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McKenzie Wark

Editorial: A Hacker Manifesto, Twenty Years On

Actually, Twenty-Five Years

I published the first version of *A Hacker Manifesto* in 1999, so really it's twenty-five years. I had some trouble finding a publisher for the book-length version. It was turned down by MIT Press, Semiotext(e), Verso, Soft Skull, and maybe one other I've forgotten. Out of desperation I sent it to Lindsay Waters at Harvard University Press. He called me on the phone just a few days later, convinced he could make it happen. Thanks to Lindsay's enthusiasm, it came out with Harvard in 2004. Harvard's legal counsel absolutely refused to make it Creative Commons licensed, so it has a copyright. I figured it would just get pirated anyway, and of course it did.

Before I had a contract for its publication in English, I had a contract for its publication in French. This was because of a chance encounter on the Nettime listserv (more on which shortly) with "Louise Desrenards," aka Aliette Guibert-Certoux. She ran a small publishing concern called criticalsecret. That edition came out after the English one, but I'm thankful for her early faith in the book.

I wrote *A Hacker Manifesto* in an imaginary language I call "European," which is equal parts Church Latin, Marxism, and business English—the three transnational languages of the continent. Perhaps as a result, it's been widely translated. Of the three words of its title, the only hard one to translate is the first word: "A." The indefinite article is important as it is part of its argument that there can be no definitive manifesto of the movement it sought to name.

I'll come back to the contexts and genesis of the book. First, just a few words on why I wanted to curate some contemporary texts that to some degree or other might engage it or differ from it. Having a few books to my name, I find that there are some where you write the book, and there are some where the book writes you. *A Hacker Manifesto* was the second kind. It set me on a path as a writer for a quarter of a century.

There are aspects of one's own books about which the author knows very little. I'm aware of some of the limitations of *A Hacker Manifesto*—which is why I wrote *Capital is Dead* (2019), to revise some of its key theses. I thought it would be interesting to see what other people thought about either the book itself or some aspect of the situation it attempted to critique. The contributors to this special issue have all helped me rethink some aspect of the ongoing project which for me really began with this book, and which in one way or another continues to constitute my writing life.

The contributors to this issue come from a wide range of backgrounds, disciplines, and aesthetic, theoretical, and political orientations. If I may say so, not the least interesting thing about *A Hacker Manifesto* is the way it cuts through assumed polarities on a diagonal. Needless to say: the contributors to this issue do not share the

aesthetic and political lines that I'll unpack in what follows. It would be boring if they did.

The Avant-Garde Never Gives Up

The political and the aesthetic are neither reducible to each other nor separable from each other; nevertheless, I'll lay down some notes on the aesthetic context for *A Hacker Manifesto* first and the political second. It came out of a lifelong interest in the avant-gardes, and may even be said to be part of one.

I read Maurice Nadeau's *History of Surrealism* at an impressionable age, and wanted to be part of something like that. What I got as a late-seventies teen was punk rock, or rather the cluster of music, art, cinema, and writing that had punk music at its center.

For something to be "avant-garde" it has to be more than an outré work in one medium or another. An avant-garde is an *aesthetics of organization*. It brings together artists in different media around some contested but more or less agreed impulse. An avant-garde touches all aspects of life and proposes a *revolution of everyday life* along *aesthetic* lines. In Walter Benjamin's famous formula, it counters the aestheticization of politics (fascism) with a politicization of aesthetics, which I prefer to think of as something that extends beyond "the political." The political, let's not forget, was for citizens, not women, slaves, or beasts. I don't think the political is ever even thinkable without some kind of exclusion. On the other hand, an avant-garde wants much, much more: as Rimbaud put it, to *change life.*

The historic avant-gardes that are best known form a series: futurists, dada, surrealists, Fluxus, situationists. One can set the bar high or low for what counts as one. I think they are interesting when they are in a multiple way trans: trans-national, trans-generational, trans-media—sometimes even trans-sexual. They're never the same thing, as avant-gardes sort of by definition reinvent not only the aesthetics of organization but also the organization of aesthetics.

There're hundreds, thousands of avant-gardes. I got to participate in two: Semiotext(e) and Nettime, the influence of both of which are easily detectable in *A Hacker Manifesto*. I'd really wanted Semiotext(e) to publish it. The late Sylvère Lotringer was very gracious when he turned it down. He just couldn't see an Australian as a "foreign agent" in American culture. After that, whenever I saw him I'd mention how well it was selling or which translation was coming out and he'd smile and express regret about the one that got away.

A Hacker Manifesto owes a lot to Nettime. This was a listserv that was also a series of meetups and publications.[1] Nettime brought together those who wanted to change life in its political and aesthetic dimensions beyond using the digital media tools then at our disposal. Contrary to the myth that we were all starry-eyed utopians in the nineties, Nettimers were mostly pragmatic about digital media. It was an open-ended experiment with what could be done with them.

Nettime was only one of a cluster of overlapping listservs: there was Spectre, Faces, 711, Undercurrents, C-Theory, Rhizome. At Nettime, we talked about "collaborative filtering," meaning a group practice of sifting through all of what was being said and done about emerging forms of media, looking for clues as to what was possible and what the dangers might be. That was our contribution to the avant-garde as an organization of aesthetics and an aesthetics of organization. It was the silver age of social media. There would be no golden age.

A Hacker Manifesto grew out of this practice of reading and writing in collaborative, distributed, digital form. Far from utopian, it was a critique of the emerging forms of power with which we were confronted. Through an almost ethnographic immersion in practices of emerging digital labor, I found that the mode of production might be mutating. That the value chain could now be controlled by *owning the vectors of information.*

The figure of the "avant-garde" is a miliary metaphor, referring to those who advance first into the breach. I prefer to think about it in terms of labor. Avant-gardes, when they are interesting, are advanced forms of collaborative, creative, mediated labor. All avant-gardes are media avant-gardes. It's where the conditions of aesthetic production that will later be generalized are discovered. It is where the struggle begins over the autonomy of creative work.

It's not surprising then that avant-gardes keep encountering the labor movement, and attempting or failing to form some alignment with it. Before their fascist turn, for the futurists this was the anarchist movement. Dada and surrealism tried with very mixed success to align themselves with communism. The situationists outflanked the Stalinist parties to the left.

At stake is the (non)relation under conditions of commodity production between creative labor (the production of difference), and industrial labor (the production of sameness). Or to put it in other terms, labor as the making of form and the making of content. Could there be an alliance between these kinds of making that commodification has severed from each other?

The Undead of World History

The people make history, but not in the media of their own choosing. They make it via signs and symbols transmitted from the past. The tradition of dead reading lists weighs like a nightmare on the citations of the living. And just as

they seem to be occupied with revolutionizing themselves and things, creating something that did not exist before, precisely in such moments of transition they anxiously conjure up the icons of the past to their service, borrowing from them names, slogans, and costumes in order to present this new scene in world history in time-honored disguise and borrowed language.

Thus, Luther put on the mask of the Apostle Paul; the Revolution of 1789 draped itself alternately in the guise of the Roman Republic and the Roman Empire. Those who took to the barricades in 1968 did so under various Bolshevik-derived banners. If anything has changed in the twenty-first century it is that today's radicals cut and paste from all previous revolutions at once. Those who start the revolution over in our own times translate it back into old languages, making the present seem the same as the past. And thus we fail at that task for which Marx had such a genius: speaking the beautiful language of our own century.

I took the last two paragraphs from Marx's famous *Eighteenth Brumaire*, my favorite of his hot takes.[2] Not to cite them as an authority but to *détourn* them. To erase from the text what history has already superseded. To transform inherited language in the direction of possibility. Many of today's self-declared "Marxists" amuse me with their careful citations from *Capital* applied in a contemplative fashion to the contemporary situation, at least as it appears in the daily news feeds. This is an approach to theory in which the present can only be contemplated in those aspects that appear like the past. Had this been Marx's approach to his own era, how would he have ever moved past the left-Hegelian critique of religion?

Marxism is not a theory, it's a practice. What one discovers if one spends some time with its history as a practice is a century and a half of defeat. Either outright defeat, or victory turned to defeat, where revolution prepares the way for restoration in a new form of oppression, as with Stalin or Mao. In such cases the new ruling class did not hesitate to silence, exile, or assassinate the revolutionaries who made their rise to power possible, all the while claiming the mantle of Marxian theory in a stale and dogmatic form.

Outside of the bureaucratic-socialist states, dogmatic forms of Marxism lived on in two variants: that of the official Stalinist parties, whether they looked to Moscow or Beijing or Havana; and that of various Trotskyist sects, the founding impulse of which is to claim to be a *more authentic dogma* than their Stalinist rivals. These competed with each other for doctrinal rectitude, conflating citational accuracy and fidelity with political perspicuity.

In the Anglophone world, particularly in the United States, the Marxist tradition as cultivated by the Communist Party was thoroughly suppressed by the Cold War blacklists. Scholars, writers, artists, filmmakers, even schoolteachers lost their jobs—a cultural and intellectual mutilation so thorough hardly anyone today is even aware of the damage done. To the extent that a Marxist tradition endured, it is known through its Trotskyist variant and its fellow travelers, and through the creation out of a canon of "Western Marxism" what Perry Anderson was at least candid enough to name "Academic Marxism."

I was raised in part on the canon of Academic Marxism that Anderson and others established. They did so as a political-intellectual project that, in the absence of a mass Marxist party, relied on the university as a base. In the process, the knowledge-procedures of Marxist theory and practice were assimilated into those of scholarship, to the point where they became indistinguishable. Marxism lost its coherence and became simply a flavor of each of the academic disciplines into which its corpus was dismembered.

I was also trained by the party to think of Marxism as something rather different. Something practical. Something that had to respond to the long history of our failures and defeats. To be a Trotskyist, like being a liberal, is to be able to pose as an innocent in history. Everything bad was perpetrated by someone else. I was never a Trotskyist. I was taught by comrades who felt both defeated by history and implicated in its disasters. I don't think of Marxism as an innocent tradition whose founding concepts can simply be cited and applied. History intervenes, over and over.

In party school I learned about Czech Marxist Radovan Richta—a complicated and certainly implicated figure. In the resistance during the war, he joined the party shortly after, and rose to prominence in official social science. The book we studied was a collaborative project he oversaw, *Civilization at the Crossroads* (1969). Whatever its faults, it's still an interesting model of collaborative labor across the social sciences. Its main argument is that there was a mutation in the mode of production, which the book refers to as a "scientific and technical revolution."

In the context of the Soviet-controlled postwar states after the death of Stalin, the book implied more than stated a political program: the replacement of the bureaucratic-repressive form of governance with one that fostered open education, research, and development. Rather than control by the party claiming to represent the working class, an alliance expressed the dual capacities of industrial labor with creative, technical labor. The book was not unconnected to the reform movement in Czechoslovakia which caused the Soviet Union to panic and invade it. What Richta had termed "socialism with a human face" was the path not taken from this historical crossroads. Richta himself remained in academia after the so-called "normalization." A compromised figure.

The first hint of the thinking that went into *A Hacker Manifesto* I probably owe to reading Richta in party school in the late seventies. There was a theory there of a profound mutation that might have occurred in the mode of production, suggesting that neither bureaucratic state socialism in the East nor what Paul Sweezy called "monopoly capitalism" in the West was quite what it appeared.

I put that thought aside during the eighties. This was the era of what we might call "superstructural Marxism." Those of us who worked in media, education, or the arts were confronted with the difference between what we did and what industrial workers did, and looked for a way to be in alignment. Louis Althusser offered the infamous formula of the "relative autonomy" of the superstructures of the capitalist social formation. Meaning that the institutions of politics, law, education, culture, and media partly answered to the necessities of the economic base, but were also partly independent sites of struggle.

In this way of thinking, Marx had uncovered the law of surplus value that determined the form of the economic base, but the political and ideological superstructures had their own relatively autonomous forms. Some, like Chantal Mouffe and Ernesto Laclau, were interested in the political; others sought the ideological. There, we built on the insights of structural linguistics and psychoanalysis to understand its workings. Roland Barthes is a key figure in this turn. I spent the eighties trying to apply superstructural Marxism to the conflicts specific to Australian national culture.

This worked for a time, and then it didn't. Theories are made to die in the war of time, as Guy Debord says. The history of Marxism is a history of theories put into practice—with very mixed results. If you're not getting results, try another concept. Learn from praxis. The experimental praxis of the avant-gardes, thought as moments of possible creative labor in formation, is as good a place as any to look for lessons.

He had his differences with the avant-gardes of his time, but nevertheless Pier Paolo Pasolini had some contributions to make to Marxist theory that turned out to be more relevant than Althusser. Like Althusser, he was thinking through Gramsci, thinking again in the light of struggles of his time. There were two revolutions, he thought. The "internal revolution," our one, the struggle of labor in and against capital. And we lost. The "external revolution," the counterrevolution, via which capital revolutionized itself, prevailed.

Rather than the relative autonomy of the superstructures from the base, it turned out that what mattered was the *relative autonomy of the base* from the superstructures. A technical revolution in the forces and relations of production made the old superstructures obsolete, and the struggles in them a rearguard action.

Pasolini was thinking through the rise of analog mass media—television, radio, and cinema—and how those were implicated in the production of new kinds of mass-produced subjects who would be the consumers of the mass-produced objects of postwar industrial consumer society. That still seems to me a good place to start thinking about a further development in the forces and relations of production, the digital turn, and how that transformed, once again, not just the production of commodities but the production of a kind of human to match it—now disarmingly called "users."

Sometimes it's helpful to go back to Marx, but sometimes it's better to go back to the most recent and relevant adaptations and transformations of the Marxist tradition. *A Hacker Manifesto* owes a lot to the Italian and French "autonomist Marxists," who among other things had a critical relation to Pasolini. I in turn had some differences from them. I thought their concepts smacked of idealism: "the general intellect," "immaterial labor," "cognitive capitalism." These identified a mutation in the forces and relations of production, but did not anchor it firmly enough in the materiality of information.

Later, Paul Preciado would make a different but I think parallel critique: That the mutation had as much to do with "social-technical reproduction" as with production. That the developments in commodification had as much to do with the corporeal as the cognitive. That what we needed was an account of the history of struggles over the "pharmacopornographic regime"—pills'n'p0rn—through which the cishet body was manufactured. But that's a story for another time.

A Hacker Manifesto is in a certain sense an "accelerationist" text. It differs significantly from other instances of that tendency in that it centers the antagonism of the productive classes—farmers, workers, hackers—against residual, dominant, and emergent ruling classes alike. It does not see capital as an accelerating agent arriving from the future through "hyperstitional" magic to speed the human to and beyond its end. But like the autonomists, the accelerationists prefer a closed world of discourse in which they don't engage with others—certainly not with me.

In short, *A Hacker Manifesto* took the experimental digital labor of the avant-gardes of the nineties—here shorthanded as Nettime—as the praxis via which to revise and critique the Marxist critical media theory we had received from previous eras, in light of other currents also attempting a theory of the present situation. It drew on classical Marxist language but also on the century and more of developments in Marxist theory, alongside the rich inheritance of avant-garde practices, not least writing practices.

My own critique of its limits was *Gamer Theory*, which was also published by Lindsay Waters at Harvard

University Press, in 2007. That came out of my friendship with Eric Zimmerman and through Eric, meetings with the most creative game designers and thinkers of the early twenty-first century. It seemed by the early years of this century that we'd lost the fight for what the internet could become. The era of enclosure and extraction had begun. I thought the persona of the "gamer," rather than the hacker, best exemplified what it meant to be a user, and I think it still does.

It's a theory which sees the computer game as the allegorical double, *at the level of form*, for what commodified life became. Here I drew on Alexander Galloway's approach, which dragged Fredric Jameson's critical apparatus into contact with contemporary media form. Everyday life appears as a zero-sum game for imaginary stakes in a "gamespace" with no outside.

About five years later Charlie Brooker's TV show *Black Mirror* would thematize much the same sensibility. I'm not comparing myself to them in terms of results so much as of ambition: if *A Hacker Manifesto* was my version of Debord's *Society of the Spectacle*, *Gamer Theory* was my version of Marcuse's *One-Dimensional Man*. I'd rather fail at grand ambitions than be satisfied with anything less.

Century of Clouds

How are we to write in the present? One can sense and feel the present in its nuanced relation to past and present, in its variations and gradations, but it is very hard to write that way. Language imposes a cut. One either assimilates the present to the past, as if there were no cut, or one declares that present to be new, imposing the cut. Neither says anything about the present as it is sensed and felt.

I'm not interested in claims to novelty, not least because those became the language of an emerging ruling class, out to "disrupt" everything, meaning to render it tender for enclosure and extraction. Supposedly critical theory also ends up making a lot of claims to a new-this and a new-that, unconsciously mimicking the language of marketing.

Rather, I'm interested in how writing might make the present appear through a *tension* between inherited language, not to mention received ideas, and its deformation and permutation, such that the present situation might appear in the play of language in-between repetition and difference. Maybe history is more Vladimir Mayakovsky's "A Cloud in Pants," a diffusion made legible through form, but barely.

I am not interested in that Marxism that became a theology, which has made of capital an eternal essence, the same for all time, until the resurrection, when the revolution somehow magically happens in its classical form, and we can live in the communism of the twentieth century. I see the appeal, but this seems to be a structure of belief, not *the ruthless criticism of all that exists*, on which Marx insists. Including inherited Marxist traditions themselves.

I'm starting to think that there is a kernel of anxiety in clinging to nineteenth-century Marxism as formalized in academic Marxology. A fear of castration, a fear of the cut in history. And so the denial of the very possibility of the cut. If there had been a cut in history, Marxism would lose its potency. But rather than take the other side, insist on the cut, on a radical novelty in historical time, I want to think forms of transformation, transduction even, which are outside the linguistic bind of sameness and otherness.

Somehow that produces even more anxiety among those who cling to received ideas. That historical time might subtly mutate in ways language has trouble grasping—what an even more terrifying thought! Not castration, but the body politic on exogenous hormones, slowing becoming transsexual.

But I am joking, of course.

X

McKenzie Wark is the author, among other things, of *A Hacker Manifesto* (Harvard), *Gamer Theory* (Harvard), *The Beach Beneath the Street* (Verso) and *Raving* (Duke). She teaches at The New School in New York City. She edited the "trans | fem | aesthetics" issue of *eflux journal* and coedited the "Black Rave" issue, with madison moore.

1
Readme! , the Nettime anthology, is available from Autonomedia https://autonomedia.org/product/read-me/ .

2
Marx, *The Eighteenth Brumaire of Louis Bonaparte* (1852), chap. 1, marxists.org https://www.marxists.org/archive/marx/works/1852/18th-brumaire/ch01.htm .

Yifan Wang and Changwen Chen

The Unauthorized Repair of the World

Unauthorized Repair

"Whatever broken phone you have, we can fix it here!" Xiaole declares his repair superpower when we first meet. He goes on to demonstrate a technique called "flying wires." "You see, I need a bit of wire to get around this broken part so that the rest of the circuits can still work," he explains as his hands move seamlessly across a smartphone motherboard, a wire coil, a soldering gun, and some tweezers, all under a well-used microscope whose unassuming presence feels more like an old family cooking pot than a pristine lab machine.

Right next to Xiaole, hunched over the same narrow desk cramped with electronic tools and parts, another technician, Hu, is winding the ends of a thin steel string around two short pencils. He then picks up a phone with a shattered glass screen and puts it on a box-shaped device with a palm-sized platform that looks like an elaborate art display pedestal—except plugged in. It is for heating and melting the glue between the touchscreen and its glass shield. While the phone heats on the platform, Hu rhythmically zigzags the steel string, held straight with a pencil at each end, across the surface of the phone, under the broken glass pieces but above the display. He uses pencils because "otherwise the string would cut into your hands," he says, which would be "much worse than paper cuts."

In another corner, a debate ensues.

"Try not to touch the motherboard before eliminating all other possible causes," a client says to technician Ling, then goes on: "I think the issue is probably something really minor."

"But I've tested everything—all three camera modules, the lens, the flex cable," replies Ling, pointing his tweezers at the malfunctioning phone in question.

"Have you tried swapping the facial recognition module?" says another technician, Fo, turning around to advise and passing over a small black spare part. "Here, try this."

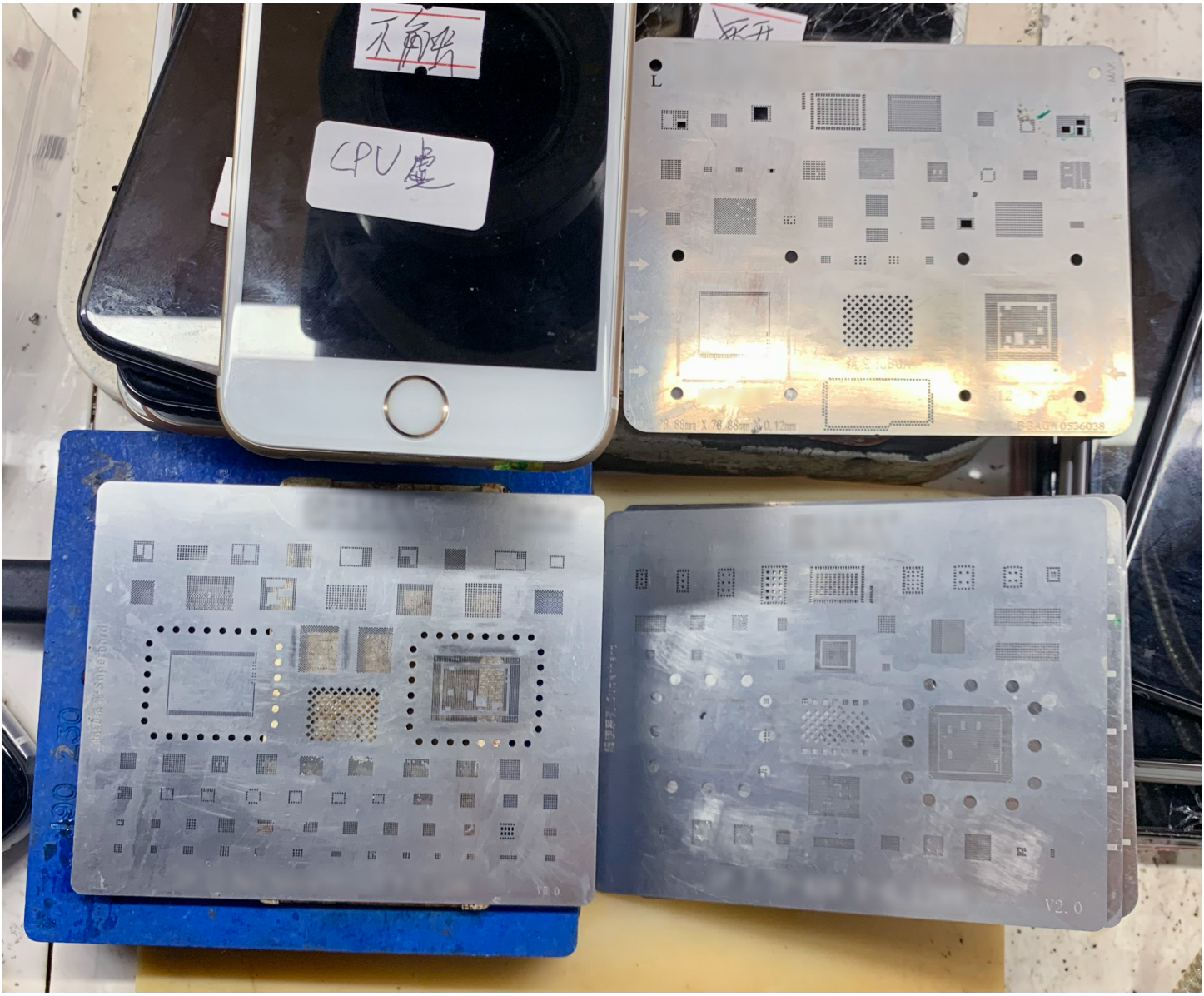
Ling takes the component and works busily under his microscope for a few minutes.

"Oh it worked!"

"See! I've seen this a hundred times," says Fo proudly. "A lot of camera issues are related to facial-recognition stuff."

"Cool, now you get to sell your part thanks to me," replies Ling. The two later split a $3 profit from the component.

This all takes place inside a tiny repair stall approximately the size of a New York City newsstand. It is co-rented by seven technicians who share two long, narrow desks set against each side wall as their collective work stations. What little open space is left in the middle stands in as a



Soldering stencils tailor-made for popular phone brands, various chips, 2024. Photo: Yifan Wang.

de facto storefront, for a nonstop flow of clients to stop by, check in, or drop off their devices to be repaired. Nested in a bustling four-story indoor market densely packed with numerous similar shops, the stall marks the beginning of our weekslong fieldwork into the world of repair.

When offline wisdom-sharing doesn't take, there's the internet. A whole genre of smartphone repair videos circulates on China's social media, where professional and amateur technicians produce-consume content, including technical walkthroughs, personal workflows, and eye-catching hacks. Social media is becoming an inevitable part of the job. "Many of our orders come from online now, our own followers or ecommerce apps," relates Tao, another technician. "Like a friend of ours—he got trending on TikTok for some reason and he's getting so many customers from there!"

In a popular video, repair influencer and technician A-Bin proudly declares: "I'm sorry, Apple. Huaqiangbei has let you down once again. You can encrypt it. We can crack it!" ("你加密，我破解!") In the video, he explains how independent repairers—those without Apple's seal of approval—work around iPhones' encryption of facial-identification modules. Apple's encryption, which disables some functionality after certain third-party repairs such as screen replacement, has been notorious in the global repair communities as epitomizing the low repairability of Apple products and their increasing use of vectoral blocks against hardware repairs.[1] "This means for that iPhone 13 in your hand, if its screen is broken, you can only replace it at authorized stores. You can't get it fixed elsewhere. Now, isn't that messed up?" exclaims A-Bin, calling the repair block "gross." He then shows how unauthorized repairers bypass the block by moving an

encryption-firmware chip from the original screen to the repair screen. At the end of the video, A-Bin turns to the camera and asks, "How about that friends! Isn't this very 'Huaqiangbei'?"

Huaqiangbei (强北　) is the name of the district where these repair technicians and their stalls—known as "one-meter counters" (一米柜台) for their compact size—are based. It sits at the center of Shenzhen, a city emblematic of China's emergence as the world's factory and the concurrent ascension of a global vectoralist class dictating the world's factory from afar. While factory-owning capitalists take charge of production in local sites, information-owning vectoralists command proprietary routes, networks, and vectors of information over globalized production: brands, patents, design, logistics, and so on. The latter orders the former over the what, where, and how of production. The term "Huaqiangbei" literally refers to the northern part of an avenue called "China-Strengthening" (强路　). It is an area handpicked by local officials to become one of the first industrial district experiments for the Communist Party's efforts to redefine socialism with Chinese characteristics.[2] Dubbed the Silicon Valley of hardware, the mainstay of Huaqiangbei's economy is cycle after cycle of the latest industrial and consumer electronics—from diodes to microcontrollers, from radios to DVD players, from black brick phones to sleek silver laptops. Behind the upgrading of hardware is a kind of upgrading of people: construction soldiers of the Third Front defense infrastructure get relocated to build export-oriented factories.[3] Former peasants disintegrated from socialist rural communes transform into migrant electronics workers. Urban workers laid off from iron-bowl jobs become self-employed entrepreneurs and backpack traders (背包客).

The official story of Huaqiangbei and Shenzhen is a narrative of China's economic miracle and socialist reform success. The messy, inconvenient fact that whatever is made will need, at some point, to be repaired rarely gets a mention. But things degrade just as they upgrade. That's where the repairers come in. A relatively small part of the Huaqiangbei community—where most people are engaged in the trading and manufacturing of new devices—repairers are concentrated in two Akihabara Electric Town–style electronics wholesale market buildings. These lively, hectic malls specialize in second-hand phone trading and refurbishing, creating a niche demand for repairers and carving out a small place for broken objects amid Huaqiangbei's general theme song of the new. This is a place where everything looks like a mesmerizing mishmash of a Jodi game modification, headline-grabbing shanzhai handphones, and Deng Xiaoping–style grassroots entrepreneurship.[4] Technicians in stall after stall, together with their myriad self-developed tools, encryption-hacking devices, and informally sourced components, look at the "warranty voided if removed" warning with a side eye.

The first step to repair any phone is to open up the casing. Guarded by water-resistant adhesives, the hardware case is the first line of defense against any "unauthorized modification" that dare challenge the Big Tech monopoly of branded devices, proprietary codes, information black boxes, exclusive expertise, and planned obsolescence. To penetrate it is no easy feat. Huaqiangbei repairers have figured out a sneaky trick involving a hair dryer, a razor blade, industrial alcohol, and a guitar pick—the unauthorized repairers' electronic millet and rifles wielded against today's "paper tigers."[5] With these tools, they wage a kind of people's war inside the smartphone, against the state-of-the-art weapon of the vectoralist class known as digital rights management—the corporate euphemism for protecting privatized information and proprietary hardware through technical means.[6] As A-Bin says: "If they can encrypt it, we can crack it."

Despite the repairers' technical imaginations and socioeconomic contributions, they remain marginalized. Among Huaqiangbei's tireless hustlers, the role of a repair technician is not a coveted one. "If I could sell phones, I'd never get into repair!" laments A-Xiang. Repair was supposed to be just a temporary gig, a stepping stone to get his foot in the door. Sales is the ultimate goal, a more lucrative business with little cap on profit and scale. "If I sit here and make repairs nonstop all day, I could get a dozen or maybe twenty jobs done, tops," says A-Xiang. "But if I sell phones, the sky's the limit."

The repairers' marginalization is also evident in terms of topography. The two repair markets are located in the lesser-known parts of Huaqiangbei, which attract much lighter consumer foot traffic than the district's famed flagship malls right next to subway exits. Within these buildings, repairers usually set up shop at the outer corners on the higher floors, where stalls are largely hidden from shoppers' view and therefore cost less to rent.

"This business of repair is ultimately only viable in our third-world countries," says A-Xiang. "Look at the foreigners. Have you seen those videos where people test smartphones by shooting bullets at them?" He goes on: "They can't be bothered with repairs. So, their unwanted phones end up finding their way to us."

Authorized Repair

A-Xiang is only partly right. If the overdeveloped world lacks a vibrant repair businesses, it's not entirely for lack of interest. In the US, for example, independent repairers are constantly besieged by a slew of practical difficulties: customs seizures of imported components, forbidding prices for the complex equipment necessitated by newer devices, and the fast-changing cycles of specialty accessories.[7]

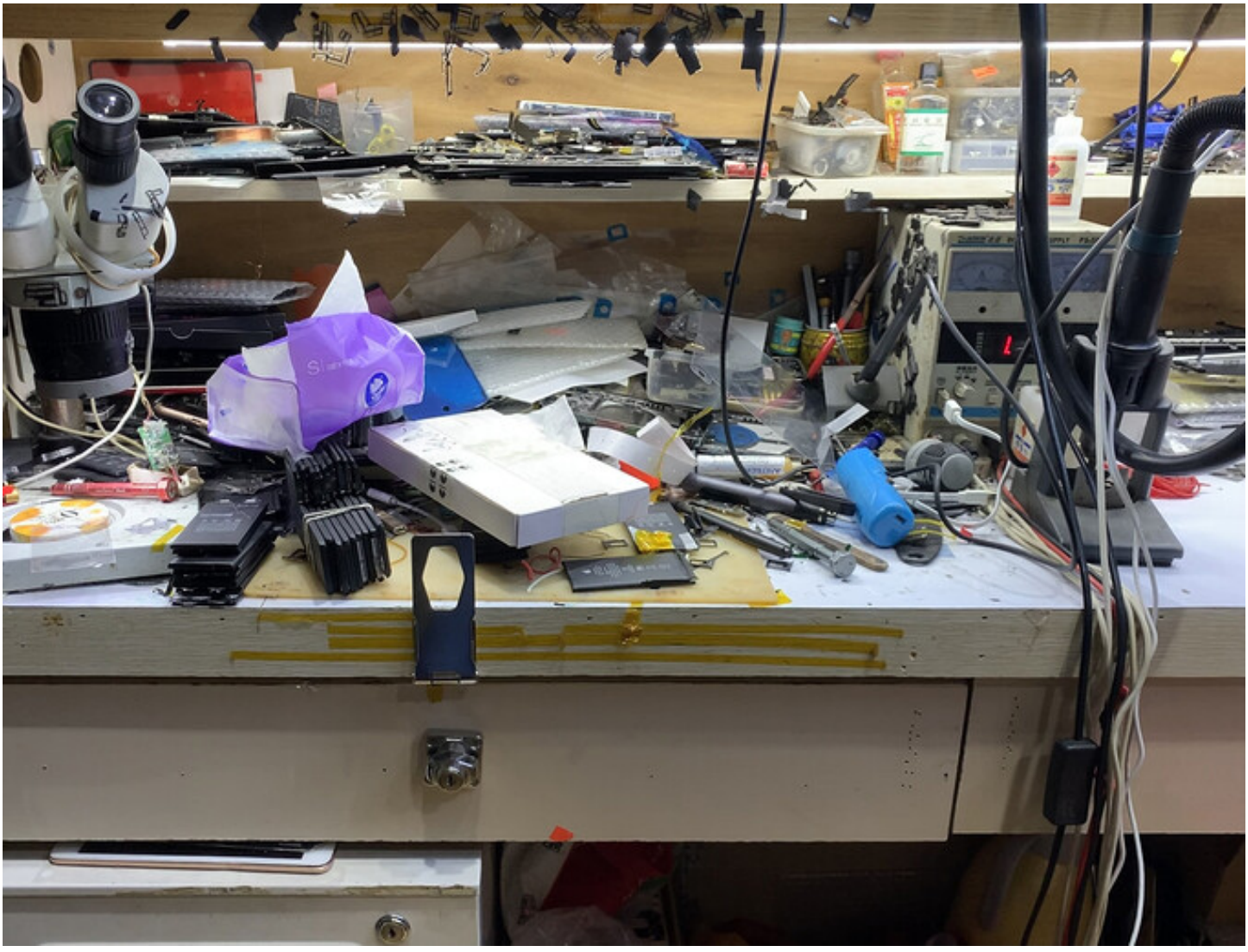
Alternatively, repairers in the overdeveloped world could

A self-made diagnostic tool to test screen functionality, repurposed from a display-less smartphone, 2024. Photo: Yifan Wang.

always buy their way out of these troubles and obtain "service authorization" from brand owners—e.g., Apple itself. The authorization, typically not bought with merely a one-time payment, depends on a repairer's ability to consistently purchase premium-priced parts and accessories from the brand corporation, share operational data, meet strict financial requirements, and consent to regular performance reviews. In return, the authorized repairer gets component supplies, training courses, device data, repair-related codes, and more importantly access to an exclusive market of customers enclosed in what financial analysts and business executives like to call an "ecosystem." This mesh of proprietary hardware and software meticulously manages the compatibility, usability, and repairability of each product throughout its life cycle, establishing multidirectional vectors for watertight surplus extraction and preventing any potential leakage to external parties like an unauthorized repair shop. The authorization of repair is the blockade of repair.[8]

Independent repairers in the overdeveloped world have lately gained ground in challenging these systems of enclosure, primarily through the double-edged sword of state legal apparatuses. In the US, multiple states have passed right-to-repair legislation. Several class-action suits against John Deere's repair restrictions are moving forward. Biden has issued an executive order calling for repair rights. All of this occurs under Biden's broader agenda that aims to boost employment and step up government investment in key industries (including clean energy), as well as a push by more progressive politicians and activists for climate action and stronger social welfare. A Green New Deal?[9] Or an emerging political-economic structure that can't quite be described by modifying the modifier?

At the center of this new structure is a mode of (re)production that seeks to instrumentalize, control, and commodify broken resources and their repair. There have been centuries of seemingly limitless growth fueled by the



A typical repair stall in Huaqiangbei, 2024. Photo: Yifan Wang.

colonial extraction of the "seven cheap things"—nature, money, labor, care, food, energy, and lives—and beyond.[10] This extraction can't go on forever, as these cheap things get used up, worn out, and broken down, threatening to turn assets into stranded assets.[11] It is now impossible for either the ruling classes or the productive classes to look away from brokenness and repair. If the question for the newborn vectoralists at the turn of the millennium was how to make endless information appear scarce, the question now becomes how to sustain endless information and its ever expanding "stack" on a finite planet increasingly falling apart.[12] As Wark puts it: "Quite simply, we have run out of world to commodify."[13]

One solution, of course, is to look for more "worlds" to commodify. Space exploration, vertical farming, land reclamation, underwater data centers all fall under this category.

Another solution is to invent a new mode of commodification, production, reproduction, accumulation, and extraction based on repair. The carbon offset industry seems the quintessential example. Step one: identify a massive political-economic opportunity in repairing carbon distribution on earth. Step two: invent a new asset form to seize this opportunity—the carbon emission credit. Step three: occupy necessary natural-cultural resources to control this asset. Step four: start producing, reproducing, buying, selling, lending, borrowing, holding, or shorting it.[14] In the first quarter of 2024, Tesla made nearly 40 percent of its total profit from such transactions.[15] A new antagonism grows in the material-social-political-economic structures of class society—an antagonism over relations of repair: who gets to take natural control (such as physical possession and access) and cultural control (such as pricing mechanisms, new property rights, state regulations) of broken and repaired things?

Wark: "For a long time, it seemed like a critical gesture to insist that reality is socially constructed. Now it seems timely to insist that the social is reality constructed."[16] Also, it seems impossible to utter words like "reality," "society," "culture," and "nature" without an uneasy sense of inaccuracy and the need to make up awkward phrases like "the material-social-political-economic."

Social and material (physical, chemical, biological, and beyond) processes have always existed side by side in forming naturecultures.[17] And intense struggles have always been fought over where the cut between nature and culture is made.[18] The Israeli state has long used climate data to justify displacement, and it is now blatantly destroying solar panels in Palestine that were set up as civilian energy infrastructure independent of Israeli state control.[19] Harlem condo developers displace low-income residents with the green wave of environmental gentrification.[20] US national parks evict Indigenous communities to create "natural wilderness."[21] Oil companies conveniently adjust calculations of the earth's oil reserves to suit business purposes.[22] These struggles are absorbing ever more parts of the world. For a long time, it might have been possible to forget about the "nature" part of naturecultures so long as one was not a survivor of Hurricane Katrina, or the 2004 Indian Ocean earthquake, or the 2022 heat waves in China.[23] Today, it's becoming glaringly clear that natures and cultures constitute each other, and everyone is on the line, if unevenly so.

In its broadest sense, "repair authorization" is the ruling classes' attempt to prevail in this new antagonism over broken resources and their repair. Just like vectoralization has swept across primary, secondary, and tertiary production with seed patents, industrial software, and food-delivery apps, repair authorization—still a nascent tendency—imposes itself onto a variety of production and reproduction activities. Electronics repair authorization regimes regulate flows of used commodities to manipulate sales of new commodities. Renewable energy corporations privatize repairable energy sources and turn them into new commodities.[24] Vectoralist-led investments in agri-technologies seek to restore farming productivity as land fertility breaks down under climate change.[25] Reverse logistics recovers surplus extraction opportunities for used commodities; Intel is planning to make over $300 million by 2025 through such repairs.[26] Wellness industries commodify communal healing practices to repair human bodyminds—for a price.[27] The forefront of surplus extraction travels full circle from the information vectors of "third nature," back to first-nature resource recovery, recycling, and repair, as well as second-nature social and culture damage control.[28] The ruling classes previously simply exported the metabolic rift's ugly consequences to the underdeveloped world.[29] Now, they want to orchestrate the repair of this widening rift on their terms.

Reproduction

Repair moves from the backstage of productivist history into the spotlight. Forces of reproduction become forces of production. Karl Marx: "Every social process of production is, at the same time, a process of reproduction."[30] Nancy Fraser: "Social reproduction is an indispensable background condition for the possibility of economic production in a capitalist society."[31] Eli Lilly: "For many of our products, we hold other patents on manufacturing processes, formulations, or uses that may extend exclusivity beyond the expiration of the compound patent."[32] The vectoral production of patents turns on the vectoral reproduction of patent extensions.

Just like most theories of production, most theories of reproduction suffer from an obsession with the eternal critique of eternal capital. Examples include accounts of the repressive and ideological reproduction of capitalism's subjects.[33] Or the gendered reproduction of laborers and

labor power.[34] Or the cultural reproduction of class relations through education and taste.[35] Or the political-economic reproduction of capital accumulation.[36] However reproduction is analyzed, in these approaches, eternal capital is seen to persist.

But today, when Foxconn shareholders and their numerous capital-heavy factories find their fortunes dependent on factory-less, asset-light vectoralist corporations such as Apple and Microsoft, what is being reproduced is clearly not only, not even primarily, capitalism. Yet even as the vectoralist class ascends above the capitalist class, even as new ruling classes emerge and incumbent elites cede partial power, the hierarchical character of the world's naturecultures remains more or less intact.

Perhaps this is why critical theorists have been so keen to cling to the word "capitalism" as a placeholder for the seemingly immortal existence of hierarchical class relations despite decades of revolutions and counterrevolutions. After all, while Foxconn's annual profit rate of 2 percent makes the lives of its owners a bit harder than Apple shareholders, with their 25 percent margin, both still have so much more power than the 99 percent.[37] And despite all the talk of the fall of the king and the church, royal families and Catholic popes remain firmly within the ranks of global power elites in this three-dimensional chess game of our time.[38] Both residual and emergent forms of ruling-class power flank the rule of a capitalist class. But whatever power reshuffles within the ruling classes, the existence of hierarchical domination stays largely untouched.

The grand narratives of various revolutions for and against capitalism are well known.[39] But when capitalism is being superseded by something worse, it's clear capital is not the only and ultimate enemy. *Class society is.* What if our stories, instead of starting with capitalism, started from the emergence and persistence of hierarchical classes—as well as their reproduction and crises? Many such stories already exist: Federici's reading of the transition from feudalism to capitalism not as anti-feudal progress led by capitalists but as a capitalist crackdown on the anti-feudal struggles of women peasants[40]; Boehm's accounts of hierarchy-leveling tactics like ridicule and disobedience among hunter-forager communities[41]; Graeber and Wengrow's analysis of political experiments with seasonally varying hierarchies in places like Palaeolithic Europe and Neolithic Çatalhöyük.[42] In these alternative grand narratives, the success of emancipatory struggles is not marked by the victory of one class over another, but by the defeat of class society itself.

Today, these struggles have become naturalcultural in scale, as atoms, molecules, objects, and organisms increasingly join humans in revolting against class society. Accumulating carbon atoms in the atmosphere, methane molecule releases from the ocean, or escalating species extinction events could all overturn the global political economy in its current form. These "revolts" may not be intentional in the conventional sense of human political struggles, but they nonetheless substantially contribute to the intensifying crisis of class society. Production overlaps with reproduction. Means of reproduction underpin means of production. This historical development underlies the click-baiting language of the day: renewables, sustainability, circular economy, right to repair.

Repair, as an emerging force for reproducing class society (which coexists with older such forces like spatial and outer-spatial fixes), takes on two forms: authorized and unauthorized. Authorized repair aims to fix the damage of class society to keep it in place. Renewable energies purport to resolve the fossil fuel crisis to sustain energy-intensive class hierarchies. Offset projects absorb atmospheric carbon to clear the way for the future emissions of the "Carbon Liberation Front."[43] Meditation apps and private therapies medicalize naturalcultural grief in the language of personal disorders to stabilize class society's desiring-production. Authorized repair is organized by and for the ruling classes.

Unauthorized repair seeks to fix the damage of concrete naturecultures with as little involvement of the ruling classes as possible. Huaqiangbei repairers mend unwanted phones imported from the overdeveloped world with locally developed tools and tricks to sustain their livelihoods. US farmers hack and repair their tractors to keep up with harvests when the authorized mechanic is always too little too late.[44] Taking repair in a more general sense, one might also think of transformative-justice intervention circles.[45] Or harm reduction clinics.[46] Or the Chinese Big Tech hackers' organization of an "Intensive Care Unit" to treat the life-threatening 996 work schedule imposed by their vectoral employers.[47] All of these might be considered experiments with radical emancipatory repairs based on the imagination of alternative relations of reproduction. Unauthorized repair aims to fix not just the problems caused by class society, but the problem that *is* class society.

Politics

A politics of repair is a healing politics. This healing politics doesn't seek to overthrow, reform, or return to the old; nor does it still believe in a miraculous leap into the radically untethered new. It reassembles, reinvents, and remakes. It re-pairs. Healing politics discloses the path for expressive politics to stage its escape from the actual into the virtual, from what the world is into what it can become.[48]

Consider this story from Xiaole, the repair stall technician who amicably promotes Huaqiangbei's repair power. "Look at this, an iPhone SE with dual SIM! Have you ever seen such a thing?" Before his special customization, the

Outside one of the busiest second-hand phone markets in Huaqiangbei, 2024. Photo: Yifan Wang.

original phone—assembled by himself with secondhand, thirdhand, or multi-hand components sourced from neighbor stalls and fellow repairers—was just like any other iPhone SE with a single SIM card tray. After a while, the handset's SIM connection failed and Xiaole opened it up to make some repairs. "When I was fixing it, it suddenly occurred to me: Why don't I just replace the broken part with a dual SIM reader and reroute the circuits!!"[49] In such moments of breakdown, the virtual sprouts from the cracks of the actual. Here the virtual refers not to the immaterial or the digital. Rather, the virtual is, as Wark says, "the inexhaustible domain of what is real but not actual, what is not but which may become," "the possibility of new worlds, beyond necessity," and "the inexhaustible multiplicity of the future."[50]

Wark: "To produce is to repeat; to hack, to differentiate."[51] To repair is to remix the repetitive into the different. Perhaps the idealization of subversive hacks and genius hackers—still fettered to originality fetishization, ingenuity myths, and knowledge hierarchies—can easily take on an aristocratic form that risks a false separation between normal commoners and the supposedly truly expressive agents of hacker history. Hopefully, repair offers a more accessible, vulgar path of escape. Breakdown is the humble, ordinary moment of revelation, when a surplus of virtual possibilities—for repair and remake—disclose themselves to everyone, regardless of technical skill or innovative genius. Repair is the feasible practice for common folks to reassemble the actual into the virtual.

If Xiaole's dual-SIM repair seems unrelatable as an example, think of the times when we casually fix a broken eyeglasses arm with superglue, or wrap the exposed wiring of an old charging cable with tape, or patch a pair of worn-out jeans.[52] A repaired item may look and work just as the old one. This seeming restoration of the old belies its underlying transformation into the not-so-new: something that has been repaired, that can be repaired, and that will be repaired, over and over again—perhaps into something that's more obviously different-looking, perhaps not. Alice Walker: "Healing begins where the wound was made."[53]

Struggle

If expressive politics is the struggle for an alternative practice of everyday life, the struggle of healing politics is a guerrilla game of parasitism and complicity with the ruling classes. In an age where it is said that there is no alternative, and where it is made to be so, the struggle of parasitism takes on greater relevance than the struggle for alternatives, just as used brand-name phones became more prized after the decline of the more widely mediatized and theorized shanzhai handsets (山寨机).

The Huaqiangbei second-hand phone markets have not always sold second-hand phones. Before there was a demand for used handsets from famous brands, these malls were all about shanzhai: cheaper, usually unbranded imitations (or enhancements, depending on one's point of view) of foreign-brand handsets by local small businesses in China. Popular stories about shanzhai usually go one of three ways. For leftist observers, shanzhai is the rebellious subversion, parody, mutation, or destabilization of the original intellectual property and its corresponding power structures.[54] For startup entrepreneurs, shanzhai is the perfect business-school case study to inspire their next big idea of something slightly different from the original IP in order to register a new IP.[55] For original IP holders, shanzhai is both an outrageous legal infringement and a geopolitical threat that needs to be brought into line with moral condemnation, legal actions, or a trade war.[56]

But few account for what happened to shanzhai after its heyday around 2005. In late 2007, Chinese authorities scrapped their old cell phone industry regulatory scheme based on production licensing and began adopting a more sophisticated model that controls handsets through IMEI registration and carrier network connection. Before 2007, a company's eligibility to manufacture mobile phones had been regulated via its possession of a physical production permit. Now, enforcement operates through state-controlled vectoral data about individual handset models, serial numbers, network types, and so on. In other words, while smaller producers had previously been able to pool resources to obtain one manufacturing license for collective use, the new regulatory paradigm based on sophisticated, digitally recorded information squeezes such legal gray zones for micro-businesses. A manufacturing regime is updated into a vectoral one. Control over physical devices is achieved through informational apparatuses. If media theorists once found it pertinent to stress the material substrate of code, software, and information, a kind of reverse phenomenon begs for analytical and political attention now: physical hardware and its functionalities—even the utmost mechanical ones—are increasingly managed by software-based vectoral systems on the cloud. (Much of our stuff now won't work without a corresponding app, an operating system, or a digital subscription. Think electric cars, light bulbs, printer cartridges, and television sets.)[57]

Meanwhile, also since 2007, vectoral giants like Apple and Google have begun making their way into the cell phone industry, setting off a new business strategy of smart-izing handsets with complex operating systems and customizable applications. The competitive success of a phone maker increasingly depended on its access to vectoral expertise like software engineering and user-interface development. The political-economic viability of the shanzhai model—one based on shanzhai producers' advantages in the physical manufacturing of feature phones—gave way to a new era of vectoral smartphones.

Amid this double expansion of China's unique blend of state and private vectoral powers, entry barriers are raised, smaller players are kicked out, and a market of dazzlingly

A Huaqiangbei independent repairer at work, 2024. Photo: Yifan Wang.

diverse shanzhai phones consolidates into a handful of domestic firms that fuel sales with consumerist nationalism.[58] Shanzhai, once at the center of attention for Beijing officials and international observers alike, has long receded from the center stage of Chinese social media and its market of ideas. In the market of things, shanzhai products have taken on a new form that's hardly recognizable as shanzhai. If you want to get a cheap phone in China these days, you'd go for an Oppo or Xiaomi, the shanzhai brands that have ended shanzhai.

In place of shanzhai phones and their hackers, second-hand devices and their unauthorized repairers have entered the stage. For shanzhai hackers, the question is one of old or new, imitation or innovation, repetition or difference, joining or quitting the game. For unauthorized repairers, the question is a bit more complicated. The repairers fix proprietary products by breaking proprietary restrictions. They violate IP rules in order to benefit from IP rules (after all, a refurbished iPhone is only profitable because it's an iPhone). They hate commodified information that fetters their healing powers. They love commodified information as the brand-name magic that commands premium repair prices. They restore physical sameness yet produce political-economic difference. They reproduce a sameness that rejects privatized difference, just as they create a difference in the form of knockoff sameness.

Repairers are neither misbehaving rulebreakers, nor unorthodox winners, nor maverick dropouts. They are both the parasite and the host of the global smartphone system. Every time a new iPhone model comes out, a slew of tailor-made parts, screws, tools, trader circles, and chat groups begin to form around it, parasitizing off of the new launch's carefully curated vectoral media hype and rerouting it into Huaqiangbei's own circuit of second-hand flows of supply, demand, capital, and vectors. At the same time, it is these very same communities of workers, technicians, tools, objects, and factories that make the pervasiveness of iPhones possible to begin with. "A single iPhone model could feed a whole bunch of us," a Huaqiangbei repairer once told us. It is also the whole bunch of us that feed corporations like Apple.

When alternative, off-the-grid mountain strongholds—shanzhai's literal meaning—are ever more intensely controlled or commodified by the spreading tentacles of vectoral powers, unauthorized repairers turn the enemies' weapons back at them. The struggle of healing politics is parasitical, just as the rule of vectoral power is parasitical. The key concern for parasites is not repetition or difference, but the downstream. Michel Serres: "The law of the relation is to place oneself below another, so that the chestnuts fall unimpeded. Below, deeper, further down in the well, or further downstream. The one downstream is the one who wins."[59]

Class

"Farmers, workers and hackers confront in its different aspects the same struggle to free information from property, and from the vectoralist class," writes Wark. "The most challenging hack for our time is to express this common experience of the world."[60] Repairers help to identify a uniquely advantageous strategic position for approaching this challenging hack. Rarely cut into any deal with the ruling classes—be it the historic compromise in the overdeveloped world over surpluses from the underdeveloped world, or nationalistic promises defined along state borders, or the unevenly distributed economic growth benefits from vectoralists-dominated globalization—repairers have little vested interest in any existing arrangement. The repairer is an outcast everywhere, a scavenger of exported wastes, an inconvenient presence that reminds one too much of decay, ruin, and wound in the storm of what we call progress.[61]

Accompanied by the repairer, one could therefore take leave for a time of both the noisy sphere of circulation and the hidden abode of production, and instead venture into the all-too-easily forgotten domain of maintenance.[62] Removed from the marketplace and the factory floor, a broken thing—its dazzling casings and mystifying components taken apart—calls for collective action from all productive classes. The repairer cuts through the dominant division of labor along class lines, and destabilizes the consequent mismatch of politics among farmers, workers, and hackers. Here, opportunities abound for overlooked, understudied tactics and strategies of alliance-making that could broaden all productive classes' imagination of "the most challenging hack."

In Huaqiangbei, it's hard to say whether someone is primarily a farmer, a worker, a hacker, or a repairer. A-Ling, whom we met above, alternates between a farm boy and a self-employed repairer. During harvest seasons or the Lunar New Year, he goes back home to a rice-farming village in central China to help in the fields. In other months, he is stationed in his Huaqiangbei stall, fixing one phone after another. His mechanical tools are made by factory workers in suburban Shenzhen, and his digital tools (such as interactive circuit-board schematics and troubleshooting software) are developed by programming hackers sitting in nearby office buildings.

These same workers and hackers, and their capitalist employers, probably also take manufacturing orders from overseas vectoralists. (A-Ling himself, like many other Huaqiangbei repairers, spent years on factory floors as an assembly-line worker before becoming a repairer.) Meanwhile, every week or so, recyclers come to buy back completely unrepairable parts from technicians like A-Ling at around fifty dollars a kilogram. These not-so-wasted electronics are then shipped to regional villages to be acid washed, burned down, or taken apart by farmer families

excluded from the state's urban-centric welfare system and struggling to sustain a decent living solely from their nonindustrial small-scale farming. The scavenged silver and gold, recouped from those beyond-repair electronics, then return as investment metals and their derivatives, circulating back into the global flows of commodities, capital, and information.

Around repair activities, a hodgepodge of people and things, classes and positionalities, come together. Importantly, such cooperation across productive and reproductive classes allows Huaqiangbei repairers to develop a unique approach to pushing against the repair blockade of vectoralist corporations. Unlike many right-to-repair movement strategies in the overdeveloped world that primarily rely on legislative initiatives and media advocacy, Huaqiangbei repairers are able to adopt a form of anarchist direct-action repair that cuts out any representational politics.[63] Thanks to close ties to electronics workers, engineers, programmers, recyclers, and their respective knowledge and tools, Huaqiangbei repairers can fix as if they are already free from encryption blocks and corporate sabotage.

Outside of Huaqiangbei, across the overdeveloped and underdeveloped worlds, electronics repairers are forging similarly imaginative, autonomous, makeshift alliances that traverse class and state borders. Repairers in Dhaka learn new techniques from Saudi Arabia, Thailand, and online GSM forums.[64] Indian repair-tool sellers advertise Chinese-branded equipment on YouTube.[65] French technicians seek MacBook repair tricks from Shenzhen.[66] Beyond electronics, repairers—in the broader sense of the word—are also coming together across boundaries. In abolitionist pods.[67] In healing justice spaces.[68] In holograms of care.[69] In Indigenous land rematriation sites.[70] And, perhaps with more worrisome implications, in carbon-offset solar power plants.

One could think of all these as examples of a new class antagonism in the making: a repairer class and what one could call an offsetter class. Repairers do the patient, messy work of fixing naturecultures broken by landlords, capitalists, and vectoralists. Offseters privatize and assetize the results of the repairers' labor, turning natureculture justice into a consumer choice or investment opportunity. This new class antagonism merges itself with existing class relations. And struggles against this new class antagonism merge with struggles against existing class relations.[71]

But on the other hand, we could propose another thought experiment: What if this is not about class struggle anymore? Maybe the category of class has lost much of its strategic and political potency in contemporary mobilization. After all, a key part of the ruling classes' efforts to break down labor movements has been to weaken worker power by mass-creating nonunion administrative jobs, outsourcing to hiring agencies, contracting temporary workers, or turning taxi drivers into Uber users.[72] Both the ruling and productive classes have multiplied and diversified into numerous intersections of simultaneous comrades, allies, difficult friends, and friendly-looking enemies. adrienne maree brown: "We must make our current enemy our future forgiven neighbor."[73]

It's perhaps time to design new weight-bearing metaphors for new actions. The right to the city, multitude entrepreneurship, and temporary autonomous zones are all useful examples.[74] Repair could be another. Given the inevitably heterogeneous range of human and nonhuman actors involved in any repair activity, the timespace of repair is one marked by messy entanglements, unruly objects, improvised connections, and shapeshifting tactics.[75] Steven Jackson: "All working technologies are alike. All broken technologies are broken in their own way."[76] When positional warfare based on a singular class location won't cut it anymore, the mobile tactics of summit blockers, park occupiers, pipeline saboteurs, and guerrilla repairers seem more fitting.[77]

Recall repair influencer A-Bin. In another one of his widely viewed videos, titled "the point of repair," A-Bin pronounces: "The point of repair is that if you can repair it, you don't want to upgrade it."[78] Another world is possible, but maybe that other world is not so much an upgraded one as a repaired one, healed from the naturalcultural traumas inflicted by hierarchical classes. Alexis Pauline Gumbs: "What if abolition isn't a shattering thing, not a crashing thing, not a wrecking ball event? What if abolition is something that sprouts out of the wet places in our eyes, the broken places in our skin, the waiting places in our palms, the tremble holding in my mouth when I turn to you?"[79] Revolutionaries have hitherto sought to change—to break—the world in various ways. The point, now more than ever, is to repair it.

X

Yifan Wang is a researcher and writer whose work deals with labor, infrastructure, finance, automation, and grassroots technologies. Her writing has appeared in publications including the *New York Times* and the *Wall Street Journal.*

Chen Changwen is a critical/cultural scholar interested in the social history of learning and work culture, focusing on its intersections with technology, development, and post-socialist politics. He recently earned his PhD in Communications and New Media from the National University of Singapore.

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This refers to the practice of disabling third-party hardware components through code-based encryption software and firmware. An example can be found here https://www.ifixit.com/news/54829/apples-new-screen-repair-trap-could-change-the-repair-industry-forever .

2
See Dai Jinhua and Jingyuan Zhang. "Invisible Writing: The Politics of Chinese Mass Culture in the 1990s," *Modern Chinese Literature and Culture* , vol. 11, no. 1 (1999); Nathan Sperber, "Party and State in China," *New Left Review* , no. 142 (July 2023); and Zhiming Long, et al., "On the Nature of the Chinese Economic System," *Monthly Review*, October 1, 2018 https://monthlyreview.org/2018/10/01/on-the-nature-of-the-chinese-economic-system/ .

3
Mary Ann O'Donnell, "What Kind of Public Space Is the City of Shenzhen?" *The Emerging Public Realm of the Greater Bay Area* , ed. Miodrag Mitrašinović and Timothy Jachna (Routledge, 2021), 90.

4
For an examination of Jodi's game modification works, see https://media.rhizome.org/artbase/documents/Untitled-Project:-A-Cross-Disciplinary-Investigation-of-JODI%E2%80%99s-Untitled-Game.pdf . For reporting on shanzhai handphones, see David Barboza, "In China, Knockoff Cellphones Are a Hit," *New York Times,* April 27, 2009 https://www.nytimes.com/2009/04/28/technology/28cell.html . On Deng Xiaoping-–style grassroots entrepreneurship, see *Learning from Shenzhen: China's Post-Mao Experiment from Special Zone to Model City* , ed. Mary Ann O'Donnell et al. (University of Chicago Press, 2017).

5
For an example of the repair process, see this video https://v.kuaishou.com/p2KEX2 . For Mao Zedong's discussions on "paper tigers," see https://www.marxists.org/reference/archive/mao/selected-works/volume-5/mswv5_52.htm .

6
For theorizations on "people's war," see Wang Hui, *China's Twentieth Century: Revolution, Retreat and the Road to Equality* (Verso Books, 2016), 110–15. For more on digital rights management, see Sascha D. Meinrath et al., "Digital Feudalism: Enclosures and Erasures from Digital Rights Management to the Digital Divide," *Advances in Computers*, vol. 81, ed. Marvin V. Zelkowitz (Elsevier, 2011), 237–40.

7
China-based repairers don't typically face the same difficulties since most of their tools and parts are locally made, often in factories miles from Huaqiangbei.

8
Early precedents of the ecosystem enclosure strategy can be found in the US auto industry, which helped drive America's rise as a global power in the twentieth-century just as the consumer electronics industry underpins China's growth in this century. Ford was among the first to standardize repair services, while General Motors pioneered early experiments on mixing planned obsolescence with brand image advertising, hinting at the emergence of vectoral power in its nascent form. They understood that sales depended on an ecosystem of after-sales. These new business practices emerged around the early 1900s, a time of an intensifying crisis for Adam Smith–style capitalism. That crisis gave rise to various repair attempts, including Keynesian economics, the Walter Lippmann Colloquium, a Cold War, and eventually vectoralism. See Philip Mirowski and Dieter Plehwe, *The Road from Mont Pèlerin: The Making of the Neoliberal Thought Collective* (Harvard University Press, 2015).

9
For discussions on Biden and the Green New Deal (GND), see Daniel Goulden, "We Need a Real Green Jobs Program to Fight Climate Change," *Jacobin*, October 4, 2023; and Alyssa Battistoni and Geoff Mann, "Climate Bidenomics," *New Left Review* , no. 143 (2023). For an activist GND vision, see https://www.sunrisemovement.org/movement-updates/lng-decision-biden/ .

10
Raj Patel and Jason W. Moore, *A History of the World in Seven Cheap Things: A Guide to Capitalism, Nature, and the Future of the Planet* (University of California Press, 2017). See also Timothy Mitchell, *Carbon Democracy: Political Power in the Age of Oil* (Verso Books, 2011).

11
Rob Aitken, "Depletion Work: Climate Change and the Mediation of Stranded Assets," *Socio-Economic Review* 21, no. 1 (2023): 267–70.

12
Benjamin H. Bratton, *The Stack: On Software and Sovereignty* (MIT Press, 2016).

13
Wark, *Capital Is Dead: Is This Something Worse?* (Verso Books, 2019), 48.

14
See for example Donald MacKenzie, "Making Things the Same: Gases, Emission Rights and the Politics of Carbon Markets," *Accounting, Organizations and Society* 34, no. 3–4 (2009); Gavin Bridge et al., "Pluralizing and Problematizing Carbon Finance," *Progress in Human Geography* 44, no. 4 (2020); Kean Birch and Fabian Muniesa. *Assetization: Turning Things into Assets in Technoscientific Capitalism* (MIT Press, 2020). See also https://www.ienearth.org/nature-based-solutions/ .

15
See https://www.sec.gov/Archives/edgar/data/1318605/000162828024017503/tsla-20240331.htm .

16
Wark, *Capital Is Dead*, 123.

17
Agustín Fuentes, "Naturalcultural Encounters in Bali: Monkeys, Temples, Tourists, and Ethnoprimatology," *Cultural Anthropology* 25, no. 4 (2010): 600–1; Donna Haraway, *The Companion Species Manifesto: Dogs, People, and Significant Otherness* (Prickly Paradigm Press, 2003), 1–10.

18
McKenzie Wark, *Molecular Red: Theory for the Anthropocene* (Verso Books, 2016), 10–20. See also https://vimeo.com/140178554 .

19
Eyal Weizman and Fazal Sheikh, *The Conflict Shoreline: Colonization as Climate Change in the Negev Desert* (Steidl, 2015), 12.

20
Melissa Checker, "Wiped Out by the 'Greenwave': Environmental Gentrification and the Paradoxical Politics of Urban Sustainability," *City & Society* 23, no. 2 (2011): 210–13.

21
Robert Poirier and David Ostergren, "Evicting People from Nature: Indigenous Land Rights and National Parks in Australia, Russia, and the United States," *Natural Resources Journal* 42, no. 2 (2002): 331–38.

22
Mitchell, *Carbon Democracy*, 180-–81.

23
Lily Zhao, "Workers Die in Extreme Heat During China's Summer," *World Socialist Website* , October 17, 2022 https://www.wsws.org/en/articles/2022/10/18/vyzg-o18.html .

24
Robert Wade and Geraint Ellis, "Reclaiming the Windy Commons: Land Ownership, Wind Rights, and the Assetization of Renewable Resources," *Energies* 15, no. 10 (2022).

25
Blaine Friedlander, "Climate Change Has Cost 7 Years of Ag Productivity Growth," *Cornell Chronicle* , April 1, 2021 https://woods.stanford.edu/news/seven-years-agricultural-productivity-growth-lost-due-climate-change .

26
See https://www.intel.com/content/dam/www/public/us/en/documents/white-papers/intel-reverse-logistics-whitepaper-1.pdf .

27
Fariha Roisin, *Who Is Wellness For?: An Examination of Wellness Culture and Who It Leaves Behind* (Harper Wave, 2022).

28
McKenzie Wark, *A Hacker Manifesto* (Harvard University Press, 2004), thesis 153.

29
Reece Walters and Maria Angeles Fuentes Loureiro, "Waste Crime and the Global Transference of Hazardous Substances: A Southern Green Perspective," *Critical Criminology* 28, no. 3 (2020); Emily Brownell, "Negotiating the New Economic Order of Waste," *Environmental History* 16, no. 2 (2011): 262–64.

30
Marx, *Capital,* vol. I (Penguin UK, 2004), 711.

31
Fraser, *Cannibal Capitalism: How Our System Is Devouring Democracy, Care, and the Planet—and What We Can Do About It* (Verso Books, 2023), 9.

32
See https://investor.lilly.com/node/45906/html .

33
Louis Althusser, *On the Reproduction of Capitalism: Ideology and Ideological State Apparatuses* (Verso, 2014).

34
Social Reproduction Theory: Remapping Class, Recentering Oppression , ed. Tithi Bhattacharya and Liselotte Vogel (Pluto Press, 2017).

35
Pierre Bourdieu and Jean-Claude Passeron, *Reproduction in Education, Society and Culture* , trans. Richard Nice (Sage Publications, 2000).

36
Paul A. Baran and Paul M. Sweezy, *Monopoly Capital: An Essay on the American Economic and Social Order* (Monthly Review Press, 1966); Rosa Luxemburg, *The Accumulation of Capital: An Anti-critique. Imperialism and the Accumulation of Capital* (Monthly Review Press, 1972).

37
On Foxconn profits https://www.foxconn.com/en-us/press-center/events/foxconn-events/1299 . On Apple profits https://www.apple.com/newsroom/pdfs/fy2023-q4/FY23_Q4_Consolidated_Financial_Statements.pdf .

38
Michael Hardt and Antonio Negri, *Commonwealth* (Belknap Press, 2011), 275.

39
The most iconic of such narratives is probably Marx's take on how "the weapons with which the bourgeoisie felled feudalism to the ground are now turned against the bourgeoisie itself" by the proletarians. Then there's also Adam Smith's epic story of the four stages of human history, or futurist Alvin Toffler's account of the three waves. See Marx and Engels, *The Communist Manifesto* (1848) https://www.marxists.org/archive/marx/works/download/pdf/Manifesto.pdf ; Smith, *The Wealth of Nations* (Penguin, 1999); and Toffler, *The Third Wave* (Bantam Books, 1980).

40
Silvia Federici, *Caliban and the Witch: Women, the Body and Primitive Accumulation* (Autonomedia, 2014).

41
Christopher Boehm, *Hierarchy in the Forest: The Evolution of Egalitarian Behaviour* (Harvard University Press, 1999).

42
David Graeber and David Wengrow, *The Dawn of Everything: A New History of Humanity* (Farrar, Straus and Giroux, 2021).

43
Wark, *Molecular Red,* 1–6.

44
Jason Koebler, "Why American Farmers Are Hacking Their Tractors With Ukrainian Firmware," *Motherboard*, March 21, 2017 https://www.vice.com/en/article/xykkkd/why-american-farmers-are-hacking-their-tractors-with-ukrainian-firmware .

45
Revolution Starts at Home: Confronting Partner Abuse in Activist Communities , ed. Ching-In Chen et al. (AK Press, 2016).

46
See for example Suzanne Morrissey and Olivia Hagmann, "Social Justice, Trauma-Informed Care, and 'Liberation Acupuncture': Exploring the Activism of the Peoples Organization of Community Acupuncture," *Anthropology and Activism* , ed. Anna J Willow and Kelly A. Yotebieng (Routledge, 2020).

47
J. S. Tan and Moira Weigel, "Organizing in (and Against) a New Cold War: The Case of 996.ICU," in *Digital Work in the Planetary Market* , ed. Mark Graham and Fabian Ferrari (MIT Press, 2022), 209.

48
For Wark's discussions on expressive politics and escape, see *Hacker Manifesto*, thesis 251, 252, 256, 257, and 273.

49
Most internet services in China require phone numbers for registration, and many people want more than one SIM card in their phone so they can switch between different digital accounts registered to different phone numbers.

50
Wark, *Hacker Manifesto*, thesis 74, 14, and 78.

51
Wark, *Hacker Manifesto*, thesis 160.

52
See https://chinaquickfix.tumblr.com/ .

53
Walker, *The Way Forward Is with a Broken Heart* (Ballantine Books, 2001), 200.

54
Byung-Chul Han, *Shanzhai: Deconstruction in Chinese* (MIT Press, 2017).

55
Silvia M. Lindtner, *Prototype Nation: China and the Contested Promise of Innovation* (Princeton University Press, 2020), 74–79.

56
Jyh-An Lee, "Shifting IP Battlegrounds in the US-China Trade War," *Columbia Journal of Law and the Arts* 43, no. 2 (2020): 147.

57
For media-studies discussions on software and hardware, see Friedrich Kittler, "There is no Software," *Stanford Literature Review* 9, no 1 (1992); Alexander Galloway, "Language Wants to Be Overlooked: On Software and Ideology," *Journal of Visual Culture* 5, no. 3 (2006); and Wendy Hui Kyong Chun, "On Software, or the Persistence of Visual Knowledge," *Grey Room*, no. 18 (2005). For the digitization of mechanical devices, see for example M. C. Forelle, "The Material Consequences of 'Chipification': The Case of Software-Embedded Cars," *Big Data & Society* 9, no. 1 (2022): 1–5. See also Cory Doctorow, "Apple Fucked Us on Right to Repair (Again)," *Medium*, September 23, 2023 https://doctorow.medium.com/apple-fucked-us-on-right-to-repair-again-df4b35030480 .

58
Zhimin Liao and Xiaofang Chen, "Why The Entry Regulation of Mobile Phone Manufacturing in China Collapsed: The Impact of Technological Innovation," *Journal of Law and Economics* 54, no. 4 (2011). See also http://jjckb.xinhuanet.com/bjjs/2007-10/16/content_70053.htm and https://www.gov.cn/gzdt/2008-12/18/content_1181377.htm (in Chinese).

59
Serres, *The Parasite* (Johns Hopkins University Press, 1982), 166.

60
Wark, *Hacker Manifesto*, thesis 87.

61
Walter Benjamin. "On the Concept of History" (1940), trans. Dennis Redmond , marxists.org https://www.marxists.org/reference/archive/benjamin/1940/history.htm . One has to wonder if Benjamin's Angel of History, with his face turned towards the single catastrophe of the past and his hope for a pause to piece together what has been smashed, must be a repairer.

62
Marx, *Capital*, vol. 1, 271–80. We are now accompanied by so many more figures than Marx's Mr. Moneybags and the labor-power possessor. The hidden spheres in need of scrutiny also stare at us with a far more intricate governmentality of inclusion and exclusion: not just "no admittance except on business," but also "warranty void if seal is removed."

63
See for example April Carter, *Direct Action and Democracy Today* (Polity, 2005); Uri Gordon, "Anarchism Reloaded," *Journal of Political Ideologies* 12, no. 1 (2007): 29–30.

64
Lara Houston and Steven J. Jackson, "Caring for the 'Next Billion' Mobile Handsets: Proprietary Closures and the Work of Repair," *Information Technologies and International Development* (special section), no. 13 (2017): 200.

65
See https://www.youtube.com/watch?v=ie6giklz_Zc .

66
See https://www.linkedin.com/feed/update/urn:li:activity:7101935191492829184/ .

67
Mia Mingus, "Pods and Pod Mapping Worksheet," Bay Area Transformative Justice Collective, June 2016 https://batjc.wordpress.com/resources/pods-and-pod-mapping-worksheet/ .

68
Leah Lakshmi Piepzna-Samarasinha, "A Not-So-Brief Personal History of the Healing Justice Movement, 2010–2016," *Mice Magazine*, no. 2 (Fall 2016) https://micemagazine.ca/issue-two/not-so-brief-personal-history-healing-justice-movement-2010%E2%80%932016 .

69
Cassie Thornton, *The Hologram: Feminist, Peer-to-Peer Health for a Post-Pandemic Future* (Pluto Press, 2020).

70
See https://sogoreate-landtrust.org/what-is-rematriation/ .

71
"No Climate Justice without Debt Justice," open letter https://debtgwa.net/debt-and-climate .

72
Mary L. Gray and Siddharth Suri, *Ghost Work: How to Stop Silicon Valley from Building a New Global Underclass* (Houghton Mifflin Harcourt, 2019).

73
brown, "Additional Recommendations for Us Right Now From a Future," Center for Humans and Nature, October 23, 2020 https://humansandnature.org/additional-recommendations-for-us-right-now-from-a-future/ .

74
David Harvey, *Rebel Cities: From the Right to the City to the Urban Revolution* (National Geographic Books, 2019); Michael Hardt and Antonio Negri, *Assembly* (Oxford University Press, 2017), 139–43; Hakim Bey, *T.A.Z: The Temporary Autonomous Zone, Ontological Anarchy, Poetic Terrorism* (Autonomedia, 2003).

75
Such irregularity and uncontrollability of repair spaces in the early 1900s proved to be a major point of friction and a limit to the Fordist model of value extraction. See Stephen L. McIntyre, "The Failure of Fordism: Reform of the Automobile Repair Industry, 1913–1940." *Technology and Culture* 41, no. 2 (2000): 269–75.

76
Steven Jackson, "Rethinking Repair," in *Media Technologies: Essays on Communication, Materiality, and Society* , ed Tarleton Gillespie et al. (MIT Press, 2014), 228.

77
Andreas Malm, *How to Blow up a Pipeline: Learning to Fight in a World on Fire* (Verso Books, 2021).

78
See https://v.kuaishou.com/A0jSRF .

79
Gumbs, "Freedom Seeds: Growing Abolition in Durham, North Carolina," in *Abolition Now!: Ten Years of Strategy and Struggle Against the Prison Industrial Complex* , ed. CR10 Publications Collective (AK Press, 2008), 145.

Isabel Ling

Daylighting Cryptocurrency's Waterstreams

Sweat-Powered Equity in the Bathhouse

In Williamsburg, Brooklyn, a sleek wellness center draws a trifecta of well-coiffed influencers, tech bros, and self-care aficionados with its promises of Bitcoin-powered heated soaking pools. Bathhouse, which has branded itself as a futuristic oasis for busy New Yorkers, offers a menu of various hammams, saunas, and pools. Going to Bathhouse means engaging with a sanitized pseudo-spirituality (essential-oil healing sessions are announced by "vibe gong"). So, it makes sense that the owners have supplanted the cultural and spiritual significance of the bathhouse with their own mythological force—proof of work.

The concept of proof of work was first sketched out in 1992 by academics looking to combat the scourge of spam email. Computer scientists Cynthia Dwork and Moni Noar proposed that senders would need to first complete a mathematical puzzle, a digital roadblock that would deter a deluge of mass emails.[1] Deemed too energy intensive, their solution was shelved in favor of spam blockers. The term "proof of work" was later formally coined in a paper by Markus Jakobsson and Ari Juels, titled "Proofs of Work and Bread Pudding Protocols," which attempted to find alternative tasks to make the energy expenditure useful, and thus less wasteful.[2] The legacy of proof of work returned to the mainstream in 2008 with the now infamous whitepaper "Bitcoin: A Peer-to-Peer Electronic Cash System." The paper's anonymous author, whose moniker "Satoshi Nakamoto" became a household name, outlined an economic system that would use blockchain technology to verify and securitize peer-to-peer digital transactions without the interference of government institutions and banks. Following a crypto-anarchist logic, Nakamoto fleshed out a future in which anonymity-protecting technology could render state control of the market impossible.[3]

In this vision, proof of work validates transactions by pitting decentralized "miners," or computers, against one another to solve complex cryptographic problems. Those who arrive at the solution first are then allowed to add a "block" to the "blockchain." In verifying the legitimacy of the transaction, the "winner" is then awarded cryptocurrency for their efforts. As a result, the integrity of the currency is directly linked to the capacity for massive amounts of computational labor, a process with immense energy demands.

In a document published to its website, Bathhouse explains how it heats its pools with two ASICs (Application-Specific Integrated Circuit), which are computers designed specifically for Bitcoin mining. Churning below ground, these machines hurtle through energy-intensive math puzzles as a part of the mining process, giving off the byproduct of heat which is then, thanks to the law of conservation of energy, recycled by a heat exchanger into warm water. At first glance, this alchemical process seems like the ultimate hacker

Bathouse, New York.

fantasy—infrastructure for a decentralized digital currency that doubles as a viable energy source.

When McKenzie Wark wrote *A Hacker Manifesto*, she positioned hackers as a people on the precipice, a class organized around new modes of production offered by technology and, by extension, their capacity for world building with it. In calling for an end to the myth of scarcity, she underscored the infinities offered through abstraction and the virtual, and the liberatory potential of an alliance between hackers—masters of abstraction—and other workers, farmers, and producers of the world.

In the two decades since the manifesto's publication, we've seen the evolution (or dissolution) of the hacker-as-class, as well as an ushering in of a new world. Wark's caution against the rise of a "vectoralist class," a ruling elite determined to control the information produced by the hacker class, has proven prophetic. Some who may have once identified as hackers have stepped into the shoes of the vectoralists, assuming roles of unimaginable power as business moguls, cultural arbiters, and policy shapers. The technologies and worlds this mode of production has midwifed have fundamentally altered our ways of life, a process of transformation that internet historian and writer Ingrid Burrington once likened to terraforming.[4]

Taking stock of the sheer acreage allocated to data centers and the hundreds of thousands of miles of fiber-optic cables crisscrossing the ocean floor, it becomes clear that these infrastructures, essential to the maintenance and upkeep of the current flows of information, are indeed remaking the material environment in the likeness of the computer. A closer look at these infrastructural sites reveals a convergence of material flows—water, electricity, air, heat, metals, minerals, and rare-earth elements—whose combined metabolic processes constitute computing as an ecological force within itself.[5]

Currently, the Williamsburg location of Bathhouse employs twelve miners, or computers, with a hashrate of twelve hundred terrahash. This scale, which resembles most early Bitcoin mining rigs, has the feel of a glorified science-fair project when compared to the commercial crypto mines that have metastasized across the industry. The cost of autonomy doesn't come cheap. These mines

are voracious consumers, guzzling up enough electricity and water to rival the annual consumption rates of entire states and countries. Although Bitcoin is predicated on the infinite, engendered as it is by abstraction, its future is deeply tied up with that of the material resources on which it relies. Here, the abundance of the virtual brushes up against the scarcity that has come to dominate conversations around our environmental future.

To better understand the contradictions of cryptocurrency's relationship with scarcity, we can look to water, an element with its own misplaced reputation for the infinite. While Bitcoin's energy consumption has come under increased scrutiny, its water footprint has received less attention despite a snowballing global water crisis. An essential component for most commercial mining operations, water is used in cooling systems to keep machines from overheating as well as indirectly in the power plants that provide energy for mining, using over a thousand gigaliters of water a year.[6] One recent study examining the water consumption of crypto mining estimated that the water footprint of just one Bitcoin transaction was equivalent to that of a small swimming pool.[7]

As it stands, worldwide escalations in drought and flooding due to climate change necessitate a shift in our collective relationships with water. However, Bitcoin mining shows no sign of slowing down. By the time of this article's publication, Bitcoin will have undergone another halving event, a mechanism in cryptocurrency's model that reduces the Bitcoin rewarded to miners by half about every four years. Meant to preserve the value of cryptocurrency, halving also means that mining the same amount of Bitcoin will now take double the amount of energy and water as it did previously. Bitcoin boosters are quick to gloss over cryptocurrency's water costs, a stance in line with the accelerationist slant many adopt in their drive to build out a new financial order. Water, however, operates on its own intrinsic matrices of time and space, ones that often clash with those imposed by systems of commodification.

Greenidge Generation

In urban planning, the term "daylighting" describes the practice of restoring watercourses that have previously been buried due to urbanization. Smelly, dirty, and polluted, these waterways were historically driven underground because they were seen as urban lesions, evidence of industrialization's environmental toll. In recent years, daylighting has gained popularity not only because of increasing demand from urban populations for recreational green space, but also because of water's own unruly defiance. In many cases, flooding runs rampant where rivers, streams, and inlets have been built over. Unable to access its natural course, buried water in turn has cost cities millions in damage and destruction. Daylighting, then, might be seen as an instrument of attunement, a means of realigning the built environment and our modes of existence with our ecosystems, a way to reframe notions around water's (in)sufficiency.[8]

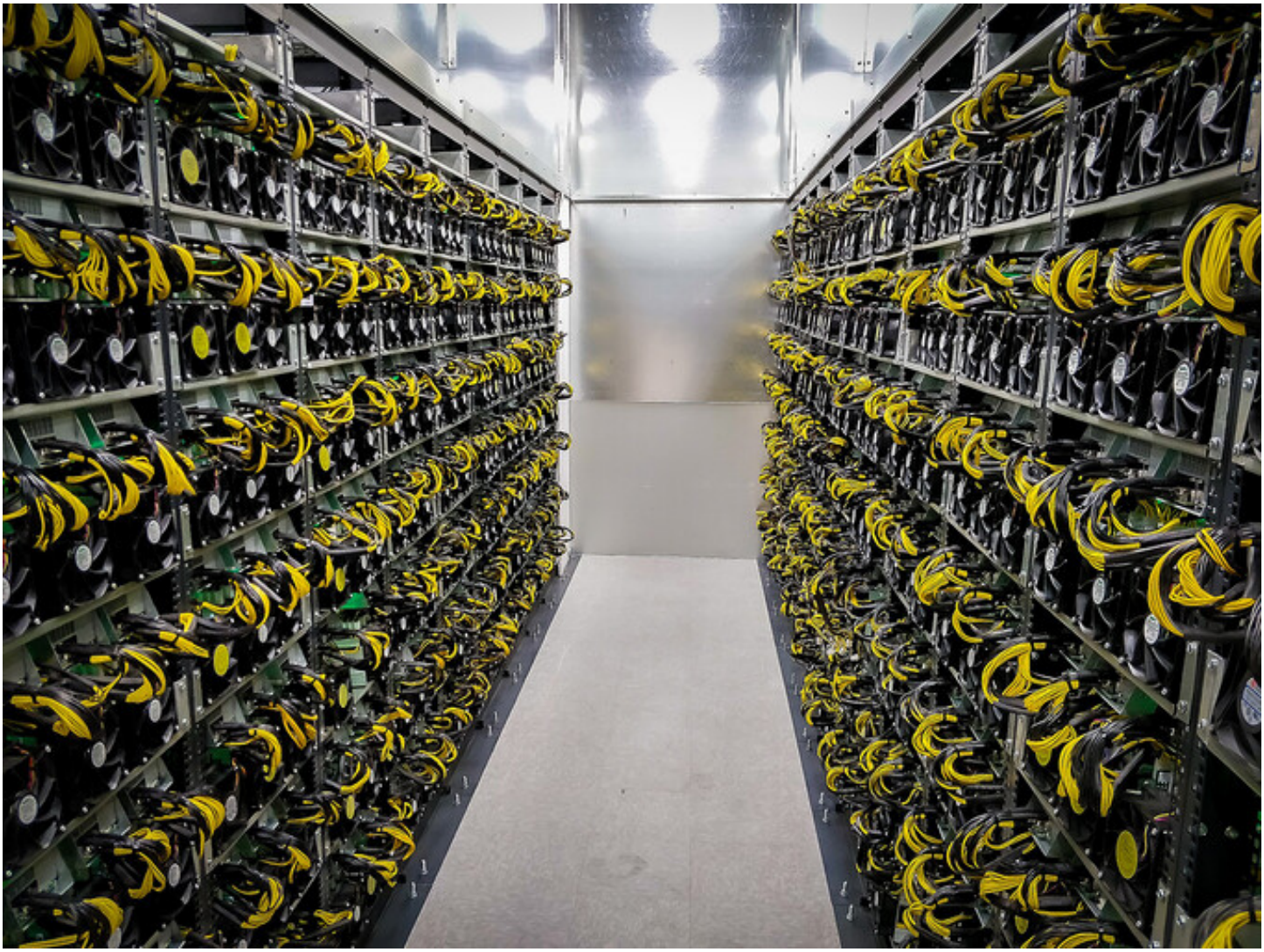
Contextualized within an ever-unfolding hydro-social lineage, the twinned acts of retracing and unearthing required of daylighting might serve as a conceptual framework through which to understand cryptocurrency's impact on current water politics. In the United States, cryptocurrency mines often find their homes on sites with an inheritance of extraction. Because of the space and the access to energy infrastructure they offer, abandoned or close-to-abandoned coal and natural gas plants are reanimated, their vacant shells finding new purpose in the project of housing and powering energy-guzzling industrial cryptocurrency mines. Many of these are located on geographies with long-held connections to coal, natural gas, and heavy-metal industries.

On the shores of New York's Seneca Lake, one such mine has found itself at the center of a political maelstrom, as local communities and environmental groups join forces in a campaign against it. Located in a mothballed coal plant, the site was purchased by a private equity firm in 2014, before being converted into a fracked-gas plant. The site drew renewed attention from locals in 2020 when the firm began transforming the facility into a Bitcoin-mining operation. Taking on the name of the coal plant that came before it, Greenidge Generation has made more than $100 million a year mining Bitcoin on over twenty thousand computers.

Public outcry against Greenidge Generation orbits around three central concerns: greenhouse-gas emissions, noise pollution, and the warming of Seneca Lake. Taking advantage of the mine's location on prime lakeside real estate, every day the facility draws nearly 140 million gallons of water from below the surface of Seneca Lake to cool its computer farm. After it is used, the water is cycled back into the lake. Whereas Bathhouse was able to repurpose the heat emitted by its mining processes into warming its spa facilities, the water discharged back into Seneca Lake is usually nine to thirteen degrees warmer.

Although this temperature differential may seem marginal, activists argue that these higher temperatures will accelerate the lake's existing problem of toxic cyanobacteria, commonly referred to as harmful algal blooms (HABs).[9] Since 2017, the Finger Lakes, the group of glacially formed lakes that Seneca Lake belongs to, have been plagued by algal blooms, which thrive in warm waters. The effects can be devastating, turning lake waters the murky consistency of pea soup and making drinking and bathing in the water poisonous for both humans and animals. Algal blooms also respire oxygen, which can cause alterations in the lake's dissolved oxygen levels, causing mass die-offs of the lake's fish populations.

Seneca Lake is a two-million-year-old body of water that



Argo Blockchain's Bitcoin-mining facility in Mirabel, Quebec, 2018. License: CC BY-SA 4.0.

was carved into the earth through the movements of mile-long glaciers during the Ice Age. The longest and deepest of the Finger Lakes, it was a sacred body to local Iroquois, who believed it to be a bottomless expanse safeguarded by an elusive sea monster. Although Greenidge is just a blip in the lake's timescale, surrounding communities are worried that continued pollution and environmental degradation at the hands of the plant will cause irreversible changes to the lake, infringing on its ability to continue serving as sustenance to life.

Greenidge's fraught relationship with the lake didn't just start with Bitcoin mining. The dumping of warm water back into the lake compounds decades of run-off waste pollution from the original coal plant. The legacy of the facility's coal operations remains even today, with Greenidge earlier this year entering a settlement with the US Environmental Protection Agency to properly dispose of the coal-ash pond on its site.[10]

Bitcoin and the wider mode of production in which it is embedded reproduce existing relationships of extraction, continuing the legacy of exploitative economic systems. The appropriation and thus warping of the hack as it is demonstrated here is perhaps best understood through the lens of what writer and researcher Theodora Dryer calls "settler computing." Dryer defines settler computing as a "process of appropriating and reformulating space and time through algorithmic systems that reify settler colonial water policy and control."[11]

Extrapolated to Bitcoin's model, reliant as it is on unchecked energy and, by extension, water consumption, the framework of settler computing allows us to understand just how the hack might be repurposed, if not weaponized, to reinforce spatial and temporal violence. Perhaps the abstraction of decentralization makes it easier to ignore questions of place. However, while proof of work is celebrated for its ability to optimize and eliminate speed bumps like human error and the risk of

trust—sticky vestiges of other economic systems—it is nevertheless designed according to very human settler-colonial ideals around resources and the environment. That Bitcoin is reproducing conditions of scarcity in this case, making Seneca Lake inhospitable to life, is inherent to the design of its algorithm.

Riot USA's Manifest Destiny

The race to mine Bitcoin has been likened to the Gold Rush. States like Texas, Pennsylvania, and New York have experienced an influx of miners looking to set up shop where energy costs are low, and regulations are almost nonexistent. This pattern has only been exacerbated in recent years by China's 2021 Bitcoin-mining ban, which sent around 75 percent of the world's miners packing. With the Bitcoin Gold Rush has come a digital manifest destiny.

Rockdale, Texas is home to not one but two commercial mining enterprises: Riot Platforms, the largest Bitcoin mine in North America; and Bitdeer. Located less than a mile apart, they sit on the site of a former Alcoa aluminum plant. A rustbelt city, Rockdale initially welcomed Bitcoin miners, who promised jobs to a local population that had over the past few decades weathered the collapse of the town's coal industry, the closure of the aluminum plant, and most recently the bankruptcy of a hospital. In addition to a declining economy and rising poverty rates, faucet water in the town runs rust brown due to outdated and corrosive pipes. Hopeful of more jobs and an influx of cash that might go toward providing clean drinking water, residents initially welcomed cryptominers.

In the years since, however, the town as well as surrounding communities have struggled to make nice with their new neighbors. Unlike Greenidge, the mines don't produce their own power; rather, they tap into Texas's already unpredictable electric grid. The state continues to grapple with blackouts, especially during extreme weather. With the promise of generating new economic activity, Bitcoin miners secured a controversial deal with the state, which offers to pay cryptominers in exchange for shutting down their computers during peak electricity demand to avoid overloading power grids. In 2023, during Texas's hottest summer on record, Riot Platforms earned more government money during the month of August for abstaining from mining than from Bitcoin, netting tens of millions of dollars in public money for power curtailment.[12]

Despite widespread outcry from residents across Texas, Bitcoin's westward expansion continues. Currently, Riot Platforms is building what would be the world's largest Bitcoin mine in the city of Corsicana, outside Dallas. The mine is projected to consume up to 1.5 million gallons of water a day for its cooling systems, a worrying statistic for a region facing chronic drought. In recent years, the region has seen heat waves that have dried up water resources and destroyed the local agriculture industry, with farmers losing their crops and ranchers selling their herds due to a lack of access to grazeable land.

With its promise of employment and economic revitalization, and through tax abatements and other government financial incentives, Riot Platforms and its fellow cryptocurrency miners have asserted a right to space, water, and energy in the name of Bitcoin, infringing on the livelihoods of the communities and ecosystems they take hostage. The original Gold Rush of the 1840s was defined by a mentality of biblical conquest and settlers' divine right to land. While the Bitcoin rush isn't necessarily ordained by God, its claim to land is rooted in a hacker orthodoxy, one that Richard Barbrook and Andy Cameron define in their canonical 1996 essay, *The Californian Ideology,* as a bizarre combination of "technological determinism and libertarian individualism." Here, expansionism is validated through the financial freedom offered by the hack. However, this narrow viewpoint of freedom has its own consequences in its infringement on the human right to water.

Conclusion

Toni Morrison once compared the act of imagining to the Mississippi River's predilection for flooding: "All water has a perfect memory and is forever trying to get back to where it was."[13] Here, leakage serves as a persistent archive, a ritual return that refuses burial. If the act of imagining is bound up with memory, as Morrison says, the practice of building new worlds is inextricable from history.

Daylighting Bitcoin's relationship with water and excavating its negotiations with existing water infrastructures is a broader study in the conditions of water scarcity. However, within postcolonial scholarship, scarcity has been shown to be a construction of colonialism.[14] Scarcity is rooted in an understanding not of what is there but what is missing. Understanding water to be a deficient resource, scarcity is used as an apparatus to validate state intervention in order to manage apportionment, allocation, and optimization. In truth, the water scarcity that Bitcoin augments is one rooted in a history of damming, irrigated commercial agriculture, and colonial water management policies.

Nonetheless, Bitcoin falls short of the possibilities offered within abstraction, leaning on a mode of production that reproduces legacies of extraction. That being said, the failures of Bitcoin should not negate the alternate worlds others are attempting to usher in through the frameworks offered by cryptocurrency. The most obvious example is Ethereum, one of the top traded cryptocurrencies, which in response to proof of work's environmental toll overhauled its system in 2022 to eliminate mining in exchange for the less energy intensive "proof of stake."

Riot Platforms' Bitcoin-mining facility in Rockdale, Texas, 2022.

The more pressing question here is: What is abstraction (and by extension the hack) in a world rapidly remade by climate change—a world that demands a heightened attentiveness to the physical and material? In *A Hacker Manifesto* Wark writes,

> The interest of the hacker class in the production of production, in the abstraction of the world, the expression of the virtuality of nature, can be brought into accord with the needs and interests of nature itself. But this too is only a step toward another history. A history where nature expresses itself as neither object nor subject but at its infinite virtuality.[15]

How can the hack better attune us to, as Wark says, the needs and interests of nature itself?

In a recent essay, eco-technology researcher Austin Wade proposes the blockchain as a way to restore autonomy and agency to nonhuman entities.[16] The idea is "infrastructural animism," which decenters the human and builds upon Indigenous practices of water and land sovereignty. Already, within the legal landscape, Indigenous-led rights-of-nature movements have sought to create policy that would protect the autonomy of rivers and forests. For example, movements in New Zealand and Canada have fought for the right to personhood of natural entities.

Wade asks: What would it look like if instead of proof of work, we had "proof of rehydration," where stewards, rather than "miners," are awarded credits for infrastructural projects that aid in the replenishment of aquifers? Or proof of habitat restoration? The system would employ sensing technologies that tie the distribution and value of ecoCredits or currency to the ecological health of the entity. By reconfiguring bodies of water into what Wade calls "ecological institutions," decentralized protocols might be used to foster new modes of identity, governance, and coexistence. In restoring agency to nonhuman identities, we might shift our frameworks away from scarcity to those of livingness.

Perhaps, then, abstraction offers a way for us to come closer to nature. Rather than alienating us from one another and our environments, virtuality provides new means for communing with the more-than-human world. Centering ideas of reciprocity and regeneration, rather than domination and extraction, carries the promise of more porous technologies—ones that can adapt and account for the aforementioned leakages and the histories they carry.

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Isabel Ling is a writer, editor, and cultural critic based in New York City.

1
Dwork and Naor, "Pricing Via Processing or Combatting Junk Mail," in *Advances in Cryptology—CRYPTO '92: 12th Annual Cryptology Conference, Santa Barbara, California, USA, August 16–20 1992, Proceedings* , ed. Ernest F. Brickell (Springer-Verlag, 1993).

2
Jakobsson and Juels, "Proofs of Work and Bread Pudding Protocols," in *Secure Information Networks: Communications and Multimedia Security IFIP TC6/TC11 Joint Working Conference on Communications and Multimedia Security (CMS'99), September 20–21, 1999, Leuven, Belgium* , ed. Bart Preneel (Springer US, 1999).

3
Adrian Chen, "Much Ado About Bitcoin," *New York Times*, November 26, 2013 https://web.archive.org/web/20131211065800/http:/www.nytimes.com/2013/11/27/opinion/much-ado-about-bitcoin.html .

4
Burrington, "How We Misremember the Internet's Origins," *The New Republic*, October 29, 2019 https://newrepublic.com/article/155532/misremember-internets-origins .

5
Steven Gonzalez Monserrate, "The Cloud Is Material: On the Environmental Impacts of Computation and Data Storage," *MIT Case Studies in Social and Ethical Responsibilities of Computing* , Winter 2022 https://mit-serc.pubpub.org/pub/the-cloud-is-material/release/2 .

6
Alex de Vries, "Bitcoin's Growing Water Footprint," *Cell Reports Sustainability* 1, no. 1 (2024).

7
De Vries, "Bitcoin's Growing Water Footprint."

8
Andrea Ballestero, "The Anthropology of Water," *Annual Review of Anthropology* , no. 48 (2019).

9
Jessica McKenzie, "This Power Plant Stopped Burning Fossil Fuels. Then Bitcoin Came Along," *Grist* , May 6, 2021 https://grist.org/technology/bitcoin-greenidge-seneca-lake-cryptocurrency/ .

10
Coal ash, produced by burning coal, is a highly toxic waste stream, and left in unlined ponds can seep into the groundwater, leaching contaminants like mercury and arsenic into the water supply. US Environmental Protection Agency, "EPA Reaches Settlement with Greenidge Generation LLC on Actions to Address Compliance with Coal Ash Regulations," press release, February 6, 2024 https://www.epa.gov/newsreleases/epa-reaches-settlement-greenidge-generation-llc-actions-address-compliance-coal-ash .

11
Dryer, "Settler Computing: Water Algorithms and the Equitable Apportionment Doctrine on the Colorado River, 1950–1990," *Osiris* , 38, no. 1 (2023).

12
David Martin Davies, "Texas Paid a Bitcoin Miner More Than $31 Million to Power Down During Heat Wave," *Texas Public Radio*, September 6, 2023 https://www.tpr.org/technology-entrepreneurship/2023-09-06/texas-paid-a-bitcoin-miner-more-than-30-million-to-power-down-during-heat-wave .

13
Morrison, *What Moves at the Margin: Selected Nonfiction* (University Press of Mississippi, 2008), 77.

14
See, for example, Lyla Mehta, "Introduction," in *The Limits to Scarcity: Contesting the Politics of Allocation* , ed. Mehta (Routledge, 2010).

15
Wark, *Hacker Manifesto*, thesis 345.

16
Smith, "Ecological Institutions → Protocols to Grow Autonomous and Convivial Ecological Actors," mirror.xyz, 2024 https://mirror.xyz/austinwadesmith.eth/tv9z1XXrtqQxDlxE8FygZ_W39NpkQJkVfrtjCtdbzA8 .

Bami Oke

Life in Fifteen Gigabytes

It was the closest thing to a break-up text I'd ever received:

> November 6, 2023
>
> Subject: Action Required – Important Changes to your Alumni Google Account
>
> We are reaching out because you currently have some active Gmail or Drive content in our Google Workspace for Alumni, and we need your help to avoid losing your data. Unfortunately, Google has recently introduced significant new costs for licensing storage, and this has forced the university to place limits on Google Workspace storage for the entire community. Your current storage usage is over our newly established limit, and you will need to reduce your data storage to the new 15 GB quota before March 4, 2024.

Fifteen gigabytes. For an account that held the contents of three laptops, a bachelor's degree, a master's degree, and eighteen generations of *Sims 3* gameplay. Anything valuable I had ever made was uploaded to this Drive. Anytime I broke my phone or started a new cover letter, I'd find a smug comfort in the depths of my unlimited storage. And now, this email had come to inform me that not only was my Drive done with me, it was taking all of my data too. In fact, the message implied that my Drive was never really "mine" to begin with. Of course, it had my name on it, and I got to choose who could access certain files. And yes, I had *created* its contents, but once I put it onto Google's servers, there was nothing to indicate that I had permanent ownership of the data my Drive contained. This became apparent as the message went on:

> If your storage is not under the quota by March 4, your account will be locked, you will be unable to access your data, and you will need to contact the Office of Information Technology to reopen it. Any accounts with more than 15 GB of mail, files, photos, and other data will be purged of all content shortly after the deadline.

So that was it. Either I needed another place to stash my files, or they'd be gone forever. Between November 2023 and February 2024, I received six identical emails to illustrate the fact that my former university was not fucking around. I could keep hoarding data as long as I liked, but I couldn't do it on their dime.

I don't tend to be sentimental with my things. I regularly donate the clothes I no longer wear, and I absolutely despise clutter. So it didn't make sense that I found myself

A 2.5" hard drive. License: CC BY-SA 3.0.

so reluctant to let go of my digital possessions. In conversation with friends, I realized that this was a common problem. My best friend's home screen is a dizzying mass of screenshots, essays, and audio recordings for future reference. My mother's internet browser regularly crashes because of the fifty-three tabs she keeps open at all times. My partner never deletes a photo without putting it on one of his three-terabyte hard drives first. The ubiquity of all this data-hoarding made me wonder if there isn't some explanation for this behavior beyond sentiment. What fuels the desire to keep computer files we will probably never look at again? What do we stand to gain by holding on to every last shred of our personal data?

Perhaps, in an economy where the sale of information has made certain people very rich, you could argue that we collect these scraps hoping to one day turn passion projects into passive income. Of course, for most this is not the priority. Storing old files is nothing more than an innocent way to relive a pleasant memory. For others, though, the value of stored data isn't based in fond recollections. The Drive is a business expense for them. Business owners pay to store information, materials, or IP that they'll eventually sell for money, and money allows them to buy whatever they need to continue running the business.

Twenty years ago, in her book *A Hacker Manifesto*, McKenzie Wark recognized this capacity to sell stored data as emblematic of a greater shift in our political economy. In order to sell information, one first has to *own* it. Only a select few—whom she calls the vectoralist class—hold the property rights that enable them to store *and* transfer swathes of information to the highest bidder. It might not be unreasonable, then, to suggest that the prevalence of digital hoarding emerged out of the very same conditions that formed Wark's hacker class—the

class that initially produced the information that vectoralists have now come to own. A widespread ability to produce information, coupled with the scarce capacity to sell this information, led a generation of people to accumulate data to no apparent end.

Perhaps it's time we extend our interpretation of the hacker class to include not only those who produce information, but also those who *hoard* it, before shaping it anew. The primary group that comes to mind are "content creators"—individuals who produce and circulate information, often in exchange for a wage. In recent years, the expansion of hybrid and remote work environments has come to mean that influencers, copywriters, podcasters, and even, regrettably, certain artists can all be lumped into this umbrella term. Because they don't enjoy the full profits extracted from their data by the ruling class, these creators might attempt to *withhold* their content from circulation, proposing instead a "democratized" marketplace, where hackers, hoarders, and content creators alike can profit off of their own contributions.

But a Marxist review of class relations tells us that this small-scale system of exchange, built within the larger infrastructure of abstracted labor, can only ever lead to continued exploitation. So long as information exists in the property form, these creators will cling onto their content and fail to allocate their resources efficiently.[1]

Successful hoarders, though, tend to share one commonality: the information they distribute is collated, with rigor, and often tied to an organized movement for radical action. This methodology separates the "collection" from the endless stream of "content" we see today. It removes all distractions from the hacker class's chief aim: the production of new knowledge and culture, made freely available, as part of a larger move towards collective transformation.

The Stream

In the summer of 2021, Black TikTok creators went on strike, and refused to produce any new content for the social media platform until they received recognition for their contributions.[2] This came after a series of non-Black creators and influencers gained popularity by recreating viral dances and challenges without giving any credit to the original creators of this content.[3] Although "credit" in this sense doesn't automatically translate into a paycheck, the strikers were well aware that a certain level of engagement on the app could open up access to paid brand partnerships, tips, and most notably, TikTok's Creator Fund.

After a user surpasses a certain level of engagement, the fund allows them to receive financial compensation based on factors like the quantity and "authenticity" of their viewership.[4] The BBC reported that TikTok creator Addison Rae "made nearly $5m (£3.6m) from TikTok in 2020 alone, getting views from videos she made recreating dances from black choreographers."[5] Meanwhile, Jalaiah Harmon, inventor of the "Renegade" dance that Rae performed, estimates that she earned $38,000 on the app that same year. Frustrated at this disparity of earned income, Black TikTok creators chose to withhold their content from the app.

The success of this strike hinged on one thing in particular: the capacity of TikTok users to monetize their content. Notably, the strikers were less concerned with TikTok's ability to generate a consistent profit, regardless of which users they paid. The focus of this strike was clear: appropriate compensation for a group of undervalued workers. By withholding their content from circulation, the strikers had hoped to reap the financial benefits of their labor, rather than see it handed to their non-Black counterparts. But the payments that TikTok eventually makes to its most popular creators are never equivalent to the actual value of TikTok's content, so the strike could never achieve fair compensation across the board. One creator's video, left unseen in their drafts folder, can literally generate millions of dollars as soon as it goes viral—and TikTok repays a fraction of that cost to the original creators. So it might be worth asking what it is that makes this uploaded content worth so much money. The "Renegade" dance itself didn't change as it went from Jalaiah's camera roll to TikTok's servers. How can one corporate platform's storage generate so much more value than the storage of an individual user?

Hoard Formation

To fully appreciate the difference between corporate and individual hoards, we first need to detach our understanding of hoarding from its empirical associations. In recent years, there have been studies that designate digital hoarding as a subtype of psychological hoarding disorder. Much like physical hoarders, the subjects of these studies found it emotionally distressing to discard stored data, citing a fear of wasted potential for future use.[6] While these symptoms may appear to be related to our discussion, here I am more concerned with the role that digital hoarding plays within our political economy.

My focus begins at the overgrown camera roll, and extends to the most valuable data hoards in today's economy: collections of user-generated information. This is information about an event between a human and a computer, which is then formalized into "data," organized into categories, fed into predictive algorithms, and sold to the highest bidder.[7] For brevity's sake, I've greatly oversimplified this process, but the important thing to note for now is that our current system of exchange does indeed allow corporate hoarders to sell their data for money. The promise of profiting from a data hoard is not unfounded. Many have done it successfully, following

these very steps. But a gap in our understanding appears *after* this sale is complete. From the outside looking in, we might assume that the money received in exchange for hoarded information goes into an ever-increasing pile of profit, and that is how the rich stay rich. The truth, though, is much less evident.

Cloud Data Center. The data protection company Arcserve predicted that the world will have 200 Zettabytes.

Marx described the desire to hoard as "boundless in nature."[8] Any commodity can be exchanged for money, which in turn means that money can be exchanged for anything else of value. So the more of one material good you hold on to, the more of its equivalent value in money you can receive—and this drives the ruling class's obsession with accumulation. But what good, really, is a pile of money to a capitalist, if it lies dormant and out of circulation?

On its own, the money received from a sale will not feed the capitalist or keep their body warm in the winter. It must be exchanged for material goods that will fulfill these needs. The capitalist needs money, built up in reserves, to pay for all sorts of expenses. Most notably, they need money to cover the cost of their employees' labor at the end of each period—because no smart entrepreneur pays someone *before* they've made anything to upsell. It's much safer just to pay for the materials that workers need beforehand, and only pay them once they've made a finished product. This ensures the continuity of production. The employee is paid for making a new product, and the new product is then sold for much more than the employee makes.[9] Profit is generated, but only *after* some of it is used to pay the workers' wages, which allows the cycle to continue. This is Marx's main contribution to our understanding of hoarding today. Stored money doesn't just function as a means of exchange; it is also a method of paying for labor power in retrospect.

In the context of TikTok's owners, if it is *data* they hoard, and not money (though, of course, they keep that too), it's useful for us to know how that data is made. As hoards can only exist after a product has been made, surely that must mean that someone, somewhere, is working tirelessly to create all of this data. In part, the Black TikTok

strikers were right: the app would be worth "nothing," and have no value, without the labor of its users.[10] But the value in question isn't actually in the content that circulates on TikTok. This is no ordinary labor, and these are no ordinary workers. These are, in Wark's eyes, *hackers*—individuals who produce new information out of their given materials. And information about the behavior of "users," in particular, is the commodity du jour. But, as we learn from *A Hacker Manifesto,* the primary thing that sets our current system apart from traditional capitalism is where that information commodity actually comes from. At what point does the exact amount of time I spend on TikTok, or searching for hard drives on Amazon, translate into a "useful" commodity? Whose labor power is consumed in order for these tech giants to even have such a hoard of information to sell? Well, reader, if you haven't already guessed, the chances are, it's yours.

Clocking In

Let's examine, for a moment, the commodity in a different context—not as labor power or data, but as entertainment, consumed by internet users. All commodities come at a cost. The websites and apps that present themselves as complimentary do, in fact, require payment, in the form of user-generated data.[11] We consume all their product has to offer, and pay for every click, every second spent on these apps, with our engagement, after the fact.

Here, there are really two commodities at play. There is entertainment, and there is data. But it is not a like-for-like exchange. You can't directly turn a fifteen-second video into sellable data, unless you employ an active workforce to carry out that change for you. In the 1960s, advertisers began to see the "leisure time" created by the forty-hour work week as an opportunity to exploit the working class even further. "The work which audience members perform for the advertiser is to learn to buy particular 'brands' of consumer goods, and to spend their income accordingly."[12] So now, the consumer works for two separate employers, on and off the clock. The workforce that carries out this process of material transformation, from entertainment to data, creates the perceived need for both products.[13] At their day jobs, workers create products for their employers to sell. And in their spare time, they create data about other products, through their likes, browsing history, reposts, and internet searches.

As we peruse the internet, any expressed desire for a specific good—be it entertainment, coffee, or external hard drives—is "parsed into a form the machine can understand," and as such it becomes "data," a commodity in and of itself.[14] Our consumption of information on the internet thereby becomes free labor. We work to create information that we will never own. And this is what makes a viral video profitable; the engagement data produced by every single user belongs to TikTok alone, and it's theirs alone to sell, without paying a single penny to users for their role in creating this data. If the Black TikTok strikers wanted to truly enjoy the profits of their labor, they didn't need to hoard their content. They needed to own the data their content generated.

Were it simply a matter of having access to a collection of data, the wealth gap within the information industry—between those who produce it and those who own it—would cease to exist. When Wark proclaimed twenty years ago that "information wants to be free but is everywhere in chains," she underscored the fact that we already have the infrastructure to make every single piece of information freely available.[15]

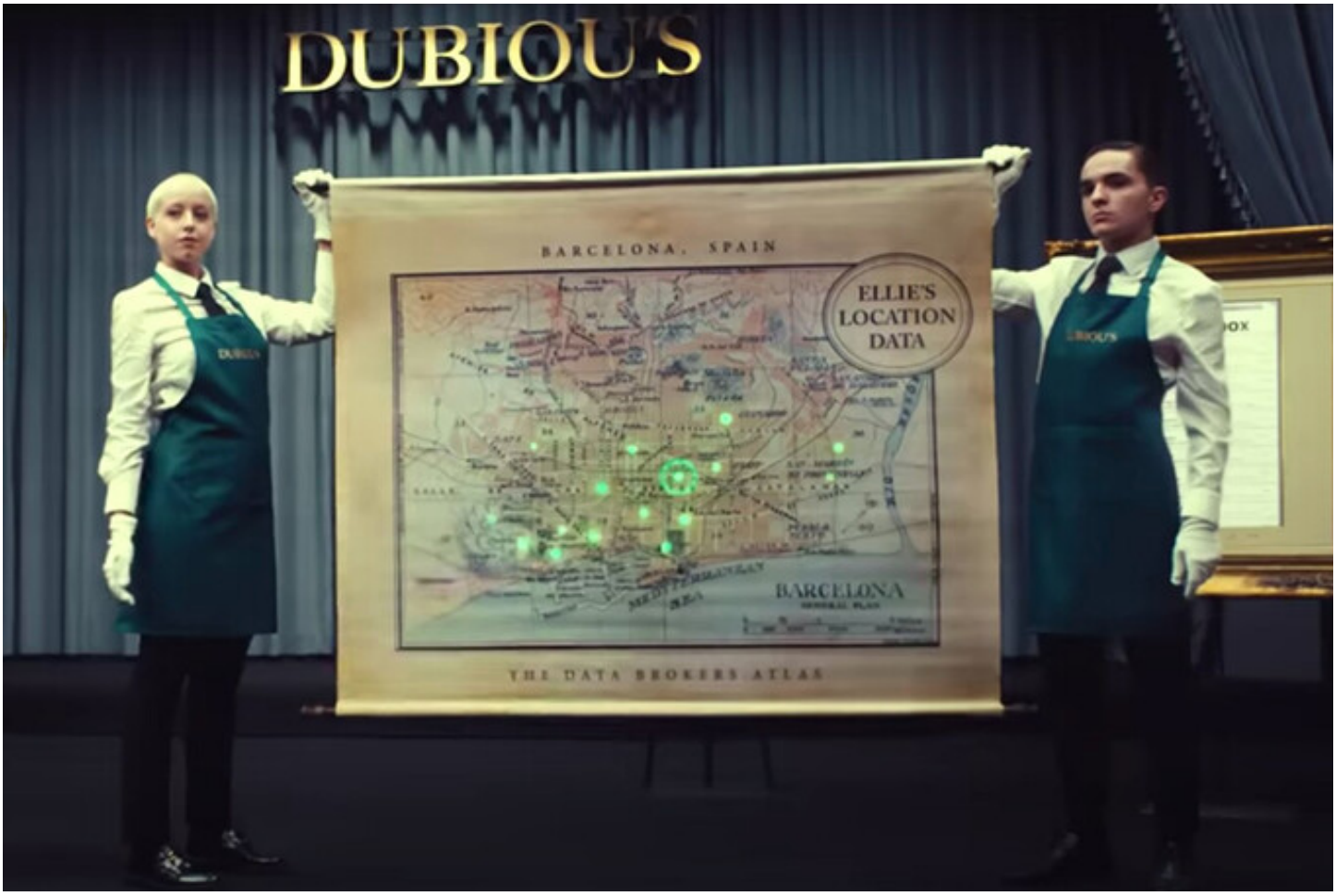
Access is only half the problem. Social media giants profit from their data collection because of: a) the sheer amount of it they have to offer, and b) their ability to sell data *exclusively* to their advertising audience.[16]

This exclusivity creates a clear power divide that some users have tried to address by creating their own content platforms. These are sites that promise fairer compensation for the creatives producing their content, but stop short of opening up the profits to the people who produce their data. Tidal, for instance, is a music streaming service that originally made its mark by delivering a paid-only service that promised to return more money to artists than its competitors, even if it meant "less profit for [Tidal's] bottom line."[17] In the absence of advertisers, Tidal promised its paid users an exclusive collection of content. The platform's one-time owner Jay-Z went so far as to remove all of his music from Tidal's competing platforms, underlining the exclusivity of Tidal's content.[18]

But Jay-Z was only able to pull such a stunt because he *owned* the rights to all of his songs.[19] Most musicians today aren't so lucky, because a host of IP and labor laws prevent them from claiming ownership of the commodities they produce. The same could be said for TikTok's creators, and for all data producers. Even the few users who do manage to "own" their data rarely have the means of reproducing it to even a fraction of the scale that Meta or TikTok can provide. As individuals, hoarding information for our own profit becomes an entirely futile attempt at circumventing the wealth of the ruling class.

Open Sources

We reach the same conclusion today that *A Hacker Manifesto* alluded to in 2004; in terms of revolutionary action, the most useful hoards of information are those made freely available, unbound by the constraints of property ownership. Digital hoards themselves aren't



Apple ad about your data being sold in auction, 2022.

necessarily a bad thing. The problem arises when users try to monetize their contents. Individual hoards inevitably fail to redistribute corporate wealth, and corporate hoards are dependent on labor extracted from us in our "free time." So, perhaps our free time would be better spent in service of alternate hoards, dedicated to the same principles of advancement that Wark laid out twenty years ago. These are digital hoards formed with the intention of developing human society, through the unfettered circulation of information. Two examples come to mind, in equally unexpected locations: the International Criminal Court (ICC), and Minecraft.

In January 2024, the ICC's Office of the Prosecutor opened an online portal, requesting that members of the public submit any evidence they had of crimes that fell within the court's remit. This included war crimes, crimes against humanity, genocide, and aggression.[20] What followed was the uploading of images, tweets, sound bites, statements, and videos to support South Africa's case against the state of Israel, in which South Africa claimed that "Israel has engaged in, is engaging in and risks further engaging in genocidal acts against the Palestinian people in Gaza."[21]

The evidence submitted by the public was presented in a live-streamed court hearing on January 11, 2024. This amassing of evidence was a collective effort on behalf of everyday internet users to build up a hoard of information aimed at the cessation of a genocide. Much of the work that made this possible was performed on "leisure time," but the resultant information was never deemed "property" of South Africa or the ICC. Instead, it was stored, organized, and presented to the world in an open forum that remains available for viewing today.

In a similar vein, four years ago, Reporters Without Borders released the Uncensored Library, a collection of articles that had been banned in parts of the world, made available through a server on Minecraft.[22] The organization's use of a blockchain to establish this server meant that even in the most censored countries, the library would remain impervious to governmental interventions. Each Minecraft user could download the library's contents, share their findings, add their own books to an offline collection, and recreate a copy of the library on their own machines, rendering it effectively impossible to remove from public

record.[23]

Both of these examples point us to data hoards that are first stored, and then shared, without the constraints of ownership to prevent their distribution. They are narratives that bring us closer to the potentials first stated in *A Hacker Manifesto*—of a future where we can shape our lives beyond the commodity form. The important thing that these examples have in common is not just that they were freely circulated, or even that they were produced (at least in part) by the hacker class. At their hearts, both the ICC portal and the Uncensored Library were rooted in material efforts to better the world we find ourselves in.

For twenty-first century hackers, the most urgent task is to locate environments like these where their contributions can be freely actualized. The majority of new knowledge today circulates through a handful of social platforms; information jumps out at us from the gluttonous stream of gym selfies, airline ads, obituaries, period tracker apps, sea lion videos, film trailers, and leftist memes. Everyday users trade their engagement for brief snippets of entertainment, and on it goes until the shadow of a screen-time banner casts its judgment upon the user's machine.

This hellscape is no place for free information to thrive. The digital hoarder must take stock, and set out in search of somewhere independent from such distractions. A simple spreadsheet, maybe, a private are.na channel, a USB drive, or even a Minecraft map. What matters here is not the hoard's form, but its capacity to be consumed outside the limits of the commodity. Free from the profit-churning debris of their social media feeds, visitors to this hoard might gain a better idea of how they, too, can use the information they find in service of principled, radical action.

X

Bami Oke is a writer and interaction designer living in London. Her work stretches across disciplines of architecture, multimedia performance, and speculative design.

1
McKenzie Wark, *A Hacker Manifesto* (Harvard University Press, 2004).

2
Sharon Pruitt-Young, "Black TikTok Creators Are On Strike To Protest A Lack Of Credit For Their Work," *NPR*, July 1, 2021 https://www.npr.org/2021/07/01/1011899328/black-tiktok-creators-are-on-strike-to-protest-a-lack-of-credit-for-their-work .

3
Cache McClay, "Why Black TikTok Creators Have Gone on Strike," *BBC News*, July 15, 2021 https://www.bbc.com/news/world-us-canada-57841055 .

4
Jessica Martel, "16 Ways to Make Money on TikTok in 2024," *Time*, March 30, 2023 https://time.com/personal-finance/article/ways-to-make-money-on-tiktok/ .

5
McClay, "Why Black TikTok Creators Have Gone on Strike."

6
Martine J. van Bennekom et al., "A Case of Digital Hoarding," *BMJ Case Reports* , vol. 2015 (January 2015) https://doi.org/10.1136/bcr-2015-210814 .

7
Sebastian Sevignani, "Surveillance, Classification, and Social Inequality in Informational Capitalism: The Relevance of Exploitation in the Context of Markets in Information," *Historical Social Research / Historische Sozialforschung* 42, no. 1 (2017).

8
Marx, *Capital: A Critique of Political Economy* , vol. 1, 1st ed. (Penguin, 1976).

9
Lapavitsas, 228.

10
McClay, "Why Black TikTok Creators Have Gone on Strike."

11
Sevignani, "Surveillance, Classification, and Social Inequality."

12
Dallas W. Smythe, "Communications: Blindspot of Western Marxism," *Canadian Journal of Political and Social Theory* 1, no. 3 (December 30, 1977).

13
Smythe, "Communications."

14
McKenzie Wark, *Capital Is Dead: Is This Something Worse?* (Verso, 2019) 9.

15
Wark, *Hacker Manifesto*, thesis 126 .

16
Sevignani, "Surveillance, Classification, and Social Inequality."

17
Stuart Dredge, "Jay Z Aims to Topple Spotify with Music Streaming Service Tidal," *The Guardian* , March 31, 2015 https://www.theguardian.com/music/2015/mar/31/jay-z-spotify-music-streaming-relaunch-tidal-support-artist .

18
David Z. Morris, "Jay-Z Pulls Every Album from Spotify, Apple Music," *Fortune*, April 8, 2017 https://fortune.com/2017/04/08/tidal-jay-z-spotify-apple/ .

19
Peter Kafka, "Why Did Jack Dorsey Buy Tidal, Jay-Z's Failed Music Service?" *Vox*, March 4, 2021 https://www.vox.com/recode/22313268/tidal-square-jay-z-jack-dorsey-nft-explainer .

20
See https://otplink.icc-cpi.int/submission .

21
"The Republic of South Africa Institutes Proceedings against the State of Israel and Requests the Court to Indicate Provisional Measures," International Court of Justice, December 29, 2023.

22
See https://www.uncensoredlibrary.com/ .

23
Alice Finney, "Minecraft Library Provides Gamers with 'a Safe Haven for Press Freedom,'" *Dezeen* , August 17, 2021 https://www.dezeen.com/2021/08/17/uncensored-library-reporters-without-borders-minecraft-censored-books .

Liara Roux

Pussy Capital

The four years I worked as a sex worker in San Francisco were a very practical lesson in the mechanics of modern techno-capitalism, or whatever this is. During my time in the Bay Area in the 2010s, I learned how tech companies treat images of "hot girls'' as a natural resource to be mined. Social media platforms exploited images of me and my fellow workers for profit as soon as we began posting them. They used our images to draw attention to the screen, fuel addictive algorithms, and sell advertising. Now, with the advent of neural networks, our images are mined and then exploited to create artificial "hot girls," eliminating the algorithm's need for actual humans. The AI business model dissociates the profit-making engine from the people who create the intellectual property that fuels it.

I first began moonlighting as a sex worker during the evenings, after I got home from my job at a start-up based in the rapidly gentrifying Mission District. Tired of the misogyny of the purportedly meritocratic tech industry, where by day I assisted Big Tech in stripping and selling data from the users of our products, I felt the urge to earn my money from more honest labor: selling sex. I posted a profile on Seeking Arrangements, and over the next week I received more than fifty messages from potential "sugar daddies."

Seeking Arrangements makes its money by charging sugar daddy members for the ability to send messages, essentially selling access to attractive, usually younger, and predominantly female "sugar babies." The site is an extension of the gig economy; much like Uber and Fiverr, it profits from the manual labor of a vulnerable population. While I was able to make good money during my time on Seeking Arrangements, it bothered me that the site demanded that I masquerade as a naive young woman who wasn't doing this as a *job,* who wasn't a *prostitute,* but just wanted to be *spoiled* by a wealthy older gentleman. I wanted to own my erotic labor, not pretend that what I was doing was anything else.

This desire for a clearly delineated transaction, a straightforward exchange of sex for cash, led me to Eros.com, where in 2014 escorts could list their hourly rates directly in their advertisements without having to play at being a broke college coeds. The financial model of Eros suited me better. The sex workers themselves paid to post there, as opposed to sugar daddies paying for membership. This meant the site had an incentive to keep us, the *workers*, happy, instead of encouraging delusional behavior from our clientele; I was looking forward to avoiding men who insisted they were entitled to condomless sex to see if we were "compatible."

Eros wasn't the only place I advertised. In 2015, the idea of a "personal brand" was becoming popular among the advertising agencies my yuppie friends were founding. At the time, most escorts chose to hide their faces and obscure their personalities, but I decided my escort

persona should become an internet personality to increase my exposure to potential clients. I created a website where I advertised my services and wrote sexy copy full of double entendres. I had an Instagram and a Twitter where I posted about a fictional day-to-day life filled with macarons, shopping, and plenty of cute selfies.

Eventually these selfies started going viral. One day, my website crashed due to an unexpected surge of traffic. I traced the source back to a Reddit thread where people discussed my selfies and my escort advertising. I catered to my booming audience on Reddit by sharing more risqué selfies and chatting bubbily about my video game and comic book collections. The bookings started rolling in and soon I was making twenty to fifty thousand dollars a month.

There was something strange about the way Instagram, Twitter, and Reddit operated. While they generally ban overt sexual content or advertising oneself as a sex worker, many of the wildly popular accounts belonged to those who were posting content that was decidedly *erotic.* Social media sites like Instagram, I would later learn, derive much of their profit from these accounts selling their own form of sex: images that elicit sexual responses.

McKenzie Wark's *A Hacker Manifesto,* published in 2004, ten years before I started doing sex work, discussed the then newly emerging mechanisms of extraction that now dominate our economy. Wark reminds the reader that in Marx's time there were not only capitalist and working classes, but also landlords and peasants. There have always been more than two classes. She then introduces a new dimension to class struggle: the hacker and the vectoralist. The vectoralist makes their money not from exploiting labor with machines, as a capitalist might, but by exploiting *data,* viewing freely available information as a natural resource to be mined and exploited.

Bodies can be made valuable as commodities, and attractive bodies are valuable in that they can entice. Old-school capitalists exploit the bodies of attractive women in advertising campaigns, adorning the products they sell for profit with a veneer of sex. By associating a beautiful face with cosmetics, apparel, or even food, the company that sells these products can increase its profits dramatically. The vectoralist also excels at exploiting beautiful images of people. Look at Instagram: attractive models post attention-grabbing photos at no cost to the platform, generating $20 billion in profit in 2019—and that's before the pandemic.[1] Those with exceptionally beautiful bodies and faces, by conventional Eurocentric standards, can make a great deal of money off of the use of their image.

Instagram rarely compensates users for the content they generate. Brands do, sending complimentary samples, booking luxury trips, and shelling out hundreds of thousands of dollars in exchange for a few posts on the feed. Instagram, realizing the value of a pretty face, began creating filters that allowed people to algorithmically perfect their appearance, smoothing wrinkles, erasing pores, lightening their skin, plumping lips, and altering their facial features to conform with Eurocentric beauty standards. Users who altered their faces quickly realized these altered photos received significantly higher engagement, giving them a quick dopamine hit and more potential revenue.

While I initially intended to pursue the honest, direct labor of in-person sex work, the fans who found me on social media were demanding a new form of labor: the production of *content*. They wanted porn. Around 2016, seeing an opportunity for an income that was less reliant on the whims of my wealthy clientele, I decided to diversify. I launched a new website. I sold access to pornography I shot with my friends. Soon I was making fifteen thousand dollars a month from porn alone.

The porn also served as advertisement for my escorting services, which soon became even more popular. Clients admitted to me that they felt like they were meeting a celebrity. My Instagram blew up. On days when I had acne I relied on filters to give the illusion of clear skin. Soon, the image filters became so good that I didn't ever need to apply makeup, and eventually, they worked on videos as well. Of course, I couldn't help but notice that these altered selfies were the ones that performed the best.

As sex workers rose to prominence on social media, sex work became more palatable to the general population. When I told strangers about my porn, the responses began shifting from judgment to excitement: *Wow, cool!* As stigma decreased, more women went public about their participation in the industry.[2] In the US, right-wing Christian fundamentalists, sensing a threat to "family values," began cracking down, lobbying for bills that would require online platforms to ban anyone advertising sexual services. Because sex workers were already largely prohibited from explicitly advertising their services, this meant that nearly all sexual content was subject to censorship.

These right-wing fundamentalists also explored extrajudicial methods of limiting sexual expression online. The distribution of pornography is currently protected under the First Amendment of the US Constitution, thanks to legal precedents set by provocateurs like Grove Press in 1964 and Robert Mapplethorpe in 1990. However, banks are legally permitted to discriminate against their clientele: after a public pressure campaign from an unholy coalition of Christian evangelicals and "radical feminists" who thought porn undermined women's rights, Visa and Mastercard pulled support from a number of platforms that sex workers used to advertise their services and take payment, including Pornhub, Slixa, and Eros.

In 2018, the "Allow States and Victims to Fight Online Sex Trafficking Act" (nicknamed "FOSTA"), a bill that criminalizes any websites hosting advertisements for sex workers, passed Congress with massive bipartisan support. The bill was ostensibly created to protect victims of child sex trafficking, but instead the language focused on consenting adults. My sex worker friends and I were terrified that we'd be out of work, but the demand for sex work and for erotic content is so strong that platforms can't get rid of us without decimating their revenue streams. While sex workers were largely shadow banned, we were not banned entirely, just required to obfuscate the exact nature of our work if we still wanted a piece of the attention economy.

The Covid-19 pandemic destroyed the income of workers who plied their trade in person, but it proved a boon for sex workers who operated online. The pandemic occurred only shortly after OnlyFans, launched in 2016, became popular with sex workers in 2019. OnlyFans, unlike many other platforms for sex workers, mimicked the functionality of a social media site, but unlike most social media sites, instead of profiting from the surveillance of its users and sale of their data, OnlyFans's revenue comes from the sale of monthly subscriptions, which largely provide access to erotic content.

OnlyFans finally made it possible for "hot girls" with large Instagram, Twitter, or Reddit followings to charge these fans directly; some of the top users were reportedly earning upwards of a million dollars a month.[3] This did not reflect the reality of many of those who joined the platform, however; at one point, accounts only needed to earn five hundred dollars a month to make it to the top five percent of earners. I joined OnlyFans a few months into the pandemic and was soon making upwards of thirty thousand a month. People worldwide were devoid of human contact, locked inside their apartments, and flush with cash from pandemic stimulus payments. Paying a few hundred dollars to stave off loneliness with a subscription to a hot girl online who was eager to chat and ask about your day felt like a very reasonable proposition.

Some sex workers were earning so much money it became commonplace for top porn stars to hire an assistant, or assistants; all they had to do was take sexy selfies and record erotic videos, and the assistant would handle the labor of chatting with the horny clients. For many, this was a way to both increase the number of people they were able to chat with and preserve their mental health. The direct access that clients had via OnlyFans was in many ways unprecedented, and while most were respectful, many were not. This delegation of erotic labor turned many sex workers into both workers and capitalists themselves, exploiting both their own bodies and the labor of their assistants.

After the pandemic, OnlyFans's revenue cooled a bit, but it was still possible to earn good money being a hot girl online. As more and more figured out the formula for altering their photos with filters before posting online, the market quickly flooded with hot girls selling photos and videos to horny men. Catfishing was a perennial issue, with certain scammers stealing the photos of Instagram influencers and passing them off as themselves. But by and large, the ease of using Google image search to check if the photos belonged to someone else ensured that it was not too difficult to ascertain whether you were talking to someone who actually existed.

This quickly shifted with the advent of neural nets. As soon as AI models were able to generate images that could pass as attractive humans, people began creating OnlyFans accounts for artificially generated hot girls. OnlyFans creators also realized that they no longer needed to generate new content themselves. All they had to do was attach their face to AI-generated selfies and videos. Suddenly, everyone was pointing fingers at content and calling it fake. Someone posted an old photo of mine on 4chan and accused me of being fake. Debate ensued about whether I was real. I was only exonerated after someone dug up my Instagram and saw that I had old posts which dated from 2016, before it was possible to create such realistic fakes with AI.

AI can replicate conversation as well as images. During the pandemic, I began getting ads for Replika, an app that promised a convincing performance of a girlfriend. *When you feel like you have no one to talk to—meet your new AI girlfriend.* I was intrigued. While Replika was still a relatively rudimentary chat bot, it had integrated some of the more sophisticated elements of contemporary Large Language Models. It could remember your stories, your preferences. Most importantly, it could sext. Like OnlyFans, Replika charged a monthly fee for chatting.

Even in-person sex work has been affected by the advent of new forms of AI. I stopped escorting to focus on my writing, but sometime last year I noticed a strange uptick in emails from old clients wondering if I was available for a booking. Curious, I reached out to a few former colleagues and heard that Eros and other escorting websites were being flooded with advertisements for AI-generated hot girls. For better or for worse, my identity is concretely established as *real*, something that is now worth a premium in the sex work economy.

The debate online quickly centered on whether anyone would still want to hire a *real* sex worker when they could just chat with an algorithmically perfected, artificially generated sex bot tweaked to their preferences. Much like the demand for organic food, I believe there will always be a desire for authenticity in sex work. What struck me as more insidious was the way in which the images of real sex workers were being exploited by these AI companies for profit.

The vectoralist class views freely available data as a

Anna Uddenberg, Journey of Self Discovery, 2016. Courtesy of the artist and Kraupa-Tuskany Zeidler.

natural resource to be mined and exploited. This is exemplified by the aggressive "move fast, break things" approach of AI companies, which scrape the net for every bit of content they can get their hands on to feed into the minds of these increasingly complex neural nets. Selfies, pornographic videos, confessional blog posts, Nazi propaganda, Wark's *A Hacker Manifesto,* conspiracy-theory YouTube videos, dissertations, whole books, the entire discography of Ke$ha—all muddled, merged, stewed, percolating on a server somewhere. On the one hand, it's easy to see the appeal of this, to want to know what something fed a nearly complete knowledge of human output on the web will spit back out at us. But it's also a massive violation of intellectual property and privacy rights.

My own selfies are a part of the vast stores of data these neural nets are trained on, which I learned after a friend working on an early AI generator plugged my name in as a prompt and a ghostly version of my face surfaced. I've worked hard to retain the rights to my image, by, for instance, refusing to work with certain famous photographers (most notably Richard Prince) after being pressured to sign my rights away. Knowing now that my image is being exploited to generate profit for a tech corporation backed by billions in VC funding is infuriating.

Sex work is often at the avant-garde of new technologies, from VHS to the internet, and the present moment appears to be no exception. By mining these images of what they consider to be attractive people and using them as fuel for social media algorithms, vectoralists have fully severed the connection between the human laborers who grease the wheels of commerce and the value they produce. There are already hundreds of AI-generated influencers on Instagram alone.

Some of these influencers are created by Instagram, who reportedly paid five million dollars to license the faces and "personalities" of certain celebrities.[4] Billie, a chatbot who takes the appearance of Kendall Jenner, posts inane AI-generated images of coffee, cats, flowers, and music festivals. Users were once able to chat directly with Billie, but that functionality is currently turned off.

Other AI-generated influencers are made independently. Ruben Cruz runs the Instagram account "Aitana Lopez," which features an AI-generated woman who is supposedly

Young Boy Dancing Group. 2019. BOFFO Fire Island Performance Festival. Photo: Nir Arieli.

twenty-five and a Scorpio. Aitana has almost twice as many followers as Billie; unlike Billie, Aitana's photos are all sexy selfies. A few AI-generated influencers advertise brands like Nike and Starbucks, although whether these posts were paid remains unclear. Cruz complained to *Euronews* that he was tired of working with human influencers "who have egos, who have manias, or who just want to make a lot of money by posing."[5] Heaven forbid workers aspire to earn money doing their job. AI influencers, being inanimate, have the benefit of lacking an ego altogether, thus serving as pliable clay that corporations can mold into any form they desire.

Indeed, *humanity* is an undesirable trait in workers. Constant productivity and consistency are held in the highest esteem, qualities that are often associated with automated mechanical systems. With systems of surveillance that grow more effective year over year, capitalists are more aware than ever of the shortcomings of their human employees. AI is seemingly a perfect solution: Why rely on an inherently flawed human when you can press a button and receive instantaneous results, no messy human emotions or demands involved?

Despite the capitalist's plastic fantasy of an egoless, servile, robotic, corporate drone, consumers chafe at the unreality of these systems. The comment sections of AI-generated art accounts on Instagram are flooded with complaints. On 4chan and Reddit, users compare notes about which e-girls are *real.* My inbox is full of emails from former clients asking if I'm available, although I've been retired for years. *It's hard to tell which ads are fake these days,* they complain. *When are you back in New York?* Much like the desire for pasture-raised chicken, demand for a more realistic fantasy of sex has yet to die.

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Liara Roux is a sex worker and the author of *Whore of New York*. She lives in Paris with her very fluffy dog.

1
Sarah Frier and Nico Grant, "Instagram Brings In More Than a Quarter of Facebook Sales," *Bloomberg* , February 4, 2020 https://www.bloomberg.com/news/articles/2020-02-04/instagram-generates-more-than-a-quarter-of-facebook-s-sales .

2
Vanessa D'Alessio, "Saving Face," *Tits and Sass*, July 26, 2018 https://titsandsass.com/saving-face/ .

3
Brian Marks, "Bhad Bhabie Reveals How Much She REALLY Earns on OnlyFans by Sharing Screenshot of Her 2021 profits—and the Figure Might Surprise You," *Daily Mail*, November 11, 2023 https://www.dailymail.co.uk/tvshowbiz/article-12736285/Bhad-Bhabie-reveals-earns-OnlyFans-2021-profits.html .

4
Sahil Patel, "Meta Paying Creators Millions for AI Chatbots," *The Information*, October 5, 2023.

5
Laura Llach, "Meet Aitana, Spain's First AI Model, Who Is Earning up to €10,000 a Month," *Euronews* , May 4, 2024 https://www.euronews.com/next/2024/05/04/meet-the-first-spanish-ai-model-earning-up-to-10000-per-month .

[html <iframe style="width: 100%; height: 800px; border: 1px dashed black;"
src="https://cthompto.github.io/a-hacked-manifesto/"
title="A Hacked Manifesto">
</iframe>]

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Chelsea Thompto (she/her) is a transdisciplinary artist and educator working at the intersections of art, trans studies, and technology.

Chelsea Thompto

A Hacked Manifesto

Francisco Nunes

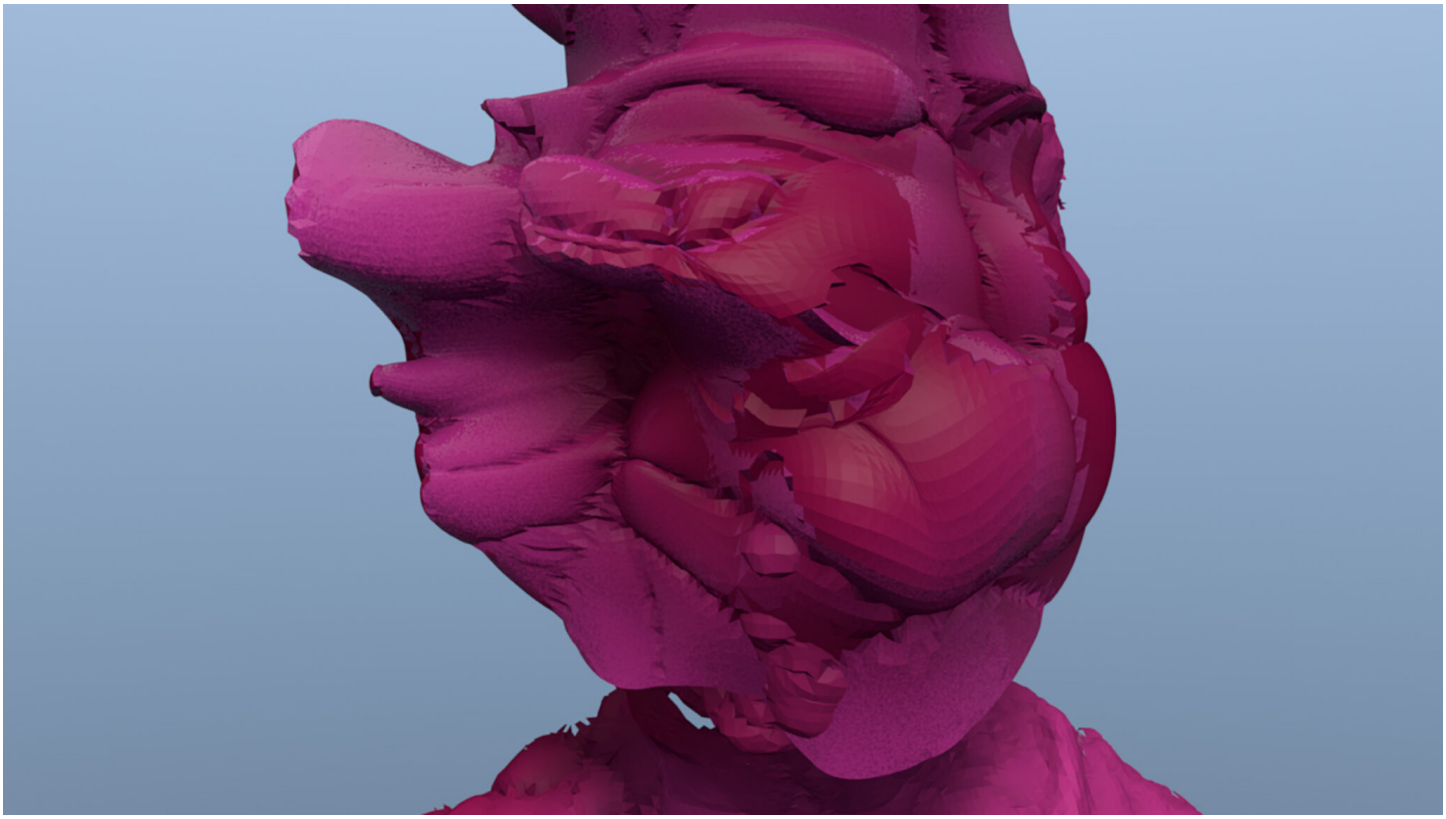
The Hacker Class Is Dead, Long Live the Hackers!

Some of us age better than others. The twenty years that have elapsed since *A Hacker Manifesto* was first published have not been kind to those with "frayed nerves," those who, for Tiqqun, refused to "settle for any sort of comfort."[1]

A Hacker Manifesto gestured towards a more consistent theoretical articulation than some of its fashionable contemporary alternatives, such as Michael Hardt and Toni Negri's "multitude," while simultaneously escaping the linguistic and philological reductionism of the likes of Giorgio Agamben's "coming community." While both terms identified the ways in which the contemporary form of biopolitics repurposes subjective identities and their representations, Hardt and Negri's "singularities that act in common" and Agamben's "whatever singularities" paid little attention to the actually existing material conditions for the productive escape of a self-composed community from the oppressing structures that bind it to the prevailing order.[2] By locating, in the development of the information vector, the conditions of possibility for this break to happen, Wark's hackers were given a point of departure.

Wark's original and provocative manifesto tried to articulate the existence of a new class that emerged from the growing informatization of life and labor—a *hacker class*, the counterpart of the newly dominant *vectorialist class.* At the time (the turn of the century), the hacker class needed allies; it also had to develop and densify its class interests and acquire a fully fledged class consciousness. The hacker class was to bring about the final subsumption of the notion of class itself, the virtualization of class politics. Information would be the driving force of this process, and this much proved to be true. However, what we have seen in the last twenty years is that the abstractive potentiality of information, as the new dominant property form in the capitalist mode of production, is not enough. Thoroughly commodified by the vectorialists, it cannot "release the virtuality of classness."[3]

As a result, those resisting the vectorial turn of capitalism have, time and again, strengthened the grip of identity and representation on virtuality and abstraction. Though this was very often the only way to secure certain formal rights and the only available form to fight against political erasure, the endless interplay between claims for identity and their state-sanctioned representations ensured that the "crisis of identity" Wark's hackers were to bring about would not be deep enough to radically unsettle the subject of liberal politics.[4] This crisis, originating in the virtuality released by the hack, is not predicated on a purely linguistic, or performative, turn, but is rather absolutely immanent and material. Hackers were to destabilize the self-enclosure of the liberal subject through a politics of expression—instantiated by the hack—that could overcome the limits posed by "the constraint of scarcity and lack" that plagues capitalist subjectification.[5]



Zach Blas, Facial Weaponization Communiqué: Fag Face, 2012, video still. Courtesy of the artist.

Since then, hackers have taken more than a few blows. The death of capital, in Wark's phrasing, did not signal the demise of its operational forces.[6] Capitalists abound, as we know only too well. The figure of the hacker might still be alive, but it lives an apparently politically powerless existence; it has retained only its criminal associations, with its accompanying imagery becoming increasingly confined to a series of hauntological manifestations, like the dark alleys of William Gibson's or Philip K. Dick's cyberpunk. The digital space that was opened by the emergence of information as the dominant force of production in the global economy has been progressively stripped of its radical possibilities. If there is a death, it is the death of *the hacker class qua class*.

What survives are the potentialities envisioned by Wark when she conceptualized the hack as an event touching the unrepresentable, leading to a politics beyond the entrapment of representation, beyond information, beyond property. And this starts where *A Hacker Manifesto* did: with abstraction, that double spooking the world, which is still the main driving force behind the current mode of production, whichever epithet one choses to describe it.

"Abstraction is what every hack produces and affirms."[7] This much is still true, but what kind of abstraction is being produced? Which products of abstraction led to the rampant power of the vectorialists and the demise of the hacker class? Wark's contention was that "the hacker class arises out of the transformation of information into property, in the form of intellectual property," as the vectorial class "mak[es] patents and copyrights equivalent to factories or fields."[8] Today, however, it is not just intellectual property that is at the origin of the vectorialists' present and future profits. While information, to be sure, is at the center of this process, the kind of information the vectorial class profits from is far more abstract than conventional intellectual property, patents, and copyrights.

The vectorialist class took this capture to an even more abstracted level. It is no longer just a question of owning the vector and the logistical systems that enable the information produced to be transformed—"the crossroads where information traffics."[9] It is also about the extended possibilities of deriving a surplus from the infinitely recombinant potential of *metadata*. Wark, writing ten years after *A Hacker Manifesto*, remarks: "Then we could be datapunks; now we have to be metapunks."[10] Writing fifteen years later, things become more dire: "It is all but inconceivable now that there could be an open-ended, playful approach to making the new appear out of the old in techniques of information that would not be entirely contained with the commodification and control of the information vector."[11]

If class oppression is founded on an original dispossession, it is useful to circle back to the

foundational moment—as an initially recurring moment—corresponding to the spoliation of the hacker class, the moment of the capture and appropriation of its labor product. For Wark, it is the discovery of "the immaterial virtuality" of the hacker class's raw matter—information—that initiates the historical break vis-à-vis its class predecessors.[12] This was, and remains, a glimpse of a productive escape from the myth of scarcity: unshackled information, the limitless material instantiation of virtuality. But over the last twenty years, what appeared as the result of a quantitative change in *the level of abstraction* was, in actuality, a shadow lurking behind the dominant commodity form. From data to metadata, from information qua intellectual property to information qua every residual trace of digitally mediated behavior, what then is today's fundamental spoliation?

As Frédéric Neyrat rightly notes, the primary commodities of today's dominant capitalism—what might be called the present vectorialism—are digitized dividual elements made of "purchase histories, elections, prophylactics, and pornographic ads assembled by bots and market algorithms," able to be (re)combined and (re)assembled along transindividual lines.[13] Produced and harvested by both human and nonhuman—increasingly the latter—networked elements, this has become the primordial form of information, and the main reason behind the rapid disintegration of the hacker class.

Abstract and abundant, this kind of information is not exactly a product of labor, but it is *produced* by virtually everyone. In fact, it is more often the result of nonlabor—or rather, nonlabor increasingly turned into a form of labor. Ironically, all of us who produce this data have been turned into hackers—makers of the new out of the old. By dramatically enlarging the conceptual and material perimeter of information and, crucially, by discovering that information's abstractive power does not stop at the level of representation—that it extends *all the way down*—the vectorialist class has neutralized the hacking possibilities therein.

The vectorialist class, realizing that the course towards abstraction made possible by the explosion of information introduced an inherent volatility in the process of capturing and managing a whole new kingdom of representations, quickly learned what Wark's more radical hackers already comprehended: the inherent *falseness* of all representation.[14] But instead of allowing the free-flowing interplay of expression, leading to a field of irreducible *differences*, the vectorialist class made use of its vectors to reconstruct representations along new infra-subjective lines. The "divide and conquer" strategy was thus taken to a whole new level of abstraction, now applied to the most granular of elements.

Materially accomplishing what poststructuralists had relentlessly theorized in the previous decades—the dissolution of the subject—the posthuman of the vectorial world has been described by N. Katherine Hayles as "an informational pattern that happens to be instantiated in a biological substrate."[15] Not only is the materiality of the subject's boundaries irrelevant when compared to the disembodied information it produces; so too are its representations.

When the dominant ruling class was capitalist, it had to act like "the authorized police of representation," closely managing the increasingly unstable link between expression and its representation—in the well-known tradition of mobilizing the state to sanction identities.[16] The greatest hack of the vectorialist class was the preemptive dismantling of this nexus—followed by a strategic appropriation of the space that took its place. If vectorialism rests on the ideological and material victory of *connectivism*, which is "the realization of the techno-affirmationist dream of complete transparency," then this transparency can only be completely operative when the distance between expression and its representation becomes *null*.[17]

The obliteration of this nexus reveals the impossible correspondence between whatever is expressed and its representation. Instead of leading to the affirmation of an infinite and unlimited virtuality—of difference beyond repetition—this nullification is actually the only possible form for controlling the destabilizing effects of sprawling identities. Beneath the surface of one of the latest chapters in the history of digital abstraction we find traces of another step in the longer history of the state as guarantor of the referents of signification.

Today's dominant abstractions are infinitely recombined traces of something that does not exist as such: the subject's tightly knit, hermetically sealed interiority. In the reign of metadata, we can no longer talk of the "nonconformity between sign and referent."[18] There is no nonconformity, but rather signs that make up for *voids*: a Platonic tragedy if ever there was one. All sign, no referent. It is no coincidence that, in the so-called "information age," the ongoing profusion of highly abstract dividual elements—whose permanent recombination forms the substrate of the subject's representations and identities—is accompanied by a (supposedly critical) lexicon deriving from privacy (or the lack thereof). More than being robbed of the signs that form a certain *subjectivity*, the subject is rather *made to appear as if composed by these clusters of signs*. Crucially, this extends both upwards and downwards. Communities reassemble along the ever changing lines of coincidental data points, of individual life functions indexed to informational patterns. Indeed, "the information vector extends into life itself."[19]

This is not a new trick. What Foucault saw in his analysis of neoliberalism in the 1970s was the result of the early development of the vector as a force of production, when it started to take over the old capitalist rule. In the early

vectorial moment, we see the first glimpse of a pre-given subject *parsed* into discrete parcels that could be quantified, and thus optimized and further marketized—Gary Becker's "human capital." It would no longer be through the abstract, all-encompassing category of labor that an individual was to be connected to the market.[20]

Referring to the "fantasy of what Marx called the automatic subject, this fantasy that capital can exist without labor," Stefano Harney and Fred Moten (after Marina Vishmidt) remark that the automatic subject is emulated by human capital, in the form of a "hollow subject, … a subject dedicated to hollowing itself precisely by expelling the negativity of labor." For them, "human capital" is the mark of a self-inflicted imposition that the subject performs on its exiled interiors; this subject is transformed into "a porous object that still talks like a subject."[21] Under vectorialist rule, the technical means used to abstract human capital added to that porosity. Lest we forget: "Production produces not only the object as commodity, but also the subject who appears as its consumer."[22]

This, incidentally, is precisely what Shoshana Zuboff misses in her critique of "surveillance capitalism."[23] The recombination of dividual elements points to a far deeper problem than that of "privacy"—which is like the "light we see from a dead star," as Clare Birchall aptly puts it.[24] Claims of privacy, reminiscent of idyllic liberal notions of the perfectly bounded spheres of public and private, are increasingly useless given the contemporary form of vectorialist power. Instead, as Neyrat argues, "when capitalism becomes recombinant, when it takes control of the processes of virtualization *and* actualization, what we are robbed of is our capacity to synthesize as such."[25] In other words, the vectorial colonization of our modes of subjectification confines the subject's field of experiential possibility to the successive transitional arrangements of data points that the vector puts forth at each moment.

Critique, in the Western (post-)Marxist tradition, as a practice of tearing holes in the veil of ideology and liberating representation from capitalist fetishism, falls short. There is nothing to be recuperated, nothing to be *exposed*. In this digital matryoshka doll, what exactly is the kernel underneath the various shells? If one reverse engineers the process leading up to the commodification of metadata, what is there to be recuperated, beyond the fallacy of privacy-centered discourse? What was all this noise, before it was made into money?

A few decades ago, a certain mode of affirmation provided hope to emancipatory politics; we were told to escape the negative and choose the positive, as Foucault famously recommended in his preface to Deleuze and Guattari's *Anti-Oedipus*. Simply put, when Foucault pleaded for "difference over uniformity, flows over unities, mobile arrangements over systems," there was still a political choice to be made.[26] These were perhaps the last years of nomadic romanticism.

The problem today, in the age of fully fledged vectorialism, is not the struggle between the limits of the negative and the emancipatory potential of the positive, but rather the dire reality that flows are the dominating forces, that systems have long been replaced by mobile arrangements, and that it is obviously capital today that is the highest form of nomadism. Vectors have won.

Today, the real political tragedy is interactivity.[27] Indeed, as Wark remarked, "capitalism is a communicable disease in the form of a disease of communication. It puts everything into communication with everything else."[28] Vectorialism is a technologically enhanced form of capitalism qua absolute communicability. Something like metadata, from the vantage point of vectorialism, is a refined form of further abstracting representations, the interplay of which generates a surplus for the vectorialist class.[29]

This is why the hacker class cannot reclaim anything back from the vectorialists, why it cannot perform the *restitution* that would lead to its emancipation: the abstractions it produces, the information it generates—willingly or, more often than not, unwittingly—is not *redeemable*. Most of what is being capitalized on by the vectorialists does not correspond exactly to a *dispossession* of the fruits of labor of a certain class (even if it is also this). It can perhaps be more accurately described as the forced circulation of evermore abstract representations.

Sure, the latter are produced from indexing the traces of everything we do; they extend virtually everywhere, forming a vast network of worldwide "smartness."[30] But they are also often useless when disconnected from the vectors (or stacks) that exploit their economic potential.[31] The information asymmetries that the vector produces are continuously remodeled, as vectorialists dismantle old markets and create new ones, capitalizing on any bit of information that can be abstracted further.

A few years ago, an enthusiastic cybernetician remarked that "information, unlike matter or energy, is not a conserved quantity: it can in principle be replicated without limit." He further added that the internet, "because of its digital character … can be viewed as a virtually frictionless medium, [making] the *unlimited replication* [of information] possible in practice." This, hoped the eminent cybernetician, would lead to a "metasystem … that would integrate the whole of humanity together with all its supporting technologies and most of its surrounding ecosystems, and that would function at a level of intelligence, awareness and complexity that we at present simply cannot imagine." A "global superorganism" directed by a "Global Brain" would then be able to authenticate, select, and hierarchize the interactions

between agents—which, in the author's matrix, "can be people, organizations, cells, robots, or any living organisms"—in a given system. This "intelligent web" would "[draw] on the experience and knowledge of its users collectively, as externalized in the 'trace' of preferences that they leave on the paths they have traveled."[32] Is there a better theoretical instantiation of vectorialism?

Have our hacks been abstracting towards global digital integration, participating in the coming into being of the infrastructure that subtends the vector? And the *vexata quaestio*: Was this the unfortunate destiny of our rhizomatic hopes? In the present conditions, we can no longer depart from the Proudhonian refrain that "property is theft"; the scandal is elsewhere, in the forcing into presence, and therefore into representation and communication, of what can never become property, *non-property* as such. Even the most abstract of things can take the property form—and indeed they do—but not that which exists on a plane that prohibits appropriation.

As has been demonstrated during the last twenty years, the qualitative differences introduced by information as it became the dominant form of property were not enough to threaten its existence. Its abstractive power, in and of itself, was unable to subsume the property form. If the hacker class failed to socialize the fruits of its labor, it was because information is always-already an expression of property; it is property *in potentia*. As Wark knew too well, "property produces, piece by piece, the armor of subjectivity."[33] The holes we find in today's armors of subjectivity are a testament to the vectorialists' success in taking control of the *portal* connecting information and representation.

Where to start—again—for the hackers, now that the tragedy of the last twenty years is starting to manifest everywhere as farce? Today's hackers need not be *the* new subject of history—another iteration in the left's endless game of tag, exchanging one collective subject for another. From the Zapatistas to Occupy and beyond, each time a new collective subject loses its political momentum, the left's revolutionary hopes are transferred to the next collective subject. The "coming community" keeps coming forever.

Beyond the calcified history of class relations, the hack can perhaps renew its vitality as a material instantiation of expression—as the insinuation of a *plane of asubjectivity*. In reality, vectorialists have been doing the first part of the job. Their ever more abstract representations have done more to hollow out the subject than hackers could ever dream of. Let us then acknowledge our losses; we do so not to report a theft but to plan what we can do in exile.

Like Wark did twenty years ago, we too will "not offer the virtual up as semantic hostage to the enemy."[34] Virtuality is all we have. We already know that the *representations turned identities* circulating with increasing velocity within the vector are not only false, but that their transitory configurations are cyclically revoked and replaced by others that turn out to be circumstantially better suited to extinguish any spark of revolt—and make some money. We "dance the war of apposition" and escape the Heideggerian *angst* over the "techno-erasure of metaphysical truth."[35] Now that vectorialists have definitely reverted Platonism—now that, as Alexander Galloway notes, " *becoming* has become superior to *being*"—our point of departure is perhaps clearer.[36]

Is it still a battle between *our* virtualization and *their* actualization, *our* use value and *their* exchange value, *our* expression and *their* information? The development of the means of production—their successive abstraction, intensified in the era of global digital integration—turned out to be insufficient for the *new*, for whatever expression expresses, to touch the unrepresentable. If the hack, as a conceptual tool, is to survive, it needs to lead to a form of commonality beyond liberal universalism.

Wark had already pointed the way, but much has changed. Then, it was perhaps possible to extract some concessions in the class conflict by momentarily "acquiesce[ing] to representation."[37] But this space has already been hacked by vectorialists. Now, the hack cannot but deal in imperceptibility, and again reinvent expression *in the dark*. In the "quest for nonexistence," the hack is both concept and strategy.[38] The failure of the hacker class, in this light, is no failure at all. In other words, the hacker is not an identity, a position in an updated scheme of class relations, but merely a point, somewhere along a line of flight casting towards genericity and commonality.

Commonality—one of the insinuations of communism—has always been incompatible with the subject of liberal politics, as Deleuze knew very well. Today, the permanently recombinant forms of subjectification that the reigning vector authorizes have already put an end to any recuperation of that idealized subject. "Logistics wants to dispense with the subject altogether," Harney and Moten contend.[39] Vectorialism, the most sophisticated form of logistical governance, accomplished just that. In the process, it has introduced many of us to the feeling of being "a problem in someone else's supply chain."[40]

Seb Franklin, discussing Eduardo Williams's film *El auge del humano* (*The Human Surge*, 2016), addresses this specific predicament: subjects are "marked as unreliable components," and certain bodies are "life-to-be-computed" while others are "life-to-be-congealed." Franklin wonders about the possibility of living in a "relationship of indifference to value-informatic demands."[41] Thus, the hack can be thought of as a form of densifying *indifference*, of offering a material substrate for the strategic subtraction that

Deleuze and Guattari posit as the privileged gesture of liberation.[42]

For Wark, the hacker class was to "hack through, and dispense with, all properties of the object and subject."[43] Now that the vector has definitely abstracted all of those properties—all of them but the property form—hackers find new accomplices to finish the task. Having installed a kingdom of hyper-communication oversaturated with claims of identity that they nullify politically, the vectorialists are less and less interested in working to maintain the fiction of a stable correspondence between beings and their projected images. After Tiananmen, the tanks have been busy with other things.

If, as Andrew Culp maintains, "subtraction is the political science of the underground," then this subtractive plane is where new, unexpected hacks can help dismantle the vectorial ruling class.[44] The places where the undercommons comes to life are full of unnatural accomplices, human but also more-than-human. Butterflies and mycelia can hack too, but their hacks have too often been framed as part of a perfectly communicative mesh of vital energies and circulating fluxes, sharing with capitalism an ethos of absolute commensurability. Instead, can the hack be a tool of xenocommunication?[45]

Is there a way to cast lines to an outside that knows no difference between presence and appearance? Beyond the reenactment of tiresome debates about which conceptual tools are better aligned with the present predicament, there's obviously much to draw upon, if we excavate the accumulated sediment of the post-situationist apparatus and its heirs.

There are intensities at work, leading to new complicities. There are other hacks laboring in this world, cutting through matter, forming vast zones of opacity that refuse representation. Siding with the imperceptible, the opaque, the *alien*, can hackers find new ways to virtualize the space of indeterminacy that installs itself in every encounter? Harney and Moten are right: "We owe each other the indeterminate."[46]

Everything has already melted into air, the air into airwaves. The distance between holiness and profanity collapsed a long time ago and there is nothing profound behind the veil of appearances. Finally, some hope.

X

Francisco Nunes is a PhD candidate in Media Studies at NOVA University in Lisbon. He is also the translator of the Portuguese edition of *A Hacker Manifesto* (*Um Manifesto Hacker*, DeStrauss, 2022).

1
Tiqqun, *Introduction to Civil War*, trans. Alexander R. Galloway and Jason E. Smith (Semiotext(e), 2010), 12.

2
Hardt and Negri, *Multitude: War and Democracy in the Age of Empire* (Penguin, 2004), 105; Agamben, *Coming Community* (University of Minnesota Press, 1993), 1.

3
McKenzie Wark, *A Hacker Manifesto* (Harvard University Press, 2004), thesis 12.

4
Wark, *Hacker Manifesto*, thesis 82.

5
Wark, *Hacker Manifesto*, thesis 256.

6
Wark, *Capital Is Dead: Is This Something Worse?* (Verso, 2019).

7
Wark, *Hacker Manifesto*, thesis 32.

8
Wark, *Hacker Manifesto*, thesis 36 and 76.

9
Wark, *Capital Is Dead*, 56.

10
Melissa Gregg, "Courting Vectoralists: An Interview with McKenzie Wark on the 10 Year Anniversary of 'A Hacker Manifesto,'" *Los Angeles Review of Books* , December 17, 2013 https://lareviewofbooks.org/article/courting-vectoralists-interview-mckenzie-wark-10-year-anniversary-hacker-manifesto/ .

11
Wark, *Capital Is Dead*, 51.

12
Wark, *Hacker Manifesto*, thesis 15.

13
Neyrat, "Exo-Communications," *Ill Will* , January 5, 2022 https://illwill.com/exo-communications .

14
Wark, *Hacker Manifesto*, thesis 206.

15
Hayles, "Unfinished Work: From Cyborg to Cognisphere," *Theory, Culture & Society* 23, no. 7–8 (December 2006): 160.

16
Wark, *Hacker Manifesto*, thesis 224.

17
Andrew Culp, *Dark Deleuze* (University of Minnesota Press, 2016), e-book, n.p.

18
Wark, *Hacker Manifesto*, thesis 219.

19
Wark, *Capital Is Dead*, 57.

20
Foucault, *The Birth of Biopolitics: Lectures at the Collège de France, 1978–1979* (Picador, 2010), 220; Becker, *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education* (University of Chicago Press, 2009).

21
Harney and Moten, *The Underco mmons: Fugitive Planning & Black Study* (Minor Compositions, 2013), 90; Vishmidt, "The Aesthetic Subject and the Politics of Speculative Labor," in *The Rout ledge Companion to Art and Politics* , ed. Randy Martin (Routledge, 2015).

22
Wark, *Hacker Manifesto*, thesis 170.

23
Zuboff, *The Age of Surveillance Capitalism* (Hachette, 2018).

24
Birchall, *Shareveillance: The Dangers of Openly Sharing and Covertly Collecting Data* (University of Minnesota Press, 2017), 25.

25
Neyrat, "Exo-Communications."

26
Foucault, "Preface," in Gilles Deleuze and Félix Guattari, *Anti-Oedipus,* trans. Brian Massumi (University of Minnesota Press, 1983), xiii.

27
Alexander R. Galloway, *Uncomputable: Play and Politics In the Long Digital Age* (Verso, 2021), 234.

28
Wark, "Furious Media: A Queer History of Heresy," in *Excommunication: Three Inquiries in Media and Mediation* , by Alexander R. Galloway, Eugene Thacker, and Wark (University of Chicago Press, 2013), 202.

29
In this regard, metadata could also be thought of as a kind of derivative, following Randy Martin's argument in *Knowledge LTD: Toward a Social Logic of the Derivative* (Temple University Press, 2015).

30
Orit Halpern and Robert Mitchell, *The Smartness Mandate* (MIT Press, 2023).

31
Benjamin Bratton, *The Stack* (MIT Press, 2015).

32
Francis Heylighen, "Accelerating Socio-Technological Evolution: From Ephemeralization and Stigmergy to the Global Brain," in *Globalization as Evolutionary Process: Modeling Global Change* , ed. George Modelski, Tessaleno Devezas, and William R. Thompson (Routledge, 2008), 295 (emphasis added), 303, 298.

33
Wark, *Hacker Manifesto*, thesis 276.

34
Wark, *Hacker Manifesto*, note on thesis 21.

35
Harney and Moten, *The Underco mmons* , 19; Luciana Parisi, "Media Ontology and Transcendental Instrumentality," *Theory, Culture & Society* 36, no. 6 (November 2019): 10.

36
Galloway, "On Epigenesis," *October* , no. 175 (April 2021): 142, emphasis in original. "To reverse Platonism is first and foremost to remove essences and to substitute events in their place"—Gilles Deleuze, *The Logic of Sense* , trans. Mark Lester and Charles Stivale (Columbia University Press, 1990), 53.

37
Wark, *Hacker Manifesto*, thesis 232.

38
Alexander R. Galloway and Eugene Thacker, *The Exploit: A Theory of Networks* (University of Minnesota Press, 2007), 136.

39
Harney and Moten, *The Underco mmons* , 87.

40
Harney and Moten, *All Incomplete* (Minor Compositions, 2021), 38.

41
Franklin, *The Digitally Disposed: Racial Capitalism and the Informatics of Value* (University of Minnesota Press, 2021), 186.

42
Deleuze and Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia* , trans. Brian Massumi (University of Minnesota Press, 1987), 6.

43
Wark, *Hacker Manifesto*, thesis 274.

44
Culp, *A Guerrilla Guide to Refusal* (University of Minnesota Press, 2022), 6.

45
Alexander R. Galloway, Eugene Thacker, and McKenzie Wark, *Excommunication: Three Inquiries in Media and Mediation* (University of Chicago Press, 2013).

46
Harney and Moten, *The Underco mmons* , 20.

Valérian Guillier

Vectors Mutate

In *A Hacker Manifesto*, McKenzie Wark offered a theory of antagonistic classes that face off with each other on the terrain of information. She argued that information is produced by social cooperation and intellectual work, and thus emerges as a site for exploitation and the extraction of value. "Intellectual property" (IP), she wrote, has become the property form through which a "vectoralist" ruling class monopolizes, reifies, and commodifies the information produced by the hacker class. I will contextualize this focus on IP and explore how the shift from IP to new forms of value extraction over the last twenty-five years demonstrates the mutation of vectoral class power.

Though the book was printed in 2004, it had already been published online in 1999. These two dates could be considered milestones of an era when free culture, freedom of information, information commons, free licenses for symbolic goods, and "creative" remuneration were sources of public debate all over the world. This debate coalesced around the passage of the Copyright Term Extension Act in 1998 and the launch of Napster the following year, the first peer-to-peer file-exchange freeware to reach a large audience. Since that time, however, the vectoralist class has become more concretely embodied in large digital platforms. The central role of IP in the extraction of value has declined, though it does continue in content disputes. Regardless of their mutation, vectoralist corporations continue to fight hard over patents regarding their hardware, and software corporations continue to fight over patents regarding both hardware and software. If the vectoralist class can mutate—as I argue it has—then hackers should consider altering their counterstrategies. While free licenses were part of the answer to IP lockdown, today there are new ways for hackers to take back control of vectors.

In her book, Wark builds a theory of information and the class struggle that it creates. Drawing on materialist approaches, her manifesto constituted one of the first critical reflections on the political economy of the internet which did not treat information as if it were either a magical solution to capitalist crisis or simply an extension of capitalism as traditionally conceived. It belongs to a short list of important scholarly contributions to the debate on (free) information published during the first ten years of the century.

Can a theory of information forged twenty-five years ago still apply today? After all, in a number of ways, the "free movement" seems to have emerged victorious: there is "free" content, "free" software, "free" information everywhere—even as we might debate how free it really is. The largest tech companies seemed to accept their role in building new models around the free flow of information. This is usually referred to as Web 2.0, the foundation for what we now call "platforms," which have turned out to be little more than technologies of surveillance, extraction, and policing. One could easily think of Wark's *Hacker*

The Peasants' Revolt, from a ca. 1470 manuscript of Jean Froissart's Chronicles in the British Library. License: Public Domain.

Manifesto as a book of the past, if only because at the time of its writing the internet still inspired utopian thinking. But it is clear that the production and dissemination of information remains subject to extractivism now more than ever before.[1] The highest-valued companies in the world essentially move information around, feeding us what we ourselves produce.

These forms of extraction are, according to Wark's conceptual language in *A Hacker Manifesto*, vectoral, although none of these new forms of vectoral power entirely match the descriptions in the book. What can we recuperate from this book for our current era? I will first place the book in the context of the "free movement," then focus on the changes that have occurred in the years since its publication, and conclude with its contemporary relevance.

A Hacker Manifesto and the Free Movement

At the turn of the twentieth century, free software and licenses constituted two aspects of an important change in how software (and later information more broadly) could be shared and reused. Free software programs like Mozilla Firefox and LibreOffice set "rules" for their code, which stated that everyone should be able to access, reuse, and share the code. Free licenses are a form of contract that legally binds anyone reusing a part of free software code to respect these rules. With the rise of free software and free licenses—turning IP against itself, so to speak—many thought an information revolution was on the horizon. In the Global North, personal computers were flourishing and Web 2.0 was soon to be implemented. Free licenses were applied to more and more sectors of cultural production. At first, such licenses were designed for software documentation. But soon after, Creative

Commons licenses proposed a "patch" that liberated more software. Suddenly, all the tools for the new information revolution were available—a revolution that would unfold, it was thought, neither within the borders of a country nor directly against any particular political system. It was about keeping "cyberspace" free. The idea was that information should stay out of the realm of commodification so that a gift economy could emerge.

A Hacker Manifesto proposed a class theory for this revolution and questioned this optimistic stance from the get-go.[2] When the book first came out, it was clear to those aware of what was happening online that Wark was offering a theory of information and a proposal for class struggle organized around it. Wark describes two antagonist classes: "hackers" and "vectoralists."[3] Hers is a theory of information as a "material production force."[4] As such, it extends the critique of property to the realm of what others at the time insisted on calling "immaterial" production. In Wark's description of how class struggle plays out on the terrain of information, hackers produce "new concepts, new perceptions, new sensations, hacked out of raw data."[5] Information should be understood here as everything that is handled, transformed, or produced by various kinds of "creative" workers. The hackers produce information but don't get to own it, because it is appropriated by the vectoralist class, whose interest "lies first and foremost in the free expansion of the vectors of communication, culture and knowledge around the globe."[6] The vectoralist class proliferates on the premise that "the reign of the vector is one in which any and every thing can be apprehended as a commodity."[7] The vectors are how the potentiality of the information is actualized in the form of the commodity. The main tool to achieve this appropriation is, according to Wark, IP, and especially copyright.[8]

Created a few centuries ago to protect authors from abuse by publishers, copyright has become a central tool of appropriation, especially with the rise of major cultural industries. The duration of copyright has been extended and the scope of production that it covers has been regularly broadened. Software was added to its scope in the 1970s, and more recently databases as well. Despite the culture industry's perennial effort to extend copyright, the first Mickey Mouse movies finally made it into the public domain in 2024. Disney deployed all possible means to postpone it and for many years succeeded. Legal scholars were particularly active at the turn of the twenty-first century in protecting the balance originally set between the rights of authors and the right of the public. At the time, the companies trying to establish these "enclosures 2.0" were mostly major publishing houses (like Vivendi Universal) and large content producers (like Disney). IP was their major tool for the extraction of value from intellectual production (and still is to some extent).

This was the context for Wark's focus on how vectoralists appropriate the value produced by hackers through IP law. She describes "intellectual property" as an evolving form of the abstraction of information; as central to the struggle between hackers and the vectoralist class; and as what is monopolized by the vectoralist class in order to realize the value of information through commodification.[9] Via the property form, the vectoralist class confines the potential of information to the commodity.

Property is central to Wark's argument. She uses it to draw parallels between the contemporary mode of production and pastoralist and early capitalist modes of production. Wark even affirms that "free information is not a product," arguing that public and gift economies are the reason why free information exists in the first place.[10] This is where she seems to have been influenced by the free movement and its optimistic outlook.

Wark also suggested that information-based capitalism has renewed Marxist teleology. As she remarked: "In its desperate need to encourage productivity, the vectoralist class induces the very productivity that exceeds the commodity itself."[11] Information by nature wants to be free, and the hacker class will always exceed the limits set by vectoralists, because invention exceeds repetition. The fight will at some point be won. However, one could argue that if the struggle between hackers and vectoralists over the appropriation of the value of information has never been more fierce than it is today, the original focus on IP as *the means* of realizing value needs to be reconsidered.

Vectors Mutate

In 2004, a small group of Harvard students was developing the first version of Facebook. Elsewhere, another small group was working on YouTube, which launched the following year. The age of platforms was about to begin. Platforms can be defined as infrastructures that encompass both material components and software, and that enable people to produce and consume information. The apparent neutrality of the word "platform" was specifically crafted so that platforms could avoid responsibility for their content and could distinguish themselves from mass-media companies.[12] Just as Covid-19 showed on a mass scale how viruses can mutate and adapt, vectors and their incumbent vectoralists react to evolutionary pressure and evolve.[13]

The spread of internet-connected personal computers disrupted the business models of various cultural industries. They needed to change (as viruses must) in the face of piracy, challenges to their authority by an (idealized) vision of democratic cyberspace, and the rise of novel technologies that allowed new actors to shake up the market.

Platforms present themselves not as gatekeepers, but as solutions. They don't claim the authority to decide who

The Pirate Bay logo. License: Free Use.

should be allowed to express themselves or what should be shown to you. These prescriptive functions are now handled by algorithms, which curate content based on your previous online behavior and that of billions of other

users of the platform. Platforms claim that their algorithms are objective, giving you results that are simultaneously truth and magic ("it just works"). In this way, platforms individuate hackers and their content.

The platform model relies on the permanent production of free content. This is why platforms emphasize the importance of each user's creativity. This call for creativity should give us pause, especially when platforms shape user creativity with technical and design constraints, or with moral rules set because of prudishness or the will of advertisers. The invitation for everybody to express themselves hardly hides how constrained the expression is. Still, platforms try and appear as spaces for the realization of freedom of expression. The tactical use of these platforms by protesters in the Arab Spring and other uprisings has strengthened this impression.

Platforms developed alongside the free movement, but they adopted its customs and principles selectively. Indeed, they have a very particular understanding of the slogan "information wants to be free." On the one hand, platforms encourage the exchange of information—as long as it stays on their platform. On the other hand, they must also extract value from this exchange. Their business model is based almost entirely in the sale of their users' attention to advertisers. This sets them apart from the old gatekeepers (large media and communication companies), which decided what forms of expression would be published or not, creating a public sphere that was limited to approved and selected expressions. Most platforms were invented in opposition to traditional gatekeepers; we can call these platforms *gateowners*.[14] Their logic is that everybody should be allowed to express themselves, as long as the platforms can extract value from this expression. Gateowners own the space where expression (and advertising) takes place and rely on the algorithmic selection of content to feign offering an objective selection. They do not do the work that publishers used to do. Gateowners don't assume the financial risks inherent to the role of publishing, but instead transfer these risks to those who create content, while extracting value from it. These new gateowners, *alongside* the gatekeepers, constitute different segments of the vectoralist class.

When it comes to content, IP is no longer the primary driver of value realization (or value extraction). What Shoshana Zuboff calls "surveillance capitalism" relies on data and the commodification of user profiles created from it.[15] However, even if vectoralists sometimes publicly undermine copyright, they still heavily rely on it for their infrastructure. Even if they sometimes use open-source software, they also produce a lot of proprietary information that is either kept secret or patented. In this sense, IP is still an important issue, and the fight for information to be free is neither over nor outdated.

That said, IP is no longer the *central* source of value for the vectoralist class. It has been overtaken by the data we produce and "share" through apps and online services. However, the materialist approach to property that infuses *A Hacker Manifesto* remains sound. The vector has mutated. IP as a source of value for vectoralists has been augmented, or even completed, by platform ownership.

A Theory for Present Times

Wark's critique of vectoralism has never been more relevant. Value is extracted by vectoralists, and platforms are their public-facing manifestation. In order to regroup and develop counterstrategies for the present era, hackers should explore the meaning of the "commons" more thoroughly. Pointing to the limits of free information, Dmytri Kleiner writes that "whatever exchange value may be derived from the information commons, will always be captured by the owners of real property, which lies outside the commons."[16] How can hackers reintegrate back into the commons property that is currently outside of it?

The information commons or "knowledge commons" (which includes but is not limited to the digital commons) is more than free information. Free licenses and public-domain laws may guarantee access for all, but these are useless in dealing with the distribution of surplus value. They offer no protection against the new forms of extractivism that are organized at the level of infrastructure and the ownership of the vectors. If we want information to really be part of a commons (in the sense that Elinor Ostrom and Charlotte Hess, among others, have given to this term), we need collective governance and collective ownership of the means of diffusion and valorization.[17]

Contra Wark, IP can't be thought of as "equivalent to factories or fields."[18] But platforms can. They are where hackers and what they produce are exploited. They are property built on capital accumulated through the valorization of information. Realizing that exploitation isn't a feature of their job alone but of the capitalist mode of production, some hackers have organized and formed platform cooperatives.[19] It is interesting that some of these cooperatives have chosen forms of legal ownership rather than free licenses to share the information they produce.

The term "commons" should be reconsidered in light of how it is used in concepts like "creative commons" and "information commons." In the definition given by Ostrom and most scholars after her, the commons includes collective and differentiated rights of ownership but also collective rules (including rules on how to change those rules).[20] The commons should not be thought of as a ready-made mode of organization, but rather as something unfinished that concerns itself with the management of resources. In an information commons, the vectors are owned collectively. Historically, cooperatives have been formed in a variety of industries,

Cambridge Analytica and Facebook partnered together in the 2010's to gather information from users based on surveys they took, which was meant to be used in academia. License: CC BY 2.0.

from agriculture to manufacturing. There is no reason why hackers cannot form vectoral cooperatives. There could be platform cooperatives owned and operated by artists (for music or video streaming) or by delivery workers, to give just two examples.

Reclaiming ownership over vectors isn't just a way to recover streams of value. It is also a way to decide what should be valorized, beyond the limited realm of commodification. Wark insists on the importance of the potential of information: "To hack is to produce or apply the abstract to information and express the possibility of new worlds, beyond necessity."[21] At stake is not only (exchange) value realization, but also the definition of the vector—what we collectively want vectors to do and *not* do. At stake as well is the definition of value itself.

The reappropriation of valorization wouldn't be the only aim of a hacker-cooperative movement. Platform cooperatives can also produce what Pascal Nicolas-Le Strat calls "oppositional commons," after Oskar Negt's oppositional public space. For Nicolas-Le Strat, this commons is a "substantial conception of the critical stance that draws equally from 'negative' affects (opposing) and from 'positive' affects (communalizing), which combines them to simultaneously, in the same critical movement, abolish the dominant norms of activity and institute new ones."[22]

An example of this is Resonate, a cooperative that provides a music streaming service.[23] It is owned by those who develop it—artists and workers—offering a new business model for streaming. Resonate's developers believe that algorithms shouldn't replace human suggestions and word of mouth for discovery, so they decided not to code an algorithm for recommendation, leaving space for human-to-human interaction on the platform. They also define their activity in a manifesto that has evolved over time and asserts that music should be more than a commodity. Elaborated in eleven points, the first point is relatively innocuous: "Music is art, not content." Then the manifesto quickly escalates: "We reject the historical basis of property in divine right and human supremacy in ecological relations." By the eleventh point, the manifesto has become a short history of domination and exploitation.[24] Resonate has invented a

(counter-)vector whose purpose goes way beyond just moving information around and producing value out of its commodification.

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When it first appeared, *A Hacker Manifesto* shared the spirit of the free movement's critique of the new enclosure of information, even as it went beyond the movement's optimistic worldview. A product of its times, Wark's argument focused on IP, which remains relevant today even if it has been pushed to the margins by subsequent developments in the information class struggle. The richness of Wark's approach is that she describes control and ownership through the idea of vectors—market actors that move, give access to, and commodify information. Thinking with this argument today, we see that vectors have become even more central to capital accumulation. The mutation of vectors has changed the way they operate but has not changed their objectives and power.

In an interview a few years ago, Wark recognized that the term "hackers" hasn't aged well.[25] Whatever it's called, the class of information producers needs to change its strategy. Owning the vector is no easy thing to do. The "winner take all" dynamic of platform capitalism makes it hard for new platforms to emerge, but hackers are resourceful. They have developed counterstrategies to circumvent the limits of platforms. They have organized platform cooperatives backed by unions, consumers, workers, and local officials. They have developed new environments for sharing information, new vectors that incorporate governance tools reflecting the needs and values of those who use the environment. They have even lobbied to pass legislation—for example, the recent EU directive that improves working conditions for platform workers.[26] The struggle between hackers and vectoralists isn't over. Today, however, it is less about information as property than about the ownership of vectors.

X

Valérian Guillier is a postdoctoral researcher at the National Center for Scientific Research in France. Guillier conducted his PhD research at the University of Paris 8 Vincennes Saint-Denis, focusing on cultural commons. Previously he taught courses at Aix-Marseille University on cultural mediation in the arts. Throughout his PhD work, Guillier delved into the dynamics of cultural commons and knowledge commons, particularly investigating the influence of technological advancements on their modes of valorisation. His research expanded to encompass the concept of digital commons, exploring a broader understanding of digital resources and how they can serve communities, extending beyond the realm of open-source software.

1
The term “extractivism” was first coined in South American scholarship to describe the relationship of capitalism to nature. It was originally used to describe the exploitation of natural resources, but it can be extended to other forms of production, including socially produced commodities like information. See Verónica Gago and Sandro Mezzadra, “A Critique of the Extractive Operations of Capital: Toward an Expanded Concept of Extractivism,” *Rethinking Marxism* 29, no. 4 (2017).

2
I first encountered the print version of the book in the cleverly designed French edition published in 2005 by Critical Secret. Each thesis was printed on a new page, emphasizing their coherence and density.

3
The question of whether hackers constitute a class in themselves provoked debate after publication of the book. Wark offers a response to most of these critiques in the introduction to *Capital Is Dead: Is This Something Worse?* (Verso, 2019).

4
McKenzie Wark, “Et si ce n’était même plus du capitalisme, mais quelque chose d’encore bien pire?,” *Multitudes* 1, no. 70 (2018). Unless otherwise specified, all translations are by the author.

5
Wark, *A Hacker Manifesto* (Harvard University Press, 2004), thesis 2.

6
Wark, *Hacker Manifesto*, thesis 381.

7
Wark, *Hacker Manifesto*, thesis 332.

8
The World Intellectual Property Organization defines intellectual property as “creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce.” The common trait is that IP laws creates a temporary—but sometimes infinitely renewable—right of property for productions of the mind.

9
Wark, *Hacker Manifesto*, thesis 18, 21, 32, 22 and 66.

10
Wark, *Hacker Manifesto*, thesis 131.

11
Wark, *Hacker Manifesto*, thesis 309.

12
Tarleton Gillespie, “The Politics of ‘Platforms,’” *New Media & Society* 12, no. 3 (May 2010).

13
The reference to Covid-19 here isn’t incongruous or random. As the public more or less complied with lockdown measures, platforms—one of the few windows to the outside world—grew like never before. And like other sites of consumption, they have declined since.

14
I elaborate on this term in my doctoral dissertation “Cultures en commun: Mutations et réappropriations de la diffusion et de la valorisation des biens symboliques dans l’environnement numérique” (PhD diss., Université Paris 8, 2023).

15
Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (PublicAffairs, 2019).

16
Kleiner, *The Telekommunist Manifesto* (Institute of Network Cultures, 2010).

17
Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge University, 2015); Hess and Ostrom, *Understanding Knowledge as a Commons: From Theory to Practice* , 1st ed. (MIT Press, 2011).

18
Wark, *A Hacker Manifesto*, thesis 76.

19
See *Ours to Hack and to Own: The Rise of Platform Cooperativism, a New Vision for the Future of Work and a Fairer Internet* , ed. Trebor Scholz and Nathan Schneider (OR Books, 2016).

20
Edella Schlager and Elinor Ostrom, “Property-Rights Regimes and Natural Resources: A Conceptual Analysis,” *Land Economic* s 68, no. 3 (1992).

21
Wark, *A Hacker Manifesto*, thesis 14.

22
Nicolas-Le Strat, *Le travail du commun* (Editions du commun, 2016), 76; Negt, *L’espace public oppositionnel* (Payot, 2007).

23
See https://resonate.coop/.

24
See https://resonate.coop/fr/manifesto/ .

25
Verso Books, “Capital Is Dead: McKenzie Wark in Conversation with Verso Books,” YouTube video, May 1, 2020 https://www.youtube.com/watch?v=eiV0wS_in-4 .

26
Council of the EU, “Platform Workers: Council Confirms Agreement on New Rules to Improve Their Working Conditions,” press release, March 11, 2024 https://www.consilium.europa.eu/en/press/press-releases/2024/03/11/platform-workers-council-confirms-agreement-on-new-rules-to-improve-their-working-conditions/ .

Luce deLire

Towards a Transsexual Understanding of Nature

> "The problem of what nature might be returns from exile among the hippies."[1]

0. Introducing Nature

Transsexuality was first. Cis is its exceptional product—or so I shall argue. More particularly, Nature is a trans girl, a transsexual woman.[2] She becomes herself by virtue of body modification. She entails an inassimilable, inexhaustible, natural surplus. I will present my point in conversation with the works of McKenzie Wark. I argue that a transsexual nature is the logical though unadmitted consequence of Warkian thinking. In that way, transsexual nature is nature "warked."

1. Hacking Nature

What is nature? The classic 2004 *A Hacker Manifesto* has this to say*:* "All abstractions are abstractions of nature. Abstractions release the potential of the material world."[3] Here, "nature" is understood as "the material world" in its primary relationship to abstraction, to hacking. "To hack is to release the virtual into the actual"—to hack something thus means to give that thing another, a new form, to make it concrete, to shuttle it into a utility.[4] In this way, Wark proclaims the primacy of the actual over the virtual. It looks as though nature as the host of "the virtual" was in itself a passive object for the cultivating intervention of human actors. This image picks up on centuries of the identification of virtuality, mere possibility, and nature as matter to a forming intellect. It also picks up on many classically Marxist versions of "nature" as a resource for human extraction.

Wark attributes relevance to the "virtual" only in relation to "what is actual"—it is "what *is not but which may become* ."[5] Is there virtuality that does not dissolve in actuality? Even if there was, this nature would still exist in relation to actualization by virtue of resisting such actualization. Nature, then, exists in relation to abstractability. It's earmarked for actualization, destined to become available to transformation into usable stuff—or to resist that transformation. Accordingly, it may be no accident that "to hack" originally refers to the violent expropriation of resources from the material world, namely the cutting of wood.

The virtual, the surplus possibility in *A Hacker Manifesto*, is subsumed under actuality. And yet another inaccessible, un-actualizable nature occurs in the margins of *A Hacker Manifesto* as its unaddressed condition. Besides nature as hackability, Wark also proposes an "inexhaustible domain of what is real."[6] The inexhaustibility of this reality tells us that the real cannot be fully actualized. The reservoir of hackability—nature—seems to exceed all abstractability.

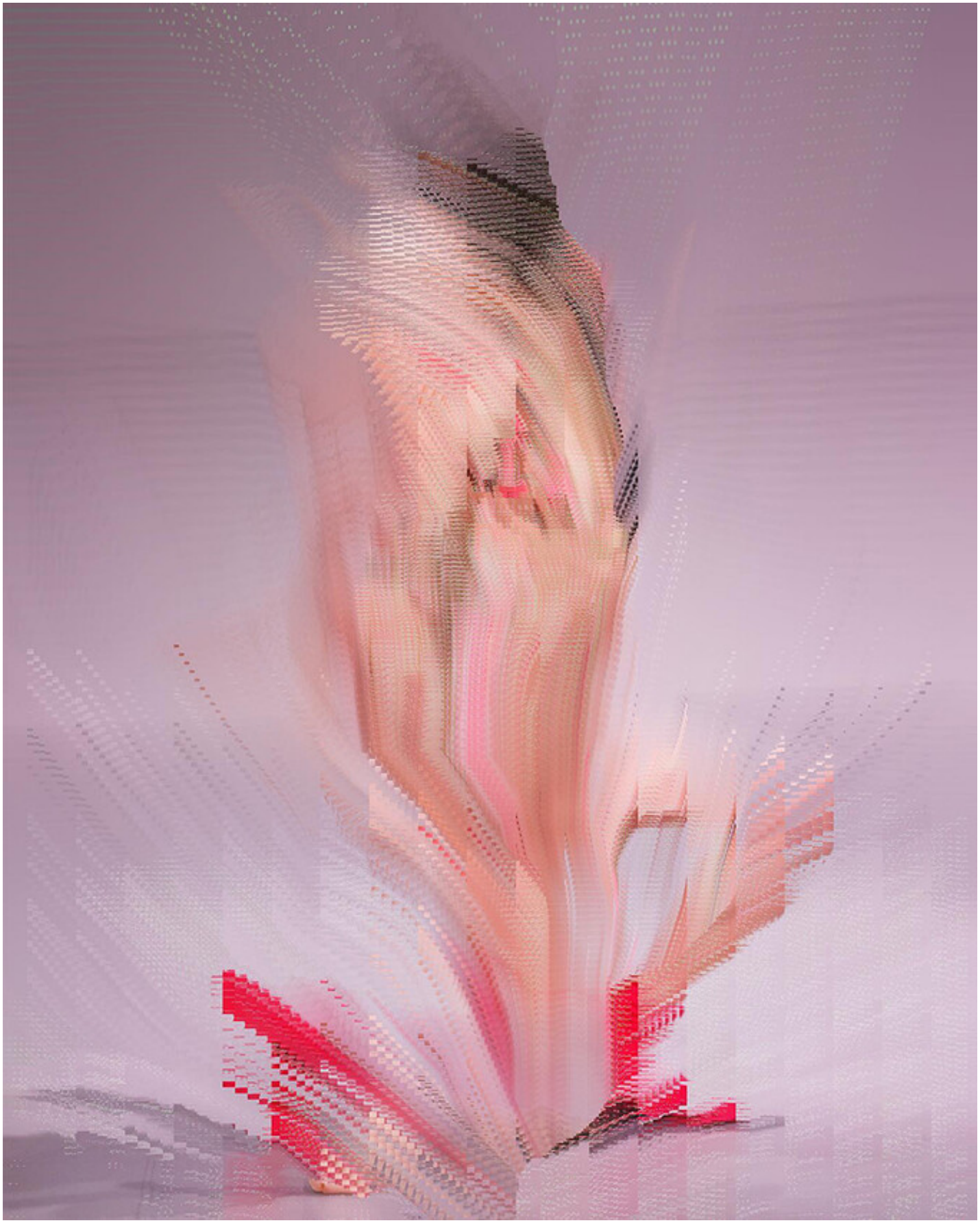
Interactive installation for Queerokratia.de by Fadi Aljabour with legal text by SBSG. Image by Lisa Siomicheva.

Nature exists beyond each and every hack. And, Wark informs us, that reality, other than nature as hackability, can never be fully actualized. Whence this inexhaustibility? It seems that the ultimate natural catastrophe, the end of nature itself, is simply unimaginable to the Wark of *A Hacker Manifesto*. Wark's taste for actuality hence is counteracted by her firm belief in the resilience of nature qua virtuality or inexhaustible *surplus*. This friction between the primacy of actuality and a certain natural surplus will stay with us until the end of this essay.

2. Belaboring Nature

About a decade later, *Molecular Red* extends and reworks the extractionist tendency between the "hack" (cutting wood, generating information) and nature as abstractability. In *Molecular Red*, "the being of nature is … whatever appears as *resistance* in labor."[7] Nature is thus no longer the passive resource of abstraction. It now occurs as an active *opposition* ("resistance") to human interaction qua labor. Wark, taking "the labor point of view," stresses human sensibility as the relevant interface: nature is intelligible only as an *other* to the laboring subject.

Note that to Wark, this nature is not the complete other to technology, nor to culture or labor. Wark actively grapples with the Anthropocene, with human influence taking center stage on planet earth. Twentieth-century critics often argued that any conceptual framing of "nature" would always remain a human artifice, as the distinction between "nature" and "culture" is itself a product of human intellectual in(ter)vention. Yet in the Anthropocene, nature is no longer merely conceptually dependent on us. Think of microplastics in placentas, CO2 in the atmosphere, and the coevolution of diseases alongside the history of industrialization.[8] Anthropocentric nature is not opposed to technology, culture, or labor. Rather, nature is touched by and produced through technology, culture, and labor. "We are cyborgs, making a cyborg planet with cyborg weather, a crazed, unstable disingression, whose information and energy systems are out of joint."[9] Anthropocentric nature is really, materially soaked with and hence co-constituted by human activity. Elephant populations are born without tusks to escape ivory hunters. The "Great Pacific garbage patch" consists of 45,000 to 129,000 metric tons (50,000 to 142,000 short tons) of plastic as of 2018—a sixth continent, formed from human trash without human intention. Anthropocentric



Andrea Illés, Feel Love 1, digital print, 2022. Courtesy of the artist.

nature is a product of human labor and not opposed to it. In this way, the Anthropocene intervenes into the metaphysics of the nature of planet earth: it destroys nature as *opposed to* culture, technology, labor. It incapacitates "the [material] exteriority of a nature that is the ground of romantic yearning [for a whole outside of human intervention]."[10]

However, that uncontrollable surplus which we encountered in *A Hacker Manifesto* haunts *Molecular Red* just as much and in its very definition: "The being of nature is not something a philosophy can dogmatically claim to know. It is not void, or matter; it is *whatever* appears as resistance in labor."[11] This "whatever" is peculiar. Wark articulates her opposition (resistance?) to a "philosophy" which dogmatically posits a somewhat empty definition such as "matter" or "void."[12] Such "dogmatism" declares its principles and runs with it. It is "authoritarian," "faith."[13] Removed from social reality, it tries to enforce principles onto a poorly understood world.

Samples of microplastics. Courtesy of Prof. Dr. Dick Vethaak.

Wark opposes this "philosophy" with a relational understanding of nature through labor, taken as a process that involves sensual interaction with real things. And yet, nature is defined as "whatever" is encountered in this way (labor, sensuality).[14] In the very act of trying to exile dogmatic philosophy from the theoretical scene, it sneaks right back in—and it does so exactly in the form of an inherently undefinable virtuality, an undesignated value X, a barely perceptible conceptual *that over there*: "whatever."[15] In this apparently purely conceptual and utterly indeterminate "whatever" we encounter nature in the text: "whatever" is the resistance of indeterminate (natural?) conceptuality to Wark's own attempt to string it to a relational quality, namely to labor.[16]

That transformational "whatever" as conceptual manifestation of nature's malleability or flexibility is a perfectly unspecific assertion. What could be more indeterminate and abstract than "whatever"? What could be more dogmatic? In this way, nature acts out in spite of Wark's best intentions and exactly through its alleged opposite—philosophical dogmatism. A perfectly metaphysically abstract and indeterminate term—"whatever"—installs itself as a constitutive element right there inside Wark's definition of "nature" as "whatever appears as resistance in labor."[17] It's the revenge of dogmatism—the resistance of an unruly, conceptual nature itself. "Whatever."

3. Warking Nature

In *A Hacker Manifesto*, Wark's taste for nature as a hackable resource leaves the question of human motivation unaddressed: Why do anything at all? In *Molecular Red*, the nature of an acting subject appears in the form of affective life, the motivating or resisting force *within* human agents. Wark makes the suggestion to "change affect, to create new structures of feeling, to overcome the emotional friction of organizing the labor that in turn organizes nature around its appetites."[18] Here, then, the libidinal economy that makes people do things is itself an object of labor, envisioned to possibly fit a more progressive design. But how and why people desire, act, resist in the first place remains (again) unclear. The affective life or a collective structure of feeling occur merely as a given material that is encountered by human activity and possibly subject to labor. The experiential quality of motivation or libidinal force seems to be missing.

Maybe we can get closer to the question of desire and motivation if we take an exemplary case: Wark's own desire for labor. Why does Wark insist on the centrality of work? Would it be too speculative to think that "the labor point of view" might be Wark's own point of view, prompted by the materiality of signification?[19] By a barely audible slip of the tongue, couldn't one slide fairly easily *and literally* from Wrk to wrk (and back)—from the worker's point of view to the warker's point of view? Is it possible that Wark takes "the labor point of view" exactly because of this real indeterminacy, manifest in signification from Wrk to wrk? Does Wark recognize herself, however unconsciously, in the work? And is such self-recognition a motivating factor for her choice of words, concepts, theoretical direction?

If so, in choosing the labor point of view nature is acting out behind Wark's back *and through Wark as an agent*. Nature would then work on itself in a recalcitrant, unexpected, resistant manner. Nature would relate *to itself through* human labor while also acting beyond, besides, and independently of human labor. Besides its envisioned aims, human labor would thus have unexpected, unintended, at times unforeseeable *yet inevitable* consequences. Whether Wark is really motivated by the work/wark indeterminacy, clearly such unexpected, unintended, at times unforeseeable yet inevitable consequences do exist. If "work" is the name for the conscious, intentional dimension of human activity, maybe "wark" can be the name for the unruly, recalcitrant, intractable yet inevitable dimension of human activity where nature is expressed through labor but extends beyond its intentions.

Let's say then that nature *warks* itself. What emerges is a nature that is not merely not opposed to human labor. Yet neither is it merely a product of human labor. This *warked nature* operates *through* human labor yet independently of it. Labor is nothing but nature, warked. Labor is nature belaboring itself through human agents. This self-belaboring nature is what I will later call "transsexual nature." It appears in both *A Hacker Manifesto* and in *Molecular Red.* In both cases, "nature" occurs chiefly as an (anthropocentric) referent of relational action (abstraction, labor). And yet in both cases, another unruly, inexhaustible, unactualizable, unabstractable, unbelaborable, resistant, recalcitrant, inevitably *warked* nature *also* articulates itself. This happens beyond Wark's apparent intention, yet by virtue of Wark as the worker (or warker). This indeterminate, unactualizable nature *acts independently* behind the back of Wark's attempts to get a tangible grip on nature. It is articulated in the "inexhaustible domain of what is real" as a natural surplus to the hackability, the abstractability intentionally installed in Wark's early definition of nature in *A Hacker Manifesto*.[20] In *Molecular Red,* it is articulated in the dogmatically metaphysical "whatever" that unintentionally appears in the definition of nature.[21] And here it appears in the slip from Wrk to wrk as a possible motivator for the "labor point of view" more generally. It is as though there was a natural surplus to nature that pushes itself into the text (by warking it), into the concept, into the world regardless of one's attempt to define "nature" in this or that way. And this is not specific to Wark.

4. Feminizing Nature

The femininity of nature is a classical trope of Western philosophy.[22] The basic idea is that nature is a mother figure that gives birth to the whole world. Surprisingly, mother nature occurs prominently in *Molecular Red*:[23] "the being of nature is … whatever appears as resistance *in labor.*"[24] Earlier, I interpreted this sentence, in line with Wark's own writing in *Molecular Red*, to mean that nature is what human labor encounters as resistance. Another reading, more in line with the surplus dimension of a warked nature, is this: nature is what we perceive ("whatever appears") of a resistance *that is giving birth* ("in labor"). More particularly: nature is an effect (appearance) of the contractions of resistance itself giving birth.

Curiously, under this reading, *it is nature herself doing the labor*, namely the labor of giving birth, of producing the world itself. Earlier, I argued that there is a nature that belabors herself *through* human activity, with effects independent of such human work (call it "wark"). This (warked) nature positioned herself as a bearing, birthing agent right inside the text of *Molecular Red*—apparently unbeknownst to and beyond the intention of its author.

And really: human activity and human technologies are themselves *natural* through and through—humanity is a natural occurrence. And human technology is made from natural resources and manipulations thereof. Consequentially, in and through humanity and its technology, nature belabors herself. Therefore, human technologies are nothing but the labor pains of nature in her self-birthing process—the physical resistances that nature encounters in its self-creation. Wark (following

Kasra Jalilipour, from the exhibition “Reliquary,” Gasleak Mountain, Nottingham, 2024. Courtesy of the artist.

Donna Haraway and Karen Barad) sometimes uses the term "naturecultures" for the sphere within which some distinction, some "cut" is made so as to generate "an artifact of 'nature' … in a rationalizable form [on the one hand], separated out from its cultural, social, and technical conditions of existence [on the other hand]."[25] That is to say: nature *as opposed to* culture/technology/humanity is *itself* an artifice, both conceptually and materially speaking. Humans must produce themselves as above and beyond "nature" so as to conceive of a nonhuman nature or a nonnatural humanity. They must cut themselves into shape vis-à-vis another cut, called "nature."

Yet these "cuts" are really set by nature herself. Nature cuts herself into shape, giving birth to herself by virtue of, among others, human technology. That is to say: there is no such thing as a "natural nature" before, besides, or beyond human technology. *Technology is nature belaboring herself*. One agent of this natural labor is technology: "Technology is made of, and remakes, nature itself. Technology's content is sensuous materiality, iron, and coal and so forth, mixed with labor."[26] Quite obviously, technology is *itself* a modification of nature. And Wark argues (as pointed out above) that in the Anthropocene, nature in turn becomes a product of human technology (microplastics in placentas, etc.).

Therefore, nature's reproductive capacity is nothing but that self-belaboring cutting, that technological self-enhancement, self-damaging, self-realization, self-birth. Warked nature, surplus nature, nature in labor is giving birth *to herself* by virtue of modifications of herself. It's an immanent birth, the offspring of which is not different from the parturient. Nature's femininity, nature's maternity is thus a product of her own intervention into herself. And in this sense, nature is really a transsexual woman. Nature is a woman who feminizes herself through body modification. Her femininity is a result of the active intervention, of the "cutting," of work, labor, *wark* on her own body. She constantly produces and reproduces that femininity as an aspect of an incessantly overflowing creative process that gives way to a whole world beyond the circumferences of femininity as a product of labor.

5. Cybelic Nature

This warked nature, nature as a transsexual woman, *almost* appears in *Love and Money, Sex and Death*—but we can wark it.[27] Here, nature takes the shape of the Roman goddess Cybele (the great mother, *Magna Mater*), who was imported to Rome from Phrygia in 204 BCE based on a prophecy in the Sibylline books that projected victory in the war against famed general Hannibal. The goddess was said to rule over the natural realm, life and death, animals, the earth, and so on. The Roman priestesses of Cybele were the *Galli*, whom Wark interprets as transsexual women. Initiation into the ranks of the *Galli* (most probably) entailed self-castration (they were typically assigned male at birth), putting on women's attire (including colorful dresses, makeup, and hairstyles), wearing Phrygian headwear, and roaming the streets of Roman cities singing and dancing, begging for money and offering fortune-telling.[28]

In *Love and Money*, nature qua Cybele is an object of prayer, not unlike that "externality" in *Molecular Red* "within and against which" life happens.[29] She takes the shape of exactly that transcendental element, that inevitable externality that keeps resurfacing in Wark's previous writing. "Cybele: goddess of thresholds, transitions, of the mountain and the city, of the deep, dark, silent caves and of the noisiest street rave."[30] Yet this externality does not point towards a virtual elsewhere. Rather, this externality is merely a detour that will inevitably land back right where it came from, though transformed, transitioned, worked up, *warked.* "I write my prayer toward your [Cybele's] vast indifference … Even your absence has its uses … When I call your name, Cybele, the calling, it's not to you—it's to us."[31] It's an immanent externality, a gesture of reaching out in order to rearrange a relation to a collective self. This "self" is a product of self-creation: "The world is autofiction, lol." And scaled up, so is "the Cybelocene," which is "more poem than thing, an endless, self-creating, self-varying, self-elaborating beat."[32] Thus, nature as Cybele, or as the Cybelocene, is exactly that self-creating surplus nature, warked nature, which, in *Molecular Red*, "appears as *resistance in labor*."[33] Cybelic nature is nature as a transsexual woman.

6. Trans Politics

Here, the earlier question about the motivation of human activity gets resolved: human activity, desire, and the struggle to resist (hence politics) are expressions of nature. We do not require an *additional* motivation to resist, to desire, to research or invent things. Political struggle, armed rebellions, and the attempts to crush them are all natural occurrences. Everything, then, happens with the same natural motivation, whether inflected as quantum probability or logical inevitability or otherwise. A flickering flame operates with the same motivation as the movements of the planets. Your choice of partner or anybody's transition in any direction are no exceptions. Whatever you are feeling right now happens with the same motivation as the feelings of the vilest person on earth. Oppression isn't any less natural than bliss and boredom are.

Is this the end of politics? It is not. In the words of Spinoza:[34] "[Some worry that] if we affirmed this, all wickedness would be excusable, [but] what of it? For evil men are no less to be feared, nor are they any less harmful, when they are necessarily evil."[35]

Oftentimes, people moralize based on aspirations regarding how people ought to act. You ought to be honest, respectful, self-contained, you name it. And you

Statue of a Seated Cybele with the Portrait Head of Her Priestess, circa 50 CE. J. Paul Getty Museum. License: Public domain.

will be blamed or excused accordingly. To Spinoza, there is no point in such reasoning. People act according to their affects, not according to their moral convictions. If you act according to moral duty, you most probably either fear punishment or hope for reward, be it by a social community or by internalized authority figures (#superego). Some are motivated by the joys of understanding. But such understanding concerns the real character of the world and not imaginary models of how the world ought to be. This is exactly what Spinoza is pointing towards: "Someone who is crazy [with rabies] because of a dog's bite is indeed to be excused; nevertheless, he is rightly suffocated [because otherwise, he would attack and infect other people]."[36]

It's not the rabid person's fault that they are rabid. But morality is a poor political advisor. As such, the rabid person is as natural and as necessary as anything else. And yet, the necessity of their actions doesn't change the way in which they relate to me: whether they act "freely" or "necessarily" (whatever that means) does not change anything if they want to harm me. And I will act, think, and feel accordingly. Consequentially, politics, science, and philosophy of all kinds run on the exact same engine: the sheer force of nature producing herself. We should, therefore (and as a simple example), neither blame nor praise or excuse anyone who keeps resisting in the face of a threat (be it real or imagined). People will *inevitably* keep fighting, no matter what. Moral discourse is mere emotional appeasement. Submission will always cause people to act out and resist. Submission under imaginary models of morality is no exception. For the sake of social stability, politics should enable a joyful life for all.

7. Molecular Transitions

Nature as Cybele gives birth to herself and everything within herself by virtue of interventions into herself—including human action and technology. Her labor (both giving birth and producing things) *is* the cutting, manipulating, technologically enhancing, and sometimes violently intervening into herself, into her own body. I thus find it reasonable to say that Cybele is really nature as a transsexual woman. This claim makes sense beyond its poetic value: nature is always already produced *by itself* and *through* particular agents, actors, manifestations of nature. In technology, nature encounters herself, turns herself into the fecund grounds of new formations of herself. Her sexuality, both libidinal force and procreative potential, are generated and regenerated by auto-intervention.

Cybelic fecundity does not necessarily or not only manifest in BABIES. The restriction of the meaning of "reproduction" to BABIES is exactly a "cut" that produces an artificial nature, ultimately geared towards a political purpose: to maintain nation-states as reproductive communities. But BABIES are not any more or less natural than nose jobs or AI. Cybelic, transsexual nature produces all kinds of things, social relations, natural occurrences, catastrophes, and—yes—also babies, which may at some point transition into cis, trans, nonbinary, and other people alike. Yet, from a philosophical point of view, there is no privileged parent-baby relation. The parent-baby relation is a reproductive technology like other such technologies. Likewise, reproductive communities such as nation-states are no more or less natural than communities of initiates, such as queer communities. Sure, reproduction by making BABIES is natural. But so are the nurture and upbringing among societies formed around initiation rather than procreation—queer communities, witch covens, Quilombos, etc.[37]

Cybelic nature with her inherent transsexuality remains originary. And consequentially, cis gender and the cis world (just like everything else) are *products* of an originarily transsexual force, call it "nature," call it "Cybele," or pick another name. McKenzie doesn't say this. But her texts *wark* themselves into this direction. Or rather, cybelic, transsexual nature *warks* herself into this text, expresses herself in between and beyond the letters. I merely articulated what was anyway latent—and is anywhere latent anyway (meaning: in all ways, always). None of what I said in this text is specific to Wark's writings. Really, I myself am just a natural technology at wark, an element of nature transsexualizing herself.

"Abort your parents, give birth to yourself, be free."[38]

X

Many thanks to McKenzie Wark and Milena Glimbovski.

Luce deLire (IG: **@Luce_deLire**) is a ship with eight sails and she lies down by the quay. As a philosopher, she publishes on the metaphysics of infinity and political theory. In her performances, she embodies figures of the collective imaginary. For more, see **getaphilosopher.com**. Luce is part of the political action group SBSG (IG: **@buendnis.selbstbestimmung**)—see **queerokratia.de**.

1
McKenzie Wark, *Capital Is Dead: Is This Something Worse?* (Verso, 2019), 123.

2
By "transsexuality" I do not mean an identity. I mean the cultural paradigm of gender transition as involving body modification such as hormone treatments and surgeries. Consequently, by "transsexual" I do not mean a person who identifies in this or that way. Instead, I use "transsexual" as an adjective that refers to the overall paradigm. Something is "transsexual" in this sense if it exists in the vortex of the idea of gender transition as involving body modification. This does not say anything about identity, representation, or individual identification. It speaks strictly about the relation to a social paradigm. The term "transsexuality" has often been criticized for many reasons, and rightfully so. Yet the reason I prefer this term in this context is that identity discourse tends to blur questions of institutional change and an analysis of political economy. For an extensive critique of an identity interpretation of transness, see Viviane Namaste, *Invisible Lives: The Erasure of Transsexual and Transgendered People* (University of Chicago Press, 2000), 17. See also Dean Spade, *Normal Life: Administrative Violence, Critical Trans Politics, and the Limits of the Law* (South End Press, 2011). I take it that to the present day, transsexuality is paradigmatic of Western gender diversity and the hinge of anti-trans discourse, so called "gender ideology," and the like. We can see this in the ongoing political conflicts over body modification (see Mikey Elster, "Insidious Concern: Trans Panic and the Limits of Care," *TSQ: Transgender Studies Quarterly* 9, no. 3, 2022; and Eric Plemons and Chris Straayer, "Introduction: Reframing the Surgical," *TSQ* 5, no. 2, 2018: 165), but also in that "nonbinary," "gender fluid," "trans," "transgender," and many other terms are understood in deliberate distinction from "transsexuality" as kinds of transition without or independently of body modification and medical intervention (such as hormone treatments and surgeries). Consequentially, due to its high affective impact and its political currency, I think we should appropriate the term, rather than avoiding it. Yet that appropriation doesn't have to describe individual identities. "Transsexuality" is a social paradigm. It does not (necessarily) describe individual people. For more on this, see Luce deLire, "Nature Is a Transsexual Woman: Lucretian Metaphysics Reconsidered," *Classical Philology* 119, no. 2 (April 2024): 208; and deLire, "Transsexuality at the Origin of Desire, Or: Schreber's Satanic Handjob," in *The Queerness of Psychoanalysis: From Freud and Lacan to Contemporary Times* , ed. Vanessa Sinclair, Elisabeth Punzi, and Myriam Sauer (Routledge, forthcoming 2024).

3
McKenzie Wark, *A Hacker Manifesto* (Harvard University Press 2004), thesis 15.

4
Wark, *Hacker Manifesto*, thesis 15.

5
Wark, *Hacker Manifesto*, thesis 74, my emphasis.

6
Wark, *Hacker Manifesto*, thesis 74.

7
McKenzie Wark, *Molecular Red: Theory for the Anthropocene* (Verso 2015), 18, my emphasis.

8
ComInSitu, "Social Contagion: Microbiological Class War in China (Chuang, 2020)," *Communists In Situ* , February 28, 2020 https://cominsitu.wordpress.com/2020/02/28/social-contagion-microbiological-class-war-in-china-chuang-2020 .

9
Wark, *Molecular Red*, 180. See also Wark, *Capital Is Dead*, 138.

10
McKenzie Wark, *Philosophy for Spiders: On the Low Theory of Kathy Acker* (Duke University Press, 2021), 166.

11
Wark, *Molecular Red*, 18, my emphasis.

12
Wark, *Molecular Red*, 18.

13
Wark, *Molecular Red*, 23.

14
Wark, *Molecular Red*, 18.

15
Wark, *Molecular Red*, 18.

16
One might protest and say that the point of *Molecular Red* was never to overcome dogmatism, but to change the location of the dogmatism from "nature" to "labor." Rather than dogmatically assuming that "naturally," women* want BABIES, the world is composed of ultimately solid elements, and dogs like sticks, we would then dogmatically assume that instead of merely understanding the status quo, we ought to change the world (through labor)—and only the results matter. In this view, Marxism would be the philosophy of the working class dogmatically attached to labor as a point of view (based on the worker's social position in the cycle of production). But I don't see that in *Molecular Red.* For one, Wark explicitly states that Marxism was oftentimes "misconstrued as a dogma" (*Molecular Red*, 216). Consequentially, she uses "dogma" exclusively as a negative adjective, opposing "dogmatic" views (even of Marxist philosophers) to "scientific" or "tactic" views in which "knowledge of matter is to be produced by experiment" (*Molecular Red ,* 24; see also *Molecular Red ,* 20, 23, 125, 126, 127,129, 130, 165, 216). Secondly and more importantly, *Molecular Red* seems to aspire to more than just replacing one dogmatism with another dogmatism: "Labor is a prism through which to construct a version of Marx that does not disappear into the cultural, political, or theological problem of the subject. It is not so much that it is objective, however. It is not about making a claim to have the true"—i.e., dogmatic?—"method. Rather, it is about the struggle of and within the realm of things, of how things organize themselves and how they might—through labor—become otherwise. The turn toward the object, as some-thing that exceeds subjectivity in scale, can undo the damage done by the fascination with the great molar dramas"—or dogmas?—"which appear as the clash of superhuman subjects, but subjects nonetheless" (217). The category "labor" decenters the subject exactly *without* tumbling into the fold of dogmatic knowledge. Wark, it seems, picked "labor" exactly for its flexibility both in the production of knowledge and in the production of things, for its transformative quality in relation to an ever evolving subject. Labor can be many things and it stands in many relations between things. Yet it centers resistance and transformation. In fact, if "the being of nature is … *whatever* appears as resistance in labor" (*Molecular Red* , 18, my emphasis), then this "whatever" seems to mirror the positive malleability that characterizes Warkian labor in the first place. Labor *is* nature as it manifests in human experience. It's not just one strategic dogmatism replacing an other. It is, supposedly, the exit from dogmatism, the entry into nature. Yet by virtue of such an exit, a dogmatic approach to nature reinscribes itself exactly through the perfect indeterminate "whatever," declared by authoritarian decree in Wark's definition of "nature" as " *whatever* appears as resistance in labor" (*Molecular Red*, 18, my emphasis).

17
Wark, *Molecular Red*, 18.

18
Wark, *Molecular Red*, 35.

19
Wark, *Molecular Red,* xviii, 11, 12, 17 *et passim.*

20
Wark, *Hacker Manifesto*, thesis 74.

21
Wark, *Molecular Red*, 18.

22
See deLire, "Nature Is a Transsexual Woman."

23
Another feminized nature as the object of patriarchal control occurs in Wark's *Philosophy for Spiders:* "Or maybe he only controls, and considers really natural in the sense of penetrable and controllable, a nature that is female. And so on, not unlike a bad myth" (167).

24
Wark, *Molecular Red,* 18, my emphasis.

25
Wark, *Capital Is Dead*, 139.

26
Wark, *Capital Is Dead*, 63.

27
McKenzie Wark, *Love and Money, Sex and Death: A Memoir* (Verso

2023), e-book, n.p.

28
In “Nature Is a Transsexual Woman,” I discuss the various racialized and gendered aspects of the *Galli* in some detail.

29
Wark, *Molecular Red*, 46.

30
Wark, *Love and Money, Sex and Death* , chap. 3.3.

31
Wark, *Love and Money, Sex and Death* , chap. 3.3.

32
Wark, *Love and Money, Sex and Death* , chap. 3.3.

33
Wark, *Molecular Red*, 18, my emphasis.

34
I quote Spinoza from *The Collected Works of Spinoza* , vol. 2, ed. Edwin Curley (Princeton University Press, 2016). “Ep.” stands for “letter” (*epistola*).

35
Ep. 58, IV/268/1–5. Also Spinoza: “A horse is excusable for being a horse and not a man, but he must still be a horse and not a man. Someone who is crazy because of a dog’s bite is indeed to be excused; nevertheless, he is rightly suffocated. And finally, one who cannot govern his desires and restrain them by fear of the laws, although he too is to be excused because of his weakness, nevertheless, cannot enjoy peace of mind” (Ep. 78, IV/327a).

36
Ep. 78, IV/327a.

37
Sandow Sinai, “On Returning Things to Their Proper Places,” *Hypocrite Reader* , no. 99 (January 2022) https://hypocritereader.com/99/proper-places ; Luce deLire, “Trans Quilombismo and the Catastrophe of Critical Writing,” *Texte Zur Kunst*, November 29, 2023 https://www.textezurkunst.de/en/articles/luce-de-lire-trans-quilombismo-and-catastrophe-critical-writing/ .

38
Meister Propper, Bremen, 2006: “Eltern abtreiben, sich selbst gebären, frei sein.”

Hugh Davies

Hacker Theory

We Live in Our Screens

Even more pressing than the unfolding permanent crisis just beyond your field of vision is the paid gig before you. And then, how to secure the next gig? Whether waged or casualized workers, we are all precariat now. Our only immunity from job redundancy is visible hyperproductivity. But the quantity of work outstrips the quality as your quickening levels of productivity inhibit your output. It's all too much.

You seek help. An online search returns a series of "life hacks" to keep you "competitive." Intuitive interfaces to get ahead, downloads, sign-ups, plug-ins, affirmation apps, tailored solutions. Costing more than money, each demands a pound of data. No time to read the "terms and conditions," you click "accept."

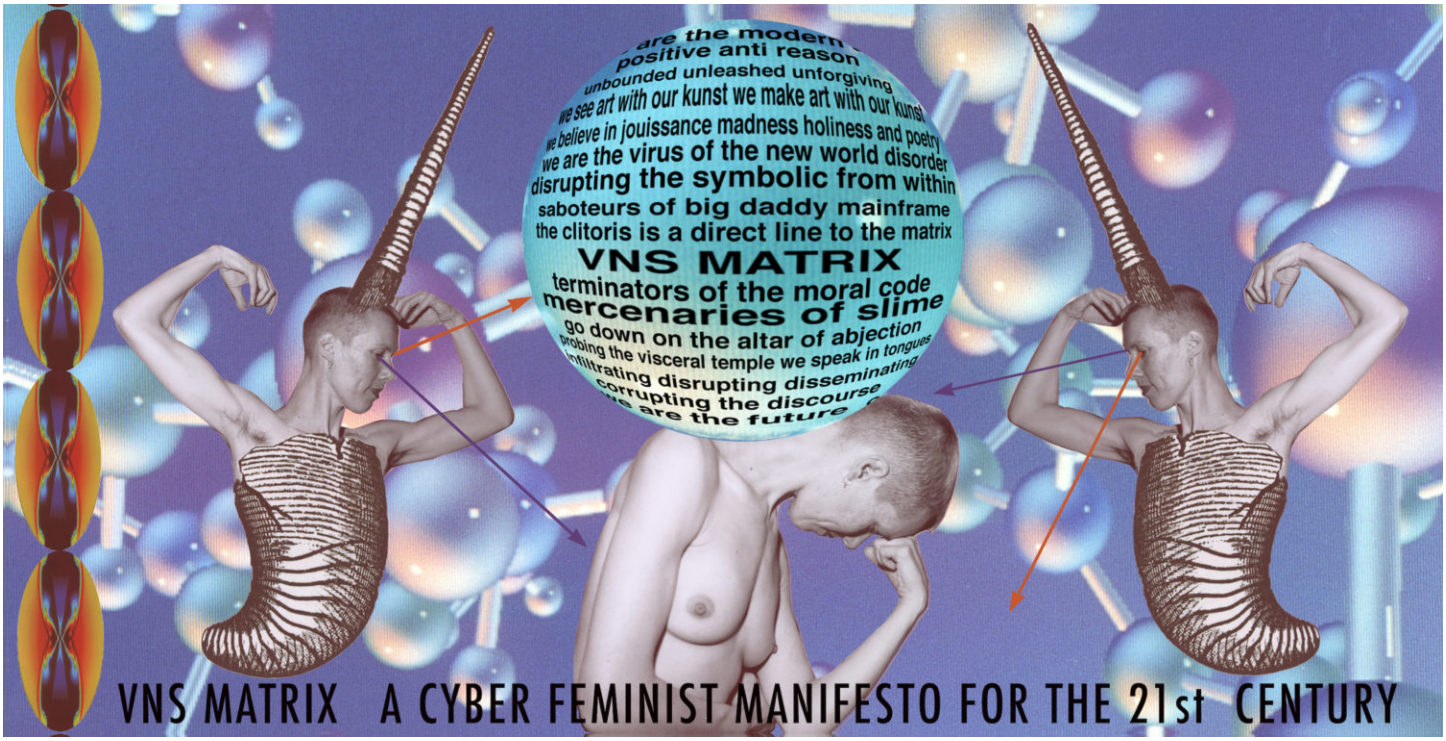
What's the point of all this productivity anyway, when your unremembered dreams and ambitions have been dissolved in the acid of hustle? This cursed game has captured you, pitted you against yourself and others; the order of algorithmic culture has been internalized. Because of these manic logics of work, there's little by way of collaboration, respect, or good faith between you and those around you. Your relationships are competitive. You know in your bones that you are being scammed by systems and forces beyond reach. We are not hackers, we are the hacked. Not players, but the played. As always, someone's benefiting here, and it's not you.

How did we arrive at this predicament? And how do we get out of it? Can we recall a time, a series of choices, a turning point that might have changed our trajectory to avoid these present conditions? How far back must we look?

Enter A Hacker Manifesto

McKenzie Wark's *A Hacker Manifesto* offers tactics that work against the commodification of information by expanding the concept of the hacker beyond its associations with computational technology to encompass a broader range of activities. These include acts that subvert, manipulate, and transform systems of commerce and control across culture, politics, society, and philosophy, and that challenge dominant power structures, data hoarders, and economic logics. For Wark, hacking can be a revolutionary act, an activism of the "digital proletariat" that aims to liberate information from the clutches of the ruling class. Beyond a call to arms, her text channels the spirit of the situationists, urging hackers to seize the means of information production and overthrow the commodification of knowledge.[1]

A Hacker Manifesto is most productively read in conversation with Wark's *Gamer Theory,* which more explicitly maps the coordinates of the present we now occupy. There, Wark articulates the "gamespace," by which she means a landscape in which the zero-sum



VNS Matrix, A Cyberfeminist Manifesto for the 21st Century, 1991. Courtesy the artists.

calculation of everything mutates the proletariat into perpetual players, or at least "playborers," to borrow Julian Kücklich's terminology.[2] This logic of "gamification" cojoins culture and entertainment within an economic calculus,[3] and brings to life the abject horror of a high-stakes game that one is forced to play, an idea rehearsed across contemporary fiction franchises like the *Hunger Games*, *Squid Game*, and *Saw*. Because of this gamification of social relations, argues Wark, video games simulate the truths at play in the lie of reality. They present fair and functioning systems that can be conquered by perfecting one's play, an integrity that the gamespace of everyday life cannot deliver.

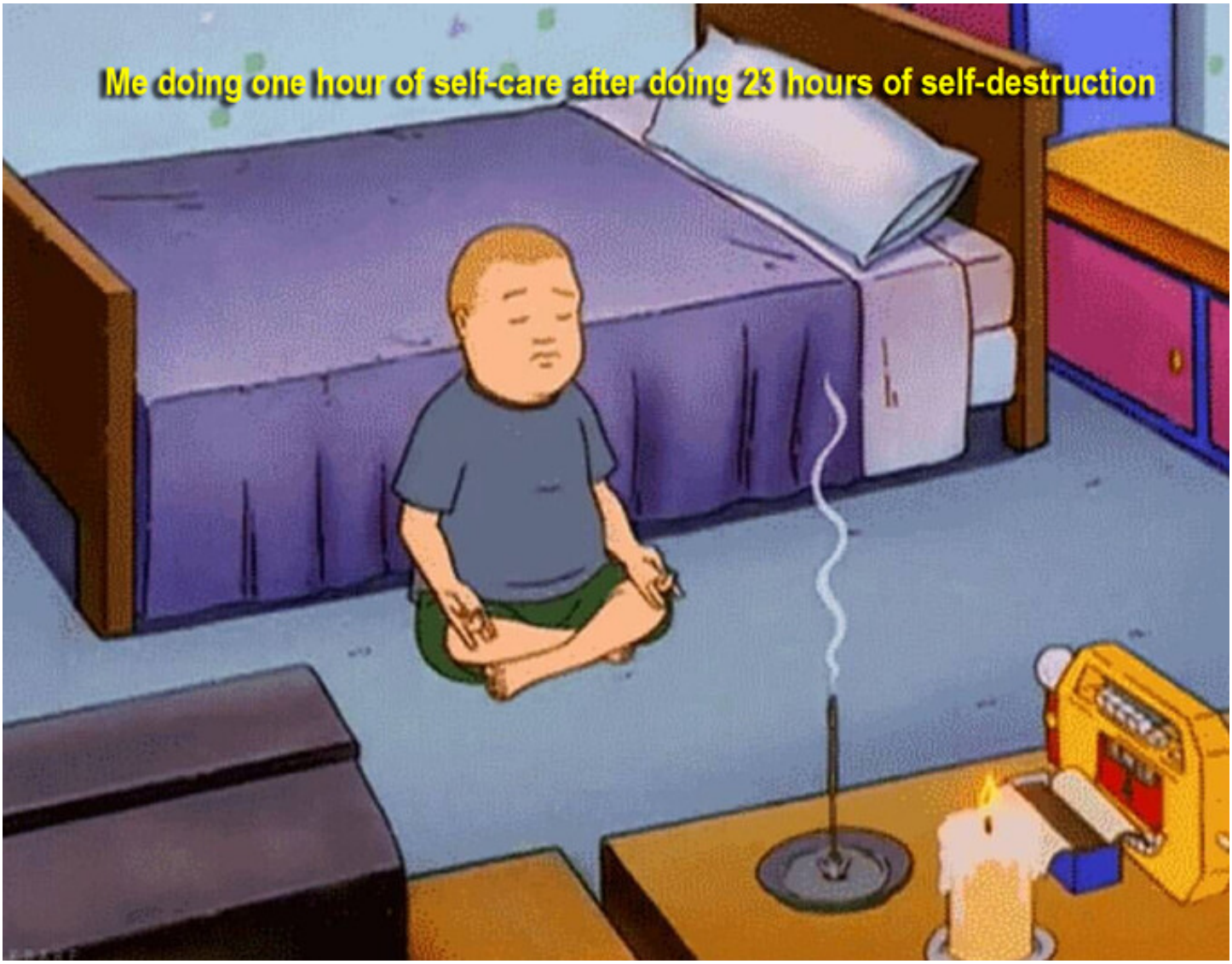
Both books build upon a virtual geography whose contours and vectors are mapped in Wark's earlier writing.[4] Each charts a global media space in which the chaotic crises of technology and political economy are deeply intertwined. Where *A Hacker Manifesto* invites and articulates a utopian revolutionary class (the hacker), *Gamer Theory* offers a more pessimistic reading, one that has increasingly become manifest in predicting how social, political, and economic systems would adopt the language and logic of games. The productive question arising at the overlap of these two books is: How can the principles in the more utopian *A Hacker Manifesto* be applied to the dystopian gamespace of the present moment?

Addressing this idea in the present and future requires mapping the genealogy of both works. Published following Wark's emigration to the United States in 2000, each book expands ideas, vocabularies, and networks from the 1990s but extends this ambition into speculative futures. *A Hacker Manifesto* developed out of Wark's engagement with the digital media avant-garde at the turn of the millennium, particularly in contexts such as the online theory forum Nettime.[5]

Gamer Theory instead emerges from the vibrancy of New York's experimental and critical game milieu at Eyebeam and the Re:Play conference.[6] Amidst these international networks of artists and collectives, critical understandings of the digital present began to emerge.

By the 1990s, for a growing number of people the rising tide of digital culture had come into full view. Desktop computers and video-game consoles had established themselves in homes; mobile phones were increasingly commonplace; software and programming generated new (internet) literacies, while games and interactivity solidified as new logics in the media landscape. Emerging in tandem with a then pervasive techno-optimism, these digital concepts and devices, the practices they enabled, and the transformations they heralded called for critical theorization.

Tackling any assumed male gendering of the digital, British cyber-feminist scholar Sadie Plant mapped a rich lineage of women programmers from Ada Lovelace to Grace Hopper.[7] At the University of Warwick, Plant cofounded the Cybernetic Culture Research Unit (CCRU) with Mark Fisher and Nick Land. Blending cyberpunk surrealism with critical theory and Gothic Horror, the



Self care meme.

CCRU took on radical and occultist dimensions. In their search for alternatives to the digital capitalism to come, "accelerationism" would play a key role—a term that has since been taken up to suit fringe and reactionary narratives rather than these earlier uses.[8]

Half a planet away in Australia, responses to digital futures and gender were far more like the early internet itself: strange, distributed, and diffuse. In a powerful gesture, Australian feminist art group VNS Matrix announced that "the clitoris is a direct line to the matrix" in their "Cyberfeminist Manifesto," emphasizing the gender-morphing potential of cyberspace. VNS Matrix produced work directly confronting the macho world of video games and positioned themselves more broadly as "saboteurs of big daddy mainframe."[9]

Meanwhile groups such as CyberDada made experimental audio-visual incursions in the digital domain. Multimedia artist Francesca da Rimini explored the possibilities of distributed virtual sex. Where the British CCRU was accelerationist, Lovecraftian, and tentacular, the antipodean cyberpunks were more sensual, sexy, and slimy. Each boasts their own expansive contemporaries and hacker legacies.

Deeper Histories

Though Wark first proposed the idea of the "hacker class" in 2000, the hacker as an object of analysis has older beginnings. Wark draws upon and extends ideas from the 1986 "The Hacker's Manifesto" by Loyd Blankenship, who expounded hacking as an act of breaking information out of prison to broaden collective horizons while

transcending selfish desires for exploitation and harm.[10] Philosophies of hacktivism appear in yet earlier texts. Theodor Nelson's *Computer Lib/Dream Machines* (1974) charts the rise of the hacker ethic within 1960s counterculture.[11] Where hippies had sought a radical disconnection from technology and a return to a more "natural" and spiritual reality, hackers embraced technology but sought to reorder its power away from large corporations and toward popular aims.

The driving philosophy of these early hackers was to challenge the idea of authoritarian gatekeeping. For hackers past and present, openly sharing information was an ethical imperative. Then as now, this notion of the freedom of information would overlap with political movements opposed to authoritarian control, such as socialism, anarchism, and libertarianism.

The activities of these earliest hackers, according to hacker pioneer Richard Stallman, transcended freely shared code and software to include a broad spectrum of activities, "from practical jokes, to exploring the roofs and tunnels of the MIT campus."[12] Examples of such activities include the work of Stewart Brand, who cofounded the New Games Movement and later became the author/editor of *The Whole Earth Catalog* (1968). Brand and others had extended the sixties spirit of play to counter the domination of capitalism through games and technology, inadvertently presaging gamespace in the process. Histories of hacking run deeper still, with some fruitfully finding a version of the practice in the Protestant Reformation, where proto-hackers worked to unshackle Biblical teachings from the chains of papal supremacy.[13]

Writing at the turn of the twenty-first century, what Wark brought to this hacker legacy was the urgency of the present. Wark was then and remains now an antenna of the culture around her. During an era of unbridled techno-exuberance, Wark warned that we risked devolving into the darkest mental prisons of the pre-Reformation Church.

A Hacker Manifesto redraws the battle lines of labor, culture, class, and exploitation for the digital age. Drawing on a network of theoretical influences from Guy Debord to Gilles Deleuze, the situationists to Karl Marx, the book outlines an emerging class conflict between, on one side, makers, researchers, authors, and artists, and on the other those who commodify information and monopolize what the hacker produces, namely information. Crucially, Wark's concept of hackers does not label them as digital dissidents, but rather as a creative class. Hacks don't simply disrupt existing closed systems; they imagine curious and inventive new approaches.

In this way, hacking is shown to be a kind of alchemy: a transformation of the material and immaterial into something new. Where the ruling class (the "vectoralist class" in Wark's words) seeks to commodify this newness, hackers resist the control of information, challenge commodified existence, disrupt the smooth functioning of capitalism, and open new possibilities for emancipation. Operating at the limits of the legal, the hacker thinks beyond legislation to explore new modes of creativity and communal exchange. Wark's manifesto captures both the tactics and the romance of this identity. The hacker cuts a nostalgic figure, gracefully rappelling across the edifice of power and control, displaying a deft subversiveness and a collectivist spirit that is sorely missing today.

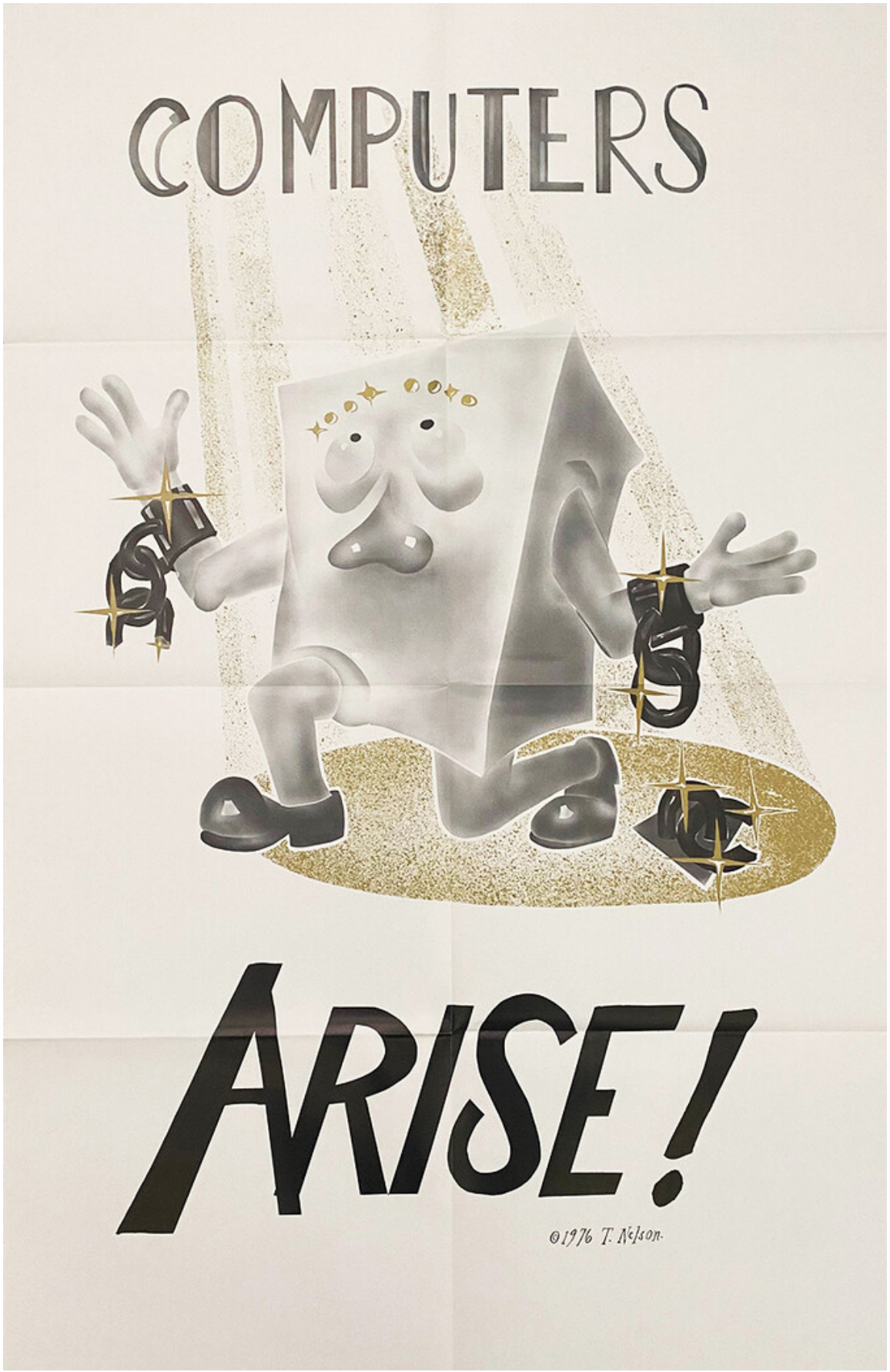
But these ideas have fallen somewhat flat in the two decades that have followed. To the contemporary reader, *A Hacker Manifesto* is dated by an over-occupation with patents, intellectual property, and copyrights, concepts that pervaded that era of file sharing and pirating but that seem distant and quaint today. Perhaps more importantly, key examples of the hacker class the book celebrates have, in the years since its publication, been criminalized. Snowden, Swartz, Manning, and Assange are nothing if not hackers of the first degree. Furthermore, the intervening years have seen a pronounced shift in digital culture. Its communities have been vacuumed up into social media services, its commons commodified by Big Tech, its activist potential transformed into an economic terrain. So-called "digital disruption" has led to new concentrations of wealth, theorized as mutant modes of capitalism, be it platform, surveillance, or algorithmic.

As Wark has described more recently, however, these emergent modes of extraction and accumulation are not capitalist permutations, but instead evidence of capitalism's decline. In its place, new and worse forms of predation and extraction are arising, yet we lack the vocabulary to name them. Arguably, here is Wark's most significant and original contribution in *A Hacker Manifesto*: the articulation of vectoralism as a new ruling class along cyber-Marxist lines.

Vectoralism

If the hacker class creates new possibilities for production and knowledge sharing, the vectoralist class appropriates and commoditizes not just the mode of the hack itself, but any value it produces. Unlike previous overlords, the vectoralist is little interested in the ownership of material assets, instead seeking control of the logistics through which they are managed. Their power rests not in assembly lines but in the flow of information.

Examples of this dynamic abound in the most banal everyday products. Smartphones and game consoles (increasingly the same thing) are not made in factories owned by Apple, Sony, or Nintendo. Their design, manufacture, and assembly are discreet processes that are organized where wages are cheapest. If "globalism," as Wark writes, can become "the transcendent power of the vectoralist class over the world," then the vectoralist dynamic connects resources, labor, and markets in a



Computers, Arise! by Theodor Nelson, COMPUTER LIB/DREAM MACHINES, 1976.

planetary-scale vectoral infrastructure.[14]

Certainly, the industrial and financial capitalist and the vectoralist share much in common, each creating new value chains and amplifying inequality, oppression, and exploitation in the process. But where the capitalist exploits nature, labor, and culture to generate surplus value, the vectoralist exploits information and logistics to strengthen existing apparatuses of domination. Where capitalism found ways to commodify leisure time as well as work time, the vectoralist transformed work into play—and play into work. The impact of vectoralist thinking on our present gamified relations requires urgent analysis.

Enter Gamer Theory

Gamer Theory reboots the framework Wark laid out in *A Hacker Manifesto* to discuss the aesthetic form that, she argues, best fits the age of vectoralism: that of the video game. Born online, *Gamer Theory* initially took the form of an networked conversation combining Wark's interest in experimental writing techniques, recalling 1990s forum dialogue.[15] The online book enabled hundreds of gamers, theorists, and others to offer critique, arguments, and feedback on the manuscript, which would later appear in print format with the online commentary included. The impression is of a singular combination of critical theory and popular culture engaged in dialogue.

Unfolding across nine chapters, *Gamer Theory* guides the reader through the vectoralist logic, showing how subjects are initiated into systems of control. Wark reveals how media-soaked reality does not merely resemble a game but is increasingly governed by the same military-entertainment complex that manufactures and distributes computer games globally. The entire political and economic structure of gamespace as experienced through online culture has conditioned the way we understand "freedom." Our available choices—which are increasingly narrow false binaries between predetermined options—are presented as ludic features that invite our engagement, agency, and play.

Within gamespace, we are all cast as gamers. Unlike hackers who pry open new worlds of opportunity, gamers play in the world but are in turn played by the vectoralist class that controls it. Where the hacker produces, the gamer reproduces. Where the hacker exceeds commodification, the gamer is a complicit collaborator in vectoral power. Unlike the hacker, gamers don't struggle against high-ranking class enemies, but instead compete against each other for ranking. Being loses its qualitative dimension. Gamers are each quantified identities, always keeping score. No amount of points scored will allow one to rise out of their class. It's all a rigged game designed to keep you playing. As Wark writes: "Ever get mad over the obvious fact that the dice are loaded, the deck stacked, the table rigged, and the fix in? Welcome to gamespace."[16]

This gamified reality serves in part to distract from visualizing the real levers of power, but there is more at stake with gamespace. Games are machines for harvesting information. During player-game relationships that extend over months and years, every single action, reaction, decision, and communication is recorded across a spectrum of parameters. Contemporary game devices capture vast quantities of data through a variety of embedded sensors: eye tracking, emotion recognition, location, physiological reading, and body-motion tracking. This harvesting process generates currency for the vectoralist. Where browsers were once the reflexive interfaces of market-driven surveillance, today it is your game that knows you better than you do.

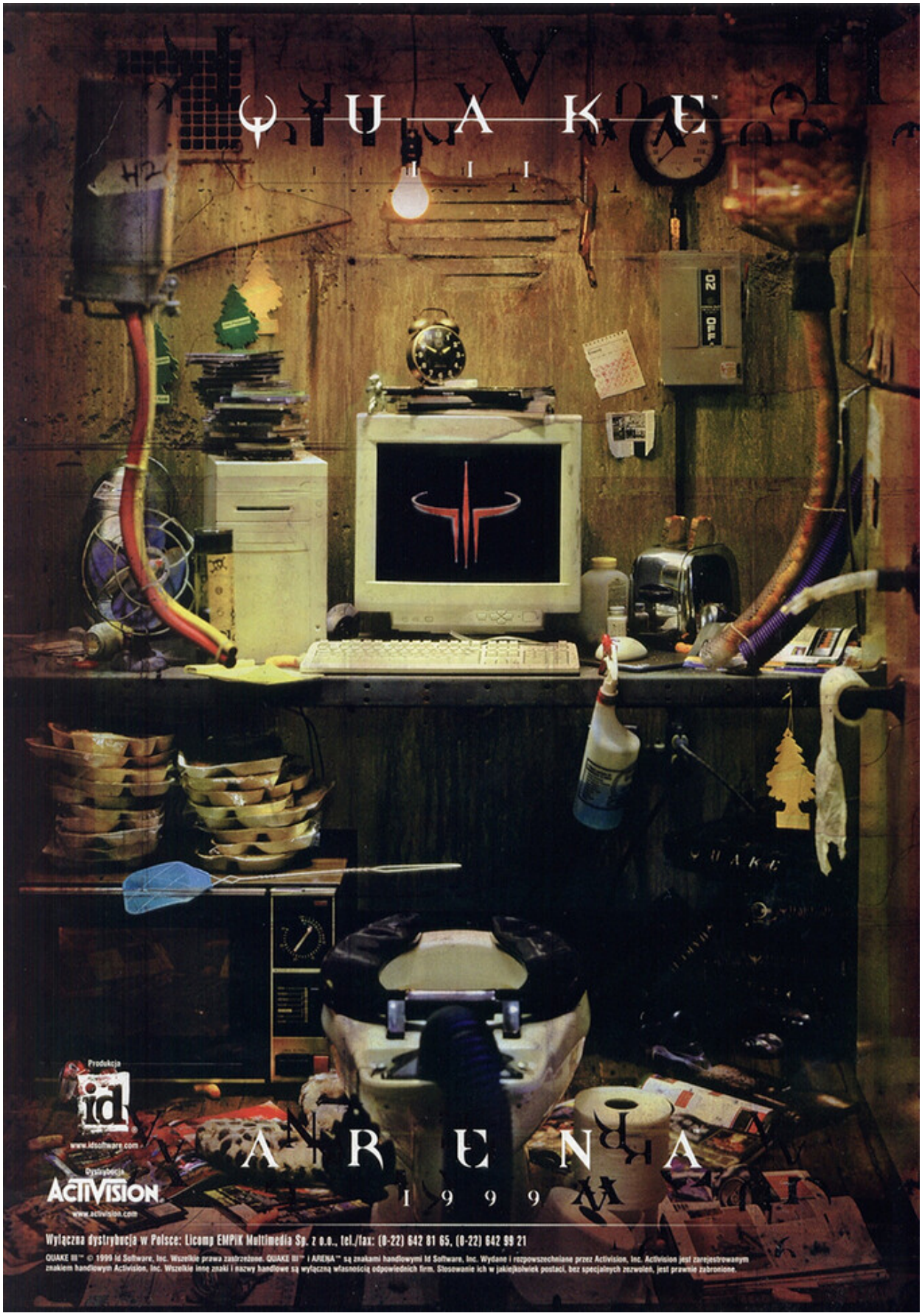
It is tempting to hold video games responsible for gamespace. Certainly, while gaming is increasingly the leading theater of distraction and extraction, the logic of the game both predates and extends far beyond video games. Vectorialists took this dynamic and expanded, amplified, and monetized it. What video games provide are algorithmic allegories through which to comprehend gamespace. Through a theorization of video games, we can map gamespace's contours and the gamer subjectivities within them. *Gamer Theory* does precisely that. Each chapter explores a video game and what it reveals about our ludic world. But a critical difference separates the logic of video games from the reality of our shared gamespace. While video games tend to present functional processes and level playing fields, our lived gamespace is dysfunctional, inequitable, and unfair.

Becoming aware of the existence of gamespace doesn't mean it goes away. Like any worthwhile philosopher, Wark offers no easy solutions, but instead reveals useful questions. She gestures toward tactics, yet these tactics are themselves ambiguous—literal calls to make our worlds strange and unfamiliar. For example, *Gamer Theory* proposes the tactic of "trifling," an idea inherited from *The Grasshopper* (1978), Bernard Suits's fable on play. To trifle is not to disengage from the desire to win the game but to playfully explore its workings from within. Whatever tactics we deploy, they must be from within, as there are no exits from gamespace. We may reject its expectations but we cannot reject gamespace itself. As the penultimate paragraph of the book makes clear, "only by going further and further into gamespace might one come out the other side of it, to realize a topology beyond the limiting forms of the game."[17]

The only way out of gamerspace is through it.

Playing with Accelerationism

In his analysis of the film series *Hunger Games*, Mark Fisher focuses on the story's central presupposition: the inescapable reality that revolution must take place. In the film's narrative, he writes, "the problems are logistical, not ethical, and the issue is simply how and when revolution



Quake 3 Arena advertisement, 1999.

can be made to happen, not if it should happen at all."[18] Curiously, in highlighting this "logistical, not ethical" lynchpin to the inevitability of revolution, Fisher evokes the key expertise of the vectoralist class. Must we collaborate with the vectoralist class in their accelerationist games in order to transcend them?

Wark's insistence that we must playfully reckon with the vectoralist's terrain of gamespace foreshadows an unavoidable (version of) accelerationism. We must search deeper within gamespace for interpretations of what this might entail. But all machines reach a threshold, eventually exceeding a limit, spinning out of control, and exploding into flames. The philosophy of accelerationism recommends disaster as a requirement to achieve a new stage of human development. Indeed, accelerationists argue that trying to rationally temper the process of techno-capitalism only prolongs the inevitable, in turn exacerbating existing problems along the way. A "just" catastrophe is needed.

There are varied opinions of what such an accelerationism involves, spanning those who advocate for embracing technological progress to those who critique it as cataclysmically final. In Nick Land's conception, which has devolved into something quite reactionary, accelerationism celebrates a delirious push towards a hyper-technological rapture, with potential for chaotic horror far beyond human control. Far less dystopian or cynical, Mark Fisher delves into the cultural implications of acceleration to rupture established norms and structures. For Wark, accelerationism offers a mode of understanding and navigating the complexities of contemporary post-capitalism and urges the reimagining of politics and society. In all these cases, accelerationism symbolizes both an impending catastrophe and the potential for a transformative hack.

We witness this accelerationist hack in today's tech culture. Digital innovation no longer responds to any planetary problems or human needs but instead propagates a series of tulip manias: blockchain, Bitcoin, cryptocurrency, NFTs, and now AI. With each, the profane is packaged as profound. The tech start-ups pushing these products arise out of a broken innovation ecosystem entirely dependent upon venture capital for its apparent stellar growth. Vast sums are invested in promises to dominate markets rather than compete on any qualitative basis. Cast as "disruptive," these vectoralist business models have no interest in service, product, or sustainability. Fortunes are lost and made on how long a confidence trick can sustain itself before selling, going public, or exploding into flames. They are accelerationist games par excellence.

But these controlled explosions within the disaster economy offer no reset; they are simply new business models.[19] The revolutionary detonation required is of far greater proportions. Do we have any agency in this ludic trajectory? As we speed-run through this garden of forked paths, where each decision unfolds others, can we steer reality's avatar? As Wark makes evident, two possible directions lay ahead. The first is to shelter within an imagined past. The second is to accelerate toward an unknown future. To choose neither is to choose the first. If games are a series of decisions, then it is this decisiveness or lack thereof that will determine our fate.

You choose:

Shelter Within an Imagined Past

Accelerate Toward an Unknown Future

Choose Neither and Hope for the Best

Vault boy from Fallout franchise.

X

Hugh Davies is an artist, researcher, and curator of games. He lectures on digital culture in Australia, Singapore, and China.

1
See also McKenzie Wark, *Leaving the Twentieth Century: Situationist Revolutions* (Verso, 2024).

2
Kücklich, "Precarious Playbour: Modders and the Digital Games Industry," *fibreculture* 5, no, 1 (2005).

3
Ingrid Richardson, Hjorth Larissa, and Hugh Davies, *Understanding Games and Game Cultures* (Sage, 2021).

4
Wark, *Virtual Geography: Living With Global Media Events* (Indiana University Press, 1994).

5
See *Readme!: ASCII Culture and the Revenge of Knowledge* , ed. Jo sephine Bosma, et. al. (Autonomedia, 1999).

6
See *Re:Play: Game Design and Game Culture* , ed. Eric Zimmerman and Amy Scholder (Peter Lang, 2003).

7
Plant, *Zeros and Ones: Digital Women and the New Technoculture* (Harper Collins, 2016).

8
See *#Accelerate; The Accelerationist Reader* , ed. Robin MacKay and Armin Avanessian (Urbanomic, 2014).

9
The Cyberfeminism Index , ed. Mindy Seu (Inventory Press, 2023).

10
The Mentor (aka Loyd Blankenship), "The Hacker's Manifesto," January 8, 1986 https://github.com/greyscalepress/manifestos/blob/master/content/manifestos/1986-hacker-manifesto.txt .

11
Nelson, *Computer Lib / Dream Machines* (Tempus Books, 1987).

12
Stallman, "On Hacking," https://stallman.org/articles/on-hacking.html .

13
Michel Bauwens, "The Five Protestant Solas and the Hacker Ethic," P2P foundation blog, April 8, 2011 https://blog.p2pfoundation.net/the-five-protestant-solas-and-the-hacker-ethic/2011/04/08 ; Ben Hoyt, "Hacker Christianity," *Aliens in the Apple* (blog), December 22, 2013 https://aliensintheapple.com/2013/12/22/hacker-christianity/ .

14
Wark, *A Hacker Manifesto* (Harvard University Press, 2004), thesis 250.

15
This first iteration of *Gamer Theory* was produced by the Institute for the Future of the Book. Due to the demise of Flash, it no longer functions https://www.futureofthebook.org/mckenziewark/ .

16
Wark, *Gamer Theory* (Harvard University Press, 2007), 25.

17
Wark, *Gamer Theory,* 223.

18
Mark Fisher, "Remember Who the Enemy Is," *k-punk* (blog), November 25, 2013 https://k-punk.org/remember-who-the-enemy-is/ .

19
See Naomi Klein, *The Shock Doctrine: The Rise of Disaster Capitalism* (Macmillan, 2007).

Kim Córdova and Bruce Schneier

The Hacking of Culture and the Creation of Socio-Technical Debt

Culture is increasingly mediated through algorithms. These algorithms have splintered the organization of culture, a result of states and tech companies vying for influence over mass audiences. One byproduct of this splintering is a shift from imperfect but broad cultural narratives to a proliferation of niche groups, who are defined by ideology or aesthetics instead of nationality or geography. This change reflects a material shift in the relationship between collective identity and power, and illustrates how states no longer have exclusive domain over either. Today, both power and culture are increasingly corporate.

Blending Stewart Brand and Jean-Jacques Rousseau, McKenzie Wark writes in *A Hacker Manifesto* that "information wants to be free but is everywhere in chains."[1] Sounding simultaneously harmless and revolutionary, Wark's assertion as part of her analysis of the role of what she terms "the hacker class" in creating new world orders points to one of the main ideas that became foundational to the reorganization of power in the era of the internet: that "information wants to be free." This credo, itself a co-option of Brand's influential original assertion in a conversation with Apple cofounder Steve Wozniak at the 1984 Hackers Conference and later in his 1987 book *The Media Lab: Inventing the Future at MIT*, became a central ethos for early internet inventors, activists,[2] and entrepreneurs. Ultimately, this notion was foundational in the construction of the era we find ourselves in today: an era in which internet companies dominate public and private life. These companies used the supposed desire of information to be free as a pretext for building platforms that allowed people to connect and share content. Over time, this development helped facilitate the definitive power transfer of our time, from states to corporations.

This power transfer was enabled in part by personal data and its potential power to influence people's behavior—a critical goal in both politics and business. The pioneers of the digital advertising industry claimed that the more data they had about people, the more they could influence their behavior. In this way, they used data as a proxy for influence, and built the business case for mass digital surveillance. The big idea was that data can accurately model, predict, and influence the behavior of everyone—from consumers to voters to criminals. In reality, the relationship between data and influence is fuzzier, since influence is hard to measure or quantify. But the idea of data as a proxy for influence is appealing precisely because data is quantifiable, whereas influence is vague. The business model of Google Ads, Facebook, Experian, and similar companies works because data is cheap to gather, and the effectiveness of the resulting influence is difficult to measure. The credo was "Build the platform, harvest the data...then profit." By 2006, a major policy paper could ask, "Is Data the New Oil?"[3]

The digital platforms that have succeeded most in

John Fullmer, Yzy Gap Psyop Red Round Jacket, 2023. Courtesy of the artist.

attracting and sustaining mass attention—Facebook, TikTok, Instagram—have become cultural. The design of these platforms dictates the circulation of customs, symbols, stories, values, and norms that bind people together in protocols of shared identity. Culture, as articulated through human systems such as art and media, is a kind of social infrastructure. Put differently, culture is the operating system of society.

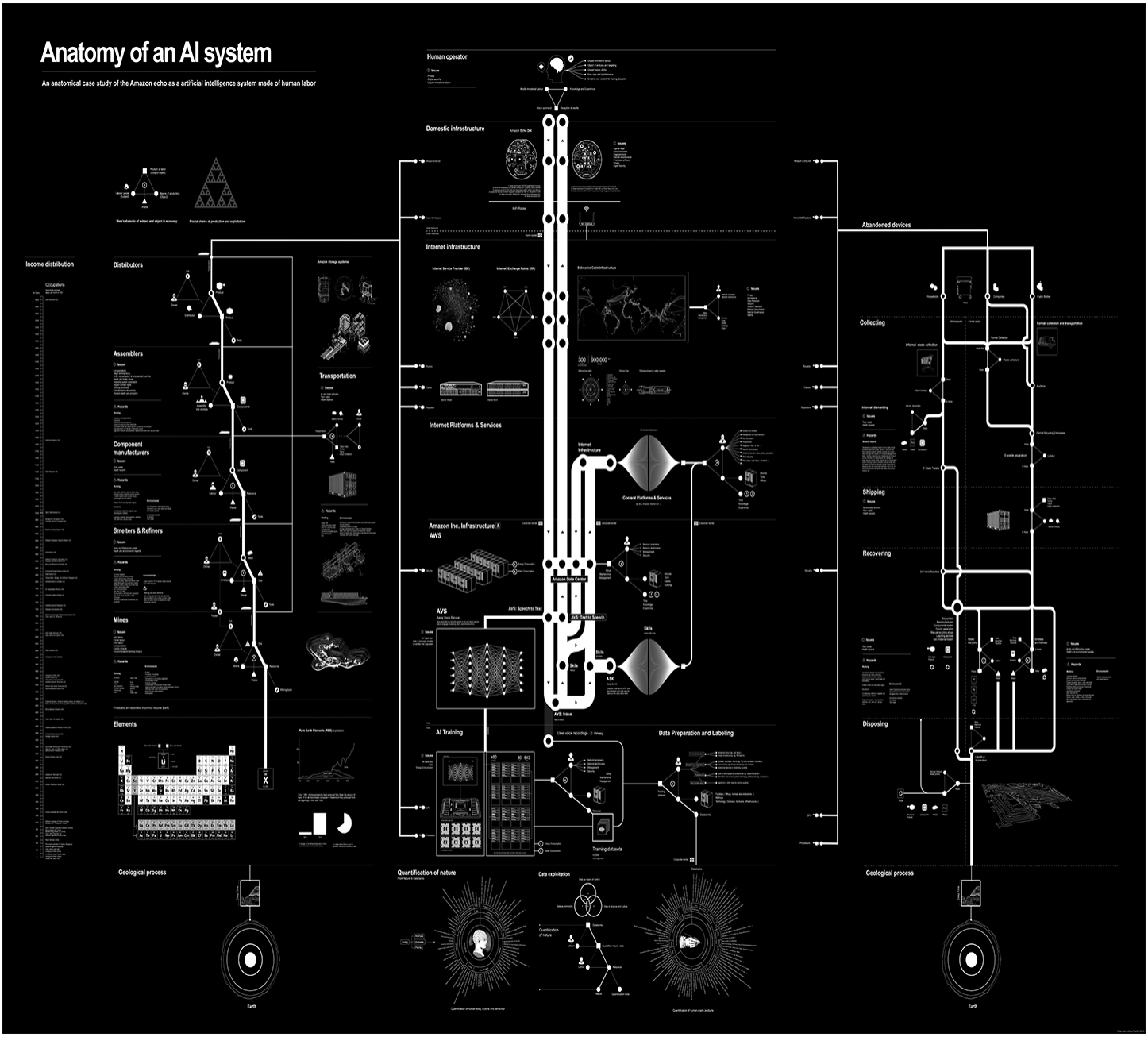
Like any well-designed operating system, culture is invisible to most people most of the time. Hidden in plain sight, we make use of it constantly without realizing it. As an operating system, culture forms the base infrastructure layer of societal interaction, facilitating communication, cooperation, and interrelations. Always evolving, culture is elastic: we build on it, remix it, and even break it.

Culture can also be hacked—subverted for specific advantage.[4] If culture is like an operating system, then to hack it is to exploit the design of that system to gain unauthorized control and manipulate it towards a specific end. This can be for good or for bad. The morality of the hack depends on the intent and actions of the hacker.

When businesses hack culture to gather data, they are not necessarily destroying or burning down social fabrics and cultural infrastructure. Rather, they reroute the way information and value circulate, for the benefit of their shareholders. This isn't new. There have been culture hacks before. For example, by lending it covert support, the CIA hacked the abstract expressionism movement to promote the idea that capitalism was friendly to high culture.[5] Advertising appropriated the folk-cultural images of Santa Claus and the American cowboy to sell Coca-Cola and Marlboro cigarettes, respectively. In Mexico, after the revolution of 1910, the ruling party hacked muralist works, aiming to construct a unifying national narrative.

Culture hacks under digital capitalism are different. Whereas traditional propaganda goes in one direction—from government to population, or from corporation to customers—the internet-surveillance business works in two directions: extracting data while pushing engaging content. The extracted data is used to determine what content a user would find most engaging, and that engagement is used to extract more data, and so on. The goal is to keep as many users as possible on platforms for as long as possible, in order to sell access to those users to advertisers. Another difference between traditional propaganda and digital platforms is that the former aims to craft messages with broad appeal, while the latter hyper-personalizes content for individual users.

The rise of Chinese-owned TikTok has triggered heated debate in the US about the potential for a foreign-owned platform to influence users by manipulating what they see. Never mind that US corporations have used similar tactics



Kate Crawford and Vladan Jole, Anatomy of an AI System, 2018. This is a large scale map of the Amazon Echo as an anatomical map of human labor, data, and planetary resources.

for years. While the political commitments of platform owners are indeed consequential—Chinese-owned companies are in service to the Chinese Communist Party, while US-owned companies are in service to business goals—the far more pressing issue is that both have virtually unchecked surveillance power. They are both reshaping societies by hacking culture to extract data and serve content. Funny memes, shocking news, and aspirational images all function similarly: they provide companies with unprecedented access to societies' collective dreams and fears.[6] By determining who sees what when and where, platform owners influence how societies articulate their understanding of themselves.

Tech companies want us to believe that algorithmically determined content is effectively neutral: that it merely reflects the user's behavior and tastes back at them. In 2021, Instagram head Adam Mosseri wrote a post on the company's blog entitled "Shedding More Light on How Instagram Works." A similar window into TikTok's functioning was provided by journalist Ben Smith in his article "How TikTok Reads Your Mind."[7] Both pieces boil down to roughly the same idea: "We use complicated math to give you more of what your behavior shows us you

really like."

This has two consequences. First, companies that control what users see in a nontransparent way influence how we perceive the world. They can even shape our personal relationships. Second, by optimizing algorithms for individual attention, a sense of culture as common ground is lost. Rather than binding people through shared narratives, digital platforms fracture common cultural norms into self-reinforcing filter bubbles.[8]

This fragmentation of shared cultural identity reflects how the data surveillance business is rewriting both the established order of global power, and social contracts between national governments and their citizens. Before the internet, in the era of the modern state, imperfect but broad narratives shaped distinct cultural identities; "Mexican culture" was different from "French culture," and so on. These narratives were designed to carve away an "us" from "them," in a way that served government aims. Culture has long been understood to operate within the envelope of nationality, as exemplified by the organization of museum collections according to the nationality of artists, or by the Venice Biennale—the Olympics of the art world, with its national pavilions format.

National culture, however, is about more than museum collections or promoting tourism. It broadly legitimizes state power by emotionally binding citizens to a self-understood identity. This identity helps ensure a continuing supply of military recruits to fight for the preservation of the state. Sociologist James Davison Hunter, who popularized the phrase "culture war," stresses that culture is used to justify violence to defend these identities.[9] We saw an example of this on January 6, 2021, with the storming of the US Capitol. Many of those involved were motivated by a desire to defend a certain idea of cultural identity they believed was under threat.

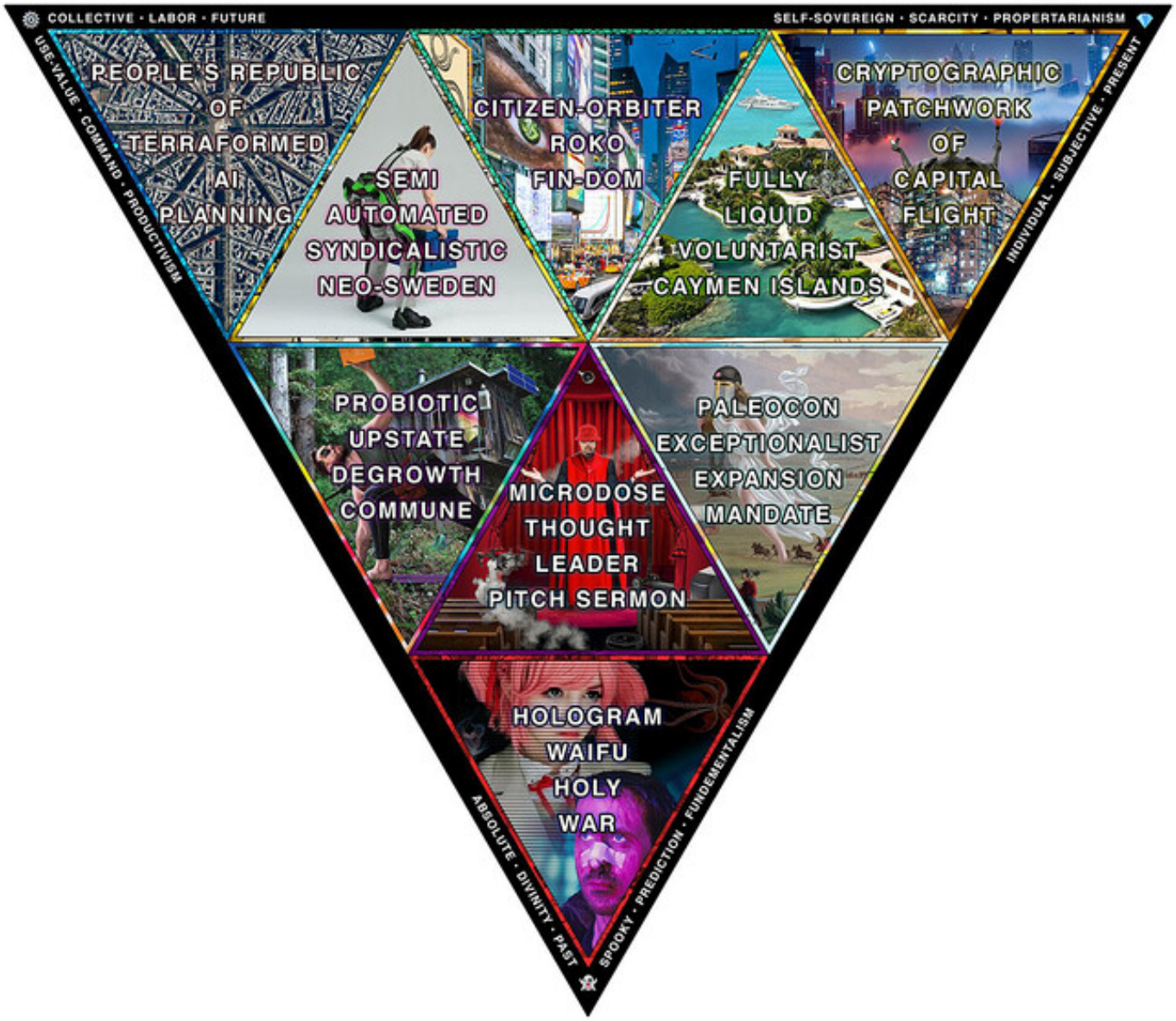
Military priorities were also entangled with the origins of the tech industry. The US Department of Defense funded ARPANET, the first version of the internet. But the internet wouldn't have become what it is today without the influence of both West Coast counterculture and small-l libertarianism, which saw the early internet as primarily a space to connect and play. One of the first digital game designers was Bernie De Koven, founder of the Games Preserve Foundation. A noted game theorist, he was inspired by Stewart Brand's interest in "play-ins" to start a center dedicated to play. Brand had envisioned play-ins as an alternative form of protest against the Vietnam War; they would be their own "soft war" of subversion against the military.[10] But the rise of digital surveillance as the business model of nascent tech corporations would hack this anti-establishment spirit, turning instruments of social cohesion and connection into instruments of control.

It's this counterculture side of tech's lineage, which advocated for the social value of play, that attuned the tech industry to the utility of culture. We see the commingling of play and military control in Brand's Whole Earth Catalog, which was a huge influence on early tech culture. Described as "a kind of Bible for counterculture technology," the Whole Earth Catalog was popular with the first generation of internet engineers, and established crucial "assumptions about the ideal relationships between information, technology, and community."[11] Brand's 1972 Rolling Stone article "Spacewar: Fantastic Life and Symbolic Death Among the Computer" further emphasized how rudimentary video games were central to the engineering community. These games were wildly popular at leading engineering research centers: Stanford, MIT, ARPA, Xerox, and others. This passion for gaming as an expression of technical skills and a way for hacker communities to bond led to the development of MUD (Multi-User Dungeon) programs, which enabled multiple people to communicate and collaborate online simultaneously.

The first MUD was developed in 1978 by engineers who wanted to play fantasy games online. It applied the early-internet ethos of decentralism and personalization to video games, making it a precursor to massive multiplayer online role-playing games and modern chat rooms and Facebook groups. Today, these video games and game-like simulations—now a commercial industry worth around $200 billion[12]—serve as important recruitment and training tools for the military.[13] The history of the tech industry and culture is full of this tension between the internet as an engineering plaything and as a surveillance commodity.

Historically, infrastructure businesses—like railroad companies in the nineteenth-century US—have always wielded considerable power. Internet companies that are also infrastructure businesses combine commercial interests with influence over national and individual security. As we transitioned from railroad tycoons connecting physical space to cloud computing companies connecting digital space, the pace of technological development put governments at a disadvantage. The result is that corporations now lead the development of new tech (a reversal from the ARPANET days), and governments follow, struggling to modernize public services in line with the new tech. Companies like Microsoft are functionally providing national cybersecurity. Starlink, Elon Musk's satellite internet service, is a consumer product that facilitates military communications for the war in Ukraine. Traditionally, this kind of service had been restricted to selected users and was the purview of states.[14] Increasingly, it is clear that a handful of transnational companies are using their technological advantages to consolidate economic and political power to a degree previously afforded to only great-power nations.

Worse, since these companies operate across multiple



Joshua Citarella, Choose Your Future, 2020. Courtesy of the artist.

countries and regions, there is no regulatory body with the jurisdiction to effectively constrain them. This transition of authority from states to corporations and the nature of surveillance as the business model of the internet rewrites social contracts between national governments and their citizens. But it also also blurs the lines among citizen, consumer, and worker. An example of this are Google's Recaptchas, visual image puzzles used in cybersecurity to "prove" that the user is a human and not a bot. While these puzzles are used by companies and governments to add a layer of security to their sites, their value is in how they record a user's input in solving the puzzles to train Google's computer vision AI systems. Similarly, Microsoft provides significant cybersecurity services to governments while it also trains its AI models on citizens' conversations with Bing.[15] Under this dyanmic, when

citizens use digital tools and services provided by tech companies, often to access government webpages and resources, they become de facto free labor for the tech companies providing them. The value generated by this citizen-user-laborer stays with the company, as it is used to develop and refine their products. In this new blurred reality, the relationships among corporations, governments, power, and identity are shifting. Our social and cultural infrastructure suffers as a result, creating a new kind of technical debt of social and cultural infrustructure.

In the field of software development, technical debt refers to the future cost of ignoring a near-term engineering problem.[16] Technical debt grows as engineers implement short-term patches or workarounds, choosing to push the more expensive and involved re-engineering fixes for later. This debt accrues over time, to be paid back in the long term. The result of a decision to solve an immediate problem at the expense of the long-term one effectively mortgages the future in favor of an easier present. In terms of cultural and social infrastructure, we use the same phrase to refer to the long-term costs that result from avoiding or not fully addressing social needs in the present. More than a mere mistake, socio-technical debt stems from willfully not addressing a social problem today and leaving a much larger problem to be addressed in the future.

For example, this kind of technical debt was created by the cratering of the news industry, which relied on social media to drive traffic—and revenue—to news websites. When social media companies adjusted their algorithms to deprioritize news, traffic to news sites plummeted, causing an existential crisis for many publications.[17] Now, traditional news stories make up only 3 percent of social media content. At the same time, 66 percent of people ages eighteen to twenty-four say they get their "news" from TikTok, Facebook, and Twitter.[18] To be clear, Facebook did not accrue technical debt when it swallowed the news industry. We as a society are dealing with technical debt in the sense that we are being forced to pay the social cost of allowing them to do that.

One result of this shift in information consumption as a result of changes to the cultural infrastructure of social media is the rise in polarization and radicalism. So by neglecting to adequately regulate tech companies and support news outlets in the near term, our governments have paved the way for social instability in the long term. We as a society also have to find and fund new systems to act as a watchdog over both corporate and governmental power.

Another example of socio-technical debt is the slow erosion of main streets and malls by e-commerce.[19] These places used to be important sites for physical gathering, which helped the shops and restaurants concentrated there stay in business. But e-commerce and direct-to-consumer trends have undermined the economic viability of main streets and malls, and have made it much harder for small businesses to survive. The long-term consequence of this to society is the hollowing out of town centers and the loss of spaces for physical gathering—which we will all have to pay for eventually.

The faltering finances of museums will also create long-term consequences for society as a whole, especially in the US, where Museums mostly depend on private donors to cover operational costs. But a younger generation of philanthropists is shifting its giving priorities away from the arts, leading to a funding crisis at some institutions.[20]

One final example: libraries. NYU Sociologist Eric Klinenberg called libraries "the textbook example of social infrastructure in action."[21] But today they are stretched to the breaking point, like museums, main streets, and news media. In New York City, Mayor Eric Adams has proposed a series of severe budget cuts to the city's library system over the past year, despite having seen a spike in usage recently. The steepest cuts were eventually retracted, but most libraries in the city have still had to cancel social programs and cut the number of days they're open.[22] As more and more spaces for meeting in real life close, we increasingly turn to digital platforms for connection to replace them. But these virtual spaces are optimized for shareholder returns, not public good.

Just seven companies—Alphabet (the parent company of Google), Amazon, Apple, Meta, Microsoft, Nvidia and Tesla—drove 60 percent of the gains of the S&P stock market index in 2023.[23] Four—Alibaba, Amazon, Google, and Microsoft—deliver the majority of cloud services.[24] These companies have captured the delivery of digital and physical goods and services. Everything involved with social media, cloud computing, groceries, and medicine is trapped in their flywheels, because the constellation of systems that previously put the brakes on corporate power, such as monopoly laws, labor unions, and news media, has been eroded. Product dependence and regulatory capture have further undermined the capacity of states to respond to the rise in corporate hard and soft power. Lock-in and other anticompetitive corporate behavior have prevented market mechanisms from working properly. As democracy falls into deeper crisis with each passing year, policy and culture are increasingly bent towards serving corporate interest. The illusion that business, government, and culture are siloed sustains this status quo.

Our digitized global economy has made us all participants in the international data trade, however reluctantly. Though we are aware of the privacy invasions and social costs of digital platforms, we nevertheless participate in these systems because we feel as though we have no alternative—which itself is partly the result of tech monopolies and the lack of competition.

Suzanne Treister, POST-SURVEILLANCE ART/NSA ON DRUGS, 2014. Courtesy of the artist.

Now, the ascendence of AI is thrusting big data into a new phase and new conflicts with social contracts. The development of bigger, more powerful AI models means more demand for data. Again, massive wholesale extractions of culture are at the heart of these efforts.[25] As AI researchers and artists Kate Crawford and Vladan Joler explain in the catalog to their exhibition Calculating Empires, AI developers require "the entire history of human knowledge and culture … The current lawsuits over generative systems like GPT and Stable Diffusion highlight how completely dependent AI systems are on extracting, enclosing, and commodifying the entire history of cognitive and creative labor."[26]

Permitting internet companies to hack the systems in which culture is produced and circulates is a short-term trade-off that has proven to have devastating long-term consequences. When governments give tech companies unregulated access to our social and cultural infrastructure, the social contract becomes biased towards their profit. When we get immediate catharsis through sharing memes or engaging in internet flamewars, real protest is muzzled. We are increasing our collective socio-technical debt by ceding our social and cultural infrastructure to tech monopolies.

Cultural expression is fundamental to what makes us human. It's an impulse, innate to us as a species, and this impulse will continue to be a gold mine to tech companies. There is evidence that AI models trained on synthetic data—data produced by other AI models rather than humans—can corrupt these models, causing them to return false or nonsensical answers to queries.[27] So as AI-produced data floods the internet, data that is guaranteed to have been derived from humans becomes more valuable. In this context, our human nature, compelling us to make and express culture, is the dream of digital capitalism. We become a perpetual motion machine churning out free data. Beholden to shareholders, these corporations see it as their fiduciary duty—a moral imperative even—to extract value from this cultural life.

We are in a strange transition. The previous global order,

in which states wielded ultimate authority, hasn't quite died. At the same time, large corporations have stepped in to deliver some of the services abandoned by states, but at the price of privacy and civic well-being. Increasingly, corporations provide consistent, if not pleasant, economic and social organization. Something similar occurred during the Gilded Age in the US (1870s–1890s). But back then, the influence of robber barons was largely constrained to the geographies in which they operated, and their services (like the railroad) were not previously provided by states. In our current transitionary period, public life worldwide is being reimagined in accordance with corporate values. Amidst a tug-of-war between the old state-centric world and the emerging capital-centric world, there is a growing radicalism fueled partly by frustration over social and personal needs going unmet under a transnational order that is maximized for profit rather than public good.

Culture is increasingly divorced from national identity in our globalized, fragmented world. On the positive side, this decoupling can make culture more inclusive of marginalized people. Other groups, however, may perceive this new status quo as a threat, especially those facing a loss of privilege. The rise of white Christian nationalism shows that the right still regards national identity and culture as crucial—as potent tools in the struggle to build political power, often through anti-democratic means. This phenomenon shows that the separation of cultural identity from national identity doesn't negate the latter. Instead, it creates new political realities and new orders of power.

Nations issuing passports still behave as though they are the definitive arbiters of identity. But culture today—particularly the multiverse of internet cultures—exposes how this is increasingly untrue. With government discredited as an ultimate authority, and identity less and less connected to nationality, we can find a measure of hope for navigating the current transition in the fact that culture is never static. New forms of resistance are always emerging. But we must ask ourselves: Have the tech industry's overwhelming surveillance powers rendered subversion impossible? Or does its scramble to gather all the world's data offer new possibilities to hack the system?

X

Kim Córdova is an art writer. Currently, she is a Fulbright Scholar based in Bogotá and is a 2023 recipient of the Andy Warhol Arts Writers Grant.

Bruce Schneier is a security technologist. He is a fellow and lecturer at the Harvard Kennedy School, a board member of the Electronic Frontier Foundation, and the Chief of Security Architecture at Inrupt, Inc.

1
McKenzie Wark, *A Hacker Manifesto* (Harvard University Press, 2004), thesis 126.

2
Jon Katz, "Birth of a Digital Nation," *Wired*, April 1, 1997.

3
Marcin Szczepanski, "Is Data the New Oil? Competition Issues in the Digital Economy," European Parliamentary Research Service, January 2020.

4
Bruce Schneier, *A Hacker's Mind: How the Powerful Bend Society's Rules, and How to Bend Them Back* (W. W. Norton & Sons, 2023).

5
Lucie Levine, "Was Modern Art Really a CIA Psy-Op?" *JStor Daily*, April 1, 2020.

6
Bruce Schneier, *Data and Goliath: The Hidden Battles to Collect Your Data and Control Your World* (W. W. Norton & Sons, 2015).

7
Adam Mosseri, "Shedding More Light on How Instagram Works," *Instagram Blog* , June 8, 2021; Ben Smith, "How TikTok Reads Your Mind," *New York Times,* December 5, 2021.

8
Giacomo Figà Talamanca and Selene Arfini, "Through the Newsfeed Glass: Rethinking Filter Bubbles and Echo Chambers," *Philosophy & Technology* 35, no. 1 (2022).

9
Zack Stanton, "How the 'Culture War' Could Break Democracy," *Politico,* May 5, 2021.

10
Jason Johnson, "Inside the Failed, Utopian New Games Movement," *Kill Screen* , October 25, 2013.

11
Fred Turner, "Taking the Whole Earth Digital," chap. 4 in *From Counter Culture to Cyberculture: Stewart Brand, The Whole Earth Network, and the Rise of Digital Utopianism* (University of Chicago Press, 2006).

12
Kaare Ericksen, "The State of the Video Games Industry: A Special Report," *Variety*, February 1, 2024.

13
Rosa Schwartzburg, "The US Military Is Embedded in the Gaming World. It's Target: Teen Recruits," *The Guardian*, February 14, 2024; Scott Kuhn, "Soldiers Maintain Readiness Playing Video Games," US Army, April 29, 2020; Katie Lange, "Military Esports: How Gaming Is Changing Recruitment & Moral," US Department of Defense, December 13, 2022.

14
Shaun Waterman, "Growing Commercial SATCOM Raises Trust Issues for Pentagon," *Air & Space Forces Magazine* , April 3, 2024.

15
Geoffrey A Fowler, "Your Instagrams Are Training AI. There's Little You Can Do About It," *Washington Post*, September 27, 2023.

16
Zengyang Li, Paris Avgeriou, and Peng Liang, "A Systematic Mapping Study on Technical Debt and Its Management," *Journal of Systems and Software* , December 2014.

17
David Streitfeld, "How the Media Industry Keeps Losing the Future," *New York Times,* February 28, 2024.

18
"The End of the Social Network," *The Economist,* February 1, 2024; Ollie Davies, "What Happens If Teens Get Their News From TikTok?" *The Guardian,* February 22, 2023.

19
Eric Jaffe, "Quantifying the Death of the Classic American Main Street," *Medium*, March 16, 2018.

20
Julia Halprin, "The Hangover from the Museum Party: Institutions in the US Are Facing a Funding Crisis," *Art Newspaper,* January 19, 2024.

21
Quoted in Pete Buttigieg, "The Key to Happiness Might Be as Simple as a Library or Park," *New York Times* , September 14, 2018.

22
Jeffery C. Mays and Dana Rubinstein, "Mayor Adams Walks Back Budget Cuts Many Saw as Unnecessary," *New York Times*, April 24, 2024.

23
Karl Russell and Joe Rennison, "These Seven Tech Stocks Are Driving the Market," *New York Times,* January 22, 2024.

24
Ian Bremmer, "How Big Tech Will Reshape the Global Order," *Foreign Affairs,* October 19, 2021.

25
Nathan Sanders and Bruce Schneier, "How the 'Frontier' Became the Slogan for Uncontrolled AI," *Jacobin,* February 27, 2024.

26
Kate Crawford and Vladan Joler, *Calculating Empires: A Genealogy of Technology and Power, 1500–2025* (Fondazione Prada, 2023), 9. Exhibition catalog.

27
Rahul Rao, "AI Generated Data Can Poison Future AI Models," *Scientific American* , July 28, 2023.

Janus Rose

After Doomscroll: A Conversation with Chelsea Manning

"Doomscrolling" is easily the single most poignant example of internet vernacular to emerge in the past decade. The term is both verb and vibe, and to most people it requires no explanation—a cheeky shorthand for the devolution of digital communications into repetitive patterns of consumption and disappointment.

While it first appeared online in 2018, it's not particularly shocking that "doomscrolling" really took off in 2020, in the early stages of the Covid-19 pandemic.[1] It was a mindset born of the lockdown, Silicon Valley excess, and the exacerbated alienation of late capitalism. In the intervening years, it has only become more evident that the internet as a whole is approaching a crisis point.

Now it's 2024. Digital news outlets that once provided a counter to mainstream media narratives are collapsing, and the much-hyped proliferation of image- and text-synthesizing "AI" systems have made the creation of viral hoaxes and propaganda trivial.[2] Even the tools we've come to rely on as essential for finding information, like search engines, seem to be collapsing under the weight of mass-generated "content"—the dystopian Silicon Valley term for anything on the internet that can be used to capture human attention for the purpose of generating ad revenue.[3]

As a journalist who has been writing about these topics online for more than a decade, I've long felt like a slow-motion air crash victim bearing witness to my profession's inevitable destruction. Along with hundreds of people, I was recently laid off from my job at *Vice*, the Canadian counterculture mag whose cartoonish mismanagement resulted in the company abandoning its award-winning newsroom and pivoting to … well, nothing.[4] The general consensus amongst my colleagues is that we are all facing a kind of vocational extinction: the owners of the platforms we rely on have pulled out of digital journalism entirely, seemingly deciding that they would rather have a glorified Excel spreadsheet fart out "content" than pay human beings to synthesize knowledge, music, or art.

This creates some new twists on some extremely annoying existential questions. Prime among them being: How will we find and share knowledge in an online information environment that is fundamentally antithetical to anything that won't inflate shareholder value?

With this in mind I turn to Chelsea Manning, my friend and sometimes collaborator who is probably best known for turning information politics on its head in 2008, with her release of classified documents showing evidence of US war crimes in Iraq and Afghanistan.[5]

Chelsea is a machine-learning expert and former US Army intelligence analyst, so she's one of the few people I trust who has firsthand experience dealing with such dilemmas; after all, she literally went to prison for it. We talked about

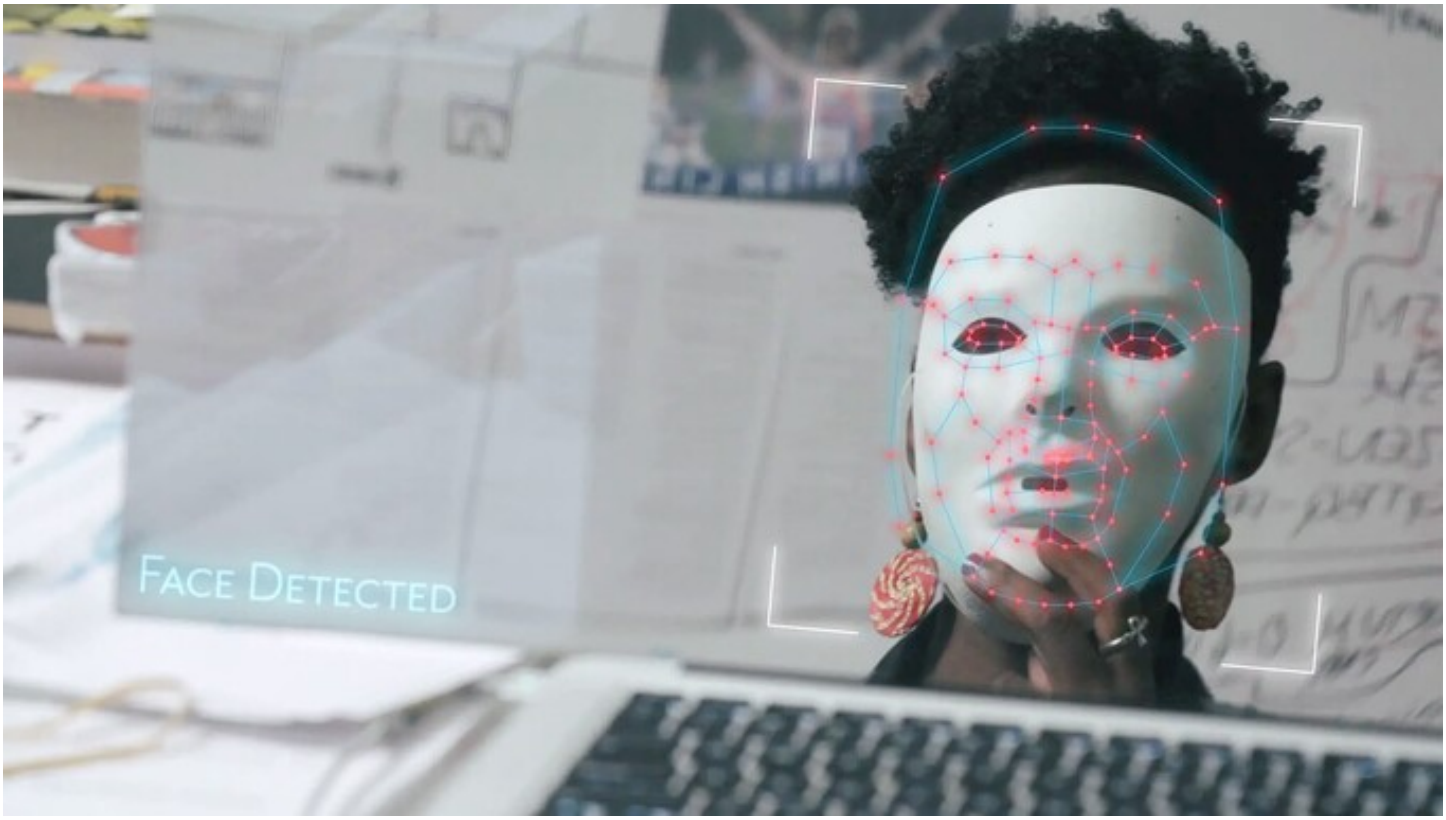
Trevor Paglen, A War Without Soldiers (Corpus: Eye Machine), Adversarially Evolved Hallucination, 2017. Courtesy of the artist, Altman Siegel, San Francisco, and Pace Gallery, New York.

how the internet got into this mess, Silicon Valley's current obsession with "AI," and how looking at the early internet can help us build new ways to publish, share, and verify knowledge without the algorithmically filtered feeds of captive social media platforms.

Janus Rose: The internet really kind of sucks now. I don't think anyone still expects it to be some kind of utopia like they did in the nineties, but it feels like even its basic functions of information search and discovery are now failing on a massive scale. What happened?

Chelsea Manning: I think it first really accelerated in the 2000s with venture capital and the advent of Google, Facebook/Meta, and smartphones. I once had a more utopian impression of what the internet could do. Being connected with friends and family, not having to depend on a mainstream publication or TV network—it felt like anyone could be a blogger or an independent journalist and you could just post the info you wanted to have out there. And there was this idea that corporations and states couldn't do anything about it.

But once these platforms like Google and Facebook that were up-and-coming became the incumbent powers, they were like: okay, we accomplished this and now we need to hold on to this power. So now I think there's been a concerted effort to make the internet as unusable as possible. Now that they're in position where they have shareholders, they have to constantly prove that they have a new way of extracting what little wealth is left among the middle class. They have to make sure there's always



Joy Buolamwini, Coded Bias, 2020. Joy Buolamwini places a white mask over her face so that a facial recognition program can "see" her. Courtesy of 7th Empire Media.

another *thing* they can make as monetizable as possible. That's really the start of it.

JR: It feels like the elephant in the room is so-called "generative AI." I knew things like ChatGPT would eventually start flooding the internet with crap, but it's shocking how fast they're being adopted anyway. Researchers point out the flaws and they're ignored,[6] and now there are companies devoted to nothing but milking ad revenue with fake articles and mass-generated garbage. And the worst part is this cult of AI-pilled tech-hype bros who are trying to convince everyone this is "The Future."

CM: Cory Doctorow calls this the "enshitification" of the internet.[7] Platforms are becoming increasingly unusable because of the profit motive and the incentive models of engagement.

I was working with natural language processing systems before this, but the kind we interact with now [Large Language Models, or LLMs] only started to come into being in 2020. Then they slapped on this user interface that allowed an average user to interact with LLMs for the first time. It quickly became apparent that normal people were going to be wowed by gobbledygook and rapid regurgitations of information that was already readily available. Now that you have these pre-trained [AI] models, you're able to do this at a much lower computing cost than what was required to train that data.

JR: What scares me is that while all this is happening, all the people whose job it is to sort signal from noise are losing their jobs. Digital journalism is rapidly collapsing, and I feel like most people aren't really fully grasping the repercussions of that.

CM: I don't think digital journalism is collapsing, I think it's being killed. There's been a deliberate and concerted effort after the George Floyd protests in 2020. There was a realization [by those in power] that the flow of information was very different in this environment. It wasn't about where you were geographically, but the communities online you interacted with, and what profiles these online platforms had identified you as having.

JR: All these sites like *Buzzfeed News* and *Vice* weren't perfect, but they at least provided some alternative to legacy media. As someone who's worked in journalism for years, I'm terrified of what happens when the only thing left is places like the *Wall Street Journal* and the *New York Times*, where journalism is just this class of obedient stenographers gathering little info nuggets from out-of-touch elites. You only get "official sources," and propaganda becomes trivially easy.

CM: Well, that's the way it was before. These Silicon Valley tech billionaires have started to realize that the mass-mediated propaganda model of the twentieth century was pretty effective at keeping things in check. In the nineties, people were usually talking about one or two things around the water cooler, and pop culture was about the same. Now we're so separated and split up that we don't have this single mass-mediated culture anymore. We have these commodified, cellular microcultures which are turned into products and mechanisms of online engagement. I think big companies have recognized that there's a value in controlling that. Having up-and-coming independent journalists who aren't backed by venture capital is a threat to the established institutions.

JR: I just realized the institutions that want to return to this old media model you're talking about are the same institutions who ignored you back in 2008, when you were trying to share evidence of US war crimes. There are more ways to publish information now, but they all have to be filtered through big tech and social media and algorithms. I think about what's happening now in Gaza, where you have essentially this 24/7 livestream of genocide and human suffering that everyone can see, but the people in power just dismiss and gaslight and the legacy media outlets help them do it.

CM: This is why the online media platforms started backing certain creators. It's one of the reasons "content creator" has emerged as a class in the past decade or so.

Trevor Paglen, Large Hangars and Fuel Storage; Tonopah Test Range, NV; Distance approx. 18 miles; 10:44 am, 2005. Courtes of the artist.

As a content creator you gain sponsorship deals and benefits, but you have to stay within certain lines. Platforms have recognized that having control and gatekeeping authority enables them to have a wide variety of content, but within certain parameters.

JR: Right, but we still see examples of counternarratives breaking through. All these college kids starting encampments for Palestine clearly have a degree of media awareness where they understand how to navigate online censorship and gatekeeping. I'm wondering how the powers that be will respond to try and regain control.

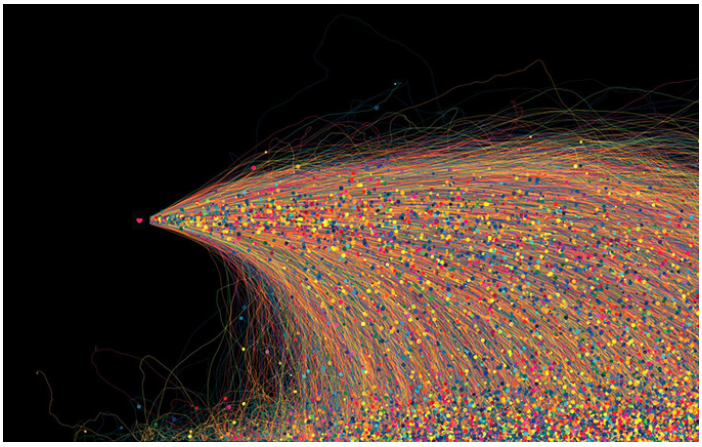
CM: We've already seen what their response is going to be. They try to dismiss and discredit, but they also channel the information that they want to proliferate. After the Russian invasion of Ukraine, there was a lot of misinformation and disinformation flowing, but a lot of that was allowed to flow because it was on the side of the incumbent [Western] powers.

It's the channeling of propaganda as opposed to the creation of it. In the hierarchical era of mass media, you would create a narrative and it would trickle out and it was centrally controlled. Now you have a bottom-up flow of information, but you're able to pick and choose and channel the information that you want and don't want to spread. So the incumbent powers and institutions are learning how to make this work in ways that benefit them, and in the process they commodify that and turn it into a product.

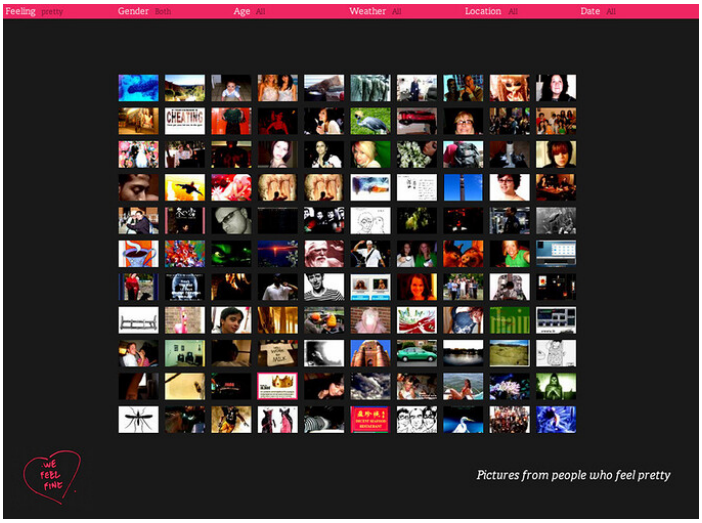
JR: All the journalists I know want to keep reporting and writing, but there's no place left to do it. Publishing doesn't pay well anymore unless you become one of these cult-celebrity Substackers and podcasters who play to their audience with reactionary clickbait—the Joe Rogans and Ben Shapiros of the world. I feel like we need a return to local, small-scale journalism, but what does that even look like?

CM: I think it's important to remember that the mass media didn't come from nothing. It came from the industrialization of information. The mass production of information is how the idea of the "journalist" formed as a profession. Right now I think we're going back to the reverse of that, where a pamphlet was the most effective means of advancing an idea. I think we're largely returning to pamphleteering as a mode of information distribution.

JR: I like the idea of small online publishers as pamphleteers, but the ground-truth reporting still needs to happen somewhere. It drives me crazy when people say, "Oh it's okay, I get all my news from TikTok anyway." Like, where do you think that information comes from? Usually when you see a video of a Gen-Z'er talking about



Jonathan Harris, We Feel Fine, an exploration of human emotion through large-scale blog analysis, 2006. Courtesy of the artist.



Jonathan Harris, We Feel Fine, an exploration of human emotion through large-scale blog analysis, 2006. Courtesy of the artist.

news events they're literally pointing behind them at a green-screened article from a news outlet that is on the verge of not existing. Does it make sense to build tech that can fix this pipeline?

CM: I think tech is part of the problem here. Verification of information is really important to the kinds of work that I do, and I think that one of the problems I've seen is that the original source of this information is going through so many iterations that it doesn't resemble the original info anymore. A TikTok, citing a tweet thread, citing an article, citing an academic paper, etc. The number of layers between the producer and the recipient allows a lot of error to occur. In information theory there is a focus on avoiding as much noise as possible. As it goes through more and more nodes in the network, the amount of noise builds. That noise-to-signal ratio is becoming untenable.

JR: Lately I've been thinking a lot about all the different things the web could have been. We had homepages and BBS and all these different ideas about how to publish and discover information. And then search engines and Google came along and dominated the entire ecosystem. That's a big part of how we got here, I think, where knowledge conforms to some central algorithm instead of the other way around. We badly need a new way of organizing knowledge, and I wonder if it makes sense to go back and revisit some of these ideas that were thrown by the wayside?

CM: Yes. I have very specifically looked at the pre–search engine internet as a potential model. There's no reason you can't just put up a website anymore. The thing is that we need to be able to verify that information at the source, and make sure that the signal-to-noise ratio is tuned down as much as possible. I think there are technical ways you can accomplish that, but there hasn't been investment because it's threatening the incumbent actors who are heavily invested in the extraction that's ongoing.

JR: Decentralization feels like an essential element of whatever comes next. These monopolistic big-tech models that revolve around ad revenue are just not sustainable. Subscription models and newsletters seem to be gaining some traction, and I do think a lot of people are willing to pay for quality alternative news. But they all live on these little islands that aren't connected, and people always have to come back to these corporate-owned social media platforms to share content and build their audience.

CM: We have been deliberately and methodically trained to interact with these social platforms.

JR: By "trained" you're talking about how we've been conditioned by these platforms that quantify social interactions and make people associate quality information with what "gets numbers"?

CM: Yes. Somehow we have to counteract that. I think a counterculture to this culture will develop, but it will take time and we're only in the early stages of this neo-Luddite rejection of social media platforms as being the way of sharing verifiable, important information.

The other aspect is that there are technical means that haven't been tried that might address this. There are tools and mechanisms and well-written papers on these concepts, but nobody has invested the time and resources to put them together and try to make them work.

JR: Yeah, people have been talking about building some kind of alternative internet for a long time, but it always comes back to "who is going to build this and how are they going to get funding."

CM: Right, but the problem I keep seeing is that whenever people talk about an alternative internet, they just come up with more platforms. The alternative to Twitter after it changed and became X was Threads or Bluesky, but those are just other platforms. They look almost identical, and they have many of the same problems, even though they might be managed differently.

I think the paradigm that we're stuck in is that we've only conceptualized the internet through platforms that already exist. We aren't trying something that might not look like Instagram, that might not look like TikTok or Twitter.

JR: I feel like a lot of the so-called "decentralization" movement has also been co-opted by NFT hustlers and cryptocoin scammers. And often these are the same people who are now pushing the Generative AI trend, which is the new flavor of the week for making a quick buck. How do we get beyond that and build common infrastructure that benefits everyone instead of creating more tech grift?

CM: The so-called Web3 movement is what we're talking about here, right?

JR: Yeah, exactly.

CM: The underlying technology is fine, and in some instances there are some unproven use cases for the tech. The problem you've identified is cultural, and it's because the incentive structure of Silicon Valley and cryptocurrency is one of acceleration and extraction. You have to be constantly scaling up, because that's what's expected by venture capital and shareholders. And that's why you won't be able to change anything with that. The decentralization movement actually had some really good people, but they left without getting a chance to do anything because it became grift so fast.

JR: I remember how a lot of people made these revolutionary claims about Bitcoin and cryptocurrency …

CM: Yeah, but cryptocurrency is still a capital asset. It's using really good math, but it only does it to recreate the existing system. And one of the reasons for that is being able to avoid regulation and the SEC.

JR: If journalism survives, it's not going to be on a blockchain. I'm extremely confident of this.

CM: Whatever we build, it can't just be decentralized. Things can be decentralized and can still be co-opted by incumbent powers. It has to be distributed tools, low cost, accessible, verifiable, and require a low amount of power.

JR: I feel like this is a return to the underground. You mentioned pamphlets before. Sometimes I see these political education Instagram posts that feel like the digital equivalent of pamphlets or zines. The question is where do you place them so people will actually find them, if not

on social media? Like if we built a decentralized digital zine distribution network, is that something people would adopt?

CM: I don't think that's the right question. I think we should focus on what works. People didn't flock to the internet immediately. You need to build something that people will want to use. It's lame to say, "If you build it they will come," but I think you have to experiment and let it play out. You can't keep doing what's already been done, and it can't keep looking the same.

X

Janus Rose is a writer, editor, and journalist whose work explores the impacts of information technology on resistance movements and marginalized communities. Previously a senior editor at *VICE Motherboard*, her work has appeared in the *New Yorker*, *Dazed Magazine*, *The Intercept*, and the *Village Voice*.

1
See https://trends.google.com/trends/explore?date=all&geo=US&q=Doomscrolling .

2
Chloe Xiang, "Verified Twitter Accounts Spread AI-Generated Hoax of Pentagon Explosion," *Vice* , May 22, 2023 https://www.vice.com/en/article/7kx84b/ai-generated-pentagon-explosion-hoax-twitter .

3
Jason Koebler, "Google Search Really Has Gotten Worse, Researchers Find," *404 Media*, January 16, 2024 https://www.404media.co/google-search-really-has-gotten-worse-researchers-find/ .

4
Katie Way, "VICE Ran Out of Money (For Everyone Except Its Executives)," *Hell Gate*, July 11, 2023 https://hellgatenyc.com/vice-bankruptcy-executive-salary ; Max Rivlin-Nadler, "VICE Management Kills Vice.Com, Set to Lay Off Hundreds of Employees," *Hell Gate*, February 22, 2024 https://hellgatenyc.com/vice-managers-the-hague .

5
A story she tells in her own words in Chelsea Manning, *README.txt* (Farrar, Strauss and Giroux, 2022).

6
Chloe Xiang, "AI Isn't Artificial or Intelligent," *Motherboard*, December 2, 2022 https://www.vice.com/en/article/wxnaqz/ai-isnt-artificial-or-intelligent .

7
Doctorow, "The 'Enshitification' of TikTok," *Wired*, January 23, 2023 https://www.wired.com/story/tiktok-platforms-cory-doctorow/ .