CAPITAL IS DEAD

MCKENZIE WARK

VERSO
London • New York

First published by Verso 2019

1 3 5 7 9 10 8 6 4 2

Verso
UK: 6 Meard Street, London W1F 0EG
US: 20 Jay Street, Suite 1010, Brooklyn, NY 11201
versobooks.com

Verso is the imprint of New Left Books

ISBN-13: 978-1-78873-530-8
ISBN-13: 978-1-78873-531-5 (UK EBK)
ISBN-13: 978-1-78873-532-2 (US EBK)

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

Names: Wark, McKenzie, 1961- author.
Title: Capital is dead / McKenzie Wark.
Description: London ; New York : Verso, 2019. | Includes bibliographical references.
Identifiers: LCCN 2018059614| ISBN 9781788735308 (hardcover) | ISBN 9781788735315 (United Kingdom ebook)
Subjects: LCSH: Capitalism.
Classification: LCC HB501 .W4395 2019 | DDC 332/.041—dc23
LC record available at https://lccn.loc.gov/2018059614

Typeset in Fournier by MJ & N Gavan, Truro, Cornwall
Printed in the UK by CPI Mackays, UK

Contents

2

Capitalism—or Worse?

> Inside the factory, you are endlessly doing.
> You are inside, in the factory, the universe,
> the one that breathes for you.
>
> —Leslie Kaplan

To be working, as vernacular English has it, is to be on your *grind*; work, says Marx, is a meat grinder. Wage labor ends up reduced to blood and guts and goo, minced and reduced to aspic, to dead flesh to be slurped down by a capitalist ruling class. It's a suitably vulgar image. Capital appears as something monstrous, as a vampire living on the blood of others. Let's be a bit careful with making monsters appear as the bad guy, however.[1] The moral force of assigning the role of monster to the other has a lot of valences.

There's another problem with this line of satirical style: it may describe a lot of what wage labor is like in the world, but it is also possible that *you*, dear reader, spend your working hours sitting in front of a laptop or taking meetings. There's a world of everyday life the meat grinder doesn't describe from which a surplus is extracted for another's benefit in other ways.[2] You can be someone other than

a tenant farmer or an industrial worker and still not be a capitalist or even petit bourgeois.

There's a whole other repertoire of popular images that address this experience, at least in part. In the Wachowski sisters' movie, *The Matrix*, it's the scene where Neo, the protagonist, is rescued.[3] It turns out he is not living the life of a hacker that he thinks he is. Rather, he inhabits a pod full of goo, in a vast array of such units, with a giant plug in the back of his skull sucking energy from his gray matter for some unseen ruling power. He glimpses a sublime landscape of endless rows of such pods for just a moment before he is whisked away.

A less successful but even more creepy version is the TV show Joss Whedon created with Eliza Dushku, *Dollhouse*.[4] The Dollhouse is a clandestine business that rents out bodies to powerful people. These bodies can be programmed with the emotional range and intellectual talents of other humans. Often they are sexy spies or performers of subtle kinds of emotional labor.[5] Upon return from their missions, their brains are "wiped" and they loll about in a fugue state, taking yoga classes, practicing "wellness," and eating from the organic buffet. They were lured into this line of work with contracts that promise they will return to their real selves with no memory and a bunch of money, but often they are relegated to the Attic, where it turns out their brains are used as meat-ware nodes of the computer that runs the whole thing.

One version of these anxious, creepy stories about this odd kind of not-quite-labor today has the emotional and cognitive capacities of the human reprogrammed and used by a ruling power. Another version reverses the combinatory elements. The human body is used as a vehicle and has its cognition erased, used instead by a ruling power. In Jordan Peele's *Get Out*, the takeover is racialized.[6] Powerful white people implant their own brains in Black skulls. In Anne

Leckie's science fiction novel *Ancillary Justice*, the bodies of enslaved peoples become ancillaries to the great artificial intelligence-driven military spaceships of an intergalactic empire, whose ruling culture is a kind of liberal imperialist feminism that suggests Hillary Clinton.[7]

The Cuban science fiction writer Agustín de Rojas offers a rather more complex take on the same mythic material. In *The Year 200*, communism has more or less triumphed, but it has not pursued a truly radical integration of the human into inhuman information technology.[8] Agents of the defeated Empire of Capital freeze and miniaturize themselves, lie dormant underground awaiting a more complacent stage in communist development, and then return to the surface and start taking over the bodies of the comrades. All that stands against the Empire is one of their own, who is actually a Communist double agent. She takes as her ally a cyborg-woman who is no longer quite of our species. Both the communist good guys and capitalist bad guys are "monstrous" inhumans in this story, but there's more than one way to be other than human.

Industrial capitalism was not terribly interested in workers who think and feel. It wanted hands. It wanted muscle. It was a flesh-eating machine. Whatever disgusting and terrifying power lurks in these more recent stories does not so much eat bodies as brains. This combinatory works two ways: either your mind is erased and your body is another mind's vehicle; or your mind is subordinated to the will of another power.[9] Either way, your mind is not your own. It feels like some vile takeover. But what if this isn't just a takeover, but a whole new class relation?

Let's start thinking through this curious class relation by being very "orthodox." Let's start with the *forces of production*, the *relations of production* that correspond to them, the class antagonism generated out of those relations of production, and the political and culture *superstructures* that correspond to that base.[10] And let us also

try to describe, just as Marx did, what may be emerging rather than what is established. If one starts with what is established, it is easy to interpret any new aspect of the situation as simply variations on the same essence. Starting with what may be emerging provides a suitable derangement of the senses, a giddy hint that all that was solid is melting into air.[11]

The thought experiment that might result is quite simple. Here's a sketch, to be elaborated upon as we go: There really is something qualitatively distinct about the forces of production that eat brains, that produce and instrumentalize and control information. This is because information really does turn out to have strange ontological properties. Making information a force of production produces something of a conundrum within the commodity form. Information wants to be free but is everywhere in chains.[12] Information is no longer scarce, it is infinitely replicable, cheap to store, cheap to transmit, and yet the whole premise of the commodity is its scarcity.

Information as a force of production calls into being particular *relations* of production and is at the same time formed by those relations. In classic Marxist style, one can look here at the evolution of legal forms.[13] In the late twentieth century "intellectual property" emerged as almost an absolute private property right.[14] One that makes the once separate and local property forms of patent, copyright, and trademark equivalent and exchangeable forms of private property. These forms need transnational legal enforcement, precisely because information is such a slippery and abstract thing.[15]

And so, like the enclosures or the joint-stock company before it, intellectual property law becomes the form of a new kind of relation of production, more abstract than its predecessors, and one that makes not land or physical plant, but rather information itself, a form of private property. Like those preceding forms of private property, this one crystalizes into a class relation. As an absolute

form of private property, it creates classes of owners and nonowners of the means of realizing its value. Land as private property gave rise to the two great classes of *farmer* and *landlord*. Capital as private property gave rise to the two great classes of *worker* and *capitalist*. Is there a new class relation that emerges out of the commodification of information?

For this thought experiment, let's say it does. I call those classes the *hacker class* and the *vectoralist class*. The hacker class produces new information. But what is "new" information? It is whatever intellectual property law recognizes as new. It's a strange kind of production. Where the farmer grows crops through a seasonal cycle and the worker stamps out repetitive units of commodities, the hacker has to use their time in a different way, to turn the same old information into new. Getting this done is not like the seasonal repetitions of farming or the clocking-on of the worker. It happens when it happens, including time spent napping or pulling all-nighters.[16] The workplace nightmare of the worker is having to make the same thing, over and over, against the pressure of the clock; the workplace nightmare of the hacker is to produce *different* things, over and over, against the pressure of the clock.

The characters of Peggy and Don in the TV series *Mad Men* work as midcentury prototypes.[17] It's the advertising business during the golden years of Fordism.[18] Don is a creative, struggling within the agency with its owners to become an owner too. Peggy is a secretary, a white collar worker, and her struggle is to become a creative. Meanwhile, Joan is already at the top of the secretarial pool, managing it, but wants to become an owner. As the show progresses, the women make a little headway in this male business. By show's end, Black women are just starting to get the secretarial jobs, but the computer has arrived and will make some of them obsolete anyway. Like much of bourgeois culture, it is a small business narrative, which

compresses the classes and blurs the lines between them. The prize of becoming truly ruling class is always just out of reach.

For our purposes, the interesting part is its picture of the activities of one prototype of the hacker class. The camera is fascinated by Don and Peggy actually doing their jobs. Don takes long naps on his office sofa. Sometimes he just wanders off. The material for his brilliant ad campaigns come from all sorts of incidental sources. He drinks too much, tries smoking pot. The whole office takes amphetamine shots and pulls an all-nighter, making speed-induced creative work full of tremendous energy and really bad decisions. Meanwhile Peggy manages to transition from worker to hacker because she actually knows something about how to address the desires of women, but she ends up limited and stymied in all sorts of ways by an industry that does not know the value of her difference.

The less popular series *Halt and Catch Fire* shows us the early tech industry version of the same set of activities, this same work that isn't quite regular work.[19] Hackers can't be managed like farmers or workers; they are not the same as either class. There's no relation between the units of labor time and the units of value produced. Something cooked up on the spur of the moment might have enormous value. Long hours of slog might end up being for nothing. Being exempt from routine work is not really all that glamorous in either story, as it just brings uncertainty, frustration, pressure, and (for some) madness.

Both of these shows hinge on the desire to escape from the limits of the hacker class and become owners. That's the limit to the desire the culture industry can admit for this class. And yet both these shows portray a continual treadmill of hope and failure. Like the farmer and the worker, the hacker does not usually end up owning the product of her efforts. Unless you own a drug company or a tech company or media conglomerate, you have to sell the rights to what you produce.

It is not always the same as selling labor power. You might still own the intellectual property, for example. But the hacker rarely captures much of the value of what they create or invent.

Nobody else gets to be Google's Sergey Brin precisely because there is a Sergey Brin, who is not the avatar of the hacker class, but of its opposite—the *vectoralist class*. He is the real unicorn: the hacker become owner. The one that perpetuates the myth that drives a million start-ups on the path to the same desire, not realizing that it is the very thing that now blocks that desire. It is highly unlikely that your start-up will be the next Google. At best, you might sell it to Google or to some other avatar of the vectoralist class.

The vectoralist class owns and controls the *vector*, a concept I use to describe in the abstract the infrastructure on which information is routed, whether through time or space.[20] A vector in geometry is simply a line of fixed length but of unfixed position. It's a way of thinking about a technology as having something about it that shapes the world in a particular way, but which can shape different aspects of the world. You can own stocks or flows of information, but far better to own the vector, the legal and technical protocols for making otherwise abundant information scarce.

If one takes a look at the top *Fortune 500* companies, it is surprising how many of them are really in the information business. I don't just mean the technology and telecommunication companies like Apple or Google or Verizon or Cisco or the drug companies like Pfizer. One could also think of the big banks as a subset of the vectoralist class rather than as "finance capital." They too are in the information asymmetry business. And as we learned in the 2008 crash, even the car companies are in the information business—they made more money from car loans than cars. The military–industrial sector is also in the information business. The companies that appear to sell actual things, like Nike, are really in the brand business. Walmart

and Amazon compete with different models of the information logistics business.[21] Even the oil companies are in part at least in the information-about-the-geology-of-*possible*-oil-deposits business. Perhaps the vectoralist class is no longer emerging. Maybe it is the new dominant class.

One could make the case here that information was always central to capitalism and that this is just capitalism. To some extent, that may be the case. However, to even think that capitalism is about information is a fairly recent perspective. It ends up being a way of retrospectively seeing the whole course of capitalism in terms of something that only emerged as a concept and an instrumental reality as one of its late products.

The other point to clarify here is that there's a difference between information as a force of production and information as a *dominant* force of production. The vectoralist class doesn't need to own the other forces of production any more. Apple and Google don't actually make their own products. A sizable chunk of those they directly employ are not workers but hackers, people who come up with new information, whether of a technical or cultural kind, to be incorporated into products whose manufacture can be tendered out to a subordinate class of capitalists.

That might only be the case in the overdeveloped world where I happen to live.[22] Many of the world's peoples are not even workers but still peasants who are being turned into tenant farmers by the theft of their common land by a landlord class. Much of the world is also a giant sweatshop. The resistance of labor to capital is alive and well in China, India, Indonesia, and Vietnam. The older class antagonisms have not gone away. It's just that there's a new layer on top, trying to control them. Just as the capitalist class sought to dominate the landlord class as a subordinate ruling class, so too the vectoralist class tries to subordinate both landlords and

capitalists by controlling the patents, the brands, the trademarks, the copyrights, but more importantly the logistics of the information vector.

The vector has also worked its way throughout the production process. This was already beginning in the so-called Fordist era. Some proposed naming it instead after the great Japanese companies that boomed in the mid to late twentieth century, such as Toyota and Sony. They were the ones who figured out how to extract not just labor but also information from the labor force. It turns out that to extract not only efficiency but also quality from industrial labor, it is best to incorporate the information held by those who know the labor process best—its workers.[23] That there is a hacker class at all is in part because workers have been stripped of the information they possess about the labor process itself.

In *Capital*, Marx mostly deals with an ideal-type political economy with two classes. But in his political writings it is clear that he understands social formations as hybrids of combined and overlapping modes of production.[24] His writing on France isn't just a grand confrontation between proletariat and bourgeoisie; the scene looms large with farmers, landlords, and peasants. So here I'm simply taking my cue from the political writings and thinking a matrix of six classes, three ruling and three subordinate. The dominant classes are landlords, capitalists, vectoralists. The subordinate classes are farmers, workers, hackers.

Now imagine all the possibilities of class alliance and conflict that this generates. It turns out that politics is much less about the relation between the friend and the enemy, and much more crucially about relations among *nonfriends* and *nonenemies*.[25] It's about shifting alliances of convenience between heterogeneous class interests. It's about conflicts that can take many forms, only some of them open, many of them discreet.

So how is this worse than capitalism? The vectoral infrastructure throws all of the world into the engine of commodification, meanwhile modifying the commodity form itself. There is nothing that can't be tagged and captured through information about it and considered a variable in the simulations that drive resource extraction and processing.[26] Quite simply, we have run out of world to commodify. And now commodification can only cannibalize its own means of existence, both natural and social. It's like that Marx Brothers film where the train runs out of firewood, so the carriages themselves have to be hacked to pieces and fed to the fire to keep it moving, until nothing but the bare bogies are left.[27]

It is worse also in that rather than some acephalous *multitude*, they are complex class alliances and conflicts at play.[28] The trickiest part of it is the politics of the hacker class, which after all is the class most of us here reading and writing this stuff belong to. Yes, it appears as a "privileged" class, among those whom Bruce Robbins calls the *beneficiaries* of global relations of exploitation.[29] And it is a class that has a very hard time thinking its common interests, because the kinds of new information its various subfractions produce are all so different. We have a hard time thinking what the writer and the scientist and artist and the engineer have in common. Well, the vectoral class does not have that problem. What all of us make is intellectual property, which from its point of view is as equivalent and as tradable as pink goo.

The hacker class experiences extremes of a winner-take-all outcome of its efforts. On the one hand, fantastic careers and the spoils of some simulation of the old bourgeois lifestyle; on the other hand, precarious and part-time work, start-ups that go bust, and the making routine of our jobs by new algorithms—designed by others of our very own class. The hacker class was supposed to be a privileged one, shielded from proletarianization by its creativity and technical skill. But it too can be made casual and precarious.

A controversial ad campaign for the website Fiverr embodied all these contradictions. It played on the desire to quit one's lousy job and become a boss, by offering the pleasure of subjecting others to the tyranny one feels as a precarious creative or technical employee these days. The ads promise a way to hire versions of your old self who are "doers." The most notorious ad showed a black and white picture of a hollow-cheeked, sad-eyed young woman staring directly at the viewer: "You eat a coffee for lunch. You follow through on your follow through. Sleep deprivation is your drug of choice," it reads, concluding: "You might be a doer." Another slogan was "Nothing like a safe, reliable paycheck to crush your soul." And "How much did you make for your boss today?" The one I most often saw defaced read "White Collars Can Come With Leashes." The slogans appear under pictures of a "diverse" workforce, of course: the algorithm is in theory very tolerant about who it exploits.

The old dream of labor, that it could organize itself, is supposed to be dead. There can be no dream of the hacker class to self-organize in any way, whether like labor or in some other form. Such desires are unspeakable, even if they keep erupting in all sorts of interesting ways. Sanctioned desire is neatly summed up in the image and slogan of a cellphone company: "Boss Revolution." The image is of a raised fist, with a cellphone in it, in red. The only desire permissible is to become a boss, like Don Draper.

This has not stopped some interesting and promising signs of hacker self-organization in technical and creative industries, from the unionization of creatives at Vice Media to the Google walkout to refusal to work on border control or military projects across the tech industry.[30] Baby steps, to be sure; it is always a tough argument to propose common interests among subordinate classes. Counter-hegemony is hard. Hackers, like workers or farmers, are distracted by particular and local interests. As with other subordinate classes, class

consciousness is rare among hackers. Most of us are rather reactionary, even in the nontechnical trades. But then class consciousness is always a rare and difficult thing. Unlike other identities, it has to be argued *contrary* to appearances.

The feeling of belonging to a class rarely extends beyond appearances. It appears that one is a "creative" or working in "tech," for example. There could be a myriad of such classes. As we shall see in Chapter 4, this self-understanding of class restricts itself to appearances and masks not an essence but a structural question as to how one's efforts end up being commodified and who reaps most of the benefit of that. The received ideas within which one is asked to think about one's identity don't help when it comes to thinking how one is located within an information political economy, one where the hidden side of appearances is not eternal essence, just things one usually doesn't see—the forces of production.

To come into an awareness of class is to speak another language. It is to refuse the terms that are given and seek other terms, other concepts. This can be difficult. I can tell you from experience: the American college students that I meet cannot even pronounce *bourgeoisie*, let alone conceptualize it. Everything it once meant culturally has evaporated. The outward signs and styles of the ruling class don't look bourgeois. Our new-style overlords only wear suits when called before Congress; otherwise they wear discreetly expensive t-shirts. You don't see them cutting ribbons at factory openings. They don't preach hard work and thrift; they preach creativity, mindfulness, and ethical consumption. The bourgeois culture with which generations of Marxist aesthetics had a love–hate relationship is effectively extinct. The ruling class is not what it used to be. Maybe it needs another name.

What is even harder is to name those whose location in the political economy of information is the making of new information. It isn't

exactly labor, as it's not the same thing every day; it's a different thing every day. Output is not quantifiable in increments, although that won't stop the vectoralist class from trying. One popular attempt to describe them (us) was as the *creative class*.[31] More radical approaches have called what we do *immaterial labor* or *postfordist labor*, and us the *cognitariat*.[32] But there's something a bit mystifying about the language of creativity, something a bit idealist about the immaterial, something backward looking about just adding a modifier, and something of a rationalist bias in the category of cognition, given that the management of feelings can be part of our job description, too.[33]

I opted to call us the *hacker class*. Twenty years ago, that was perhaps too romantic a term, on the border of legality, outside the logic of commodification.[34] Now it has more exclusively criminal associations. If anything, it's an index of how much the vectoralist class has succeeded. It is all but inconceivable now that there could be an open-ended, playful, experimental 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.

But just as the industrial working class retained a utopian feeling about what labor should be like from craft labor, so too it is possible to hold onto a feeling about what it's like to make elegance appear that wasn't there before with a technique for transforming information, and to do it on one's own time, with one's own goals and objectives.[35] That is what it might mean to *hack*. Some of the more compelling scenes in both *Mad Men* and *Halt and Catch Fire* try to find a televisual language for these joyful moments, caught though they are, as the narrative arc reminds us, within the commodification of information.

To think that one's class is the hacker class might now be not unlike repurposing the word *queer*, or any of the other negatively charged

terms that those so designated reclaim with pride—just as Marx and Engels reclaimed the word *communist* from its denouncers in the opening poetic gambit of the *Manifesto*. That was an artful bit of *détournement*. They refunctioned found language from the common store, deleted false meaning, pasted in fresh ones. To clear a space for thought is to work in and against language, to put some pressure on it.

What if we took a more daring, modernist, defamiliarizing approach to writing theory? What if we asked of theory as a genre that it be as interesting, as strange, as poetically or narratively rich as we ask our other kinds of literature to be? What if we treated it not as *high theory*, with pretentions to legislate or interpret other genres, but as *low theory*, as something vulgar, common, even a bit rude —having no greater or lesser claim to speak of the world than any other?[36] It might be more fun to read. It might tell us something strange about the world. It might, just might, enable us to act in the world otherwise. A world in which the old faith in History is no more, but where there are histories that still might be made—in a pinch.

The end of the dominance of capitalism as a mode of production is not a subject that has received much useful attention. For its devotees, it has no end, as it is itself the end of History.[37] For its enemies, it can end only in Communism. If Communism—a state that exists mostly in the imaginal realm, always deferred into the future—has not prevailed, then this by definition must still be the reign of Capital. Let's pause for a moment over the ideological freight attached to this poetic conceit and its consequences: the present is defined mostly in terms of a hoped-for negation of it. Some theology!

If capitalism is to be of any use as a *historical* concept, then the question of its end has to remain an open one. The thought experiment as to whether it may already have been surpassed by another dominant mode ought at least to be one that can be posed. The concept of Capital is theological precisely to the extent that questions

of its possible surpassing by other exploitative modes of production remain off limits. How then can a concept of capitalism be returned to its histories? By abandoning the duality of its essence and appearance.

Theories of the eternal quality of Capital's essence, its unity and identity through time, tend to focus on the analysis of the *relations* of production. One can extract from Marx's *Capital* a quite remarkable theoretical armature that appears in the negative through the critique of the theological concepts of bourgeois political economy. This conceptual armature is so robust that there are few phenomena that resist interpretation as surface appearances of these concepts when posited as a hidden essence. Two things slip from view in this procedure. First, that the bourgeois political economy that Marx took as the object of critique is now itself a museum piece.[38] Second, that in this focus on the relations of production, the forces of production receive very little attention. We don't spend enough time on how the brain-fryer is a different machine from the meat grinder.

This is something of a problem, as surely the dynamism of those forces of production under capitalism was one of the salient points of the theory in the first place. But where the relations of production can be understood theoretically, the forces of production cannot. They don't lend themselves to an abstract, conceptual overview by a master thinker within a genteel high theory. They can really only be known through the collaborative production of a critical theory sharing the experiences of many fields. That would include those with a knowledge of information technology, artificial intelligence, supply chain management, material science, computational biology, and much else besides. We're way past the steam engines that Marx was sketching in his notebooks.[39]

Is it not possible, then, that there have been sufficient transformations in the forces of production to break out of the fetters of a

strictly capitalist mode of production? There are two versions of this question. One is looking for a theological justification for this appearance of something new as finally putting an end to the more troubling aspects of capitalism for vectoralist class apologetics. But the more salient version of the question might be to ask whether what has emerged, in addition to and laminated on top of a capitalist mode of production, is something qualitatively different, but which generates new forms of class domination, new forms of the extraction of surplus, even new kinds of class formation.

The emergence of information as a material force of production looked for a while like it might escape the confines of existing relations of production and that it could negate existing property forms. (I return to this topic in Chapter 4). It looked for a while as though the one thing that really could form the basis of the commons was information. It blew apart the old culture industry. Producers of information started to think not just about their craft or trade interests but about a class interest.

Or so it looked early in the twenty-first century when I wrote *A Hacker Manifesto*. What I did not anticipate was the emergence of a whole other technique for the capture of creation. While there are still elements among the ruling class that want to confine creation within ever stricter forms of private property, some took the opposite tack. Rather than police or restrict free creation, this other strategy was to move its capture to a more abstract level. The production of information can be outsourced to *free labor*, to people who work but need not even be paid, and the aggregate value of their production of information can then be captured and treated as a resource that can be monetized.[40]

This new kind of ruling class does not appropriate a quantity of surplus value so much as exploit an asymmetry of information. It gives, sometimes even as a gift, access to the location of a piece of

information for which you are searching.[41] Or it lets you assemble your own social network. Or it lets you perform a particular financial transaction. Or it gives you coordinates on the planet and what can be found at that location. Or it will even tell you some things about your own DNA. Or it will provide a logistical infrastructure for your small business. But while you get that little piece of information, this ruling class gets all of that information in the aggregate. It exploits the asymmetry between the little you know and the aggregate it knows—an aggregate it collects based on information you were obliged to "volunteer."

In practice, this emergent ruling class of our time insists on the confinement of particular acts of creation within the property form and access to collective creative activity, from which to harvest information in the aggregate. This is the vectoralist class. If the capitalist class owns the means of production, the vectoralist class owns the vectors of information. They own the *extensive* vectors of communication, which traverse space. They own the *intensive* vectors of computation, which accelerate time. They own the copyrights, the patents, and the trademarks that capture attention or assign ownership to novel techniques. They own the logistic systems that manage and monitor the disposition and movement of any resource. They own the financial instruments that stand in for the value of every resource and that can be put out on markets to crowdsource the possible value of every possible future combination of those resources. They own the algorithms that rank and sort and assign particular information in particular circumstances.

This vectoralist class comes to dominate not just subordinate classes, but other ruling classes as well. Just as capital came to dominate landed property, subsuming its control over land in a more abstract and fungible property form, so too the vectoralist class has subsumed and outflanked capital in a more abstract form. The

capitalist class finds itself at a disadvantage. Owning the means of production, labor materialized into capital in the sense of plant and equipment, is a rigid and long-term investment. Owning and controlling the vector, the hack of new information materialized into patents, copyrights, brands, proprietary logistics. It is more abstract, flexible, adaptive. It is not more rational, but it is more abstract. The vectoralist class monopolizes the crossroads where information traffics, feeding like Michel Serres's parasite on the buzz of information and noise at crucial junctures.[42]

The most obvious aspect of vectoral rule in everyday life is its monopoly of attention, although it is not reducible to this. As Yves Citton notes, in a world awash in digital data, what is rare is the attention paid to it.[43] Commanding attention through the ownership and control of brands, celebrities and media "properties" is the public face, the disintegrating spectacle, of vectoral economy.[44] In part, this descends from what was formerly the culture industry. But it is no longer an industry apart, commodified leisure. It's now integrated into the whole of production and consumption.

This brief sketch of the supersession of capitalism as a dominant mode has the advantage of enabling many of the features of contemporary life that are often treated as separate to appear as aspects of the same historical development. The rise of technology, financialization, neoliberalism, and biopolitics appear as effects of the same transformation of the forces of production, putting pressure on the relations of production, to the point where what bursts forth is a new ruling class formation.

In the usual historical narrative, by the end of the seventies, the forces of labor had fought capital to a standstill in the overdeveloped world.[45] In this story, financialization and neoliberalism come to the rescue. But how? What material means made financialization even possible? What underlying social forces enabled neoliberal ideas to

even appear plausible as policy instruments? Why does this coincide with the apparent birth of "tech" as an industry sector?

In the thought experiment I am sketching, all of these developments fit together in a novel way. The capitalist class was searching for a way out of the impasse of confronting the demands of labor at a time when improvements of the old means of production no longer yielded much by way of a productivity increase. The capitalist class thought it found a way out by replacing labor with the vector and escaping along it. Globalization, deindustrialization, and outsourcing would enable it to be free from the power of labor to block the flows of production. The same information vector would enable not just a more abstract and flexible kind of production, but also of consumption, through the financialization of everyday life.[46] Workers as producers found their jobs had moved elsewhere; workers as consumers found their purchasing power restored—at least temporarily.

Here's the twist: what at first appeared to assist capital to defeat labor in the overdeveloped world was also a *defeat for capital.* The novel forces of production that enabled this outflanking of labor became themselves the new dominant forces of production. Power over the value chain moves from the ownership and control of the means of production to ownership and control of the vectors of information. Whole new industries arose, as did whole new corporations—the so-called tech sector. But actually all corporations become increasingly organized around the ownership and control of information.

Control over the value chain through ownership of the information vector extends even into life itself. This is not the least reason, incidentally, that it is no longer helpful to posit the vitalism of living labor against capital as dead labor.[47] Not capital but the vector enters the flesh and commands it, and not just as meat, but also as information, through monitoring its states, through modifying its functions

with drugs that alter chemical signals, through patenting aspects of life as design.[48] What is at stake is neither a *bios* nor a *polis* but a regime of property in information extending into the organism. The novel forces of production as they have emerged in our time are also forces of reproduction and forces of circulation.

The power of the vectoralist class is not cognitive; nor is it a power over the general intellect.[49] It thrives just as well on noise, on volatility, on bad information as it does on any kind of intelligence or reason.[50] It reaches just as far into the corporeality and even sexuality of the human as it does into the intellect.[51] The forms of artificial computational order it is creating are not extensions or imitations of human cognition but something else entirely.[52]

One cannot interpret the strangeness of this mode of production using the received hermeneutic conceptual categories, derived as they are from a critique of the relations of production of nineteenth-century steam-powered capitalism. Indeed, one sees now how incomplete Marx's critique was and remains. Even his critical understanding of capitalism is still thinking capitalism metaphorically as like a giant, dysfunctional steam engine, set to blow at any moment from unregulated internal pressures.[53] Marx is not able to think critically about information in the contemporary sense of the concept because it is not one that the forces of production of his time have yet produced.

Marx found what was absent in the theories of Capital in his time. He lifted the veil between exchange and production and found the exploited labor that makes it. He wrote the heresy that Capital is dead labor—congealed pink goo—and he went on to write from the point of view of the labor that capital exploits. So: let's go looking for what is absent in theories of both Capital and information in our time. Let's find that peculiar class who own and control information. Let's find the exploited class or classes that make it and are subjected to it. In

vulgar terms: the capitalist class eats our bodies, the vectoralist class eats our brains.

Returning this thought experiment to the present, one might then be able to think the historical specificity of the contemporary moment. This, after all, was Marx's great achievement. He thought *his* moment. His present did not look to him like his past. It had novel features that called into being concepts adequate to the situation. Which leaves us with the paradoxical and provocative thought that any theory in which the present appears as in essence the same as the past of Marx's time, only different in a few matters of appearance, can't really be a "Marxist" one, as such fidelity is necessarily a betrayal of his achievement. Debord: "And theories are made to die in the war of time."[54]

Perhaps we can leave such theological questions to the faithful, who are in any case an embattled and diminished band. Instead, here is a research agenda: what are the current forces of production, and how can they be understood (in a preliminary way) under a modest set of concepts? How do those forces of production give rise to contemporary forms of class power, and how has that power in turn shaped the particular form those forces of production have taken? At what points might the subordinate classes, obliged to live within the world those forces of production make in the interests of those ruling class, be able to assert agency and autonomy? What other world is still possible, given the damage this general economy has done to the world, with the means that it has hitherto developed?[55]

5

A Time Machine Theory of History

> We no longer know what socialism is,
> or how to get there,
> and yet it remains the goal.
>
> —Deng Xiaoping

Let's say you have a time machine. Let's say you take it back in time to the mid-seventies. You hop out and look about for some influential people of that time. You explain to them a few things about what is going on in the twenty-first century. Some of your stories make sense to some of them; other stories sound completely nuts.[1]

For example, let's say your time machine sent you to mid-seventies China. You explain that, by the second decade of the next century, the fate of the global market will be in the hands of the Chinese Communist Party. That would sound pretty crazy. The mid-to-late seventies in China saw the fall of the Gang of Four, the Maoism-lite of Hua Guofeng, and then finally Deng Xiaoping coming to power in the late seventies. But even by then, the China of today would still seem unimaginable to everyone—except Deng Xiaoping.[2]

If you took a time machine back to the Soviet Union in the mid-seventies, you might find a more mixed reaction. Leonid Brezhnev is

in his second decade in power, which looks like it will go on forever. The proxy wars aren't going too badly, with a good showing in Angola and a decisive win in Vietnam—at least until the Soviet invasion of Afghanistan in 1979. You'd probably come across some ideologues who think it's all going fine and you must be mad to think it will be over by the start of the nineties. On the other hand, the economy is just lumbering along. Productivity is flat. The military consumes a huge slice of resources. Vladimir Putin, who joined the KGB in 1975, might already be thinking about a way to stay on the power-track without having to really believe in this particular kind of power.[3]

If you took the time machine back to the United States in the mid-seventies, you might be the one who is confused. Jimmy Carter is President. New York is broke and broken. Microsoft has just been founded. If you tell the think tank "intellectuals" of that era that the Soviet Union will collapse, you might also have gotten a mixed reaction there, too. Let's not forget that the ancestors of today's neoconservatives were pretty certain it couldn't happen. The Soviet Union was not just a regular repressive state to them. It was a *totalitarian* one, which had wormed its way so far into every aspect of everyday life that it could not be brought down by internal forces, but only by jabs from without—by arming Islamic militants to fight it in Afghanistan, for example.[4]

But if you told the neoliberals, they would get it.[5] They said all along that planning won't work because it's just too clunky a way to organize the *information* in an economy, and information is what economies are all about. But those guys did not have a lot of influence back then. Their time had not quite come.[6] And when they talked about information, they really only meant markets. They would not have known any more than anyone else why the founding of Microsoft would turn out to be a big deal. (Later they will pretend they did.)

It is a commonplace to think of the Soviet Union as dead and buried and of the People's Republic of China as somehow becoming just like the West in everything except politics. There are other perspectives. One is that far from being a thing of the past, "Communism" is alive and well and still in charge of a fair chunk of the planet. What the hundred million strong Chinese Communist Party rules over is something a bit less like the "neoliberal West" and a bit more like what the Soviet Union might have been had it stayed the course and stuck with the New Economic Policy, which lasted from 1921 to 1928. Incidentally, Deng Xiaoping was in Moscow briefly during that period. One wonders if he was thinking quietly to himself about something like the New Economic Policy version of "socialism" for fifty years before he got to build it and watch it run off.[7]

The specter haunting Europe, haunting much of the world, is the specter of anti-communism.[8] It might be a useful perspective to imagine that it was not just the Soviet Union that died; its corresponding other half, the so-called Free World, might also have died with it.[9] Of course, it wasn't all that free, if you include all the beatings, the torture, the murder, and the massacre perpetrated by the US military and its proxies around the world: Suharto in Indonesia, Pinochet in Chile, Mobutu in the Congo, and the Shah of Iran—those thugs and butchers were part of the "free" world too.[10] And in the United States itself, the state's response to Black Liberation was to embark on mass incarceration.[11] But on the other hand, one small contributing factor to the partial success of social democracy and civil rights in the West was the need to compete for loyalty with international communism, which at least laid claim to a narrative of universal justice and the final victory in History of a higher form of life.

Even Communism's enemies had to admit this was a pretty compelling story. There was feudalism, now there's capitalism and alongside it socialism, which evolves into Communism, where history ends.

"We will bury you," as Khrushchev said in 1956, when people still took what Soviet leaders said seriously.[12] The most celebrated minds in the West did their best to come up with mythic-epic-poetic grand narratives that could be as compelling, but where the Free World got to be the future rather than the past.[13] A surprising number of them were rather lapsed Marxists and socialists: James Burnham and the managerial revolution; Daniel Bell and the postindustrial society; Walt Rostow's stages of growth and takeoff theory; Alvin Toffler's future shock.[14]

Most of these theories avoided thinking about class conflict. In that respect they looked back to Saint-Simon rather than Marx.[15] They were stories about technology and progress—or in today's terms, acceleration.[16] Actually, Marxists beat them to accelerationism, too. This part of the story is rather neglected by all sides. If there was an original accelerationist, it was J. D. Bernal, whom we met in Chapter 3. A prominent British scientist of the interwar years, he wrote a dazzling accelerationist tract called *The World, The Flesh and the Devil* (1929), which envisioned the consummation of rationality and desire not so much as making human life better, but of transforming the human into some sort of posthuman species-being.[17]

He was also aware it could all go horribly wrong. Bernal: "Scientific corporations might well become independent states and be enabled to undertake their largest experiments without consulting the outside world... The world might, in fact, be transformed into a human zoo, a zoo so intelligently managed that its inhabitants are not aware that they are there merely for the purposes of observation and experiment."[18] As one sees, he was starting to have some inkling of where the forces of production might lead and what kinds of ruling classes might control them.

Bernal converted to the Communist cause shortly after, and together with the left wing of the Social Relations of Science

movement, thought a bit more coherently about science and technology as transforming the forces of production. For Bernal, the transformative capacities of science put scientific workers—one prototype for what I would call the hacker class—on an opposing path to Capital, which restricts the full force of technological change to that which is compatible with the profit motive. As early as 1939 Bernal thought a scientific and technological revolution was under way that was qualitatively different from the forces of production developed in industrial capitalism.[19] That had been piecemeal and accidental; this was intentional and planned. That was based on a rudimentary know-how; this was based on controlling matter, energy, and information understood through abstract, conceptual, and ever-evolving knowledge.

Bernal was an enormously influential figure in his prime—which was roughly from 1930 to 1950.[20] His application of scientific knowledge to the problems of war made the D-Day invasion possible. He was a pioneer on the question of the organization of scientific information. He was made a Fellow of the Royal Society for his x-ray crystallography. But his loyalty to the Soviet Union doomed his career once the wartime alliance broke up and the Cold War was on. Still, the Social Relations of Science movement (whose left wing he represented) helped politicize scientific and technical workers around the world, from Denmark to Japan.[21]

Ironically, given that he stuck with the Soviet Union even after it invaded Czechoslovakia in 1968, his idea of the scientific and technical revolution was alive and kicking in the intellectual ferment of the Prague Spring, which had tried to come up with a "socialism with a human face." The phrase is attributed to Radovan Richta, who put together the book *Civilization at the Crossroads*.[22] Published in 1966, it is another lost accelerationist classic. It quietly argued that Soviet style socialism had failed but that the state ownership of the means

of production should make possible a new kind of socialization, not just of labor and its product, but of the totality of knowledge.

When I went shopping online for this forgotten book, I ended up buying what had once been Daniel Bell's personal copy. It is not hard to see the accelerationist theories of the Free World, such as Bell's, as responding not just to classic Marxist historical prophecy, but also to what was still a very real fear up until the '70s: that the East rather than the West would figure out how to turn the scientific and technical revolution into a new mode of production. But in neither the East nor the West had accelerationist thinkers quite grasped the strange ontological properties of information and how information science, even more than the science of matter and energy, would end up being the distinctive feature of the next century.[23] But at least the Marxist accelerationists had almost grasped one important feature of the world to come: namely, that it would be a world with new kinds of class antagonism.

It is ironic that the Soviet Union failed to build the Internet; the Soviets went at it like Americans, whereas the Americans succeeded because they went about it like Soviets. What would become the Internet was the product of the state investing in basic research in fairly big, collaborative labs, just as Bernal had said it should happen. If we have to come up with a one-word explanation of the failure of the Soviet version, we might settle on "competition."[24]

The war had given the American state the habit of funding collaborative research projects involving both basic science and engineering, and with a surprising amount of sharing of ideas rather than keeping discoveries secret with an eye on monopolizing the patent. The basic, shared knowledge about computation, communication, radar, and electrical engineering emerging out of wartime was the foundation for the Pentagon's substantial investment in all these fields during the Cold War.[25]

Bernal was a bit too much of an orthodox Marxist to wrap his head around information theoretically, but he got it as a practical problem.[26] The kind of physics he did was not about understanding smaller and smaller particles, which is what we think of as the main line of modern physics. It was about understanding bigger and bigger ones. How do atoms come together not just in molecules, but in giant, organic macro-molecules? Advances in the techniques of x-ray crystallography made it possible to answer such questions. This was the path that would lead others to understanding the structure of things like vitamin B12 and insulin (for which his student Dorothy Crowfoot Hodgkin won the Nobel prize).[27] These techniques also contributed to Watson and Crick's famous work on DNA (with an uncredited assist from Rosalind Franklin).[28] All this would end up requiring fantastically complex computation, and Bernal was one of the first to bring more or less modern computing into this field.

In short, for better and worse, computation enables operations to be performed on what would now be called "big data."[29] That makes possible the simulation of really complex things, like organic molecules or even whole economies. Some had even thought that Soviet-style socialism could be made to work if prices were made variable and computation introduced into resource allocation decisions. But the powers that be nixed it. They didn't want to give up command of their command economy.[30]

Radovan Richta must have known that Soviet cybernetics had failed to shift the Soviet mode of production on from dysfunctional state socialist control.[31] There's a hint in his book that this was something of a class conflict: the scientific workers versus the party apparatchiks. But with a few notable exceptions, the former were still insiders, not willing to test the patience of a state that had jailed, tortured, and killed so many of their predecessors.[32]

The most notorious example of Soviet abuse of science was the Lysenko affair.[33] Trofim Lysenko was the son of a peasant and an agronomist whose essentially Lamarkian view of evolution became official policy, at the expense of those scientists who followed Mendel's discoveries in genetics. But this well-known case of state interference in science in the East obscures certain things about power and science in the West. For one thing, western ideologues exploited the Lysenko case for propaganda purposes with little regard for the complexity of the facts. Their call for "freedom" in science seems to have meant "free" as in Free World. Science was coopted into secret military programs. Scientists who raised difficult questions about the politics of science lost their visas, their security clearance, even their laboratories and livelihood.[34]

The most absurd case was surely that of Tsien Hsue-Shen, a Chinese immigrant to America. In the postwar period he had settled into a top-notch career in the new field of rocketry (renamed "jet propulsion" at Caltech, to make it sound more respectable). But it seems he had unwittingly socialized with people who were in the Communist Party. So he was deported—to what had since become Communist China. There this formerly apolitical scientist became both a loyal Communist and the architect of the Chinese missile program. The Silkworm tactical missile, descendant of his designs, was even used in the complicated proxy wars of our own times against US forces.[35]

But this was nothing compared to the general demobilization and demoralization of the scientific left in the postwar years. Progressive scientists such as Bernal were under attack, as were the unions that had grown to express and unify the interests and aspirations of scientific and technical workers. Ironically, big science really was now a creature of massive state support as Bernal had predicted, but the ideology of science made to prevail was not Bernalism, but an image

of science as a "market of ideas" cooked up by his ideological nemesis Michael Polanyi.[36]

Those whose prejudice is to think that science must be inherently reactionary or apolitical or an extrusion of mere "metaphysics" would do well to study just how much coercion and co-option it took to blunt the power of progressive and leftist science in the West after the war. Polanyi's group was even the beneficiary of what we now know to have been a CIA front, the Congress for Cultural Freedom.[37] If you went back in time to the seventies and told an ailing Bernal that by the early twenty-first century there would be left-Heideggerians, it might have caused him another stroke.[38]

And so here we are then, trying to understand what happened over the course of the second half of the twentieth century, equipped with critical theories detached from their former connection to the political struggles in the sciences and hobbled by Cold War injuries that still go largely unexamined.[39] No wonder then that there are few good conceptual tools for understanding how the forces of production really were revolutionized in the period following the war. We have instead descendants of the consensus theories in the spirit of Saint-Simon.[40] For instance, the "ecomodernists" insist that there's nothing that can't be solved by yet more technology in its current form, steered by the wisdom of today's ruling class. The line of thought initiated by Bernal, which in a particular vulgar Marxist style understood historical change on the basis of a thorough knowledge of the forces of production as riven by class conflict, has been much less prominent.

The field was left vacant in the postwar years for one body of theory that really did have a bit of a clue about information: neoliberalism.[41] It did not really have its day in the sun until it was apparent that the Soviet Union was not a clear and present danger. Caught between the oil shocks of the early seventies and relentless

working class militancy amid flat productivity growth, the idea took hold among the ruling classes of some leading western nations that it was time for an actual class war against labor rather than simulated nuclear war against the Soviet Union. Indeed, one might wonder whether nuclear détente between the United States and the Soviet Union came out of a mutual interest in suppressing working class discontent within those empire's respective home worlds.

Neoliberal policy was not universally adopted, but that too was part of the problem. If you could go back in time to the mid-seventies and you explained to people that by the early twenty-first century the Japanese economy would be in stasis, and some of its once powerful companies up for sale, your predictions would have been greeted with some surprise—back in the seventies it was Japan that was the threat to American economic dominance. Japan seemed to have figured out how to contain class struggle within a dynamic that raised productivity. And it had figured out how to incorporate the information workers possess about the production process into the quality control of industrial manufacturing. In Japan, state and corporations worked together to limit the free market domestically and combine economic resources for an all-out drive to conquer export markets.[42]

Back during the war, Japan never attacked continental America with its Zero fighter-planes. The best it could manage was dropping a couple of incendiary bombs from unmanned hot air balloons made of rice paper glued together by schoolgirls and carried across the Pacific on the jet stream.[43] Rather than Zeroes, Japan eventually invaded the United States with Mitsubishi Colts and Galants—cars that incidentally were made by the same conglomerate as those Zeroes. So with the Soviet and Chinese geopolitical threat contained—the latter with Nixon's "ping-pong diplomacy" of the seventies—the challenge was more of the order of working class militancy on the one hand and sophisticated Japanese exports on the other. The neoliberal attack on

labor, in the name of "free" markets as the most efficient processors of information, got under way.

Another anomaly in relation to the story of the rise of neoliberalism is Italy. By the mid-'70s it seemed to be in the throes of some sort of spectral civil war. The Red Brigades were kidnapping people. The secret police seemed to be running the state. The Communist Party was close to a "historic compromise" that would put it in power, in partnership with its old nemesis the Christian Democrats. This had spawned a dissenting Autonomist left movement and corresponding theory. The secret police were doing their best to jail, exile, or silence those theorists, such as Antonio Negri and Paolo Virno. But it looked like Italy really could swing left.[44]

If you were to go back in time and explain to Italians living in the mid-seventies how culture industry tycoon Silvio Berlusconi came to power in the nineties, they might not be amused.[45] In the seventies, major corporations such as Fiat and Olivetti had tried using cheap labor from the rural south, but many of those young workers became politicized.[46] So instead they tried automation as a way to control the power of labor. Either way, Italy like Japan was not on the neoliberal path in the postwar years, even if (unlike Japan) it was not particularly successful at conjuring up an alternative. Italian exceptionalism did give rise to a vigorous strand of Marxist theory, but one more rooted than it might want to acknowledge in eccentric local conditions.[47]

The myth of neoliberalism is that the *idea* of neoliberalism came first, and then politicians like Margaret Thatcher and Ronald Reagan made it policy and then law. This narrative is sometimes popular among leftists despite its clearly idealist view of history.[48] I think it's possible to tell the story another way. After all, what made it possible to implement neoliberal policies in the first place? What changed since the seventies that made it possible to globalize banking and

build vast international supply chains to combine components of a manufacturing process from all over the world?

The clue is already there in the stray fact that Microsoft came into existence in the mid-seventies. It was not information as an idea —free markets—that changed the mode of production. It was a vast, global infrastructure in which information enabled the control of flows of money, machines, resources, and labor. If you can use a computer to calculate the positions of ten thousand atoms in a protein, you can use it to calculate a global production system that routes around the power of militant labor in a factory in Detroit.[49]

There isn't really a time machine that will take you back to the seventies. Or rather, we have only a one-way time machine, or perhaps not a time machine so much as a *tome* machine. You can look in the archive for some neglected storylines, and the past comes back as something else. Maybe something even more amazing than the surprises you could spring on people in the past if you had a time machine are the surprises the past can spring on us through the tome machine of the archive. Maybe we could practice a kind of historical art, of telling the stories otherwise, as a way of inquiring into why certain kinds of story are neglected or suppressed. The default stories selected from the combinatory of story elements may be arbitrary narrative habits.

Here's a story, then: It is an error to call our times *neoliberal* when its politics are not "neo" and its politics are not "liberal," anyway. The politics of the present might just as well be described with the equally retro term *alt-fascist*.[50] It is all about securing ruling class power through the manipulation of racial and ethnic prejudice and the use of surveillance and overt violence to suppress dissent. It is centrally about the prison–industrial complex, expanded now on a global scale, as Angela Davis reminds us.[51] What is new is not the politics at all, which is a farcical double of the superstructures

of old, but rather the mode of production underneath it. Here one might say that the economics are not "liberal" either and that is what makes them new. Forces of production organized around information change the commodity form.

It is a strange thing, this mode of production. What Bernal and Richta called the *scientific and technological revolution* really did happen, and in the West, not the East. But it was the product of a weird kind of "socialism." It came out of a wartime socialization of scientific and technical power. Scientists and engineers, in academic and corporate laboratories, cooperated with each other. Their innovations weren't immediately patented, they were shared. That laid the groundwork for postwar developments in the forces of production. To some extent this "socialism" continued, under the auspices of the Pentagon's Advanced Projects Research Agency, which among other things funded key work in computation.[52]

If there was a key innovation that came out of this strange western state-socialist military–industrial complex, it was the technics of information. It took a while for the pieces to come together. By the early twenty-first century, the odd thing is that the state-socialist sponsored scientific and technical effort, made first to defeat the Axis powers and then to defeat the Soviets, ended up being a way to compete with Japanese industry abroad and to defeat the working classes at home. A basically socialized research program became the means to build an infrastructure—what Benjamin Bratton calls *the stack*, what I call the *vector*—for a systematic and global privatization of objects, subjects, and the information in between them.[53]

That this was not an inevitable destiny of science and technology was masked by the suppression of critical and dissenting voices among scientists themselves. Bernalism, or the Social Relations of Science movement more broadly, was shut down in the red scare politics of the Cold War. In the relative absence of that strand of thinking, the

available stories for accounting for this historical period have lacked a sense of the class conflicts internal to these new forces of production and the extent to which they were likely to transform capitalism, such as it was in the late twentieth century, into something else.

The story that is best known about science and technology during the war is the Manhattan project and the atom bomb. But perhaps it was not the only piece of the puzzle that mattered. The war in the Pacific was probably the biggest logistical operation ever conducted up until that time. Robert McNamara, who would later run the Ford Motor Company and then the Pentagon, was an apprentice logistics expert during the war. These were pioneering efforts to control the movement and combination of incredibly complex arrays of resources across vast territories using communication and computation.[54]

What started out as the means to beat the Axis powers, and then contain the Soviets, and then to compete with Japanese industry, was in the end the means to globalize production, exploit the newly available cheap labor of the People's Republic of China, and destroy the power of organized labor within Italy, the United States, and throughout much of the overdeveloped world. But there's a paradox attendant to this. Capital thought it was using some new kinds of communication and computational power in its struggle with labor, but in the end the capitalist class too ended up being subsumed under that power. The capitalist class became a subsidiary ruling class to the *vectoralist class.* Capital is dead; the Vector lives.

A capitalist class owns the means of production, the means of organizing labor. A vectoralist class owns the means of organizing the means of production. The vector has a double form: the form of vector along which information is to be routed (the extensive vector), and the form of the vector along which information can be stored and computed (the intensive vector). A vectoralist class also owns and

controls the production process through patents, copyrights, brands, trademarks, proprietary logistical processes, and the like.

It is curious that if one looks at the world's biggest corporations these days, a lot of their power and property is in vectoral form. Many of them don't actually make the things they sell. They control the production process by owning and controlling the information. Even when they do still make the stuff, a quite remarkable amount of the valuation of the company comes from portfolios of intellectual property, or proprietary data about their customers, and so on. Capital was subsumed under a more abstract form of technical power.

When considering the vectoralist class, then, three further points suggest themselves. First, it seems to be able to extract value not just from labor but from what Tiziana Terranova calls *free labor*.[55] Even when you just stroll down the street, the phone in your purse or pocket is reporting data back to some vectoralist entity. The vectoralist class seems to be able to extract revenue out of qualitative information in much the same way as banks extract it out of quantitative information. Perhaps the exercise of power through control of quantitative and qualitative information is characteristic of the same ruling class.

Second, the vectoralist class subordinates the old kind of ruling class, a capitalist class, in the same way that capitalists subordinated the old landlord class that subjected rural production to commodification through ground rent. In that sense, the rise of a vectoralist class is a similar and subsequent development within intra-ruling class dynamics. The vectoralist class still sits atop a pyramid of exploited labor, but it depends also on extracting a surplus out of another, fairly privileged but still subordinate class.

I call it the *hacker class*. Bernal already had an inkling of this development when he tried to articulate the interests of scientific workers in and against capitalism, but this was not quite the hacker class

yet. That had to wait for the development of sophisticated forms of intellectual property, which are in turn embedded in the design of the interface for the creative process. This transforms the qualitative work of producing new forms of information in the world into property that can be rendered equivalent in the market. In short, a new class dynamic, between vectoralist and hacker, was added to an already complex pattern of relations between dominant and subordinate classes.

Third, the political economy of the former West rather than the former East was the one that was able to develop the implications of the scientific and technical revolution, in the form of the rise of the vectoralist class. But it was the state form of the former East that has prevailed in the former West. The vector is not just a means of transforming production. It is also a way of transforming state power.[56] Data can be collected for the purposes of a logistics of economic control; data can also be collected to run the surveillance and security apparatus of the state. The western states too had their surveillance apparatus, but it was never as total as those of the East. The new model worldwide uses the vector to realize the dreams of the KGB of old, an information state. This is what Guy Debord called the stage of the *integrated spectacle*, combining the worst of the former East and West.[57]

The West is now the former West. Its economy became something else. It isn't capitalism any more—it's worse. It takes even more control away from work life and everyday life. It expands the exploitation of nature to possible extinction. It is certainly not the wonderful dream of a "postindustrial society," still less Bernal and Richta's accelerationist socialism. It is a relatively new and more elaborate form of class domination, one in more or less "peaceful coexistence" with the Russian former East, whose global significance is reduced to that of predatory oligarchy monopolizing a resource

export economy.[58] The Soviet Union paid a high price for not figuring out the role of information and reaching a modus vivendi with its scientific workers.

Both now co-exist with the People's Republic of China, which under Deng Xiaoping followed something more akin to the Japanese rather than the so-called neoliberal model, of suppressing wages and funneling the surplus into export-led growth. Whatever forces may have been pushing in a more neoliberal direction in China seem to have been decisively defeated after the 2008 financial crash. Xi Jinping consolidated his power and set China on a different course. Perhaps the neoliberal state is not the only model of the information state. China is attempting another kind. An authoritarian information state, no doubt, but the states of the former West are hardly in much of a position to criticize given their own tendencies.

In the West, vectoral power has so routed the working class and driven down its wages that it can no longer consume what China manufactures. Its ability to do so was propped up temporarily by debt. But now the whole system is awash in bad debt and surplus productive capacity. Sensing a crisis of overproduction looming, the Chinese Communist Party directed its matrix of state and corporate actors to embark on an extraordinary plan to restart the silk road and open new markets for its manufacturers across central Asia and beyond. The dominant idea still seems to be, as it was under Deng, to expand the forces of production, this time beyond the borders of China itself—and this time allied to control of the vector.[59]

In its own mind, the legitimacy of Communist Party rule rests on its capacity to both accelerate the infrastructure and manage the consequences for the superstructure of this social engineering project as it pushes outwards beyond the borders of the People's Republic of China.[60] That this was to be the destiny of a Leninist party is so inconceivable to either the western left or right that both seem to

pretend that this monstrous project is not really happening. What would require considerably more thought would be to figure out what is distinctive and what is generic in the intraruling class politics that make China's ambitious alignment of state, vector, and capital possible.[61]

Benjamin Bratton thinks that what he calls the *stack*, or what I call the *vector*, generates a distinctive kind of geopolitics, one in which the former sovereign states have to negotiate with a kind of power based in distributed information infrastructures, producing a relatively novel kind of virtual geography.[62] He would have us attend not just to China's strategic competition with the United States, but also to what he calls the "First Sino-Google war of 2009."[63] The vectoralist class in the former West seems to be detaching itself from the space of the representative state and investing in transnational vectors. Meanwhile, China's ruling class is building something different, in which state territory and stack territory coincide.

Of all the trips in our imaginary time machine or actual tome machine, those back and forth to the People's Republic of China are surely the most perplexing, at least for those of us from the former West, and possibly those from the former Soviet East as well. It is particularly difficult for western Marxists. There is still a hardy band of bearded old professors and votaries of various sects who think they keep alive the flame of an "orthodox" Marxism—some of them even extinct flavors of westernized Maoism. This is a strange conceit when seen from the point of view of the existence of the hundred-million-member Communist Party of China. While one might want to dissent strongly from their version of it, orthodox Marxism today is really whatever that party says it is. One's heretical version might best take the thorough critique of "Xi Jinping Thought" as its point of departure now, rather than the ancient quarrels dormant in dead tomes.

To someone from the former West, the willful "ultrabolshevism" of Chinese Marxism is a curious thing, particularly once it became the mythic combinatory through which the now ruling party narrates and justifies its own trajectory to itself.[64] In the former West, it is common to imagine, and not without a shade of Eurocentrism, that we are the custodians of what Marxism is, so the ruling party in China must just ignore it or pay lip service to it or invoke it purely hypocritically. There may indeed be elements of that.

The Communist Party of China does not really care what those of us from the former West think Marxism is. To them, whatever it is, its fate is determined in China, not the former West and certainly not in the former East. And its fate was to become the mythic generator of narratives through which a Chinese adaptation of the Bolshevik Party narrates its own history to itself. This is hardly a cynical exercise, as the party's grip on power depends in some small part on the cogency of that story.

The party drew three very different kinds of story from the Marxist combinatory at three junctures in its history. Mao Zedong thought emphasized class struggle as a voluntarist activity, putting politics in command, forcibly making a working class agency out of a mostly peasant population led by the party.[65] Deng Xiaoping thought shifted instead to the development of the forces of production to accelerate industrialization and the formation of some kind of capitalist class, led by the party.[66] Xi Jinping thought shifts again to the ambition of China's leadership of world history, through the building of a massive infrastructure of the vector or stack kind that drives global trade and supply chains that route around those of the former West, led by the party.[67]

Mao had warned about capitalist roaders, but he knew nothing of the vectoralist silk-roaders to come after them. Capital in the former West broke the power of labor by using the information vector to

coordinate a new global geography of production, and in particular by moving actual production to China, where a capitalist class emerged under the auspices of the party. That class might indeed have subsumed the party entirely. It is quite possible that the richest billionaires on the planet are Chinese Communist Party grandees and their families.

The Chinese state might well have taken a "neoliberal" turn. However, with the collapse of the global financial system in 2008, triggered by speculative madness in the US mortgage-backed securities market, China seems to have decisively changed tack. The Chinese state and economy, like others, are increasingly driven by a plurality of forms of big data vector rather than exclusively by finance. The ambition of the Chinese ruling class seems to be the control of a transnational value chain more through ownership and control of the vector of information than through ownership and control of the means of production. Factories outsourced from the former West to China are being outsourced again to even less developed states (including some in the former East) through Chinese-controlled information and logistics infrastructure. The party now seems to view itself as an agent of world history, realizing a global universality—but with Chinese characteristics.[68]

There is not enough world out of which to build China's ambitious global vector or anyone else's. The intensive vector of computation can now model just about anything, from complex biochemical forms to whole economies to the whole biosphere. And as it turns out, that biosphere is in trouble. The scientific and technical revolution at one and the same time pushes the biosphere to crisis point and yet also yields the only reliable information we have about climate change and other symptoms of the Anthropocene.[69] Once more, there is a moment in which the scientifically trained start to ask questions about the system within which their knowledge is being exploited. Only this

time it's not poison gas or nuclear weapons or DDT, it's the whole process of vectoral and commodified production and consumption that is called into question, which has become more and more abstract and less and less rational.

If you were to go back to the seventies and explain to climate scientists that by the early twenty-first century, climate change caused by industrial production has been definitively shown to raise global average temperatures, they would probably want to closely study the models and the data you have brought back with you to show them, but they would probably not be surprised at all. However, they would probably ask you what people in our time are doing about it. And you will wish they hadn't asked.

56 Sutherland, *Stupefaction*, 43.
57 Ibid., 47.
58 Ibid., 36.
59 William Pietz, "The Problem of the Fetish," *RES: Anthropology and Aesthetics* 9: 1, 1985, 5–17.
60 Galloway, *Excommunication*.
61 Gustave Flaubert, *Bouvard and Pechuet with The Dictionary of Received Ideas*, London: Penguin Classics, 1976.
62 A metaphysics one was taught to question in Michel Foucault, *The Archaeology of Knowledge*, New York: Vintage, 1982. Only this in turn became the foundation of its own doxa.
63 Karl Marx, "Preface," *A Contribution to the Critique of Political Economy*, Moscow: Progress Publishers, 1977, https://www.marxists.org/archive/marx/works/1859/critique-pol-economy/preface.htm
64 Ibid.

2. *Capitalism—or Worse?*

1 Donna Haraway, "The Promises of Monsters," *The Haraway Reader*, New York: Routledge, 2004.
2 Melissa Gregg, *Counterproductive: Time Management in the Knowledge Economy*, Durham, NC: Duke University Press, 2018.
3 Lana Wachowski and Lilly Wachowski (directors), *The Matrix*, Los Angeles: Warner Brothers, 1999.
4 Joss Whedon (executive producer), *The Dollhouse*, Los Angeles: 20th Century Fox Productions, 2009–2010.
5 Arlie Russell Hochschild, *The Managed Heart*, Berkeley: University of California Press, 2011.
6 Jordan Peele (writer and director), *Get Out*, Los Angeles: Blumhouse Productions, 2017.
7 Ann Leckie, *Ancillary Justice*, London: Orbit, 2015.
8 Agustín de Rojas, *The Year 200*, trans. Nick Caistor and Hebe Powell, New York: Restless Books, 2016.
9 Boots Riley's film *Sorry to Bother You* (Significant Productions, 2018) plays out another possibility of the combinatory: worker's bodies are genetically altered with horse DNA to produce a new and more powerful species of manual laborers.

10 Karl Marx, "Preface (to A Contribution to the Critique of Political Economy)," *Early Writings*, London: Penguin, 1992, 424ff.
11 Marshall Berman, *All That Is Solid Melts into Air: The Experience of Modernity*, New York: Penguin, 1988.
12 McKenzie Wark, *A Hacker Manifesto*, Cambridge, MA: Harvard University Press, 2004.
13 Evegeny Pashukanis, *Law and Marxism*, London: Pluto Press, 1987.
14 James Boyle, *The Public Domain*, New Haven, CT: Yale University Press, 2010.
15 Phillip Kalantzis-Cope, *The Work and Play of the Mind in the Information Age: Whose Property?* London: Palgrave, 2017.
16 Pekka Himanen, *The Hacker Ethic*, New York: Random House, 2002.
17 Matthew Weiner et al. (executive producers), *Mad Men*, Los Angeles: Weiner Bros., 2007–2015.
18 The classic Marxist study of which is Stuart Ewen, *Captains of Consciousness: Advertising and the Social Roots of Commercial Culture*, New York: Basic Books, 2001.
19 Christopher Cantwell and Christopher C. Rogers (creators), *Halt and Catch Fire*, Atlanta, GA: Gran Via Productions and Lockjaw Productions, 2014–2017.
20 I borrowed the term from Paul Virilio, but the concept is closer to the work of Harold Innis, *The Bias of Communication*, Toronto: University of Toronto Press, 2008.
21 Jesse LeCavalier, *The Rule of Logistics: WalMart and the Architecture of Fulfillment*, Minneapolis: University of Minnesota Press, 2016.
22 Leopold Kohr, *The Overdeveloped Nations*, New York: Shocken, 1978.
23 I summed up the debates around this in "From Fordism to Sonyism: Perverse Readings of the New World Order," *New Formations* 16, 1992, 4–54.
24 Karl Marx, *The Revolutions of 1848*, London: Verso, 2010; Karl Marx, *Surveys from Exile*, London: Verso, 2010; Karl Marx, *The First International and After*, London: Verso, 2010.
25 Algirdas Julien Greimas, *On Meaning: Selected Writings in Semiotic Theory*, Minnesota: University of Minneapolis Press, 1987.
26 Anna Tsing, *Friction: An Ethnography of Global Connection*, Princeton, NJ: Princeton University Press, 2005.

27 The Marx Brothers, *Go West* (1940), directed by Edward Buzzell.

28 Michael Hardt and Antonio Negri, *Multitude*, New York: Penguin, 2005. The term has a somewhat different valence in Paolo Virno, *Multitude Between Innovation and Negation*, Los Angeles: Semiotext(e), 2008.

29 Bruce Robbins, *The Beneficiary*, Durham, NC: Duke University Press, 2017.

30 Dave McNary, "Vice Media Employees Unionize," *Variety*, September 21, 2017; Nitasha Tiku, "Why Tech Workers Dissent is Going Viral," *Wired*, June 29, 2018; Daisuke Wakabayashi et at, "Google Walkout: Employees Stage Protest Over Handling of Sexual Harassment," *New York Times*, November 1, 2018. One could connect these recent instances of hacker activisim to more long-standing ones, such as the work of Computer Professionals for Social Responsibility.

31 Popularized by Richard Florida, *The Rise of the Creative Class*, New York: Basic Books, 2014.

32 Franco Berardi, *Soul at Work*, Los Angeles: Semiotext(e), 2009.

33 One could think of cognition in a far wider sense; see Katherine Hayles, *Unthought: The Power of the Cognitive Nonconscious*, Chicago: University of Chicago Press, 2017.

34 Steven Levy, *Hackers*, Sebastopol, CA: O'Reilly Media, 2010. This classic account can be read, in spite of itself, as depicting a moment before hackers in the narrow sense of the term were fully incorporated into a vectoralist mode of production.

35 E. P. Thompson, *William Morris: Romantic to Revolutionary*, Oakland, CA: PM Press, 2011. Morris understood first-hand the contradiction between quality work that produced use value and wage labor that subordinated use value to exchange value.

36 Jack Halberstam, *The Queer Art of Failure*, Durham, NC: Duke University Press, 2010.

37 Francis Fukuyama, *The End of History and the Last Man*, New York: Free Press, 2006.

38 Maurice Dobb, *Theories of Value and Distribution Since Adam Smith*, Cambridge: Cambridge University Press, 1975.

39 Amy Wendling, *Karl Marx on Technology and Alienation*, London: Palgrave, 2009.

40 Tiziana Terranova, *Network Culture: Politics for the Information Age*,

London: Pluto Press, 2004. Labor with the modifier free is still something of a placeholder concept, but has a useful tension in it with the norm of *wage* labor.

41 Marcel Mauss, *The Gift*, Chicago: Hau Books, 2016.

42 Michel Serres, *The Parasite*, Minneapolis: University of Minnesota Press, 2007.

43 Yves Citton, *The Ecology of Attention*, Cambridge, UK: Polity, 2017.

44 I borrowed the term *disintegrating spectacle*, a play on Debord's integrated spectacle, from Jodi Dean, *Blog Theory: Feedback and Capture in the Circuits of Drive*, Cambridge, UK: Polity, 2010.

45 For example: Wendy Brown, *Undoing the Demos: Neoliberalism's Stealth Revolution*, New York: Zone Books, 2015.

46 Randy Martin, *Financialization of Daily Life*, Philadelphia, PA: Temple University Press, 2002.

47 As for example in Antonio Negri, *Marx Beyond Marx: Lessons on the Grundrisse*, New York: Autonomedia, 1992.

48 Melinda Cooper, *Life as Surplus: Biotechnology and Capitalism in the Neoliberal Era*, Seattle: University of Washington Press, 2008.

49 See the introduction to McKenzie Wark, *General Intellects*, New York: Verso, 2017.

50 Randy Martin, *Knowledge LTD: Towards a Social Logic of the Derivative*, Philadelphia, PA: Temple University Press, 2015.

51 Paul B. Préciado, *Testo Junkie*, New York: Feminist Press at CUNY, 2013.

52 Benjamin Bratton, *The Stack: On Software and Sovereignty*, Cambridge, MA: MIT Press, 2016.

53 Amy Wendling, *Karl Marx on Technology and Alienation*, London: Palgrave, 2009.

54 Guy Debord, *in girum imus nocte et consumimur igni*, London: Pelagian Press, 1991, 63.

55 Allan Stoekl, *Bataille's Peak: Energy, Religion and Post-Sustainability*, Minneapolis: University of Minnesota Press, 2007.

3. *The Forces of Production*

1 Wolfgang Schivelbusch, *The Railway Journey: The Industrialization of Time and Space in the Nineteenth Century*, Berkeley: University of California Press, 2014.

55 Verso Books, ed., *Where Freedom Starts: Sex Power Violence #MeToo*, New York: Verso Books, 2018.
56 Gerald Raunig, *Dividuum: Machinci Capitalism and Molecular Revolution*, Los Angeles: Semiotext(e), 2016.
57 Franco Berardi, *Soul at Work*, Los Angeles: Semiotext(e), 2009.
58 Cardi B., "Bodak Yellow," 2017. See Robin D. G. Kelley, *Yo' Mama's Disfunktional: Fighting the Culture Wars in Urban America*, Boston: Beacon Press, 1998, which brings Angela Davis's reading of the class politics of blues culture at least up to the nineties.
59 Mark Fisher, *Ghosts of My Life*, Winchester, UK: Zero Books, 2014.
60 Camilla Griggers, *Becoming Woman*, Minneapolis: University of Minnesota Press, 1997; Laurent de Sutter, *Narcocapitalism: Life in the Age of Anaesthesia*, Cambridge, UK: Polity, 2018.

5. *A Time Machine Theory of History*

1 On the time machine trope, see Fredric Jameson, "In Hyperspace," *London Review of Books* 32: 17, September 2015.
2 Deng Xiaoping, *Fundamental Issues in Present-Day China*, Beijing: Foreign Languages Press, 1987.
3 Masha Gessen, *The Man Without a Face: The Unlikely Rise of Vladimir Putin*, New York: Riverhead Books, 2013.
4 Hannah Arendt, *The Origins of Totalitarianism*, New York: Harcourt, 1973. Arendt is obviously not entirely responsible for the uses this text was put to in Cold War America.
5 See Philip Mirowski and Edward Nik-Khan, *The Knowledge We Have Lost in Information*, New York: Oxford University Press, 2017, for a highly critical account of how orthodox economics handles information.
6 Philip Mirowski, *Machine Dreams: Economics Becomes a Cyborg Science*, Cambridge: Cambridge University Press, 2002.
7 Deng, *Fundamental Issues in Present-Day China*.
8 "Specters of anti-communism" is from Joshua Simon; see Ingo Niermann and Joshua Simon, eds., *Solution 275–294: Communists Anonymous*, Berlin: Sternberg Press, 2017, 19.
9 I owe this idea to Maria Hlavajova and Simon Sheikh, eds., *Former West: Art and the Contemporary after 1989*, Cambridge, MA: MIT Press, 2017, in which this chapter first appeared.

10 On anti-communism as domestic and foreign policy, see Joel Kovel, *Red Hunting in the Promised Land: Anticommunism and the Making of America*, London: Cassell, 1997.
11 Jackie Wang, *Carceral Capitalism*, Los Angeles: Semiotext(e), 2018.
12 Nikita Khrushchev, *Memoirs of Nikita Khrushchev*, University Park: Penn State Press, 2007, 893.
13 *Le grand récit*, which more or less translates as the grand narrative, is from Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge*, Minneapolis: University of Minnesota Press, 1984.
14 Richard Barbrook, *Imaginary Futures: From Thinking Machines to the Global Village*, London: Pluto Press, 2007.
15 Frank Edward Manuel, *The Prophets of Paris*, New York: Harper, 1965.
16 Robin Mackay and Armen Avanessian, eds., *#Accelerate: The Accelerationist Reader*, Falmouth, UK: Urbanomic, 2014.
17 Rosi Braidotti, *The Posthuman*, Cambridge, UK: Polity, 2013.
18 J. D. Bernal, *The World, the Flesh and the Devil*, Bloomington: Indiana University Press, 1969, 78–80.
19 J. D. Bernal, *The Social Function of Science*, Cambridge, MA: MIT Press, 1969.
20 Andrew Brown, *JD Bernal: The Sage of Science*, Oxford: Oxford University Press, 2007.
21 Kristian Hvidfelt Nielsen, "Enacting the Social Relations of Science," *Public Understanding of Science* 17: 2, 2008, 171–88; Hideto Nakajima, "Kuhn's Structure in Japan," *Social Studies of Science* 42: 3, 2012, 462–6.
22 Radovan Richta et al, *Civilizace na Rozcesti*, Prague: Svoboda, 1966. English translation: Radovan Richta et al, *Civilization at the Crossroads*, Prague: International Arts and Sciences Press, 1969.
23 McKenzie Wark, *A Hacker Manifesto*, Cambridge, MA: Harvard University Press, 2004.
24 Benjamin Peters, *How Not to Network a Nation*, Cambridge, MA: MIT Press, 2016.
25 Robert Buderi, *The Invention That Changed the World*, New York: Simon & Schuster, 1996.
26 See the exchange of views between Bernal and J. B. S. Haldane in *Modern Quarterly* from 1948 to 1949.

27 Georgina Ferry, *Dorothy Hodgkin: A Life*, London: Bloomsbury, 2014.
28 Brenda Maddox, *Rosalind Franklin: The Dark Lady of DNA*, New York: Harper, 2003.
29 Viktor Mayer-Schönberger and Thomas Ramage, *Reinventing Capitalism in the Age of Big Data*, New York: Basic Books, 2018.
30 Francis Spufford, *Red Plenty*, Minneapolis, MN: Greywolf Press, 2012.
31 On Soviet cybernetics, see Slava Gerovitch, *From Newspeak to Cyberspeak*, Cambridge, MA: MIT Press, 2004.
32 See the careful appeals to official Soviet language in Andrei Sakharov, *Progress, Coexistence and Intellectual Freedom*, New York: Norton, 1968.
33 Richard Levins and Richard Lewontin, *The Dialectical Biologist*, Cambridge, MA: Harvard University Press, 1987.
34 Greta Jones, "British Scientists, Lysenko and the Cold War," *Economy & Society* 8: 1, 1978, 26–58.
35 Iris Chang, *Thread of the Silkworm*, New York: Basic Books, 1996.
36 Mary Jo Nye, *Michael Polanyi and His Generation*, Chicago: University of Chicago Press, 2011.
37 Frances Stonor Saunders, *The Cultural Cold War*, New York: The New Press, 2013.
38 Martin Heidegger, *Ponderings II–VI: Black Notebooks 1931–1938*, Bloomington: Indiana University Press, 2016.
39 Hugh Wilford, *The Mighty Wurlitzer: How the CIA Played America*, Cambridge, MA: Harvard University Press, 2009.
40 Henri Saint-Simon, *Social Organization, the Science of Man and Other Writings*, New York: Harper, 1964.
41 Or not. See Mirowski and Nik-Khan, *The Knowledge We Have Lost in Information*, for a highly critical account of how orthodox economics handles information.
42 Chalmers Johnson, *MITI and the Japanese Miracle*, Stanford, CA: Stanford University Press, 1982.
43 John McPhee, "Balloons of War," *The New Yorker*, January 29, 1996.
44 Sylvère Lotringer and Christian Marazzi, eds., *Autonomia: Post-Political Politics*, New York: Semiotext(e), 1980.
45 Paul Ginsborg, *Silvio Berlusconi: Television, Power and Patrimony*, London: Verso, 2005.
46 Nanni Balestrini, *We Want Everything*, London: Verso Books, 2016,

captures the structure of feeling of the revolting southern workers of the time.

47 Sylvère Lotringer and Christian Marazzi, eds., *Autonomia: Post-Political Politics*, New York: Semiotext(e), 1980.

48 Wendy Brown, *Undoing the Demos*, New York: Zone Books, 2015.

49 Marvin Surkin and Dan Georgakas, *Detroit: I Do Mind Dying*, Chicago: Haymarket Books, 2012. Actually many critical labor processes had already moved out of Detroit itself, so by "Detroit" I mean the distributed geography of the car industry rather than the actual city.

50 Clearly a topic in need of far more sensitive handling than I can give it here. See Federico Finchelstein, *From Fascism to Populism in History*, Berkeley: University of California Press, 2017.

51 Angela Y. Davis, *Are Prisons Obsolete?* New York: Seven Stories Press, 2003.

52 Sharon Weinberger, *The Imagineers of War: The Untold Story of DARPA*, New York: Knopf, 2017.

53 Benjamin Bratton, *The Stack: On Software and Sovereignty*, Cambridge, MA: MIT Press, 2016.

54 David Halberstam, *The Reckoning*, New York: William Morrow, 1986.

55 Tiziana Terranova, *Network Cultures: Politics for the Information Age*, London: Pluto Press, 2004.

56 Sandra Braman, *Change of State: Information, Policy, Power*, Cambridge, MA: MIT Press, 2009.

57 Guy Debord, *Comments on the Society of the Spectacle*, New York: Verso, 2011.

58 On the post-Soviet period, see Tony Wood, *Russia Without Putin: Money, Power and the Myths of the New Cold War*, New York: Verso, 2018.

59 Deng, *Fundamental Issues on Present-Day China.*

60 Arif Dirlick, *Complicities: The People's Republic of China in Global Capitalism*, Chicago: Prickly Paradigm, 2017.

61 Xi Jinping, "Report to the 19th CPC National Congress," *China Daily*, October 18, 2017.

62 McKenzie Wark, *Virtual Geography*, Bloomington: Indiana University Press, 1994.

63 Bratton, *The Stack.*

64 Adrian Chan, *Chinese Marxism*, London: Continuum, 2003.

65 Laikwang Pang, *The Art of Cloning: Creative Production During China's Cultural Revolution*, London: Verso, 2017.

66 Yuk Hui, *The Question Concerning Technology in China*, Falmouth, UK: Urbanomic, 2016, 190–97. This brilliant book notes in passing that Deng drew in part on Engels-inspired Marxist theories of technology to pose questions about industrial efficiency in order to develop a policy for the rapid expansion of the forces of production.

67 Xi Jinping, *The Governance of China*, vol. 2, Shanghai: Shanghai Press, 2018.

68 Daniel Vukovich, *Illiberal China*, Singapore: Palgrave Macmillan, 2019, ably poses the problem of seeing like a *different* state (a problem that I obviously cannot do justice to in these speculative remarks).

69 Jan Zalasiewicz, Colin N. Waters, Mark Williams, and Colin Peter Summerhayes, eds., *The Anthropocene as a Geological Time Unit: A Guide to the Scientific Evidence and Current Debate*, Cambridge: Cambridge University Press, 2019.

6. *Nature as Extrapolation and Inertia*

1 Sianne Ngai, *Ugly Feelings*, Cambridge, MA: Harvard University Press, 2007.

2 Peter L. Berger and Thomas Luckman, *The Social Construction of Reality*, New York: Anchor, 1967.This is one way of thinking the direction in which science studies moved on from the sociology of knowledge.

3 Jason W. Moore, *Capitalism in the Web of Life*, New York: Verso, 2015.

4 Paul Burkett, *Marx and Nature*, Chicago: Haymarket Books, 2014.

5 E. P. Thompson, *Exterminism and the Cold War*, London: Verso, 1987. See also John Carl Baker, "Notes on Late Exterminism," published on the Verso blog, June 16, 2017.

6 Robert J. C. Young, *White Mythologies*, New York: Routledge, 2004. Young offers a strong critique of the Sartrean project outlined in this essay, from a postcolonial perspective.

7 Vivek Chibber, *Postcolonial Theory and the Specter of Capital*, London: Verso, 2013.

8 Gilles Deleuze and Félix Guattari, *Anti-Oedipus*, London: Penguin,