Inhuman Networks

Social Media and the Archaeology of Connection

Grant Bollmer

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I began this book around 2008 with a set of seemingly basic questions: Why do we imagine that networked media "connect" people and things? And what does imagining something as "networked" or "connected" do—be it in terms of political articulations of subjectivity, the formation of material practices, or in the everyday experiences people have of technology? Answering these questions has taken me through numerous fields and disciplines, all to grasp the massively complex cultural significance of so-called "social media"—which was, when I began, a relatively novel set of technologies, but now refers to a proliferation of different media platforms ubiquitous throughout a large percentage of the planet. Eight years after I began this project (during which I lived in a total of four different countries and relied more than a fair bit on social media to remain "connected" with friends and family), what started as a somewhat unwieldy, interdisciplinary—and perhaps even a bit feral—manuscript has grown into this book, which is perhaps still somewhat unwieldy, interdisciplinary, and just a little undisciplined. In writing this book I've relied on a large number of friends, mentors, and colleagues. As is often stated, a book is not merely the work of one person (though I remain solely responsible for its limitations).

I began this project at the University of North Carolina at Chapel Hill, with the fortune to arrive at the same time as Sarah Sharma. Sarah's influence on my own thought and teaching is immeasurable, pushing me to think about contemporary media in a way that is historical, political, theoretical, and grounded in everyday life. Sarah has been an ideal mentor, colleague, and friend. I feel so lucky that I've had the chance to know her, and even luckier that such a brilliant and thoughtful person has done so much for me over the years.

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I finished this book while a lecturer in the Digital Cultures Program at the University of Sydney. The other staff members of the Digital Cultures Program—Chris Chesher, Kathy Cleland, John Tonkin, and César Albarrán Torres—have been exceptional colleagues, along with those at the intersection of Digital Cultures and Media and Communications: Gerard Goggin, Jonathon Hutchinson, and Katrina Aveyard. The regular attendees of the Technology and Culture Reading Group have been a source of dialogue that I greatly value. My research students, Chris Rodley, Punit Jagasia, Kyle Moore, Yuanbo Qiu, Benjamin Ridgeway, and Dina Abdel-Mageed, have all been a source of new ideas and provocations, introducing me to new areas of digital culture and new problems to think through, along with Ravi Glasser-Vora and Jorge Valdovinos (the latter of whom served as a research assistant for another project as I was completing this one). I thank Chris and Ravi, in particular, for regularly engaging me in the kinds of theoretical and critical dialogue that led me to research digital media in the first place.

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Earlier versions of parts of this book have been previously published. A different version of Chapter 1 appeared as "Technobiological Traffic: Networks, Bodies, and the Management of Vitality," in *Traffic: Media as Infrastructures and Cultural Practices*, edited by Marion Näser-Lather and Christoph Neubert (Leiden: Brill, 2015), 117–35. Part of Chapter 3 originally appeared, in a significantly different form, as "Community as a Financial Network: Mortgages, Citizenship, and Connectivity," *Democratic Communiqué* 24 (2011): 39–56, which was part of a special issue titled "Laboring the Academy: New Directions for Communications Studies in the Economic Crisis," edited by Brian Dolber and Mark Hayward. A version of Chapter 4 was originally published as "Millions Now Living Will Never Die: Cultural Anxieties About the Afterlife of Information," *The Information Society* 29, no. 3 (2013): 142–51, part of a special issue on "The Death, Afterlife, and Immortality of Bodies and Data," edited by Connor Graham, Martin Gibbs, and Lanfranco Aceti. And, finally, a shorter version of Chapter 6 was published as "Demanding Connectivity: The Performance of 'True' Identity and the Politics of Social Media," *JOMEC Journal*

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INTRODUCTION
CONNECTIVITY, FLOW, CITIZENSHIP, ARCHAEOLOGY

How to make a person into an internet router

At the 2012 South by Southwest Conference and Festival in Austin, Texas, the marketing firm Bartle Bogle Hegarty, or BBH, chose thirteen people from the Front Steps shelter to participate in a new program to combat homelessness. BBH gave each of their selected participants a small, portable 4G wireless device called a "MiFi" router. This kind of router, the name of which is a portmanteau of "My WiFi," can connect up to five internet-enabled phones or peripherals, usually for individualized, personal network connectivity while away from the home or office.[1] These "Homeless Hotspots," as BBH referred to their MiFi men,[2] were sent into Austin with their new mobile technologies literally strapped to their necks (Figure 1). Instead of a few fixed access points located throughout South by Southwest, the Hotspots would wander among congregations of conference-goers, offering free wireless internet connectivity through an ever-changing network. They were guaranteed a minimum day's wages of

Figure 1 Mark, a Homeless Hotspot, pictured with his 4G MiFi router at the 2012 South by Southwest Conference and Festival. Photograph by Callie Richmond, reproduced with her permission.

fifty dollars for their infrastructural labor, with the potential for additional income from donations.[3] By attaching these devices to the bodies of Austin's homeless, BBH created a wireless network out of the city's underclass. The marketing agency had literally transformed mobile human beings—mobile by precarious circumstance, not by choice—into a flexible and fluid technological infrastructure, serving a different mobile class of those living at the speed of postindustrial capital.

Even within the vanguard of the digital creative class, many noted how Homeless Hotspots seemed to exploit homelessness, not ameliorate it. By transforming the homeless into a wireless internet infrastructure for the use of those attending South by Southwest, the program played into and perpetuated divisions between the economically empowered and the financially impoverished in postindustrial America. A *Wired* blog post argued that the homeless were transformed "not just into walking, talking hotspots, but walking, talking billboards for a program that doesn't care anything at all about them or their future, so long as it can score a point or two about digital disruption of old media paradigms. So long as it can prove that the real problem with homelessness is that *it doesn't provide a service*."[4] For this *Wired* author, Homeless Hotspots was not a model for actual social intervention in an age of social media. It was, instead, about the battle between old media and new media, represented by the transformation of capitalism from an industrial, state-based model of social welfare to the service-based postindustrial capitalism of flexible and fluid networks.[5] BBH, in order to make these homeless individuals "productive" and, consequentially, worthy of aid, fashioned them into a kind of cyborg service worker, conflating a human body and a wireless router.

But this *Wired* author was offering a minority opinion among those within the tech world. A *Paste Magazine* blog post named the program their "Awesome of the Day" because the Hotspots were able to keep charitable donations made for the provision of wireless internet.[6] Technology website *C-NET* suggested that any debate over the Hotspots was the result of a "manufactured controversy," since there's nothing "wrong with a program that will put a few extra bucks in someone's pocket who really needs it."[7] From this point of view, BBH was genuinely working to fix homelessness by bringing those excluded from contemporary capitalism back into the fold, at least temporarily.[8] The homeless, after all, were those who had been cast aside as invisible victims of the same capitalist order to which they were now being reconnected. According to some in the commentariat of the digital elite, BBH had enabled their homeless individuals access to income in return for a service. New technologies permitted homelessness to become a source of value rather than an impediment that serves to entrench social divisions.

Homeless Hotspots appears to be an exceptionally strange case. Yet, the belief that things are or should be connected, or that human nature includes a desire to connect to other people, is inevitable whenever the social capacities of digital media are invoked. The message advanced by BBH and the program's champions seems simple: technological, informational connection solves social problems, reflecting a

desire for connectivity found in the most primal yearnings of the human soul. Social problems result from a lack of connectivity. Other examples of this way of thinking are abundant. The tremendously popular (and tremendously problematic) viral video *Kony 2012*, produced by the organization Invisible Children, begins by stating, "Right now there are more people on Facebook than there were on the planet 200 years ago. Humanity's greatest desire is to belong and connect." The video goes on to argue that a war criminal in Africa, Joseph Kony, could be brought to justice simply by social media connections and the spread of information, making Kony "visible" through the "technology that has brought our planet together [and] is allowing us to respond to the problems of our friends." As with *Kony 2012*, the popular technology writer Steven Johnson suggests that today's internet activists, whom he terms "peer progressives" after peer-to-peer information transfer protocols, view the internet as a model for reforming—if not replacing—governmental programs and structures in the name of realizing a more representative democracy.[9] This would, in Johnson's view at least, improve any number of global social issues through the connection, distribution, and "socialization" of public funding and attention. Similar desires also ground any number of fears and fetishizations related to social media's ability to accumulate, aggregate, and map "Big Data."[10] Assumedly, the networking of the massive amount of data generated via social media will make visible "truth" in such a way that individual subjectivity will matter no more. Technological networks will realize a collaborative, human utopia through connectivity, eliminating the injustices of the past committed in the name of bad or incomplete knowledge.

These connections—along with associated forms of information generation, storage, and transmission—all rely on different tools and techniques. One might assume it impossible to generalize out from these examples. Nonetheless, many discussions of the power of social media and Big Data are united in the belief that the first step in ending social, economic, and cultural inequality is to connect people and technology, producing the circulation and flow of communication and capital between two nodes previously thought separate—and if not through technology directly, then following the model of the internet and the lessons it has supposedly taught. From this perspective, questions of power, questions of exploitation, or even questions about contextual specificity, all overlook the new technological reality of today's networked world: discrimination is based in connectivity—or the lack thereof. Or, as a series of ads for Facebook's controversial "internet.org" project maintains, "The more we connect, the better it gets" (Figures 2 and 3).

These social effects are rarely positioned as a result of the technical capacities of networks or Big Data. Rather, they are assumed to be about innate human desires, effacing the agency of technological materiality in favor of general beliefs about human nature. The promotional campaigns for Cisco Systems, the networking infrastructure company, are some of the most popular manifestations of these attitudes. In its well-known "Human Network" series of ads from 2006 to 2012, Cisco repeatedly erased the role of their own products in their framing of technology's capacity to connect

Figures 2 and 3 Advertisements for Facebook's internet.org, found in Darlinghurst and Darlington, Sydney, Australia, February 2015. Photographs by the author.

and circulate data. In Cisco's world, it's the people connected through technology that produce the Human Network, while technology itself is merely incidental. "The Internet is a network of people, not of computers," to quote Cisco's own brand strategy.[11] Facebook's internet.org ads perform a similar erasure. We see people standing in classrooms and fields, holding innovations that arise from everyday knowledge and creativity. These ads feature people who are raced or gendered and thus, assumedly, excluded from globally networked flows of capital. They again position "the internet" as nothing other than human beings and shared ideas. At the same time, any actual discrimination that exists in the world of Silicon Valley and beyond is reduced to an effect of improper technological connectivity—even though these technologies are effectively absent in these images. Since 2012, Cisco has rebranded itself as "The Internet of Everything." Appropriating various discourses associated with the "Internet of Things," Cisco now states, "The real value of the Internet of Everything lies in the value of connections among people, process, data, and things, not simply in the sheer number of things that are connected." The network is no longer merely human. Nonetheless, it extends human desires throughout the world via a totalizing form of connectivity enabled by the multiplication of cybernetic sensors, networked together through seemingly ubiquitous forms of computing. "It's the connections that matter most," after all.[12] And it is only through technological connectivity, these ads maintain, that humanity can realize its true potential through sharing and communication, even though this technology is always secondary to "human nature."

These examples appear to be about the magical powers of technology, and yet the actual place of technology within them is uncertain. Simultaneously agentic, yet completely subservient to human will, technological materiality is neglected aside from its place in larger narratives about human connectivity and the networking of human knowledge. Together, the above directs our attention to a larger abstraction—what Michel Foucault termed a "political rationality"[13]—in which the values of technological connectivity and flow reign supreme, albeit in ways that are often contradictory, multiple, reductive, and dispersed, not the least because the agency of the technological is ignored in favor of a supposedly natural human need for connectivity. A political rationality isn't the only way of thinking at any one point in time, but it depends on regularities that tend to overlook specific differences, presenting a specific way of imagining the world as "truth" and a specific way of acting in the world as proper. It inheres in material apparatuses and institutions that positively direct and manage bodies, enforcing specific kinds of conduct, producing specific kinds of subjects, and governing specific ways of being included and excluded in larger collectives. If Homeless Hotspots is any indication, the so-called humanism that emerges from networking—which stems from its guiding rationality—seems to interlink the human body and technology in a way that makes some individuals resemble infrastructural hardware more than human beings.

Beyond these seemingly exceptional programs and campaigns, and as I'll argue throughout this book, the use of social media legitimates these same values and enforces these same desires in the everyday lives of internet users. In short, *Inhuman Networks* is about how social media, in their banality, normalize seemingly strange transformations where humans and technology become interchangeable through the privileging of connectivity and flow above all else. Social media position the human as having an essential relationship to data that can be transmitted over informational networks. Social media produce the human as a "posthuman" subject,[14] not through biotechnology or other hybridizing of the human and the technological, but through a deeply ingrained and ultimately quotidian belief that it is in human nature to connect and circulate flows of information and capital. And this intertwining privileges the technological in defining the potentialities and limits for contemporary understandings of personhood—if in a contradictory way where the actual, physical materiality of technology is effaced in the name of narratives about connectivity and flow. I'm not suggesting that we should strive to free ourselves from the tyranny of social media, discovering a "true" human nature that has been obscured. Rather, I claim that what we think of as "human," along with its "rights" and "abilities" as a "citizen" of today's world, is inevitably bound together with the metaphors we (often incorrectly) use to describe technology, many of which are best observed in everyday practices and discourses surrounding social media. Or, "human nature," at least when we suggest that it is in our nature to desire "connection," is an effect of the ways we use and describe technologies.[15]

Governing the inhuman

Inhuman Networks begins and ends in places that may seem to have little to do with the phrase "social media." This is because social media refers not only to a form of technology, but to the political rationality referred to above—a formation that I term *nodal citizenship*. My use of the term "citizenship" in this book may strike some as odd. Often, citizenship is associated with the regulatory power of the state as a body that guarantees rights. This understanding of citizenship correctly notes how it depends on normative, exclusionary assumptions about bodies and behaviors.[16] But, at the same time, citizenship can be disarticulated from the state, and thus becomes more a question of how individual rights, obligations, and privileges—be they actual or perceived—are negotiated among members of a collective body.[17] These understandings of citizenship relate to my use of it as a term, but do not precisely follow what I'm suggesting about citizenship and social media today.

I use the figure of citizenship because, first, the term "citizen" repeatedly appears in descriptions of social media that define how informational connectivity and flow will help society at large. Be it through "citizen journalism" or in proposals to link passports and social media profiles, social media entrepreneurs often invoke the logic of good citizenship when explicating the benefits of their internet platforms.[18] But second, and more significantly, I consider social media to represent a specific form of what Michel Foucault terms *governmentality*. Although there are numerous definitions Foucault gives of governmentality, when I employ it as a concept I am using it as he does when he states:

> . . . by "governmentality" I understand the tendency, the line of force, that for a long time, and throughout the West, has constantly led towards the pre-eminence over all other types of power—sovereignty, discipline, and so on—of the type of power that we can call "government" and which has led to the development of a series of specific governmental apparatuses (*appareils*) on the one hand, [and, on the other] to the development of a series of knowledges (*saviors*).[19]

Following this definition, I suggest that social media is not simply a set of technological platforms or devices, but carries with it specifications for the proper conduct one should internalize in a world defined by network technologies. Social media, as a dispersed set of technologies and discourses, is an apparatus for instructing and normalizing specific behaviors through the definition of proper, knowledgeable practice (*savoir*), perpetuating a form of rationality in which the maintenance of connections and perpetuation of flows is the task of a good "citizen," especially as embodied by the materiality of network technology.

Beginning from the perspective of governmentality requires one to examine the formation of individualized behaviors directed toward the maintenance of

a larger, often abstract collective body—in short, examining transformations in governmentality is an examination in transformations of citizenship. In Foucault's lectures, this collective usually takes the form of a population with normative, identifiable features produced within medical, social, and technical institutions, supposedly for the well-being of the state. But population, state, and subject are all historically specific constructions, inventions of a unique environment in which these different bodies are coproduced. The state has no transcendental essence; it is defined not by territorial boundaries but through practices of government that simultaneously call into being the economic, political, and social boundaries of "the state" along with those "citizens" acknowledged as beneficiaries of the rights and abilities conferred by citizenship. Foucault, thus, gives us an understanding of citizenship defined in terms of contextual fields of relation, in which the meaning of "liberty," "rights," and "abilities" is grounded in larger articulations of truth and government. Government is the "conduct of conduct" of individual citizens normalized as one is positioned within a collective body; citizen and state are relational effects produced out of discursive and material means for specifying proper relational behaviors.

Networks rewrite the limits of the state, "mutating" the expectations and requirements associated with historical articulations of citizenship.[20] The contemporary context of networks, crossing and rewriting territorial boundaries in the name of informational, economic, and migratory flows of labor, reveals the key problem addressed by governmentality: one cannot inevitably locate governance in traditional articulations of the state—and, likewise, forms of rationality that determine the conduct of individual citizens cannot be assumed directed toward the state as that which guarantees rights and political recognition. The political rationality that guides conduct associated with social media conforms to one articulation of these networked mutations in citizenship. Nodal citizenship is a reductive, instrumental way of imagining practices that will, apparently, render one included in the flexible, fluid "state" that emerges when remade by networks. In many ways, what I describe in these pages doesn't look much like "citizenship" in any coherent sense, as the collective body toward which this citizenship appeals is neither a distinct community nor the state, but an imagined totality that goes by the name of "network." A proper nodal citizen is one that, like networks more broadly, connects socially, economically, biologically, and technologically. It generates data to be uploaded and stored in accordance with norms handed down from history, perpetuated by contemporary technology and the recent fetish for Big Data. A nodal citizen relates to others by connecting and maintaining flows. And this "citizen" doesn't do much else. The very possibilities engendered under the terms "inclusion," "rights," and "abilities" are produced through a cultural dominant that imagines the limitations of network technology as the limits of governance, with citizenship "naturally" granted to those who conform to the imagined materiality of network technology, a materiality excluded in the very definition of networked "nature."

As Wendy Brown has argued, the contemporary political rationality that accompanies neoliberalism imagines that democracy is little more than so-called citizens "held together by technologies and capital flows." Any material realization of this imaginary, she suggests, will potentially lead to humanity's "darkest chapter ever."[21] *Inhuman Networks* demonstrates how these assumptions about neoliberal subjects are part of a much larger history, with different—if overlapping—political effects than those identified in accounts of neoliberalism. Nonetheless, I share with Brown her belief that this rationality has potentially devastating effects for contemporary political reality. But, as I see it, much of this rationality's legitimation has happened through larger historical transformations that have already come to pass, and today occur primarily in everyday actions performed with technology and in everyday beliefs about technology. Thus, in the following pages I chart the historical and quotidian routes through which a naïve set of beliefs is projected onto humans in the name of human nature and citizenship; beliefs that assume humans to behave in limited, predictable ways; beliefs that position humans as problems to correct; beliefs that privilege an imagined agency of technology as law. With nodal citizenship, the ability to distinguish between human and technology is eroded, producing humans as objects that serve as imagined material relays supposedly interchangeable with infrastructure. In other words, this book is about how social media produce that which does not connect and flow properly as *inhuman*.

When I use the word "inhuman," I am following Jean-François Lyotard when he asks, "What if human beings, in humanism's sense, were in the process of, constrained into, becoming inhuman . . . what if what is 'proper' to humankind were to be inhabited by the inhuman?"[22] There are two definitions of the inhuman in this quote. First, to "become inhuman" means to be subject to technocratic systems of development and control. Enlightenment values of rationality, as central as they are to the historical project of Western humanism, inevitably restrict and limit the possibilities for humanity in the name of civilization's progress. Enlightenment reason involves a system of regulation that manages through technological means, producing the subject marked by the term "human." The human of humanism is produced through the use of media, all with the intent to tame and pacify.[23] The human only exists in relation to these inhuman technologies that exceed, and yet are a precondition for, anything that can be defined as "the human." The humanity of the enlightenment only exists in relationship to technologies and cultural institutions that are designed to regulate, control, and calm.

In locating this technical, rational inhumanity at the center of enlightenment humanism, Lyotard suggests that another, second form of inhumanity comes into being. That which escapes systems of development and control haunts the human as the inhumanity in the soul of modern man, an inhumanity to be eliminated by the rationality of enlightenment. This inhumanity manifests as agitation, anxiety, and disturbance. It is an "evil" found in the discontents of civilization, in unruly subjects, in "bad citizens" who refuse to obey the rules or who cannot follow orders. Lyotard

asks, "Since development is the very thing which takes away the hope of an alternative to the system from both analysis and practice . . . what else remains as 'politics' except resistance to this inhuman? And what else is left to resist with but the debt which each soul has contracted with the miserable and admirable indetermination from which it was born and does not cease to be born – which is to say, with the other inhuman?"[24]

The indeterminacies that intertwine these two definitions of the inhuman shape the arguments of this book. The inhumanity of the network confronts the inhumanity in the soul of the human and attempts to correct it through measurable, monetized data flows and connections that stand in and remake people as nodal citizens. There is no human without an inhuman—and where the line between the two is drawn is contingent, with political effects for those recognized as "human" and those beyond the limits of representation in the "state" that is the network. This not only means that whatever qualifies as human is preconditioned by nonhuman technologies.[25] It also means that the boundaries between the two are continually negotiated, and what counts as human may exclude biological humans. After all, as Peter Sloterdijk claims, it "is characteristic of being human that human beings are presented with tasks that are too difficult for them, without having the option of avoiding them because of their difficulty."[26] Or, what counts as human rarely has much to do with actual human bodies and their capacities. Humans rarely live up to the figure of "the human," but are always at risk of failing and becoming inhuman.

The technical apparatuses of governmentality sort proper and improper, in part, through the demarcation of human and inhuman subjects, positioning "correct" human forms of knowledge and practice in relation to that which is excluded for humanity to achieve coherence. The conclusion from both Foucault and Lyotard is that humanity is a historical construction, borne out of governmental systems of regularity, rationalization, and standardization designed to incite specific forms of know-how expressed in the acts of properly developed "human" citizens. In the following chapters, I trace the historical emergence of the nodal citizen and its mobilization in contemporary culture via social media, identifying these inhuman margins produced by the belief that, in a world of networks, everything is connected. This feigned and flawed logic of totality seems to ground the world revealed by network technologies and social media. Yet, it cannot account for the simple fact that human connectivity, as such, requires an inhuman exterior, an outside of exclusion based on the individualized management of connectivity and flow. As the norms of nodal citizenship are concretized in technology, humans are remade in the mold of social media or else are threatened with the revocation of a vague form of "citizenship" that exists only in networked connectivity.

But there is an additional problem. Because a network presents itself as a totality without limits, margins and exteriors are seemingly erased from possibility.[27] Without a social media presence, one does not exist—or at least goes a joke common in popular online discourse.[28] But this joke expresses the very real anxieties experienced by human users confronted with a world in which we are told we want to and need

to connect. As Big Data increasingly appear to dictate the value of a human, not only as a consumer and a worker, but also as a biological, living entity, then fears of disconnection seem to represent larger fears of exclusion from a new social, vital, and technological order. One must constantly make and manage connections or else be left behind and rendered invisible (or inhuman), erased from the world as a casualty of technological development.

Imagining a technological humanism

Regardless of the material reality of the technological, or the fact that the people who serve as Homeless Hotspots may or may not actually be socially connected to conference attendees at South by Southwest, the flows of communication and capital enabled by networked media are thought to reveal a holistic connectivity that grounds the totality of existence. According to Ulises Ali Mejias, the contemporary context projects a specific discourse of technological networks onto the world at large, giving us a singular, hegemonic "way of seeing the world as composed of nodes and links."[29] This perspective values network connectivity as a way to commodify social labor, privatize social space, and enable the mass surveillance of dissent. These problems are overlooked by an entrepreneurial culture rife with technological solutions that frame network connectivity as the realization of the human capacity to create a better world through technology and science.[30] Today's humanism is a clear extension of enlightenment reason. It sees in science a form of progress while disregarding any mechanisms of standardization, suggesting that it is only now, through technological connection, that we can finally recognize each other and care for our fellow members of society directly, without the support of the state or any other institution. Social media apparently realize a fundamental desire of humanity previously obscured, permitting an authentic, direct, unmediated connectivity through technology by way of the perfection of informational transmission.

The mediation of new social technologies is seen to enable human connection *without* larger structural forms of mediation, as if no technological system exists at all. This is because network technologies, exemplified by social media, are thought to not *produce* connections technologically; they *reveal* human connections that have always been present but have long been hidden or otherwise obscured. The sciences of networks, hard and soft alike, begin with the fundamental assumption that contemporary technology has disclosed an eternal social connectivity prior to the contemporary revolution of social media. According to network sociologists Lee Rainie and Berry Wellman, "We all have been using networks throughout our lives without knowing it . . . Networks have always been with us, although they are more prevalent now and we are certainly paying more attention to them."[31] For network scientist Albert-László Barabási, "Our biological existence, social world, economy, and religious traditions tell a compelling story of interrelatedness. As the great

Argentinean author Jorge Luis Borges put it, 'Everything touches everything.'"[32] The economic geographer and sociologist Manuel Castells, once critical of the technological power of networks to produce digital divides, now claims, "Networks constitute the fundamental pattern of life, of all kinds of life . . . *We are networks connected to a world of networks*."[33] For humanities scholars such as the theorist Mark C. Taylor, "We are gradually discovering that we are, in effect, *incarnations* of worldwide webs and global networks whose complexity is fraught with danger as well as opportunity."[34] The limits to political agency are the limits to today's connective technologies for networking.[35] Humans take to Facebook, this argument goes, because Facebook is in our genes and in our synapses.[36]

This is an astoundingly common way of describing social media. Our new technologies connect us together in a new and powerful way, realizing ideals of direct democracy, community, and collaboration that reside in the most fundamental natural urges of human being. Yet, at the same time, technology doesn't do *anything* other than realize what's existed as part of human nature for millennia. We may only now see this nature thanks to the visibility of social media and technological networks that dominate the present—but rest assured, the technologies themselves only materialize and reflect human desire. Networked media, supposedly, fulfill the potentials within human bodies and minds more wholly than previously thought possible, effectively making us more human than ever.

I term this perspective *technological humanism*. The technological humanist looks at technology, imagines it to have a set of formal and material qualities that are also true of human nature, and then projects this imaginary back onto the human, expecting people to conform to how technology is thought to operate, forgetting the initial technological source of the metaphor in the process. This allows the technological humanist to seemingly avoid claims of technological determinism because what technology appears to reveal is always-already present in nature itself. Consequentially, the inhumanity of the system is effaced in the very name of a humanism that emerges from technological metaphors.

Any argument that equates social media and human nature decontextualizes the present in favor of simple teleological narratives of technological progress. These narratives suggest a future determined in advance through networked connectivity, even if the determinism of technology is placed under erasure by locating an imagined technological structure within nature. Yet, a simple look back into history tells us that technologies have long been things to think with, envisioning the human body and human nature in accordance with whatever technological metaphor seems to capture a specific historical moment's zeitgeist.[37] Reductive, partial interpretations of the formal capacities of technology are projected upon bodies, brains, economies, and societies, remaking and reimagining the rest of existence in accordance with the newest medium to capture the popular imagination.[38] If the history of technology is any guide, we cannot assume that network technologies constitute a reflection of our biological being revealed through the techniques of social media.

Beliefs in technological humanism do not hold, even though they possess a massive amount of power in shaping popular and scientific attitudes toward technology. Imagining a networked human nature has massive problems for the politics, aesthetics, and daily lives of those working and interacting over the varied mechanisms that comprise the internet. We are told that "the network" is a singular holism of totalized connectivity in which all are included and nothing can escape.[39] Yet, this obscures everyday experiences of difference and unevenness that actually represent the kinds of connectivity made possible through the internet.[40] It conceptually eliminates the possibility of class struggle, reaffirming the naturalness of networked capitalism as the "ontology" of networks.[41] It perpetuates fears of "too much connectivity" that have little to do with the material reality of networks.[42] The ability to connect and participate online may be unevenly distributed, as the political economy of social media values some participants more than others.[43] And, as was the case after the dot.com crash, many of those once thought to be most confident about the potentials of networked "empowerment" through online collaboration, creativity, and sharing now temper their claims, as it's increasingly unclear if networked forms of connectivity are progressive or not.[44]

Many critiques treat the totalizing, holistic image of a singular network as an ideological distortion or an ontological error. These authors argue that we should revel in the hidden places of disconnection or unevenness as a space of political potential. Or, if there is a divide between the connected and the disconnected, it's in the interest of progressive politics to enable more connection and more participation. The totalizing network imaginary legitimated by technological humanism is ultimately an illusion or mirage, and cultural critique should praise the places that this illusion breaks down, or work to make a more truly connected world.

It is my contention, however, that the holistic model of the network can neither be reduced to a distortion nor should be dismissed as a misreading of the "reality" of the internet.[45] The grounds of debate oscillate inevitably between two points. Either the network is a natural totality or this totality is a fabrication of the false consciousness of new media. Either everything is connected, or this is a fictional story a lot of people have been duped into believing, where technophiles and internet entrepreneurs are simply delusional in their skewed view of reality. I don't find it productive to claim that any perspective on reality is simply false or incorrect, as if the critic is the one who can see through the lies and get to the "real" reality underneath. Again, we're living with a political rationality that positions the connective models of networks and social media as supreme values. The fact that there are places where this thinking breaks down (because it doesn't describe or mirror "reality") does little to change its ability to determine the proper behaviors and bodies defined by this way of producing "the human" and its potentials. This political rationality has produced a contemporary "truth" of networks that directs us to think of connectivity and the perpetuation of flows as the proper use of liberty in a world defined by networks. The network is an incitement to connect, an incitement to make flow that blurs the boundaries between

the human and information as enacted over social media. Believing in the absolutes of connectivity and flow is not a mistake, but repeats a massive historical formation that has coevolved with the development of Western modernity—one that gradually remakes "man" through an imagined, supposedly universal and natural model believed to exist materially as technological form.

These ways of imagining connection are incredibly limited, even though they arrive conjoined with imagined assumptions about the "fullness" of technological contact. For instance, in its work connecting people together, Homeless Hotspots asks us to relate to one another through little more than the exchange of capital and data. The other is, quite literally, nothing more than a node for connecting to the internet. Even though we may be connected through data flows, we don't even have to talk to a Homeless Hotspot. We just have to look at the code printed on their shirt. "Human" connections are pasted right on the bodies of the Hotspots: "I'm Clarence, A 4G Hotspot. SMS HH Clarence to 25827 for access," reads the shirt of one of the project's MiFi nodes. There is no essentially human connectivity here; there is only the input of passwords and abstract exchanges of digital capital. If this is representative of the struggle for justice in an age of network technology, then justice now requires the creation of subjects who increasingly resemble technological networks themselves.

Technology, as is so often the case, becomes that which manifests and corrects the centuries-old problem of communicative relation. The impossibility of constituting the social, of fully and authentically understanding another, is seen as a technical problem of communication.[46] We desire communication when, for some reason or another, we somehow feel that we have failed those around us. Yet, justice and mercy never arrive when we look toward technology to solve the tyranny of human distance and the impasses of internal consciousness. Instead of animal solidarity, technological humanism identifies failures to communicate and deems them aberrations from human nature. And then it tries to correct these aberrations by normalizing communicative technologies that connect as a model of proper human behavior.

These are not simply errors to be dismissed. Assumptions about the humanist "nature" of technological connection have real effects that work on real bodies. Failures of communication, the gulfs and abysses that fundamentally separate us from each other and ourselves, have long been thought of as foundational for human experience.[47] But when we suggest that technology connects us, overcoming these historical limitations of human communication, technology becomes normative while humanity exists to be corrected, if not eliminated, as something that cannot guarantee the proper functioning of the social. This belief extends back toward the values that directly informed enlightenment humanism, and continue to inform how social media imagine "the human"—though this genealogy is filled with many turns, reversals, and discontinuities. Today, those who cannot connect are those that do not conform to the dominant way of materially shaping and producing social relations. The social itself is remade as a network, formed into the technological. And human sociality itself becomes a stumbling block for technologies that supposedly exist to help people connect.

Social media beyond social media

We should still approach these problems with the recognition that much of what's said about technology has little to no grounding in its material reality.[48] These beliefs, as detached from the material reality of the technological as they may be, inform the humanist assumptions about technology that guide policy, shape everyday anxieties, and contribute to what Raymond Williams termed the "structure of feeling" of everyday life. While they may be wrong about what technology can and cannot physically accomplish, they nonetheless color "meanings and values as they are lived and felt."[49] These fictions still matter in influencing assumptions about humans, technologies, and the relations between the two concretized in ways of knowing and acting—along with the scientific and technological funding for projects that seem determined to transform human beings into analogs of digital computers. Some of the most common stories told about digital media seem to drift between these fictions and material reality, both highlighting and obscuring contradictions in the process. Any study of digital culture cannot simply dismiss these stories as factually incorrect, if for the simple matter that scientific research, venture capital, political will, and popular desire are directed toward making them come true, often in ways that are sustained for decades.

Understanding the implications of this claim requires a shift in how social media is often approached. It demands investigation beyond the specific uses of a singular platform because these technologies are bound together with other discourses and beliefs about networks, computers, biology, economics, and so on—beliefs that may not reflect the materiality of a specific form of social media but nonetheless shape material relations between humans and technology.[50] Employing "social media" as shorthand for a number of new internet-based technologies begs the question of defining both "social" and "media." These two words do not have universal meanings. Consequentially, I suggest that "social media" should refer to, borrowing one of Raymond Williams' definitions of culture, *a whole way of life* in which a specific set of beliefs about behavior, normalized through connective network technology and the flow of information, comes to stand in for the social, the economic, and the biological. The social does not precede the media that call it into being, and media are not autonomous determinants of the social. Articulation of varied materialities and agencies together shape what social media "is" and "does"—and what may be meant by "the social" and "mediation"—through historical discourses, imaginaries, behaviors, and beliefs that may be neither conscious nor visible.

Social media, in other words, must be understood as *cultural technologies*, or what Foucault referred to as an "apparatus."[51] They exist as a material form that crosses countless other processes and procedures, intersecting daily life, institutional power, modes of governance, cultural imaginaries, historical contingencies, and lived resistances. The cultural formation in which social media technologies are embedded both existed prior to the invention of anything that can be called "social media" and

has effects far beyond the technological. The ease with which social media and nodal citizenship are projected onto human nature happens because of the cultural and historical work that directly and indirectly precedes today's logic of networking, often conflating different discourses (in this case, between social media, social networks, and Big Data) as if there were little to no distinction between them. These intertwining facets of social media can neither be detached nor forgotten if one wants to grasp the role of this technology in shaping and producing everyday life today.

Inhuman Networks understands social media as a shorthand phrase that signifies a specific articulation of technology, biology, the social, and the economic—a conjuncture[52] made possible specifically through historical equivalences between different kinds of networks, connections, and flows. But, in reframing social media as something that names a conjuncture, we can no longer use the phrase to seemingly refer to a "neutral" technology. Social media are derived from and determined by historical discourses and processes, yet they likewise determine and fix the relationship between humans, machines, and capital. There is no single element that can receive privilege in this historically evolving assemblage. The role of the human, the technological, and their relations all intersect and interact relationally.

Expanding social media beyond its usual definition where it refers to tools with names like Facebook and Twitter draws our attention to how a specific technological apparatus often serves as a material and metaphorical model for countless other assumptions about proper social relations and well-governed subjects. When we cease to use "social media" to refer to a limited, if wide-ranging set of internet-based platforms, instead using it to identify a specific manifestation of a massively complex social formation, it then begins to reveal the varied apparatuses of governance that constitute the possibilities of what I'm calling nodal citizenship—the individualized forms of conduct that assume networked social relations as human nature. No longer defined by the norms of a population, social media identify a form of governance in which individual conduct is directed toward the network—and not necessarily for the management of the state, but for the institutions and processes (most often capitalist and monopolistic) that have most successfully colonized the internet.

These "nodal citizens" produced by the governmentality of social media are not simply users; they connect and flow actively and freely. They manage their own behavior, as well as that of others, according to the demands of the network. A nodal citizen understands its liberty as equivalent to the imagined agency of the technological in managing and perpetuating flows. A nodal citizen renders itself discursively indistinguishable from technology. And the normalization of nodal citizenship likewise produces that which is abnormal: one who cannot or does not connect and flow properly, or mismanages connectivity and flow, is rendered pathological—to be corrected, excluded, or placed outside the boundaries of the network.[53] In spite of the supposedly "flat" or "nonhierarchical" structure of the network, an uneven hierarchy is produced in the name of the erasure of those who cannot behave as demanded by social media, in the name of the divide between

"human" and "inhuman." To disconnect is to be rendered invisible to the network, beyond acknowledgment, beyond the political.

Toward a media archaeology of social media

This book diverges significantly from much research on social media, the claims of which often depend on social scientific methodologies and anthropocentric epistemologies. Research that only examines how people *use* social media cannot help but reassert the primacy of the human in understanding what social media is and does. At the same time, examining human uses of social media tends toward local discussions of specific platforms like Twitter and Facebook rather than the larger contexts in which they are intrinsically embedded. This way of theorizing technology confuses the new and the old, the specific and the general, the agency of humans and that of machines, simply because of the requirements of specific articulations of "empirical" research in the social sciences. It has no choice but to return the analysis of media to the fundamental agency of people, even if history demonstrates that "humans" are composed through technocratic means that produce the ever-tentative boundary between human and inhuman.[54] To counter this, *Inhuman Networks* employs the perspective of "media archaeology." Media archaeology examines the epistemological and ontological foundations of contemporary media, locating lines of historical continuity and divergence resultant from technological materialities and discourses that persist in the present. It looks to the history of technology to examine the contemporary possibilities for embodiment, subjectivity, and relation.[55]

Media archaeology's name is a reference to Foucault's *Archaeology of Knowledge*, drawing on his desire to rid history of "the sovereignty of the subject, and the twin figures of anthropology and humanism."[56] In the *Archaeology*, Foucault sketches a method that avoids locating the agent of historical change in "man" as a transcendental subject, stressing, instead, the accidents and errors of history, the multiplication of sites of "truth" and their tentative articulations, and the discursive materialities that shape the present beyond the agency of humankind. In defining the method of his archaeology, Foucault turns attention away from the grand narratives of history and toward moments of discontinuity. Archaeology is a history of taking difference seriously, of refusing to let history gloss over the points of divergence that reveal the contingency of the present. Media archaeology, in appropriating Foucault's method, often has similar goals, unearthing the history of media in order to reveal contingent moments in the narrative of technological "progress."[57] The politics of archaeology emerge in breaking apart present assumptions about media assumed to follow the natural progression of history. Foucault's archaeologies demonstrate how madness, medicine, and "man" himself emerged alongside other ways of knowing with other possible historical trajectories. These objects do not materialize preformed from history, but come as one possibility among many, sustained in the present only

tentatively. Examples of media archaeology that follow this more orthodox sense of Foucault's archaeology similarly demonstrate how the history of media is filled with imaginary alternatives, incomplete inventions, dead ends, mistakes, and different—yet deferred—futures.

But another version of media archaeology—and the version closer to the one *Inhuman Networks* follows—is based in Foucault's definition of "genealogy" as a method. Genealogy "opposes itself to the search for 'origins.'"[58] Foucault defines an "origin" as the location of a transcendental concept in history that remains unchanged throughout time, as if the truth of the present merely reveals an essence buried all along. Rather than looking to the past to discover that nothing is really different, genealogy begins with the differences revealed by archaeology and reconstructs a history of *descent*. Instead of finding a universal subject or agent determining history, genealogy serves "to identify the accidents, the minor deviations—or conversely, the complete reversals—the errors, the false appraisals, and the faulty calculations that gave birth to those things that continue to exist and have value for us; it is to discover that the truth or being does not lie at the root of what we know and what we are, but the exteriority of accidents."[59] Any interrogation of technological descent must move from the usual narratives of "great men" and their landmark inventions toward scientific errors, aborted plans, dystopian nightmares, utopian dreams, and beyond. In this sense, media archaeology looks not merely at the multiplicity of possible histories neglected in the shaping of narratives of the present, but also at how these forgotten moments of the past persist and—in addition—are written on the very materiality of the human body through the production of "the human" as a subject and citizen who acts and behaves in accordance with specific determinations of knowledge.

In asking these questions, much work in media archaeology tends to eliminate the agency of the human, following some of German media theorist Friedrich Kittler's more controversial claims about the role of technology in determining human existence.[60] Kittler's work is often central for the definition of media archaeology as a method of inquiry, reading Foucault in a way to emphasize the role technological modes of inscription play in determining the possibilities for subjectivity, time, and experience, remaking "the human" into an effect of the recording and storage of information. Yet, hardware, software, and the human all interact and relate relationally, in which the limits and capacities of each are contextually defined.[61] While technology's material capacity to store human bodies and souls has a massive impact in the historical consciousness of the human, the human cannot be entirely understood as an effect of information storage. And, as I've stated above, much of what's said about technological development has more to do with metaphorical models and imaginary conflations that redefine the possibilities of the human through associative articulations between varied materialities that cannot be fully reduced to one another.[62] The role of the imaginary—defined as the capacity to think of new models of technology and relation—can never be forgotten.[63]

If we contrast Foucault's methods with what I've described above as "technological humanism," we can see how archaeology and genealogy intervene in our present understanding of social media and the human need for connectivity. In technological humanist narratives of social media, networks, connectivity, and the flow of information are *origins*. Social media have revealed to us transcendental abilities and desires of the human. Looking back toward history demonstrates the eternal need for connectivity, as if the "nature" of Facebook and the human body are roughly identical. Following the perspective of media archaeology, we should track not a history of connectivity, but a history of disconnection, of moments where connectivity breaks down, of where the figure of connectivity legitimates violence, hatred, and fear. We should follow this history to examine how "the human" is produced in the present not as an eternal subject, but as a body integrated into technical systems that produce and perpetuate forms of power that render humans "inhuman." We should examine how human subjects take to networks and social media not as if they were second nature, but with affects of frustration, exhaustion, and futility.

It is the goal of this book to take up this task. *Inhuman Networks* looks to the past, reconstructs a narrative of networks that emerges on the fringes of Western modernity, and follows this narrative to contemporary anxieties about connectivity, where the "humanism" of social media remakes human bodies in the name of eternal "human" desires. Understanding the present context of social media requires looking at how the past inheres in the present, in which what we conceive to be new about new media is old, and what is genuinely different is often neglected because of the search for historical origins for our present.

Chapters

This book is divided into three parts, which roughly correspond to the past, present, and future of networks and social media. Part One, "Network Archaeologies," follows the usage of network from its original formalized definition in English to its current internet-inflected associations, tracking historical narratives of networks, bodies, technologies, and economies that occur in the margins of Western modernity. Chapter 1, "Biology: Vital Technologies, Anatomical Networks," follows the transformation of "network" from a term for manufactured netting to a biological term for nerves, veins, and arteries, arguing that many of the meanings we today attribute to technology descend partially from metaphors of vitality, flow, and health derived from premodern and ancient medicine. Chapter 2, "Society: Railroads, Red Scares, and Racism," outlines the shift from biological networks to the networks of the railroad, the telegraph, and the social. In the late nineteenth and early twentieth century, the mere existence of networks and connectivity was seen as a disruptive, constraining force opposed to the individualism of the modern liberal subject. This belief informed early social interpretations of the railroad and communication,

often filtered through anti-Semitic beliefs about the malevolence of communicative, interpersonal connection. Yet, through reference to the flows of network anatomy, these technologies would become that which would enable the proper regulation of relation by positioning the social and the technological in relation to an imaginary of biological health, vitality, and the human body. Chapter 3, "Economy: Banking on a Networked Society," traces the shift away from popular fears of financial networks in the early twentieth century (also encoded with anti-Semitic beliefs about connectivity) to their embrace in American culture before and during the Great Depression. The fear of technological connectivity was conjoined and countered with a popular belief that positioned banking networks as necessary to maintain the health of a community, perpetuating and regulating the flow of capital throughout social networks, a perspective also expressed in early sociological theories that would equate monetary exchange and circulation with the general foundations of the social.

Part One concludes by showing how these different intersections of networks are united through the technological infrastructure of the internet and the "posthuman" subjects derived from the sciences of cybernetics in the 1960s and 1970s. The internet does not emerge fully formed from the minds of the DARPA and university researchers central to its invention. With the claims of cybernetics, it emerges as the material form of the abstract relation of nodal citizenship produced by the lengthy articulation of technology, biology, finance, and the social, conflating and reducing these different domains through the assumed universals of informational connectivity and flow.

Part Two, "Nodal Citizens," moves from this history to how these norms are enacted through the everyday use of social media. Throughout these chapters, the distinction between human and technology is erased through intersections of the biological, the economic, the social, and the technological, legitimating norms of connectivity and flow as tasks for human behavior. This draws directly on this past history of networks while the imagined informational materiality of social media remakes "the human" into little more than a node that connects and perpetuates biological, financial, and communicative flows. Part Two demonstrates that the proper "citizen" of social media is a subject that conforms to a rationalized model of data generation and information circulation, often privileging automated data processes as actors.

Chapter 4, "Death: Living Forever on Social Media," examines how "life" online is reduced to the formal limits of what can be cataloged, stored, and transmitted over technological networks, where the social value of a human being is reframed by the ability to conform, connect, and behave as an infrastructural node perpetuating informatic flows, indistinguishable from "living" autonomous data. Chapter 5, "Labor: Giving Life to Data," extends this argument, arguing how the power of labor is often given over to simple automated programs called "bots" that increasingly come to stand in for human users and workers. The techniques that produce the "human" user often cannot distinguish between human, bot, and personal data, blurring the lines between the three. Finally, if nodal citizenship is a normative prescription for the behavior of social media users, then there should be some mechanism that

disciplines, pathologizes, or otherwise marginalizes those behaving as "bad" citizens. Chapter 6, "Truth: The Politics of Performing the Total Self," examines the threat of disconnection and revocation of one's agency as a political actor over social media. Networks, while ostensibly "nonhierarchical," produce a hierarchy based on a subject's willingness to connect and flow through the continuous production of "true" personal information about one's identity. This demands, on one hand, the fixing of identity and, on the other, the full and totalizing performance of the "truth" of one's identity. Failure to perform truth results in the branding of an individual as a liar, fake, or fraud, who is consequentially unworthy of inclusion within the social, unable to participate in the political.

The final two chapters of *Inhuman Networks* that make up Part Three, "Beyond Social Media, or, A World Without People," examine social networks as they bleed beyond the limits of social media, pointing to a future in which human beings are remade in the name of connectivity and flow, which has problems for the creation of the collective political body we refer to as a "people." This moves far beyond the usual world of social media, as the same strategies for personal conduct described in Part Two are apparently necessary for other kinds of networks as well. One must properly manage all connections and flows to be included in the social and rendered worthy of rights. Not only are those who fail to conduct flows and connections marked as others to be corrected or excluded—their failure is assumed to potentially bring down the entire social, biological, and economic order because of networked connectivity. Chapter 7, "Contagion: The Inevitable Failure of Connectivity," examines the limits of nodal citizenship in network epidemiology. When networks explain illness, pathologies become a sign of the inability to manage connections and flows properly—flows that are social, biological, and economic. The final chapter, "(Political) Theory: How to Disempower Friends and Pathologize People," turns to theoretical concerns relating citizenship, social media, and the current permutation of neoliberal self-management normalized through network technology. This chapter argues that ontological theories of networks and self-organization begin by presuming nodal citizenship in their models of human behavior. The "self-organization" of networks paradoxically accepts the necessity of highly neoliberalized forms of connection management while also suggesting that individual behavior is irrelevant in the face of natural "emergence" through complex networks. In terms of everyday discourse about the internet and social media, this theoretical impasse is reflected by users feeling both empowered and irrelevant in the face of networked interconnection.

Coda

In August 2013, a document often attributed to Mark Zuckerberg was posted on Facebook, titled "Is Connectivity a Human Right?"[64] This essay, an early statement defining the mission of what would become Facebook's internet.org project, defines

neither what rights are nor why we should consider connectivity a right. It barely even explains why technological connectivity is socially positive. It merely claims that, because the internet is "the foundation of the global knowledge economy," by "bringing everyone online" and "giving everyone the opportunity to connect," Facebook will improve, among other things, productivity, ideas, and the overall "knowledge economy."[65] This essay—with its title question answered in the affirmative throughout—outlines nothing other than technical and economic limitations to the totalized internet connectivity that informs many of the imagined futures of a global network. As should be clear at this point, Facebook is not alone in its desire for connectivity. On the 16th of May 2011, the Human Rights Council of the United Nations affirmed that enabling global internet connectivity "should be a priority for all States."[66] While the UN does not say connectivity itself is a right, it nonetheless claims that the internet "facilitates economic development and the enjoyment of a range of human rights,"[67] specifically the freedom of expression enabled, in part, by the ability of users to communicate anonymously online. While connectivity may not be a right, the ability to generate a flow of data and spread it across the internet is—and by guaranteeing internet connectivity, states can supposedly better secure the rights of citizens today.

Statements such as these—from corporations and human rights organizations alike—should immediately call to mind a series of questions. How did it become possible to say that informational connectivity and flow are so central to the human condition that we now regard them as rights? And what are the implications of imagining and remaking the agency of individuals in these terms? How do these "rights" and "abilities" relate to the technological and governmental structures in which individuals live their daily lives? And, finally, how do they transform the limits of the political, in daily life and beyond? This introduction has attempted to provide a framework with which to think about these issues. In the coming pages, this book will elaborate how the history of networks informs the present in such a way as to make the "human" subject of these rights interchangeable with technological devices in the name of the advancement of connectivity. "Social media" are not tools for connecting humans together. This term, instead, names a context in which rationalized connectivity and flow are elevated to supreme values, in which all agents are equivalent actors united through an imagined biotechnical capacity for networking and data generation—in other words, social media prepare us for a world in which internet routers and human beings are functionally interchangeable, in which the "rights" and "abilities" of a person are equivalent to those of information technology.

The argument that will unfold over the coming pages is as follows: when rights and abilities are reframed in terms of network technology and the flow of data, concretized in everyday life by social media, our understanding of which is derived from centuries-long articulations of the biological, the technological, the social, and the economic, then the citizens of the near future are not the humans holding internet routers, but are the routers themselves.

PART ONE
NETWORK ARCHAEOLOGIES

The network, or, the other of Western modernity

Discussions of the transformative power of social media too frequently disregard history. For those enthralled with the newness of this new media, technology unites humans in ways previously unimagined. Yet, the way we understand technological connection is reliant on residual discourses, arguments, and metaphors directly drawn from centuries past.[1] This history reveals not an eternal desire to connect but the simple fact that this desire is a contingent one, produced and shaped in the margins of Western modernity. In the three chapters that comprise Part One, I trace genealogical transformations of networking and connectivity, tying together and intertwining minor narratives and histories of anatomy, finance, technology, and the social. These four areas together produce what is today regarded the nature of networks and, consequentially, the proper normative dimensions of nodal citizenship as perpetuated and legitimated by social media. I neither suggest that this is a direct, causal history, nor do I pretend that it covers every single moment in the production of the contemporary way of imagining networks. Rather, these chapters sketch out one possible way that the contemporary dogma of network connection and informational flow became legible as a sensible claim about human nature through a series of loosely intertwined moments from history. There are many points in these chapters that may seem obscure, or even apocryphal. But in examining these moments one can begin to observe the conditions of possibility for claiming connectivity as an essence that unites man and machine, biology and finance, the social and the technological. Consequentially, this requires us to look beyond institutional narratives about the history of technology and revel in what has revealed itself to be a history of error. This has odd implications for the contemporary beliefs about "nature" articulated to social media. Namely, in claiming there to be a networked nature of vital flows, we repeat a great deal of history that is no longer thought to be "within the true," to use Foucault's phrase.[2]

In spite of pronouncements about the nature revealed through network technologies, understanding the human as networked or connected is not intrinsic to the history of Western thought. The experience of disconnection defined the normal state of affairs under capitalist civilization. Disconnection was not truly natural, however—it was a problem to overcome. Freud's "oceanic feeling," an experience of "'eternity,' a feeling as of something limitless, unbounded . . . of being one with

the external world as a whole," was worthy of note because it was unusual.[3] Modern civilization negated this experience of oneness and connection. For Freud, the oceanic feeling was an experience closer to nature than civilization, transcending the modern self and inching closer to the true essence of the human. For Marx, modern capitalism reframes social relations between people as relations between things and objects, producing humans as modern individuals, alienated both from their own bodies and from the others around them. The connections and associations of a primordial collectivism are obscured through the commodity fetish as objects stand in for people and vice versa. Because of the capitalist mode of production, "Men are henceforth related to each other in their social process of production in a purely atomistic way."[4]

Freud and Marx are exemplars of this modern paradigm. The anguish experienced by the modern subject emerges, at least in part, in his separation from an essential wholeness, cut up and parceled out by institutions of modernity. Modern bodies, nations, cultures, identities, selves, and so on are all constructed through the invention of an exterior—an exterior that must be policed and originates from the interior, but an exterior nonetheless.[5] Modern technologies and media, likewise, divide and atomize the senses and the experience of the world.[6] By the twentieth century, this process of division extended to the fragmentation of the human body, based in cellular models that define biological bodies as loose agglomerations of fundamentally isolated building blocks.[7] Modernity perpetually divides, isolating an individual from the others around him and from his own self, producing the modern subject as liberated and "free."

In the production of this exterior, the supposed essence of the human is placed outside of the experience of the modern subject. As this subject is produced, another subject—the "Other," both more complete and more "natural" but uncivilized or unknowable—comes into being at precisely the same time.[8] The discontents of civilization are found in the tendency to atomize and divide humans from each other and from their essential nature. As in Freud and Marx, the drive of the modern subject is to undo this splitting, functionally putting an end to the very phenomena and experience brought about by modernity itself.[9] The inhumanity of developed civilization produces and attempts to eliminate the inhumanity of the Other—an otherness that exists both within and without modernity.

Variations on this teleological narrative appear throughout theories of technology. Technology overcomes modernity through the magic power of connectivity.[10] The disembodied universal reason of the individual modern subject has been revealed as a fraudulent ontological construct through the metaphors of networked media.[11] But the desire to connect through technology, repeated by today's technological humanists, is a desire founded in modernity, directed toward undoing the experience of modernity itself through the postenlightenment tools of science and engineering, often in the name of capitalism. We can claim that "network" is one name for modernity's Other. Another double of the modern has been manifested

through technological networking, casting aside the fragmentation of modernity, reconciling modern man with an essence once thought to be lost. Consequentially, the increasingly visible networks of the contemporary technological condition are thought to reveal the connectedness that has always grounded human experience, even when the affects of the modern were experienced as a profound isolation and disconnection. To be networked is to experience connection to a greater totality, to be one with others, mediated through connections and flows that are both material and expressive of the natural world. The popular explosions of networks and social media are often assumed to mean that the discontents of modernity have been cast aside thanks to the connectivity of technology.[12] The very things that Freud and Marx saw as separating humans from each other—communication, capitalism, desire—are seen as evidence of our truly connected nature. Instead of the autonomy and isolation of the modern subject, everything is connected. There is no outside in this world of networks—and there never has been. There is only the One of the network. The narrative and teleology of technological development, our transition from orality to literacy and beyond,[13] has manifested itself with a technologically enabled "true" connectivity that returns modern man to the connected humanity he once lost.

These chapters follow the historical usage of the word "network," primarily as expressed in Anglophone print culture to discuss fabric netting, human biology, the railroad and telegraph, and branch banking—ending at a universalized totality thought to be represented by the internet. These sites were chosen for a simple reason: these are merely the routes "network" took over time, be it through metaphor or another form of association. The following reconstruction was accomplished primarily through the use of online databases, from early American and British newspapers, the archives of the *Wall Street Journal* and *Harper's Magazine*, or early medical and scientific journals—many of which are cited below, many of which are not. I didn't look to the past with the intent of finding anything specific other than historical uses of "network" as a term that could possibly reveal something about the historical associations between technology and connectivity. Surprisingly, to me at least, the uses I found conjoined the technological, biological, economic, and the social in ways that resonate with our present, often with fine distinctions and differences associated with articulations of personal liberty and autonomy. This suggests that many of the "new" features we attribute to technology are often echoes of the past—and understanding the transformations engendered by social media must begin by drawing out Western modernity's articulations of its own margins.

As described in the introduction, the nodal citizen understands itself through technological connectivity to flows of data. It must constantly produce true data, keeping information flowing, else be rendered unworthy of inclusion in the network that increasingly defines the social and the political. As much as we may want to believe that social media produces this subject, it is not actually new. The nodal citizen was a by-product of modernity, bringing together an alternative discourse of connectivity at the same time as the construction of the independent, disconnected, and "free"

liberal individual. It is important to stress this subject's marginalization throughout the history of Western modernity. Connectivity and flow inspired great anxieties in a large number of people, rooted in fears of a loss of individual self-determination to the networked structures of technology and economy that would remake the social. To rewrite Sartre, Hell was not *only* other people. It was also the communicative and technological means that brought about the very possibility of encounters with others—encounters that were biological, technological and, above all, economic. Consequentially, the networked self was perpetually positioned as modernity's Other, shaped out of the flows and connections that originated from within modernity but were constantly excluded as an attack on the stability of the liberal subject. To be connected was both a more "authentic" or "primal" state that supposedly existed before or outside the modern, but was itself produced by the anxieties of modern life. A connected self was something constantly present on the boundaries of Western history as a threatening Other to be negotiated within and without one's own modern subjectivity. These three chapters trace one narrative of how this Other became the dominant form of subjectivity normalized by social media today.

CHAPTER ONE
BIOLOGY: VITAL TECHNOLOGIES, ANATOMICAL NETWORKS

Blood and the Machine

E. M. Forster's 1909 novella "The Machine Stops" is a fiction that encapsulates countless anxieties about technology currently experienced by today's social media users, even though it was written over a century ago. In Forster's story, a massive technological apparatus known as "the Machine" has produced a society of hyper-individualized beings, each living isolated and separate in nearly identical rooms across the globe. These individuals remain in contact through mediated systems of communication that resemble today's tools for videoconferencing. In the world of "The Machine Stops," moving images are transmitted instantaneously across vast distances, reliant on visual "plates" that predict the near-ubiquitous screens of contemporary technoculture. Much of the story is a dialogue between a mother and her son. The mother, Vashti, is a lecturer. She lives in a nondescript, seemingly placeless room. She is content in regurgitating previously held ideas and "truths" over and over, transmitting her lectures around the world through technology, as do today's MOOCs, distance educators, and TED speakers. She is skeptical—as is most of Forster's future society—of the value of first-hand experience, preferring that which has been established as common sense. Her son Kuno lives in a near-identical room on the other side of the planet. He refuses to accept the technologized world of the Machine. Technology, for Kuno, separates individuals and ends the sensual and visceral pleasures of experience and touch. But in Forster's dystopia, Kuno is one of very few who believe this. "You talk as if a god had made the Machine," Kuno tells his mother, "I believe that you pray to it when you are unhappy. Man made it, do not forget that. . . . I see something like you in this plate, but I do not see you. I hear something like you through this telephone, but I do not hear you."[1]

In "The Machine Stops," technology is mistaken for that which is natural and universal. It obscures "real" and, assumedly, unmediated physical human relations. As Kuno states,

> We created the Machine, to do our will, but we cannot make it do our will now. It has robbed us of the sense of space and of the sense of touch, it has blurred every human relation and narrowed down love to a carnal act, it has paralysed our bodies and our wills, and now it compels us to worship it. The Machine

> develops—but not on our lines. The Machine proceeds—but not to our goal. We only exist as the blood corpuscles that course through its arteries, and if it could work without us, it would let us die.[2]

It may seem as if Forster is simply echoing Marx's critique of machinery in *Capital*. Marx argued that, within industrial capitalism, the "automaton itself is the subject," reducing humans to "merely conscious organs, co-ordinated with the unconscious organs of the automaton, and together with the latter subordinated to the central moving force."[3] In the *Grundrisse*'s "Fragment on Machines," Marx declared, "Nature builds no machines. . . . These are products of human industry; natural material transformed into organs of the human will over nature, or of human participation in nature. They are *organs of the human brain, created by the human hand*; the power of knowledge, objectified."[4] Forster's critique of The Machine is practically identical to some of Marx's theorizations of machines; the material form of The Machine subjects workers to a specific arrangement of nature defined by the capitalist mode of production, perpetuating capital's flows by reducing the human to something indistinguishable from a machine part. This understanding of The Machine, so central for fears of technology throughout earlier industrial revolutions, persists today in debates about the human connections enabled or remade through social media. Network technology permits connections far beyond the limits of physical contact. But these connections are supposedly false, completely reliant on technology. Just as with the anxieties experienced in the daily lives of social media users today, Forster warned of a world in which connections to others must be managed through technology, defined as the best and only way to maintain human relations. The inhumanity of the system reveals and manages the inhumanity in the soul of the human.

When a work of science fiction seems so prescient, readers often remark how its author was an amazing visionary, capable of seeing something that had yet to manifest itself in the author's own time.[5] It would be easy to suggest that "The Machine Stops" is one of these stories, given how eerily similar it seems to contemporary debates about social media and how readily those in the present appropriate Forster's writings, assuming that his injunction to "only connect" at the beginning of *Howards End* is realized today through Facebook and Twitter. Reading "The Machine Stops" alongside Marx on machinery, however, would seem to suggest that Forster was simply expressing the anxieties and fears of his own time, often using the same language that Marx used decades earlier.[6] The ability to rearticulate "The Machine Stops" to radically different technological contexts indicates two things. First, the contemporary experience and understanding of technology has deep roots that extend far into the past. The discourse that frames our understanding of technology and culture emerges, at least in part, much earlier than the contemporary technology that discourse describes, often in contexts that are forgotten when we attempt to discern just what is "new" about "new media." And second, the ethical interpretations we

project upon technology repeat, in broad strokes, earlier debates about the effects of the technological, all while effacing the specific historical differences and divergences that distinguish the present from the past.

Consequentially, the subjects shaped by technology are not new beings, together constituting new collectives, produced through new media. They are part of, to again invoke Raymond Williams' term, a "structure of feeling" that extends far beyond the temporal limits of the present. But this does not imply that they are ahistorical expressions of a natural or ontological order that was previously invisible because of flawed pretenses of modern, liberal subjects. Neither new nor eternal, the subject of network technology is the contemporary emergence of something that has been in the making since antiquity. The limits and possibilities of this subject depend on the (often unconscious) resurrection of past knowledges once discarded as errors. Forgotten "truths" of the past persist in today's discussions of technological connectivity. The ability of Forster to compose something that today seems so prophetic is, in part, because the discursive formation that produced our understanding of social media and network technology had been partially composed by the first decades of the twentieth century, fashioned in the oft-neglected margins of modernity.

This chapter is about one of the roots of our understanding of technology: the conjunction of the vitality of the body and the mechanism of the technological through the language of connection and flow, as attributed to the embodied circulatory and nervous networks of early anatomy. The next two chapters trace how social and financial connectivity likewise contribute to the transformation and reimagination of how we understand connectivity, coming together to produce the nodal citizen of network technology that must connect and flow online. In network discourse today, "life" is an abstract vitality that flows through networks, and the "health" of the social, the economic, and the biological requires the proper regulation and management of these flows. Anything that flows, be it information or blood (or capital), is generalized as that which possesses vital signs that are enough to define the living. As I argue in this chapter, the very possibility of this discourse depends on the articulation of the earliest network technologies—literally, manufactured nets—with the vitalism of ancient Greek and Roman medicine. In ancient discourses about the body, life and health are effects of the embodied management of fluidity. These two discourses come together in eighteenth- and nineteenth-century medical and anatomical investigations of the nervous and circulatory networks, in which a proper and healthy body is defined as one in which vital fluids flow freely throughout an embodied network, but not without restraint. Like contemporary technological metaphors, such as "code," borrowed to describe DNA,[7] or biological metaphors used to describe technology, such as "virus,"[8] our conceptions of the body and technology are reshaped through metaphors drawn from elsewhere—metaphors that conjoin, intertwine, and associate, leading to beliefs and desires that depend on the conflation of different domains that are often materially and ontologically separate. The equating of health and life to the regulation of connectivity and flow is normalized through the conjunction of

technology with a premodern medical discourse. While this discourse fell out of favor in modern medical science, it remained prominent throughout modernity to describe technology, capitalism, and the social. And notably, the biological roots of network discourse have returned with a vengeance in the contemporary appropriation of networks to describe brains and bodies, contagion and epidemics.[9]

In "The Machine Stops," there are several brief but significant references to blood, defining and differentiating human and machine through the vitality of that which flows through bodies. Kuno, in his warnings about the Machine, describes humans as cells of blood, circulating through the "veins" and "arteries" of the Machine. If the Machine could rid itself of this human "blood," it would do so instantly in the name of efficiency and rationality.[10] Blood provides Forster with a metaphor for vitality and humanity, opposed to the cold, mechanical, false "life" of the Machine. The lifelessness of (assumedly capitalist) machinery replaces the vitality of human touch and human relation. The story ends with Kuno and Vashti finally reuniting outside of the disintegrating Machine. In accordance with Kuno's warnings, "the Machine stops." The sudden withdrawal of technology sends the world into apocalyptic chaos. Mother and son embrace each other as they die:

> "Where are you?" she sobbed.
> His voice in the darkness said, "Here."
> "Is there any hope, Kuno?"
> "None for us."
> She crawled towards him over the bodies of the dead. His blood spurted over her hands.
> "Quicker," he gasped, "I am dying—but we touch, we talk, not through the Machine."
> He kissed her.[11]

As Kuno dies, his blood gushes over his mother's touch. When Kuno and Vashti finally connect through physical, human contact, it is with the wetness of blood between them. Again, the differentiation of life from machine depends on the vital flows of the body's circulation. But Forster's differentiation diverges from the history of technology. In contrast to "The Machine Stops," the symbolic qualities of blood, flowing and circulating through the body as the key sign of vitality, enable metaphors for technological "health" that today persist in the discourse of networks as the foundation of nature.[12]

The weaving of networks

In its earliest formalized usage in English, the term "network" referred both to physical objects and to a dematerialized, metaphysical connectivity. Samuel Johnson's

1755 *Dictionary of the English Language* defined a network as "Any thing reticulated or decussated at equal distances, with interstices between the intersections."[13] This entry was often used by Dr. Johnson's contemporaries as an example of the failure of his dictionary and his prose style. The definition for network "has been often quoted with sportive malignity, as obscuring a thing in itself very plain," states one review of a biography of Johnson. "But," the review continues, "to these frivolous censures no other answer is necessary than that with which we are furnished by [Johnson's] own Preface. 'To explain, requires the use of terms less obtruse than that which is to be explained, and such terms cannot always be found. For as nothing can be proved but by supposing something intuitively known, and evident without proof, so nothing can be defined but by the use of words too plain to admit of definition.'"[14] Networks were neither abstract nor metaphysical, Johnson's critics claimed, in spite of the abstract language he used in his definition. But while the definition may have failed his own standards, the word "network" was so difficult to define because, even as early as the 1750s, the "thing in itself" that gave it meaning was already obscured through metaphor. Network was one of those words too plain for definition, and would only become more so in the centuries after Dr. Johnson's dictionary.

For his critics, Dr. Johnson was struggling to describe a simple net—and doing a rather shoddy job in his attempt. Threads and fibers of textiles or metal, woven together by machine or human hand, comprised a "net-work." As Johnson's definition indicates, this term applied to any of these nets, from those thrown into the ocean to trap fish to the ornate metallic fabrics worn by women of high society. The fabrication of nets brought together the human appropriation of raw materials from the natural environment to produce tools to manipulate that environment.[15] The production of metallic nets was an early mechanism for bringing together mining, the transportation of raw materials, and the skilled fabrication of a net as a manufactured "work." Some of the earliest forms of industrial production were to create fabrics with machines, removing the human hand from the production of networks. Throughout the 1700s and 1800s, this definition of network was common in newspapers, popular magazines, and literature. Networks were the ropes covering hot air balloons,[16] the interconnected rigging on ships,[17] and headwear for fashionable women (Figure 4).[18]

In the mid- to late 1700s, the use of "network" was often taken beyond its material foundation to describe any form of connective structure. That network referred to a material thing in itself, obvious to all, also meant that it was suited particularly well to metaphor. Although most uses of network still retained some sense of the physicality of the object, not all did. We can see this shift in two poems printed in 1786. In a few lines from a poem titled "Verses on a Lady's Hand," the skin of a woman is likened to several different kinds of fabrics:

> *Coarse look'd the cambrick to a hand so fine!*
> *And shades of lawn are net-work to her skin!*[19]

Figure 4 A "head-dress" made of "chenille and bead net-work." G. Brodie, "Fashions for February," *Harper's New Monthly Magazine*, February 1864, 432. Public Domain.

Cambric and lawn are both textiles defined by their tight weave. Lawn, in particular, is smooth and is often partially transparent. In contrast to the lady's skin, these two fabrics seem coarse, rough, and even like network.

If we compare this to the second poem, titled "Loss of Friends," even seemingly immaterial things, such as internal memories of those passed on, can be written in the form of a network:

Toil we for sublunary pay?
Defy the dangers of the field and flood,
Or spider-like, spin out our precious all,
Our more than vitals spin (if no regard
To great futurity) Incurious webs
Of subtle thoughts, and exquisite design;
(Fine net-work of the brain) to catch a fly![20]

The spider's web, compared to the fabric of networks because of visual and structural similarities, is also compared to the workings of our own brains, our own thoughts, and our own desires. To remember is to catch another in the network of our mind—though this network may be fragile and weak like the web of a spider.[21] The network contains and constrains, but can only do so as long as it can hold together. There are gaps through which things (or thoughts) can slip through and escape.

As Laura Otis has pointed out, webs and nets are not precisely the same thing, even though the meanings of the two words overlap in many European languages. "It is tempting," Otis notes, "to draw a distinction between webs as organic and nets as artificial structures, except that for millennia, people have been weaving both."[22] As in "Loss of Friends," with its associations between networks and webs, the manufactured and the given are confused and associated. Metaphors that associate the multitudinous webs and nets make mentally visible and comprehensible that which would often be incorporeal—but, in the process, these metaphors make the material into the metaphysical and vice versa. As early as 1786, a network was not only a physical, manufactured net. It was a word taken to mean little more than an abstract *connection* that *constrains*. A network is a constraining structure that is *flexible* and *weak*. The metaphorical use of network dialectically combined the material and the immaterial to give coherent form to that which seemingly had none—the webs of thoughts, emotions, affects, and desires that are seen as connections to others and the external world, overflowing the human body. These mental connections, however, were understood as permeable and easily broken. The usage of network from the 1700s likewise makes any possible connectivity, immaterial or material, take on either abstract or physical attributes, flickering between the two if needed.

Networks of the body

The first major appropriation of network as a metaphor occurred not with any new technological development, but in anatomy. Beginning in the 1600s and peaking in popularity by the late 1800s, physicians used "network" to describe many structures of the human body, most notably the nerves, arteries, and veins. The discourse of embodied networks was most prominently debated in the history of the nervous system. The scientists who saw in the nerves a holistic, connected network as a fundamental biological structure were "reticularists," who fought intensely with the "neuronists"—those who argued that the nerves were made up of differentiated cells.[23] While the neuronists appear to have been the victors in the history of anatomy, in their own time the reticularists were also well-respected and influential scientists, like the Italian anatomist and Nobel Laureate Camillo Golgi. In fact, the reticularists achieved dominance in scientific theorization about the body's nerves in the last decades of the nineteenth century, in part because of the popularity of directly associating the body's network of nerves with the material mechanism of the

telegraph—a belief held by a number of notable scientists and engineers, including Hermann von Helmholtz, Emil DuBois-Reymond, and Samuel Morse.[24] According to Otis, "the earliest anatomists" would explain the nerves by "drawing inferences about their structure and function by comparing them to a system whose structure and function were more obvious."[25] These other, more obvious analogs were often found in the networked operation of electrical telegraphy. Yet, as I aim to demonstrate below, these embodied networks were neither simply observed in the nerves nor directly developed out of deterministic metaphors from technology that associated electricity and nervous energy. Instead, constantly evolving associations between technology, the body, and health intertwined in different ways at different times—albeit in ways that ultimately served to obscure the specificity of all three in the name of a generalized idealization of connectivity and flow. This happened prior to the popularization of the telegraph, in which metaphors that associate embodied flows, blood, and vitality would also come to define beliefs about perception and sensation, enabling the eventual associations between the body and telegraphy.

While anatomical networks are purely corporeal, the intertwining of the material and metaphysical—so foundational for the meanings and metaphors associated with nets—persists in the networks of the body. In drawing on the technological form of material nets, these metaphors would suggest that the connectivity of a network was limited to the ends of the network itself; the constraint of the network was weak; the interstices between the intersections of the net could allow the escape of what the net constrained. The use of networks to describe anatomy borrowed some of these associations while fundamentally transforming the meaning of network with the addition of *vital flows*. For the anatomists of the eighteenth and nineteenth centuries, the fluids and energies that would flow within the network, circulating inside the body and beyond, produced a body connected to, yet differentiated from, a larger environment. The networked body was part of a universal, open totality through which would flow sensation and vitality. At the same time, these networks quite literally enclosed the body, constraining it and isolating it. The use of the material metaphor of network in describing the human body reproduces the meanings associated with fabric networks. The networks of anatomy would limit the physical human body, wrapping it up and trapping it as in a net. We find in the use of networks in anatomic discourse of the 1700s and 1800s the beginnings of an understanding of the human body, and life itself, defined through connection and the circulation of flows.

Networks in anatomy should be understood through the discourse of "tissues" and "fibers" as the basic building blocks of the human body. According to Georges Canguilhem, the language of "tissues" in anatomy suggests a "weaving" implicit in the construction of the biological body. *Tissu* is a derivation of the word *tistre*, "an archaic form of the verb *tisser* ('to weave')."[26] Networks, fabrics, fibers, and tissues are all cut from the same discursive cloth. Canguilhem contrasts tissues with cells. The difference between the two—and, consequentially, the difference between

reticularists and neuronists—reflects radically opposed worldviews that produce the truth of the body in vastly different ways. "Tissue," Canguilhem states, "offers the image of a continuity in which any interruption is arbitrary, and it is the product of an activity always open to continuation." The cell, on the other hand, "is the image of a whole closed in upon itself."[27] Tissue biology privileges connection, circulation, and flow between an organism and the external environment. Cell biology emphasizes enclosed individuals separated from the natural world.[28]

The move from an anatomy based in fibers and tissues to one founded in a theory of cells, which occurred during the 1800s, is associated with the formation of the modern liberal subject. Cell theory defines the foundational building blocks of the biological as discrete "individuals," self-contained and differentiated from each other, the larger environment, and other organisms. This transformation of scientific knowledge and norms directly corresponded to a discursive shift that privileged and produced the isolated, autonomous human being.[29] The succession of tissue biology by cell theory corresponded to and legitimated liberal political theories that understood human beings as separated, cellular, and self-reproducing. In metaphors that would equate the social body to the human body, the reproduction of the social order was accomplished at the level of individuals, not at the level of the collective.

Cell theory existed centuries prior to the 1800s, but models of the body that privileged fibers and tissues were common, if not completely dominant, throughout the sixteenth, seventeenth, and eighteenth centuries—and would persist well into the twentieth century and today. While later advances in scientific imaging would eventually replace the networks of woven tissues with differentiated cells, there was, nonetheless, an alternative discourse in the 1700s and 1800s, which we can now see has survived, at least in part, in the present.[30] This discourse defines bodies as held together, constrained yet connected, through anatomical networks equivalent to the fabrics worn outside the body. While to the naked eye the fine skin of an aristocrat may make lawn resemble network, one discourse of the medical gaze made striated networks out of the apparently smooth tissues and membranes of the human body. And, as Canguilhem suggests, assumptions about anatomical networks and the body would also enter into political discourse to legitimate claims about human nature and political being.

Take, for instance, a section of the British politician John Courtenay's 1790 essay, "Philosophical Reflections on the Late Revolution in France, etc.," an indirect reply to Edmund Burke's essay of similar title, popular in England and reprinted in a number of American newspapers. Edmund Burke's pamphlet has an almost identical name and publication date as Courtenay's, and the two share these similarities for important reasons. Courtenay and Burke were contemporaries in the House of Commons, and Courtenay's essay was a response to Burke's that repeats a number of the latter's key points—if for seemingly different ends. Courtenay is writing on the biological foundations of race and inequality. His essay is an attempt to critique and disprove the ideals of the French Revolution by claiming that democracy is

fundamentally impossible, that individuals need pastoral, Christian care, and that the differences between races will inevitably lead to an upsetting of the natural, Christian order if democracy—rather than monarchy—is pursued. He legitimates racism and inequality through a biological essentialism that positions the network of nerves—directly connected to skin—as the key trait that determines intelligence and human worth. Courtenay drifts between the scientific language of cells, membranes, and networks. Yet, the fundamental difference between races is defined in terms of connection, flow, and containment. While he describes the skin as made of cells, the cellular membrane of the skin is defined as that which directly connects to a network of nerves and, ultimately, the brain.[31] The weave of the cellular membrane wraps around the brain, below the epidermal surface of the body, and constrains the perceptions of those without white skin. Through embodied sensation, cognition is directly connected to the outside world. The supposed "symptoms" of the pathological other are found through the dissection of bodies, symptoms inherent in the very "nature" of the black body, defined through the language of networks and membranes. The network itself, as a constraining net, is seen to literally prohibit the possibility of perception and thought. This excerpt is from a section focusing primarily on the skin color of Egyptians, which Courtenay conflates with that of other nonwhite races:

> Besides, it has been conjectured by the Abbe Spalanzani, and demonstrated by a late dissection at Jamaica, that the cellular membrane, on which the color of the epidermis or outer cuticle depends is wondrously extended over the brain of the negroes, and completely wraps up the *cerebrum* and *cerebellum* in its curious net-work. Consequently, the impression made by external objects on the *sensorium* is rendered less distinct by passing through this reticular *envelope*, the nervous sensibility thereby blunted, and the rational faculties weakened.[32]

For Courtenay, intelligence depends on the flow of sensations from the environment to the brain. Racial hierarchies can be legitimated based on pseudoscientific arguments about the body's regulation of sensory flows. Admittedly, Courtenay does not follow the medical discourse of networks and flow to the letter, but he nonetheless argues for a distinction between bodies based on their vital capacity to regulate sensory and nervous flows through the physiological network that defines the limits and capacities of a body.

While Courtenay takes scientific evidence and remakes it in accordance with his own political beliefs, his claims are, nonetheless, based on a number of associations that generally defined the networks of anatomy in the 1700s and 1800s. They *constrained* the body (and, as in the passage above, thought and perception), but *connected* the body (and, again, perception), both to itself and to the larger external world. Through networks, the material of vitality and sensation would *flow* throughout the body. Networks moved fluids (namely blood, but also a hypothetical fluid within the

nerves) and energy through the body. And, most significantly, a subset of physicians understood networks as the very essence of life itself—if not the fundamental form of all matter. While the earliest usage of the word network understood the structure as limited in its connectivity, in anatomy, especially in theories of perception, the networks of the body not only constrained, but also connected a body to a larger totality of the sensible world through fluids and energies that would flow inside the fibers of networks. And, as can be seen in writings such as Courtenay's, the pathological could be defined through problems with flow and connectivity. The supposed inferiority of the black other was, for Courtenay, based in problems of connection that prohibited flow of sensation between the brain and the external world.

We can see with Courtenay how normal and pathological are produced through distinctions in the management of flows through embodied networks. This relies on linking networks of nerves and blood with earlier associations that articulate vitality with the movement and regulation of embodied fluids. So, before I discuss how differences in the embodied management of networked flows were thought to define the normal and the pathological beyond this one example—an example that clearly moves from more orthodox varieties of medical research to the popular uses and abuses of science—I'm going to go further back into Western history to discuss the genealogy of flow, circulation, and vitality in Western thought.

Vitality and the management of fluidity

The linking of fluidity with vitality is carried over from ancient Greek and Roman medicine, especially the work of Galen (c. 130–200 CE), physician to the emperor of Rome. The articulation of vitality specifically with embodied circulation occurred in the work of English physician William Harvey (1578–1657), generally considered to have discovered the circulation of blood throughout the body.[33] According to some genealogies, the emergence of contemporary discourse about network technology can be found within classical Greek literature. In Greek literary metaphors, networks served both to constrain and liberate—a dialectic perpetuated in current discussions of the power of networked communications which we'll continue to observe in other historical discussions of networks.[34] Yet, there is nothing that directly links communicative networks and the human body in the writings of these ancient and classical accounts of anatomy. Early attempts to describe the operation of the body's veins and arteries divided them into different parts that were only tangentially connected, at best. Models of the veins and arteries in ancient medicine were not understood to resemble netting and were not thought to connect as a network. Nonetheless, as the body became defined as a networked organism in the late 1700s, it was with an understanding of health as the proper management of bodily fluids and flows, carried over from medical knowledge defined by physicians such as Galen and Harvey. The discursive formation that enabled Courtenay to differentiate the

normal and the pathological in terms of the embodied management of flow would be impossible without this earlier understanding of health.

With the methods and techniques of ancient medicine, it was not feasible to observe the movement of blood within a living body. By contemporary standards, many of the beliefs of ancient physicians and philosophers were partial explanations based on an incomplete knowledge of the body, reliant on previously accepted *doxa* with little or no scientific evidence from empirical observation. These limitations were well known by Greek physicians, as can be seen in Aristotle's own laments about the study of anatomy:

> In living animals one cannot see how these parts are arranged; for, naturally, they are inside. And so those who look for them in dead, dissected animals do not see their chief origins, and others decide the origins of the veins on the basis of what can be seen from the outside of the bodies of men who are lean to emaciation.[35]

While the body was filled with fluids, it was impossible to see where these fluids originated, where they went, or if they even moved throughout the body at all. These limitations to vision and observation are clearly reflected in ancient medical discourse and prescriptions for proper health and bodily care.

Aristotle's theories about the body and health, produced within the context of these limits, were some of the most influential in ancient Greek thought and provided the basis for Galen's view of the body.[36] A healthy body was defined through the regulated balance of bodily fluids, or humors, diagnosed in conjunction with a proper "mixture" of hot and cold, wet and dry. As interpreted by Galen, this view would be dominant for nearly 2,000 years, foundational not only for ancient Roman medicine, but also for Islamic and Christian medical practice throughout the Middle Ages and the Renaissance. Galen's body was defined by four elements (fire, earth, air, water), each relating to four humors (blood, black bile, yellow bile, and phlegm). The blending of these fourfold elements and humors, along with the four qualities of hot, cold, wet, and dry, produced one's temperament and health.[37] One's "soul" directly related to the regulation and care of the body, depending on the mixture of humors and bodily qualities, produced through a "diet" that included food, drink, exercise, bathing, massage, and climate.[38] The body's regulation of the humors would result in one of four temperaments: sanguine, melancholic, choleric, or phlegmatic.[39]

The management of the self in Galen's era was directly related to the management of the body's fluids, which were thought to traverse the body as a whole. The humors were produced through ingestion of food, transmitted throughout the body via the loose, indirect interconnection of organs. In the stomach, according to Galen,

> everything eaten . . . undergoes a preliminary process of transformation, then received by the veins which lead from the liver to the stomach, and that it then

> produces the bodily humours, by which all other parts, including brain, heart, and liver, are nourished. But in the process of nutrition these parts become hotter than normal, or colder, or wetter, in accordance with the nature of the humours which predominate.[40]

To say that Galen did not believe in the movement of the humors throughout the body would be misleading; this movement was not circular, however. Food and drink were transformed into blood in the stomach and liver, which were then distributed to the rest of the body through the veins, where the fluids would be transmuted into the body's tissues. The heart, Galen claimed, drawing on technological metaphors contemporary to his own time, was like a bellows or smelter's furnace, heating the body's fluids and drawing them throughout the body itself.[41] The fluids throughout the body would nourish the entire body as a united totality: "All the parts of the body are in sympathy with one another, that is to say, all cooperate in producing one effect."[42] Galen's view of health depends on the holistic maintenance of equilibrium between the four major organs: the brain, heart, liver, and testes.[43] Proper vitality is not precisely linked to the flow of bodily fluids, but to the relative stasis that permits these organs balance. One's humors should run comparatively still, or at least should be a proper and unvarying temperature.

William Harvey's discovery of blood circulation was a jarring paradigm shift away from Galen's medical practice. Harvey's great finding was "that the blood goes forth along a new path and returns again, contrary to the way which has been accepted for so many hundreds of years by countless most famous and learned men . . ."[44] The body was not a unified system, as it was for Galen. Instead, the veins and arteries were closed—if not fully connected—containing nothing but blood that circulates perpetually throughout the body (Figure 5). According to Harvey, "we may fairly conclude that the arteries contain the same blood as the veins, and nothing but the same blood."[45] Health was not based on the balance of fluids, managed through the inputs of diet. For Harvey, health was now understood as the free flow and movement of blood, circulating throughout the body as an eternal return. Harvey seemingly inverted Galen's view of health. Instead of a stable equilibrium, balanced and free of fluid disturbances, a healthy body was one in which the body's fluids constantly and forcefully flowed in an endless and closed loop. While still a kind of equilibrium, it was a balance that emerged from the regular and constant movement of embodied fluidity rather than managed stasis.

Harvey's insight was taken up elsewhere, far beyond the veins and arteries. The principle of flow was quickly used to explain the workings of the nervous system by the English doctor Thomas Willis, who claimed that sensation was based on the fluid flow of nervous energy throughout the body.[46] "Hydraulic" models of the nerves such as the one proposed by Willis were common until at least 1833, in which a fluid analogous to blood was thought to literally move throughout the body's nerves, communicating sensation as a regular, circular flow.[47] Beyond anatomy and

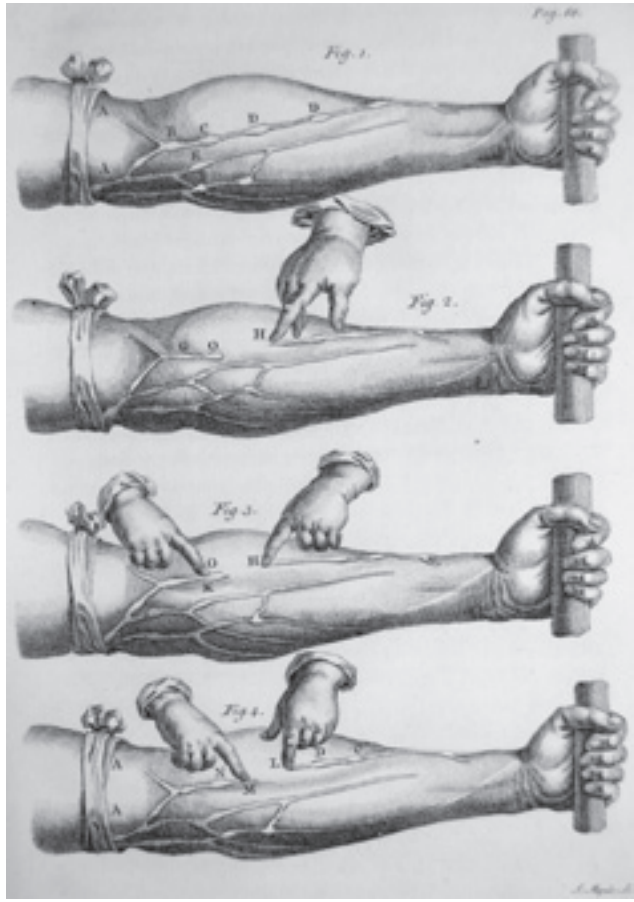

Figure 5 William Harvey and the discovery of blood circulation. From Harvey's *Anatomical Treatise on the Movement of the Heart and Blood in Animals*.
Source: The University of Liverpool Faculty of Health and Life Sciences, https://www.flickr.com/photos/liverpoolhls/10825780635/in/photostream/, reproduced in accordance with a Creative Commons Attribution-ShareAlike 2.0 Generic (CC BY-SA 2.0) License.

physiology, Harvey's image of the body became the image of the city. City planners in the eighteenth century began to structure the urban environment as "a place in which people could move and breathe freely, a city of flowing arteries and veins through which people streamed like healthy blood corpuscles."[48] As with Forster's Machine, people became the blood of the city. Emphasizing the necessity of flow instead of stasis produced new urban amenities such as sanitation. The streets must be sanitary and constantly flowing. As bodily waste was fixed and immobile, human urine and feces must be removed to keep the proper flows moving throughout the city. Streets must be cleaned through urban "veins" of sewers. People must be allowed to move freely and quickly in accordance with urban circulation.[49] In economics, Adam Smith and other

theorists of classical liberalism saw in Harvey's model of circulation a naturalistic metaphor for the proper operation of a capitalist society. The terms the Harveyean physician used to describe a healthy body were nearly identical to those Smith's colleagues used to describe the healthy operation of capitalism. The market enabled the "respiration of goods" through "the exercise of capital" and "the stimulation of laboring energy." Just as the free circulation of the blood was necessary for the proper health of the human body, the free circulation of capital was a requirement for the health of the society.[50]

The discourse that produces the requirements for a healthy body likewise produces the demands of a healthy society as it loses its foundations in an individual's biology and is generalized as a model of governance and conduct. With Galen, we have a model of personal health that involves the conscious management of one's body through the balance of fluidity. The conduct of the proper subject manages inputs and outputs in order to achieve a kind of affective stasis. With Harvey, the management of the body's fluids no longer possesses the goals of stasis and immobility. Instead, the blood must move, flowing and circulating throughout the body. The body must move, flowing and circulating throughout the city. Capital must circulate. On each and every scale, there must be movement through the circulation of flows. The management and perpetuation of these flows produces healthy bodies and healthy economies, together producing healthy societies. Blood, people, and capital do not simply flow. They flow through the relatively closed structures of networks as they appear to describe the veins, arteries, and nerves.

The body as a network of fabric and fluid

The biological appropriation of networks defined them in terms of flow and circulation, either of energy or of blood, and, accordingly, "life," bringing together the anatomy of Harvey with technological textiles. The networks of the body were not analogs to fabrics holding the body together, but a connective biological structure through which various vital fluids and energies would flow. Consequentially, differentiations between the normal and the pathological, between a full and a degraded "life," were made based on the ability of a body to properly or improperly manage flows of blood and nervous energy through the networks assumed essential to the phenomenon of lively matter.

Hydraulic models of the nerves, such as the one proposed by Thomas Willis, were never uniformly accepted in the history of anatomy, as it wasn't obvious that nervous fluid and blood would circulate in the same way. In 1674, upon observing a cow's nerves through a microscope, the "Father of Microbiology" Antonie van Leeuwenhoek wrote, "I could find no hollowness in them . . . as if they only consisted of the corpuscles of the Brain joined together."[51] For van Leeuwenhoek, this meant that the nerves were free of fluid, operating on different principles than blood circulation.

Yet, scientists and philosophers, including René Descartes, often held the belief that a moving nervous fluid ultimately connected the muscles and the brain.[52] The belief that nerves were filled with fluid was occasionally popular in medical thought, supported by the experimental research of scientists like the Swiss anatomist Albrecht von Haller, who, by the 1730s, had concluded that all of the fibrous structures of the body were unified in a singular "net-like cellular substance. . . . None of the cellular fabric . . . is excepted from this communication."[53]

As early as the mid-1700s, networks, as the organized form of the body, were seen by some in the medical and scientific community to be the unifying property of life, from the tubes and filaments of plants, to the blood vessels and nerves of the human body—a belief that would continue in one form or another throughout the 1800s. For these scientists, the nerves were seen as a unified, nonhierarchical, networked totality in each and every living thing, "all the portions of which contribute, in a certain degree, and especially according to their size, to the organization and functions of the whole; and not as a tree which, having only one trunk, distributes itself into branches and twigs . . ."[54] The skin, when observed under magnification, was revealed to be a "marvelously woven network, presenting millions of interstices and apertures . . ."[55] An 1824 paper defining the taxonomy of all matter, delivered to the Society of Natural History and the Academy of Science at Paris, differentiates higher forms of life entirely through the existence of a "nervous network" enabling sensation, via flows of nervous connection, throughout the entire body. The author of this paper, a Monsieur Bory de Saint Vincent, locates "living matter" above "mucous matter," which refers primarily to the slime on rocks, but below "vegetable matter," "crystallisable matter," and "earthly matter." Animal life is distinguished by the presence of a nervous network within a body, comprised of a combination of mucous and living matter, "the manner of the introduction of which will probably never be discovered."[56] Living and mucous matter are either hardened or decomposed to give vegetables, crystals, and earth their relative firmness and lack of mobility. There is nothing flowing through crystalline or earthly matter. The essence of animal life is defined in terms of networked flows of vitality in a relatively pliable kind of "matter." As a journalist remarked on Bory de Saint Vincent's theory, the scientist "thinks that, with this small number of materials. . . . Nature is enabled to produce the prodigious variety of beings which people the universe, all subjected to simple and uniform laws. He entirely denies the transformation of animals into vegetables, and reciprocally, even in microscopic beings."[57]

Regardless, beyond what appear to be fringes or forgotten dead ends of science, upon dissecting the various parts of the body many physicians would find networks of fibers, nerves, and capillaries. Aside from a simple biological structure, the presence of well-regulated networks in the body was assumed to imply a greater connection to the environment and an ability to sense one's surroundings in a more delicate way.[58] A theoretical medical essay from 1817 argues that sensation happens not in the five sensory organs, but in each and every part of the body capable of detecting

a difference of "texture" in the external world. Embodied sensation, for this author, relies in part on "the network of subcutaneous vessels" extending throughout each and every part of the body.[59] The flow through the body—be it blood or nervous energy—was that which enabled sensation, which could happen at any point within the body itself. Differences in texture would produce differences in flow, and thus the entire human body was a multitude of unified sensory organs too numerous to count. One medical essay argued for a strong connection between stomach and brain, perhaps attempting to scientifically justify any special connection between mind and food, still holding on to Galen's association of health and diet: "So that, if we believe nervous sympathy to be dependent on nervous connection, no parts are better fitted to sympathize than the brain and stomach . . ."[60] The scabs covering bodily wounds were understood as networks made by the body in order to protect and hold the body together. This natural "cautery," "causing no sensible pain, [is believed] to arise from a coating, more or less thick, of a network of vessels, injected and covered with the epidermis already disorganised: which coating . . . isolates and protects the nervous tissue of the skin."[61] The limits to the body, and the limits to the body's sensation, were defined by the limits to the connections made by the body's networks.

Anatomical writings about the network of nerves suggested a connection between the individual body and the external environment. Through the connection of nerves in a network, energy from external stimuli would be stored and transmitted along the fibers of the nerves throughout the body.[62] This belief was extended to the circulation of blood. While the network of veins and arteries was generally believed to range no further than the body, the flows of circulation were extended through the pores of the skin, which were understood as connected to the veins and arteries. Perspiration removes that which "might prove injurious to the health of the body . . . these skin-exudations proved a powerful aid in the acquisition of permanent health and strength, and notably so to the health, elasticity, purity, and beauty of the skin itself."[63] Sweat was the removal of pathogens from the blood. The maintenance of flow, again, was taken as a sign of good health and the proper functioning of the human body.

Pathologies of the networked body

The pathology of the circulatory network, while beginning with these above assumptions about connection and flow, transformed the discourse of networks in anatomy even further. In the study of apoplexies—an effusion of blood often associated with brain hemorrhages and strokes—the visibility of a network of blood vessels began to be identified as a pathological symptom signifying problems with blood flow. In the dissection of a corpse, one medical scientist noted that the brain of the deceased was "covered with a network of innumerable small vessels . . . opake, thickened, covered in certain places with a whitish exudation . . . on which they form a species of veil . . ."[64] Tumors in the eye were identified by the "network of red

vessels" covering them.[65] Pathologists commonly remarked that some brain injuries were the result of uncontrolled flow of fluid through the brain. "I have very strong and satisfactory reasons for believing," observed one, that the brain of a corpse had been damaged "as the result merely of the natural structure of the vascular network being unfolded and distended by the effusion of a fluid . . ."[66] Brain pathologies were the result of improper flow of blood or other vital fluid throughout the network. Pathologies of intelligence and perception, as seen in Courtenay's quotation above, were understood through skin preventing proper flow of external sensations.

In anatomy, the term network came to describe the human being as one ultimately constrained, separated from the environment through networks of nerves and blood vessels (along with networks of skin), yet connected to the environment through the fluids and energies that would flow through these networks. Pathologies of the body, from brain hemorrhages to problems with perception and sensation, were theorized as pathologies of flow. A proper body was one through which blood and sensation would flow freely, but not without limits. Unlike the flows of Harvey's circulatory network, the body must be restrained and prudent in its movements. Flow was constrained by the ends of networks of circulation, yet connected to the external environment by those very same networks. It is with anatomy—and, not to mention, an anatomical discourse that would reach its greatest popularity by the end of the 1800s before falling out of favor in Western medical thought—that we see the transformation of network from a simple, technological fabrication that would constrain and contain to a concept upon which life and vitality were equated to the proper regulation of networked flows. This directly prefigures those writing today who see in networks either the essence of natural existence or a conflation of technology and biology.[67] While the material of networks would still contain and constrain, that which flowed through these networks—blood, nervous "fluid," and nervous energy—were understood as that which generated vitality, perception, and even intelligence. Boundaries and blockages to flow could lead to death and ignorance, while too much connection could also lead to the same problems.

This medical discourse of the network would peak in the last decades of the 1800s, then falling out of use in anatomy in favor of cells and systems, coinciding with the rise of the telegraph and railroad. Almost all of the examples cited in this chapter, however, were from between 1800 and 1820, which indicates that the metaphor of networked flows actually emerged earlier than the telegraph; in other words, the use of "flow" to describe contemporary network culture is a vitalist, biological metaphor imported to describe technology and information. Assumedly, this does not change the material organization of the body, although it does change the truth of how the body is understood and treated in anatomy, which depends on material practices that define what a body is and does. Networks in the body are not an eternal, unchangeable material form. These networks are produced through the conjunction of materiality and metaphor, with material effects. At the height of its popularity in anatomy, the discourse of networks was used to describe the railroads and the telegraph—often

through means that associated technology and biology in ways that were supposedly more entrenched than metaphorical association. As we will see in the next chapter, that which would flow through the iron network of the rails and the electric network of the telegraph would come to be understood as that which would sustain the life of a nation, just as the networks of veins, arteries, and nerves would sustain the life of the human body. Technology would return as the dominant form of network—but this time technology would be that which would sustain and produce the social through vital flows of capital, people, electricity, and information.

The conflation of technology, biology, the social, and the economic is typically understood as a feature of the new, networked reality of today's world. The biological and the technological are brought together through equivalences of informatics and genetics, producing posthuman bodies through cybernetics.[68] Network culture relies on radical economic transformations from the technologized postindustrial or immaterial mode of production. The social is constituted by global networks that unite collectives through connectivity. But this discourse has a history—one that depends on "truths" so deeply held that the materiality of the network seems to realize the promise of nature through the technological. There are political consequences when one accepts networks as nature or ontology. As we will continue to see, when networks are defined as the one true logic of reality, those who do not or cannot connect and flow properly are rendered aberrations from nature. They are to be excluded or disciplined into proper nodal citizens. The story told today about social media, over and over, follows the same repeated refrain. Networks are our reality. We want to connect. Social media helps us accomplish technologically what we have always wanted naturally. With the repetition of these maxims, those who are not networked are rendered unworthy of recognition by larger social institutions—institutions increasingly defined by "social" connectivity that expresses a "fundamentally" networked nature, perpetuating the fears of technology expressed in "The Machine Stops." The history traced in this chapter—while only one line or vector of the story of networking—is essential for the contemporary conflation of flow, connectivity, and biology under the name of the network, a conflation perpetuated as networks once again become technological through the telegraph and the railroad.

CHAPTER TWO
SOCIETY: RAILROADS, RED SCARES, AND RACISM

Vitality, technology, society

In its original usage, "network" primarily referred to a technological textile that would constrain and contain through the power of its connected, interwoven fibers. In making networks out of the veins, nerves, and arteries of the body, this restriction was fashioned into a biotechnical vitalism defined by the possibilities and limits of flow and circulation. By framing life and health in this way, pathologies were likewise constructed as disorders of networked flows and circulation. Already we see fragments of an emerging rationality that would eventually lead to contemporary understandings of networked connectivity. The articulation of the term "network" to what we today think of as genuine network technologies—the railroad and the telegraph—would do two things. First, the creation and usage of these networks would make capital, material goods, people, and, eventually, information into that which would flow through networks. These flows would come to constitute the vital fluids of technology through metaphors derived from anatomical networks. A healthy society would, like a healthy body, maintain its vitality through the perpetuation of flows. Second, these networks, via the telegraph and its flows of communication, would seem to dematerialize technologies themselves. This would transform "network" from a very specific material connection with limits to one that was, potentially, a universal formulation of connectivity and flow without actual wires or rails. While this erasure of materiality was implied by some examples of the anatomical use of networks to describe the connection of the body to the totality of the external world, the (ultimately constraining) networks of nerves and veins were never forgotten in anatomy. This is not the case with the telegraph, as the linkages between technologies and people gradually became immaterial relational abstractions divorced from matter.

Because the flows perpetuated by trains and telegraphs were thought to regulate the health of society, they were, in some sense, social networks from their very instantiation. But unlike today's "natural" expression of sociality through technologies that seemingly reveal our always-already networked nature, the technological networks of the early twentieth century were fodder for populist (and in some cases, capitalist) fears of social and economic connectivity. The power of technology and communication produced a network that was unmanageable and uncontrollable. The so-called "iron network" of the railroad was initially feared for these reasons. Like

apoplexies in anatomical pathology, the size of the railroad led to widespread fears of the inability to control and regulate people, sociality, and capital. The rails of the network would trap and constrain by producing some as masters and others as slaves, with one group in control of flow and the other subject to the whims of connection, shoved to the margins through (in this case) the power of the steam engine. The sheer size of the railroad network—and, for that matter, its intrinsic relation to capital and industry—would elicit suspicion from a great number of individuals in the United States and the United Kingdom, these beliefs often transcending class or other social division. Connecting individuals across great distances, enabling the movement of people and goods, opening up new markets and creating more powerful, vital flows of capital—these were not part of the dominant interpretation of new technology in the earliest days of the iron network of the railroad. Connection and flow were positioned not as beneficial or natural, but as negative attributes of industrial capitalism to be resisted, by both worker and capitalist alike.

If the networks of anatomy, following Canguilhem, were indicative of a worldview opposed to that of an autonomous liberal subject, then networks of technology were also understood to violate individualistic autonomy and freedom. If networks are supposedly natural, then the intense fear elicited by the networks of the railroad and the telegraph demonstrate once more that this nature had to be produced and normalized through the historical conjunction of technological materiality and discourse. The railroad was not understood to liberate through movement and mobility. But these fears were eventually assuaged with the telegraph as a communicative device to manage material flows—a technology understood to have the same organic qualities of the body's nerves, connecting the world in accordance with a biological, natural order. Communication and information, by way of the telegraph, would manage and control matter, setting a precedent for information theory and cybernetics through metaphors and meanings derived from the history of anatomy.[1]

But this early story of social networking is not simply a narrative about changes in the technological power to control through the transmission of information. Social networks, in the age of the railroad and telegraph, were thought to be connective traps in which liberal protestant virtues of individualism and self-restraint were cast aside for collectivism. The very possibility of social connectivity through technology produced an unmanageable threat to individual autonomy. This was a sentiment central to political tracts from the 1920s and 1930s that framed social connection through anti-Semitic and anticommunist language. The political vision that invoked social networks would describe a dystopian future in which the mere existence of social and communicative relation would point to a ruinous end, in which the self and state ceased to be autonomous, independent entities.

Consequentially, the fears of the railroad and the telegraph should be placed within the larger political context of Western modernity, in which states and societies are constituted through an imagined exterior defined by the invention of a mobile and fluid Other. This Other is often historically embodied by the fictive anti-Semitic figure

of "the Jew,"[2] a mobile and stateless abstraction defined by premodern genealogical connectivity and postmodern technological, communicative, and financial connectivity.[3] It may seem strange to invoke anti-Semitism in a genealogy of networks and social media. Yet, these early writings about social networks use the railroads and the telegraph as metaphors for Semitic forms of connectivity. The political formation that defines the modern state and self-positions networked connectivity as that which challenges the hegemony of these modern structures. For instance, Elizabeth Dilling's *The Red Network*, a popular anticommunist and anti-Semitic tract from the 1930s that remains in print today,[4] took the new technological networks of the railroad and the telegraph and articulated imagined formal and material properties of technology to larger modern discourses of anti-Semitism. An external "Jewish" and "communist" Other was thought to be a master of connectivity and flow, again positioning networks as the excluded double of the modern. "Sociability is won, not forced," claimed Dilling. "Force on this point only engenders real antagonism, even bloodshed."[5] Apparently, the "forced" social connectivity of a new technologically globalized world was something so abhorrent as to be struggled against violently. These technological networks signaled a collapse of social divisions and separations, bringing about the erosion of social stability through encounters with a form of Otherness more adept at maintaining and controlling communicative, biological, and financial forms of global connectivity.

The invention of social networks within anti-Semitic discourse articulates the technological and biological vitalism of anatomy with communication, technology, and the social, embracing the historical construction of networks we've seen thus far while simultaneously rejecting any promise of "health" that may come from the management of flow and connection. While, as we will see below, the management of matter by communication made networks palatable to many in industry and finance, these same beliefs would not take hold in a paranoid "populism" that would decry an invisible and unknowable controlling social agency under the name of networks. In the next chapter, we'll see how it would take a global economic disaster—the Great Depression—for the embrace of connectivity and flow to migrate from the spheres of the financial and industrial elite to those on the populist fringes of the early twentieth century.

Liberal capitalism and the unification of the iron network

According to Wolfgang Schivelbusch, "From its beginnings the railroad was never free of some note of menace, some undercurrent of fear."[6] Instead of a technologized utopia, the railroads produced colonial relations between industrial centers and the marginal spaces upon which industry necessarily relied for raw materials.[7] The biases of the technological would unevenly distribute and disperse goods, solidifying differential relations, making some spaces poor while enriching those that controlled

the means of transportation.[8] While there were some notable authors who extolled the railroad and its potential in creating new forms of social and financial connectivity,[9] around 1850 the power of the railroads was more often framed as a restrictive trap and an invisible controlling force that would end individual freedom through unmanaged connection.

Devotees of Milton Friedman may believe that "competitive capitalism and freedom have been inseparable" throughout history.[10] Neoliberals like Freidman argue that nineteenth-century laissez-faire capitalism maintained personal freedom against the government. Yet, the widespread fear of the iron network suggests something slightly different. The freedom apparently desired by those who feared the railroad was, in fact, positioned counter to any institution seen to be a massive connective force, industrial or governmental, capitalist or otherwise. Through connection, and not simply governmental connection, individual autonomy would be threatened. In the United States, fears of a unified railroad were also fears of corporate control of major national institutions. Both American farmers and industrialists alike feared the railroad. Simple "freedom" from state interests in the name of unfettered, free-flowing capital was not understood to produce a healthy society. In the United Kingdom, the unification of the railroads, accomplished through state regulation, was a force that would negate the operation of free-market capitalism, though the unification of the rails was understood as necessary to guarantee the freedom of the people. The stress on competition between British capitalists explicitly defined the flow and "freedom" enabled by the unification of the railroad to be opposed to the interests of the free market. In each case, technological connection was feared as that which would negate the liberty of the individual, be that individual a worker (in the United States) or a capitalist (in both the United States and the United Kingdom). The power of the railroad was neither correlated to the increased circulation and flow of capital nor thought to help interpersonal connectivity. Stuart Brand's slogan "Information wants to be free" may be an axiom in contemporary studies of networked capitalism, where the liberation of flows is thought of as an intrinsic good enabled by the anarchic nature of the network. Yet, these assumptions are not universally held in the history of technology and capitalism. The flows of networks, both technological and economic, had to be legitimated in the name of freedom.

In the United Kingdom, the unification of the railroad was seen as an overtaking of private industry by state power—a violation of both the operation of free-market capitalism and the rights of individuals in the name of a state-sponsored monopoly. This discourse manifested itself in prominent debates about the "uniformity of gauge" between competing railroad lines. Private corporations constructed the railroad network in the United Kingdom. Consequentially, it only covered the country as a unified transportation grid if engineering specificities were ignored. The gauge of the railroad tracks, either the broad 7-foot gauge or the narrow 4-foot 8.5-inch gauge,[11] varied depending on line, resulting in a necessary transfer of passengers, luggage, and material goods at different points on the British railways. The British railways were an

amalgamation of competing lines that could only be said to connect in a rudimentary way, and they certainly did not permit unrestricted flow across the country.[12] A special supplement to *The Spectator* argued that differences in gauge could even constitute an "intolerable evil" for a number of reasons, such as the safety of passengers at night, the inconvenience to travelers, and the difficulties of loading and unloading cargo when the gauge changed.[13] This proposed uniformity of gauge, while still operated by a set of competing railroads, was seen to produce "an enormous monopoly, created by the capital and enterprise of individuals, and sanctioned by the Legislature for the advantage of the country. Competition, which in other cases where capital is expended secures for the public the best article at the cheapest rate, is practically in this instance inoperative as a check to extortion and a stimulus to improvement."[14] In the case of the railroads, competitive capitalism had failed the people. These breaks of railway gauge were an effect of laissez-faire capitalism. For the editorialists of *The Spectator*, the liberty and safety of the people could only be maintained by admitting, in this one case at least, the failure of an unregulated capitalist market in producing the best option for Britain's transportation system.

From the perspective of the British railroad industrialists, the creation of a single, uniform network of the railroads would give the upper hand to workers and trade unions. If there were any "unity" of the iron network, workers would potentially coordinate their own efforts at a strike with much greater ease than previously possible.[15] The assumed devotees of the free market were, here, the ones afraid of connection and flow, in part because connectivity would help unite the working class into a single unified group of "railroad workers." Workers, in the minds of Britain's capitalist class, would organize and unite at the same time as they were organizing and uniting the totality of the iron network. While it was "inefficient" from our perspective today, British capitalists saw the break of gauge as a result of both the natural operation of the free market and competition between the railroads. In the name of perpetuating competition and negating the potential organization of labor unions, the self-organization of the railroad had produced a number of incompatible lines that did not effectively connect or flow.

Books written on the debate of gauge, almost all seemingly critical of competition and demanding governmental regulation of railroad gauge, were popular enough to cover *The Spectator's* advertising section. One page from May 16, 1846 contained the following titles: *Narrow Gauge Speedier than Broad Gauge Railways, as Well as Cheaper*, then in its second edition; *A Railway Traveller's Reasons for Adopting Uniformity of Gauge*, then in its fourth edition; *Unity of the Iron Network: Showing how the Last Argument for the Break of Gauge, Competition, is at Variance with the True Interests of the Public*; *Gauge Evidence: The History and Prospects of the Railway System, Illustrated by the Evidence Given Before the Gauge Commission*; and *Fallacies of the Broken Gauge: Mr. Lushington's Arguments in Favour of the Broad Gauge and Breaks of Gauge Refuted*.[16] Each of these books agreed that the competition between the different railroad corporations, unchecked by governmental regulation, would

necessarily be against the interests and liberty of the public. And, some argued, the competition between railroads would even threaten the safety of the state when it came to the military use of the railroads.[17] A single network connecting and covering the entirety of the geography of the United Kingdom would best fulfill the needs of the state and its citizenry. These authors argued that open and uniform standards of a unified railroad would be best for the people. They had yet to imagine that it could be good for the operation of capitalism, however. The interests of the people were presented in direct opposition to the interests of the capitalists who ran the railroads of the United Kingdom. Thus, the railroads were held up as an example of how government intervention and regulation were necessary to maintain the democratic use of networked infrastructures. Flows must be managed—and in this case, it was the government that must act as regulator, not the market.

This is not how the regulation of railroad gauge is remembered today. Chris Anderson, as editor of *Wired* magazine, suggested that with railroads, "uniform and open gauge standards helped the industry boom and created an explosion of competitors," even though the multitude of different lines eventually merged into only a few, effectively creating an oligarchy.[18] Anderson is assumedly discussing the history of American railroad lines. Nonetheless, his full-fledged enthusiasm for "network society" capitalism, in which openness and connection foster capitalist competition and innovation, would be an alien, radical idea to the capitalists of the United Kingdom throughout the late 1800s and early 1900s. When juxtaposed with the possibility of a British railroad monopoly, we can see that connection and competition were understood as inherently opposed. Competition would be good for capitalists, but bad for the citizenry. On the other hand, connection of the railway was understood as socialistic, an appropriation of the railways by the state and an attack on individual (capitalistic) liberty through the fostering of trade unionism.

In the United States, the conglomeration of railways into a single, unified national network of rails was feared both by everyday citizens and by investors who understood the increasing size of corporations—the railways being some of the largest businesses known to date—as fertile grounds for graft and corruption. American railways both represented the determining power of capital and served as a massive network of obfuscation that made those same flows of capital functionally invisible and uncontrollable. The large investment of capital that it took to form the railroads played a large part in transforming the role of finance in the United States. The funding of industrialization in the 1800s was primarily accomplished with either the accumulated wealth of rich families, individuals, partnerships, or through the selling of ownership shares to a comparatively small group of associates. The production of the railroads, initiated using similar techniques, could not be completed using established methods for financing industrial development. While farmers and merchants originally funded the railroad, by the end of the 1840s the need for additional backing led railroad executives to Wall Street to finance their technologies, effectively popularizing the majority of financial instruments still in

use today.[19] As the funding of railroads shifted from local communities and interests to New York, they gradually began to be seen as massive networks of capital in which the interests of individual citizens (and, often, individual investors) would be lost and forgotten in the name of the ever-expanding power of capitalist organizations.

But the sheer size of the network made it impossible to accurately regulate the railroads, prompting suspicion from investors as well as everyday farmers and workers. Capitalist financiers saw these corporations as too large to effectively manage, fearing the unification of multiple railway systems into a national network because of the opacity in regulating human behavior and individual corruption. Decreased competition would lead to a more stable market when it came to speculation on the railroads. But the increasing size of corporations would be a problem if crooked railway managers were to withhold information from investors.[20] Because of the inability of investors to literally see, check, and manage precisely what was happening down at the railroad office, they dreaded a bureaucratic structure in which simple processes of accounting would be obscured or falsified in the name of small-time con artists employed as office managers far from Wall Street.

These fears continued throughout the final decades of the 1800s into the 1900s. In a 1907 essay from the *Wall Street Journal*, one author, imagining a future historian of the railroad, suggested that posterity would look back and note how "law-makers had forced the railway systems to develop under a false theory that railways can be controlled and regulated by competition, although in their economic nature we are even now beginning to see that they must necessarily be largely monopolistic."[21] This monopoly was required not because of finance, but because of the difficulty of coordinating the use of the same rails by multiple corporations. Too much connection between railways was understood to negate much of the possible increase in efficiency from railroads, as trains would have to navigate increasingly tortuous routes.[22] One editorial explicitly remarked that the hostility and fear of the railroads in the United States was a result of its massive national network of interconnected lines run by different railway systems: "Each company has not only a definite geographical area within which it holds a more or less privileged position, but it likewise has a network of relations to similar companies which cross its territory or touch its lines at various points, each of which determines in some measure the character and scope of the problem which a given company has to work out."[23] The problem of the railroad was its networked structure. Because of the singular network of the railroad, capitalist organizations had to learn how to cooperate rather than compete, as they all had to share the same infrastructure.

Material chaos and immaterial control

The historical impact of the railroad (in both the United States and the United Kingdom) is necessarily associated with the telegraph. As with the pathologies of anatomical

networks, fears of technological networks were the result of an inability to regulate the flows of capital, people, and goods throughout a network of ever-increasing size and scale. There was no way to guarantee, or even manage, the "health" of the social body with the railroad. Flows were out of control and unpredictable. The absence of transparency throughout the administration of the railroads, likewise, meant that any attempt to diagnose the health of the iron network would only be met with quizzical expressions of bafflement. The telegraph changed this. In its conjunction with the railroad, the telegraph assuaged popular fears of the railroad by metaphorically giving it a network of "nerves" through which the "body" could be controlled.[24] The national networks initially cut into geography by railway tracks provided the original routes for the telegraph's infrastructure.[25] Communication via telegraph managed, ordered, and maintained the operation of the trains, preventing collisions and regulating time schedules. But most importantly, with the telegraph information was seen to move independently of physical matter. Communication was divorced from materiality, while simultaneously managing and ordering that which is material. This attribute of information came from the telegraph's conjunction with the railroad, creating, in the words of James Carey, an "*encephalated social nervous system in which signaling was divorced from musculature*."[26] The telegraph and the railroad, when combined, transformed the use of the term network from restriction to freedom. Connection and flow on a massive scale were no longer feared because of the newfound ability to manage materiality and produce "visibility" through "immaterial" communication. The metaphors of health that characterized the vitalist networks of the previous century returned in technology as they were waning in biology. It was no longer the individual body that was networked, with health emerging from the proper management of biological flows. Instead, the body of the nation, the *social network* of technology, capital, and people, would be healthfully maintained through increased circulation and management of flow. The material effects of new technologies were thus understood through biological metaphors of a proper and healthy body that existed prior to the invention of a synthesized telegraph and railroad network.

Early in its history, the telegraph was seen as analogous to the networks anatomists found in the body's nerves, a technological manifestation of that which was already realized in the biological structure of the nervous system. In an 1851 talk, the German physiologist Emil DuBois-Reymond claimed, "The wonder of our time, electrical telegraphy, was long ago modeled in the animal machine. But the similarity between the two apparatus, the nervous system and the electric telegraph, has a much deeper foundation. It is more than similarity; it is a kinship between the two, an agreement not merely of the effects, but also perhaps of the causes."[27] For DuBois-Reymond and his contemporaries, like the German scientist Hermann von Helmholtz, the telegraph was both a metaphorical and a material model for the operation of the body's nerves. Helmholtz, in particular, used the telegraph as a model to frame the neurological operation of vision through "physiological" processes derived directly from the electrical functioning of telegraphic communication. It was around the same time as

DuBois-Reymond's speech comparing the telegraph and the nerves that Helmholtz began to form some of his theories of visual perception based on the material function of the telegraph.[28] And while DuBois-Reymond and Helmholtz saw in the telegraph a model of the nerves, engineers and inventors Samuel Morse and Werner von Siemens saw precisely the opposite relation: the body's nervous network served as a model for the telegraph. Morse and Siemens, consequentially, designed their communications technologies as an "organic" means of communication via biological models they assumed were replicated by the technological.[29]

DuBois-Reymond claimed that the articulation of the technological and the organic, represented in both the nerves and the telegraph, also depicted a model of ideal government reliant on a synthetic model of informational, electrical, and biological control. In the same 1851 talk cited above, he remarked:

> France is still waiting for a Werner Siemens to cover it with a telegraph net. For just as the central station of the electric telegraph in the Post Office in Königsstrasse is in communication with the outermost borders of the monarchy through its gigantic web of copper wire, just so the soul in its office, the brain, endlessly receives dispatches from the outermost limits of its empire through its telegraph wires, the nerves, and sends out its orders in all directions to its civil servants, the muscles.[30]

A similar statement can be found near the beginning of William Harvey's *Anatomical Disquisition on the Motion of the Heart and Blood in Animals*:

> The heart of animals is the foundation of their life, the sovereign of everything within them, the sun of their microcosm, that upon which all growth depends, from which all power proceeds. The King, in like manner, is the foundation of his kingdom, the sun of the world around him, the heart of the republic, the fountain whence all power, all grace doth flow.[31]

Both DuBois-Reymond's neurobiological description of telegraphy and Harvey's circulatory description of royal power use organic and technological models to describe an idealized form of monarchical governance. Like the nerves, the sovereign uses the telegraph to communicate, manage, and control the other parts of the organic "body" that is the state. Like the heart, the sovereign provides the vital impulse of circulation from whence emerges the vitality of the organic unity of the state. These models, however, are closer to a centralized model of network rather than the distributed one thought to characterize the internet[32]—they still depend on a central sovereign in the metaphors that relate the networks of the body, technology, and the state.

The earlier fears of the railroad came about precisely because of a perceived violation of these principles of networked governance expressed by Harvey and

DuBois-Reymond. The flows and connections of the railroad could not be successfully managed, leading to potential social, cultural, and economic ruin. But, as DuBois-Reymond saw with the telegraph, the power of electric connectivity would permit the organization of the state by way of networked flows of communication. With the telegraph, capitalist fears of the railroad began to disappear, as the opacity of railroad management would become transparent with newfound increased communicative abilities. The telegraph and the railroad together would enable a quicker turnover of capital, greater circulation, and increased health of the national body.

Claimed one *Wall Street Journal* editorial from 1906, "Independent companies are coming to the larger cities seeking to be connected more directly with the great centers of trade and industry. The last step remains to be taken to couple rural and urban systems, thus forming one network of communication from center to circumference…"[33] The greater connection via telegraph and, later, telephone, combined with the increased speed of railroads, would enable a model of production and consumption that directly predicts what we would call today "Toyotism" or "just-in-time production,"[34] or even something akin to how the internet is understood when it comes to retail:

> One certain effect of this must be the quicker turnover of mercantile capital, both on the part of jobbers and of retailers. An hour after a phone order is received at the jobbing house the goods will be on their way to the railway or trolley line reaching out to the retail store in town, village or country cross-road. Within an hour or two the article will be in the hands of the purchaser. Or the retailer may be eliminated entirely, and the transaction take [*sic*] place between the city department store and the suburban or rural purchaser.[35]

Technological infrastructure dramatically improved in the early twentieth century through roads, airlines, trolleys, and upgraded railroads. The resulting "annihilation of space by time" was often expressed in advertisements for the technologies themselves as well as ads for other businesses that relied on flows of information, such as investment firms. One such ad from 1930, titled "Leveling the Barriers of Distance," produced for the financial corporation Halsey, Stuart & Co., stated: "On wheels and on wings, over highways of steel or concrete and via airways, moves a vast phalanx of transportation—representing about sixty billion dollars of investment. The mobility of man and merchandise—once measured by the range of a horse and wagon—is now limited only to the capacity of steam, gasoline and electric vehicles."[36] As a financial services corporation, Halsey, Stuart & Co. were advertising the role of investment in the production of transportation and technological infrastructure, suggesting that the "whole social and commercial structure upon which all depend is constantly extended and stabilized by the pooling of investment funds." Harris, Forbes & Company, another investment firm, also produced advertisements based on the history of the railroads, such as one titled "Forty Years of Progress," which claimed

that railroads were "arteries of trade and commerce," producing American "progress" through the development of technology that maintains circulation through the entire country as a body.[37]

James Carey has suggested that it was the telegraph that enabled humans to think of communication as separate from its material foundation. Thanks to the persistence of Cartesian dualism, in the metaphors that united the anatomical and the technological, the nervous network of the telegraph controlled yet was divorced from the "body" of the railroad. The social meaning of the railroad dramatically shifted once communication was "dematerialized" and used to manage such a large structure previously believed to be unmanageable, a belief that would persist through the various technological "sublimes" popular throughout the twentieth century, each promoting the powers of a new technology—be it the telegraph or electricity—to order and rationally control social and economic relations.[38] By 1925, an advertisement for Bell Telephone Securities promoted its communication network as the "things that are not seen," in which the material infrastructure of the telephone network was "not visible to the subscribers and investors whose homes and offices they serve . . . Plant and service as extensive as the nation itself underlie the securities of the Bell System."[39] While, from an ontological perspective, communication has never been dematerialized,[40] in terms of the everyday truth produced by the telegraph, there was an increasingly immaterial aspect to technology that tied people together through the ether of communication as physical wires and relays seemed to vanish from view.

In the words of a 1905 article from *The Atlantic*, through a network of worldwide trade, fostered through railroads and the telegraph, "the world has become one."[41] While it's clear that the railroad and telegraph did not actually connect the totality of the world, this was, nonetheless, a common sentiment about technology that has persisted throughout the twentieth century to the present. Technological networks had, supposedly, transcended the tyranny of distance and created a singular, globalized world. By the turn of the century, the possibility of a "network" carried with it the spirit of totality, unity, and holism. To connect would be to connect the entire world, without margins and without exclusion. While the visible, material connections of the railroad could also demonstrate the limits to this way of thinking, wired communications networks, first the telegraph and then the telephone, "dematerialized" these technological connections in popular culture. This immateriality both made manageable the material flows of people and capital through the circulation of information and enabled a view in which networks could cover the planet, excluding nothing. When transmuted into an etheric substance, networks no longer seemed to rely on a material infrastructure, but would touch all while slipping from view as a concrete, material thing. During the first decades of the twentieth century, networks were no longer restrictive and constraining nets. For many, they were everywhere, all the time, circulating information and capital as the (immaterial, invisible) fabric of the social.

Neither the people nor many capitalists seemed to greet the railroad industry with wholehearted enthusiasm. The massive size of the railroad network was cause for concern. Attempts to unify the networks, be they through state power or through capitalist conglomeration, were believed to infringe upon the liberty of the individual and self-determined community. Yet, with the introduction of the telegraph, many of these beliefs were cast aside, in part because the fear of connection was also a fear of the inability to control and manage flows. Through metaphors lifted from the study of anatomical networks, the telegraph was understood as a nervous network for the iron network, as would later be the case with the telephone, as well. The management of flows of communication would enable flows of people and capital to likewise become manageable. The telegraph and railroad signified the articulation of biological and technological networks, conjoined with flows of people, capital, and information. These networks of the 1800s and 1900s brought together the world contemporary network theory equates with nature and ontology: the interconnection of the technological, the biological, the economic, and the social. But, as was initially the case with the railroad, interconnection had yet to be understood as natural—or even desirable—by many in the United States and elsewhere. While the telegraph transformed capitalist fears of interconnection, it did not transform populist fears of a networked sociality. Instead, networks were positioned as a social Other opposed to the liberal autonomy of the modern individual. The network, as an infrastructure perpetuating disembodied flows of information and capital, was articulated with anti-Semitic and anticommunist fears of an invisible and inaccessible determining social power.

Social networks, communism, and anti-Semitism

In the earliest descriptions of "social networks," social connectivity was understood through many of the same doubts that characterized hostility toward the telegraph and the railroad. The increased movement of capital and communication was a trap for everyday autonomy, in which individuals would find themselves caught in a constraining network of social obligations and relations. Yet, in extending beyond the technological, these worries would also ground fears more sinister and hateful—worries directly associated with articulations of racism and xenophobia common throughout the first decades of the twentieth century. New forms of social connectivity supposedly represented an erosion of the modern subject directly arising from technologically enabled communistic and Semitic collectivism. Through crude caricatures that resonated with fascist and totalitarian political discourse, writings from the 1920s and 1930s invoked networks to suggest that the very idea of global social connection attacked the free will and autonomy of liberal individuals. Connection was an aberration from the natural order of the social world foisted upon free individuals in the name of an alien and corrosive global monoculture that threatened to undermine and destroy both capitalism and Christianity.

In 1857, a *Harper's Magazine* essayist looked through a microscope at the water of a stream and found living organisms that "generally seem to wave gracefully to and fro, but they move not as if by an act of volition. Their motions are, of course, much hampered by their close and strange connection, and can hardly be said to be the result of their own free will, except when they succeed in freeing themselves for a time from their attached companions." These organisms are, according to the author, "strict socialists" connected through a biological network.[42] Unlike human nerves or veins, microscopic connections would externally bond different organisms together as one, transcending biological boundaries in the name of the network. Like the railroad, these networks would extend individuals out to produce larger "bodies." In the process, this negates the autonomy and will of the individual organism. In spite of the reference to nature, there is nothing intrinsically natural about networks here—or at least the networks of these "little sticks," as *Harper's* referred to the microorganisms, have absolutely nothing to do with human nature. Instead, they sap the free will of potentially autonomous life forms, trapping them in a socialistic collective. Like the fears of the railroad, networked connections constrained and trapped individuals, overtaking individual will and autonomy.

This *Harper's* article is a particularly early instance equating collectivism with networks, but it precedes a popular use of the term in the first half of the twentieth century. Networks would be invoked as that which would threaten autonomous liberal subjects, tying together those separated while negating free will. The perceived threat of communism, in particular, was the most explicit network to be feared. When extended to political discourse, specifically in anti-Semitic writings conflating socialism and communism with an imagined "Jewishness," this understanding of networks posited a global conspiracy in which the material ties between individuals would gradually become erased, mirroring the dematerialization of connection associated with the telegraph. The "red network" of communism was described as that which could unnaturally connect everyone and everything through global flows of contaminating ideas. Even with the embrace of the telegraph and the railroad, radical right-wing populist political activists nonetheless feared networked flows of money and communication as representative of a larger controlling force that would eliminate the free will of the individual.

In spite of this, networks were positioned as the only possibility for future political organization by the very conspiracy theorists that feared the determining agency of communist communication. The connection of networks was not always pathologized as an ailment of communism. Networking and collective organization, abandoning the autonomous subject of liberalism, were constructed by some of these writers as a requirement for future political struggle. In the first decades of the twentieth century, the embrace of social connection came not from those looking to advance global communism, but from fascist sympathizers claiming to save Christianity, capitalism, and the liberal subject from collective politics. In other words, modern liberal subjects thought that they had to leave modernity behind, embracing the very

Other they had constructed, in order to save liberalism itself from connectivity and unmanaged flows.

Another essay from *Harper's*, this time from 1925, criticized the emergence of "American fascism," or nationalism formed of fears "that out of Moscow there had spread all over America the network of a vast international conspiracy to destroy the family, religion, property, all government . . ."[43] The various Red Scares in the United States were inspired, in part, by the belief that there was a communist network invisibly infiltrating all aspects of American life. Not only were communists potentially everywhere, the very existence of government was constructed as a constraining force similar to the network of socialism.[44] The possibilities for the future were coded using the broad strokes invoked by either fascism or communism. While fascism was to be feared, socialistic tendencies of centralized government, even at their most minimal, were likewise understood as necessarily blunting personal and economic freedom. "Anarchy would logically be still better than the least government, but no one except a few quaint lunatics imagines that it will operate a technological civilization. . . . Government is a sad nuisance: it enmeshes everyone in a network of obligations, taxes, and restraints; but if we want preventive medicine, high-speed transportation and communication, and hot water in the bathroom, the yoke of government will remain heavy on our necks."[45] In an age of technology that must be managed, be it the railroad or the telegraph, government must intervene. But government itself is a network, constraining the power of the individual in favor of the shackles of the social, all the while managing the flows of infrastructure. In the 1920s and 1930s, networks were everywhere, and each constrained the individual, attacking the liberal subject, drawing directly on the historical imaginary of a network as a constraining net. Government connected the nation-state together out of financial obligations used to fund technological networks. Social networks from Russia were invoked as doing nearly the same thing. Like early fears of the railroad, connectivity indicated a loss of individual agency and control. The liberal individual, upon discovering that they were enmeshed in a massive network of social and economic binds and ties, would resist connectivity in favor of personal freedom, rejecting government, industry, and capitalism. Connections from all directions were tearing the individual apart.

Fascist anti-Semites railed loudest against these networks of the social, envisioning them to connect the totality of Western life, if not the entire globe. Anti-Semitic discourse has long defined the Jewish people as a superhuman "social network" that is controlling "reality" from behind the scenes. Reductively washing over real lives and experiences, anti-Semitism in the form of the "Jewish Question" or "Jewish Problem" positions "the Jew" as a contradictory figure that delineates the margins of modern subjectivity. On one hand, Jews are supposedly "slavishly bound to external Law and tradition, ritualistic and irrational, and incapable of the maturity and autonomy called for in the development of enlightened, modern subjectivity . . ."[46] They exist as a "premodern" Other that refuses to give up the bonds of religion and tradition, rejecting the relatively individualistic subjectivity of modern liberalism.

But, on the other hand, Jews are also "a figure of transnational range and abilities [that] raises questions about deracination, homelessness, abstraction, supra-national identifications, and divided loyalties,"[47] a "postmodern" Other that points to global flows of migration, communication, and capitalism. Of course, the figure of "the Jew" does not refer to any actual person, although it has and continues to be deployed to enact very real violence against actual people. It is, instead, an abstract, imaginary subject position that represents the failure of modern liberal ideals of universal enlightenment while also simultaneously existing as a figure for the perfection of many of the same narratives of modernity. Social connectivity—historically articulated with race and genealogy—is another way for racism to identify a global conspiracy of Jews, financiers, and, with the telegraph and other teletechnologies, those associated with media and communication.[48] This connectivity is represented by the premodern bonds of religion and race as well as the postmodern networks of stateless cosmopolitanism, technology, and finance.

In the early decades of the twentieth century, this version of anti-Semitism was popular with Fascists and Nazi sympathizers in both the United Kingdom and the United States. The best-selling British author Nesta H. Webster, an anti-Semite and one-time member of the British Union of Fascists whose audience included Winston Churchill as an admiring reader,[49] built a career through paranoid historical studies of invisible social networks that determined historical transformations. One of her most famous books, *Secret Societies and Subversive Movements*, opens with a quote from Benjamin Disraeli speaking in the House of Commons: "A great part of Europe—the whole of Italy and France and a great portion of Germany, to say nothing of other countries—is covered with a network of these secret societies, just as the superficies of the Earth is now being covered with railroads . . ."[50] For Disraeli—or at least Webster's reading of Disraeli made by way of this quote—citizens of the early twentieth century were no longer able to determine their own fates. Just as railroads were assumed to negate the power of capitalists in the United Kingdom, social networks of "secret societies" were believed to negate individual political power and self-determination. And like the connectivity of the telegraph, communicative social connections were thought to be invisible. That which determines history is an imperceptible agency to which all are connected. This agency supersedes national governments, even though the connections that define these "secret societies" remain unknown. For Webster, the power of these secret societies, being invisible, was often managed and maintained through the occult.[51] She believed in a Jewish conspiracy of global domination and regularly invoked *The Protocols of the Elders of Zion* in her writings as an exemplar of this invisible determining force.

In her 1926 book *The Socialist Network*, however, Webster eschewed many of the more mythological or occult aspects of global networks, along with the more overt anti-Semitism of her conspiracies. Instead, she charted the supposed unification of the global network of socialists through the membership lists of various communist, pacifist, and anarchist organizations—or, more to the point, any organization that

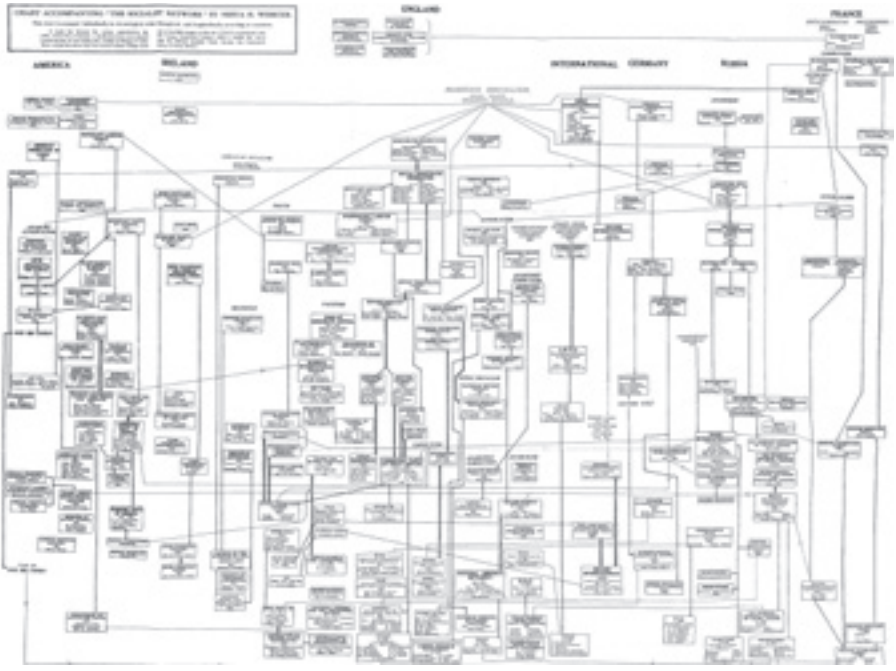

Figure 6 Nesta Webster's 1926 diagram of "The Socialist Network."

Webster saw as counter to the solidification and maintenance of British state power (Figure 6). As just one example, she argued that Germany, in the First World War, depended on "the network of pacifist organisation" in Great Britain to "prevent England's resistance to her scheme of world domination."[52]

Fears of a global communist conspiracy are not precisely the same as anti-Semitism. Both, however, operate through the logic of Othering that defines the white Western self and nation through the exclusion of specific populations defined by abstractions that originate from within white, Western modernity.[53] Webster's ability to move directly from "secret societies" organized through the *Protocols of the Elders of Zion* to the visible bonds of her socialist network demonstrates not two different models of understanding social connection, but, rather, a single network of Otherness that unites communists and Jews as an integrated force. While this is implicit in *The Socialist Network*, Webster makes it explicit with her "Chart of the World Revolution" (Figure 7), which depicts a single, cohesive conspiracy comprised of both invisible secret societies and the visible socialist network. Webster's worldview collapses the figures of the Jew and the communist into a singular Other that communicates both publicly and invisibly, controlling the world through global flows of capital and communication.

Webster draws several conclusions about the "socialist network" on the basis of her assumptions of global connection. First, she argues, there is no real centrality

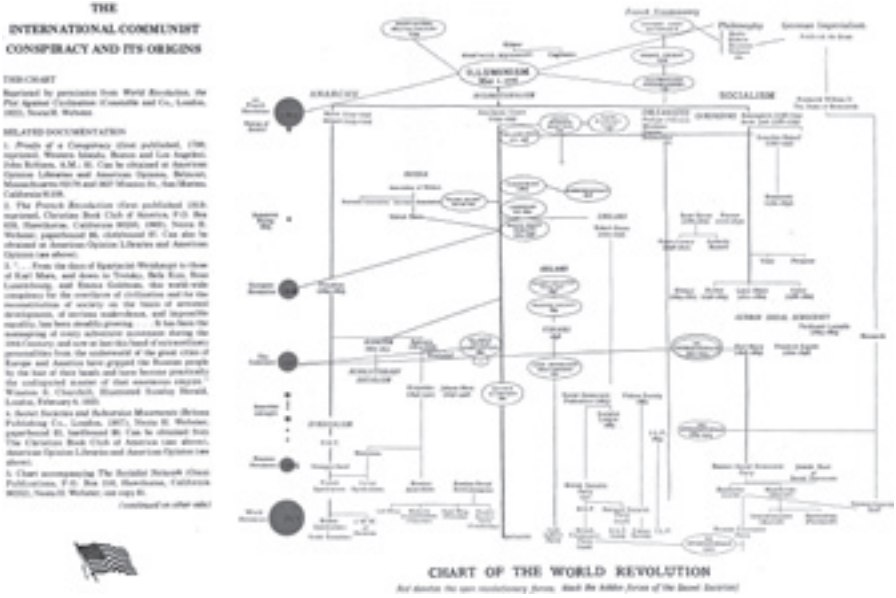

Figure 7 Nesta Webster's 1922 "Chart of the World Revolution." The charts reproduced in Figures 6 and 7 accompanied some of the print editions of *The Socialist Network* even though only the chart in Figure 6 was directly related to the claims of the book itself.

to the network itself. The socialist network is managed through a balance between the concentration of Soviet power in Moscow and the anarchist desire to destroy governmental and state organization. A network is simultaneously organized and disorganized, connecting everywhere but only marginally directed toward a hierarchical center. The socialist network is defined by flexible connections between loosely coordinated organizations that share members and goals. These organizations are not hierarchically arranged, but are multiple and dispersed. Taking out any one socialist organization would do nothing to the network as a whole. Their "leaders well know that amalgamation would be fatal,"[54] but are nonetheless united in this network form, which is loose but totalizing. Second, the network is a means for the circulation of capital *away* from capitalists. The network operates by a redistributive accumulation by dispossession. Capital is taken from its centrally concentrated holders and moves throughout the entire world population as a whole. The flow essential to a network is one in which capital is distributed in an egalitarian manner throughout the totality. Like the fears of farmers when faced with the railroad, connection signifies the rerouting of capital elsewhere. The flow of capital through the network negates private property through connectivity. Thus, "the socialist movement has unlimited funds at its disposal."[55] Third, the network itself is "open" and has "been able to penetrate every sphere of human endeavour . . ."[56] The socialist network touches the totality of human life across the globe. It is everywhere, able to absorb anything previously

excluded. Fourth, and finally, the resistance to socialism is for Christian capitalists to network themselves. Capitalists should mimic the loose structure of connections that makes up the socialist network. Continuing to embrace an ideal of autonomous liberal subjects in competition, for Webster, makes impossible any effort to defeat the socialist network. "Our societies are not only disconnected, but too often," claims Webster, "instead of being allies, they are rivals."[57] Webster's solution is not to resist the network, but to fight networks with networks.

In only a few pages, in 1926, Webster outlines a political theory of networks that directly prefigures many contemporary theories of network politics, if from the obverse perspective. In particular, Webster's socialist network resonates with Michael Hardt and Antonio Negri's reading of global networks of communication and finance. According to Hardt and Negri, the contemporary moment is defined by the waning of the nation-state where "a 'network power,' a new form of sovereignty, is now emerging, and it includes as its primary elements, or nodes, the dominant nation-states along with supranational institutions, major capitalist corporations, and other powers."[58] New communications technologies are creating the possibility for a globalized network of communication and production, constituting the potential for a new revolutionary class, the "multitude." Just like Webster, Hardt and Negri argue that these networks are nonhierarchical; they redistribute wealth throughout the world; they connect all aspects of earthly existence; and to resist networks, one must become networked. "The development of communications networks has an organic relationship to the emergence of the new world order," claim Hardt and Negri, "it is, in other words, effect and cause, product and producer. Communication not only expresses but also organizes the movement of globalization. It organizes the movement by multiplying and structuring interconnections through networks."[59] While Hardt and Negri see this as the only possibility for a future communism, Webster sees it as the only possibility for a future capitalism. This leads to a massively problematic realization that I'll return to below: contemporary political theories of global network connection appear to unintentionally repeat anti-Semitic fears of a global Jewish-communist conspiracy from the first decades of the twentieth century. While one cannot reduce those writing today to anti-Semites like Webster, the imaginary of a global "multitude" of distributed, networked actors, nonetheless, seems to repeat racist fears about an Other that will overcome Western modernity—if from a position that celebrates the networked potential of this Other in overthrowing the limits of the modern.

Nearly ten years after *The Socialist Network*, the book *The Red Network: A "Who's Who" and Handbook of Radicalism for Patriots* was published in the United States. The book's author, Elizabeth Dilling, like Nesta Webster, was an anti-Semite and a fascist. She was prosecuted, for arguments she made during the Second World War sympathizing with Nazis, under the Smith Act in the Great Sedition Trial of 1944. Dilling's stated goal with *The Red Network* was to "bring to the sound but still sleeping portion of the American public the truth about the Communist-Socialist world

conspiracy which . . . is boring within our churches, schools and government and is undermining America like a cancerous growth."[60] Dilling does this through a series of essays bloviating about communism, then devoting nearly 200 pages to listing names of those she considers communists along with the organizations to which they belong. Unlike Webster, Dilling makes no explicit connections between these organizations, doubling down on the imaginary links that characterize the anti-Semitic political paranoia that Webster outlined in her *Secret Societies and Subversive Movements*. "Since the Communist Party is a *secret society*," claims Dilling, "it is impossible to know, with the exception of certain open leaders and organizers, whether or not any individual is or is not a Party member."[61] But, ultimately, what connects many communists together is their Jewish heritage. Her entry on Marx stresses his Jewish genealogy. The entry on Freud labels him a communist, not because of any specific political beliefs but because of his Jewish roots. The same goes for numerous other political figures, like the popular Republican New York mayor and congressman Fiorello La Guardia, who, while ethnically Jewish, was a practicing Christian. In Dilling's view, the network itself is transformed from the visible (or at least public) interpersonal ties that define Webster's socialist conspiracy to something completely invisible yet totalizing, grounded by any number of interchangeable biological, social, and communicative links. The network is distributed spatially as well as temporally, as the history of biological genealogy connects the network, as well as the interpersonal ties in Dilling's present. In Dilling's anticommunist conspiracy, all are under suspicion of communist sympathies, especially those who have any sort of contact with Jews. The network is everywhere and yet nowhere, threatening to connect all in such a way as to completely eliminate any semblance of liberty and personal autonomy.

Dilling spends a great deal of her essays on the obliteration of the family and locality. Her fears of communism are rooted in the destruction of traditional local bonds that she sees embodied in the family and the Christian church.[62] For Dilling, communism replaces local bonds, local autonomy, and self-determination through an invisible and impersonal global interconnection. The network is that which comes after the family and the church, replacing local community with global impersonality. As it is for Manuel Castells and other contemporary critics of globalization, networked space is defined by the flows it connects.[63] Dilling removes the network from any material constraint and elevates it to a purely metaphysical connection. Social networks are everywhere and nowhere. They connect all but they connect nothing, as "true" connections must remain invisible. The red network drifts off into an ethereal fantasy of total connectivity and total enclosure from which there is no escape. Its lines cannot be traced, but, nonetheless, they constrain and trap, annihilating locality in favor of global articulations of capital and race.

While Dilling understands the global network of communism as opposed to individualistic autonomy and localism, Webster, more interestingly, believes global networks to be the only possible future for the survival of a Christian, capitalist existence. For Webster, the networking of capitalism—and, in a way, ending

competition—is the only possible way for capitalism to survive. Neither author believes networks to be a natural description of reality. In their use of the term, however, both totalize the concept. There is no alternative or outside to networks in these books. Ideas, like other things that move through networks, flow throughout the globe simply by virtue of interpersonal connection. The circulation of "correct" or "incorrect" ideas has an impact on the vital body of society. The management of flows is central to the maintenance of an upstanding community of Christian capitalists, even while connectivity is to be resisted.

The telegraph managed, in part, to transform the relation of capitalism to network technologies. Fears of large institutions such as the railroad were at least partially assuaged because of the power of communications networks to regulate and manage flows. Conversely, the increasing networking—and dematerialization—of communication enabled reactionary anti-Communists and anti-Semites to claim a global conspiracy that was organized yet invisible. In some of the earliest writings that articulate networks to social organization, networks are opposed to the traditional assumptions of liberal Western subjectivity. Nonetheless, they are the only possible form of social organization that can delineate a future for Western liberalism. Networks traverse the globe, connecting all to all, eroding locality in favor of global flows of information and capital, from which there are no alternatives.

The social network as an anti-Semitic political imaginary

The emergence of the figure of the "social network" from within this anticommunist, anti-Semitic discourse is, needless to say, highly problematic. One cannot say that theorists of networks necessarily reproduce the language of anti-Semitism simply by invoking connectivity. Yet, these anti-Semitic roots of network discourse further draw our attention to how networks and social connection were once formulated as the Other of the modern, as a lost essence that modern subjects desire to recapture but, nonetheless, fear and resist. The determining, vitalist connective agency of technology, as it migrated to describe social formations, became something antithetical to the organization of liberal modernity, embodying the very Other excluded to maintain the limits of the modern, fetishized and feared as a capacity both natural, yet monstrous.

According to Slavoj Žižek, anti-Semitic racism is "the purest incarnation of ideology. . . . To put it bluntly: 'Society doesn't exist,' and the Jew is its symptom."[64] Anti-Semitism is a result of the modern process of exclusion, the drive to define an exterior in order to produce a constitutive boundary on the social. But, Žižek notes, anti-Semitism represents both the desire of modern "wholeness" and its ultimate failure. The figure of "the Jew" mobilized by anti-Semitism, quite simply, does not exist and cannot exist. It does not refer to any actual person, race, or group. It is, instead, a bundle of contradictions that signifies not only the exterior of the social but also the impossibility of the social's actual existence.[65] It is excluded, but is, in a way,

functionally included because the figure originates from within a society specifically to obscure or cover over the fact that there is no unity to the social, no true bond that unites a community together.

This ideological exclusion depends on two contradictory figures seemingly embodied by the "Jew" derived from the Letters of Paul. Jews are both a conceptual exterior of Western modernity—subjects that refuse to conform or otherwise be assimilated because of a stateless identity rooted in tradition and genealogy—and the realization of the ideals of Western modernity—as a figure of stateless universalism, of a "coming community" beyond the limits of contemporary political belonging.[66] When the figure of "the Jew" is invoked, the intellectual traditions of Western modernity necessarily, if unintentionally, reproduce a political narrative that deprives the Jews of the ability to speak or define their own identity and difference. "The Jew" is reduced to an abstraction in the name of a series of contradictory figures that represent the present failures and potential futures of modern existence.

The organization of modern community assigns imagined attributes to specific populations, reducing the actual people identified as members of a specific group to mere figures that somehow experience something otherwise excluded by the moral virtues of community—be these exclusions based in norms of a sexual, financial, or hygienic variety.[67] Modernity is, consequentially, defined by an *anti-Semitic political imaginary*, in which the very possibility of a nation-state only comes into being through the exclusion of an imaginary Other, with very real effects for people that find themselves discursively identified in accordance with that Other—effects often neglected as a filial and ethnic identity drifts into a discursive abstraction.[68]

In today's arguments about social media and networks, technological and communicative connectivity occupy the same place as "the Jew" in the anti-Semitic imaginary of the modern, overlapping and conjoining in ways that are often forgotten in favor of political abstractions that unintentionally reproduce tropes of anti-Semitism. Networks cause us to lose our "place" for a "space of flows."[69] Digital media incites unrest and social disruption as a new globalism replaces once stable cultural formations.[70] Hierarchy is disrupted by a seemingly uncontrollable and undisciplined nonhierarchical force.[71] Stereotypes about Jewish power uncomfortably parallel claims about the agency of global networks of media and capital circulation. I note this because how we think of social connectivity today was not just actively feared in the early decades of the twentieth century. The abstraction embodied by networks today played a direct part in mobilizing anti-Semitic hatred across the globe. While Webster's *Socialist Network* suggested a paradoxical embrace of the Otherness of the network, Dilling's *Red Network* defined a conspiracy spiraling out of control, in which social purity must be maintained through the identification and elimination of those Others. Like other fears of connectivity, the encounter with the Other must be purged or voided in order to maintain the boundaries of self and state. These fears are expressive of the darkest desires of the modern, consequentially embodied by biopolitical forms of "killing" and "encampment" that still persist. Dilling and Webster

give us two versions of the social in which the management of the networked Other is a central administrative task for the governmental and technological regimes of the state. On one hand is annihilation—the unfortunate task taken up by modernity's bleakest historical turns. On the other is assimilation—which is perhaps what we've now moved to in an age of networked empires and multitudes.

Here we can begin to see a split in two different ways of understanding connectivity. As communication came to organize the disorder of networked flows, embodied in the material form of the telegraph as a "brain" for the "body" of the railroad, any fears of connectivity and networks once held by the elites of Western capitalism would gradually wane away. As the economic scale of the technological escalates to radically complex levels, the ability of the telegraph to order and make visible assuages fears about managing networked flows of people, goods, and information—while, at the same time, technological form is itself rendered invisible. The management of information facilitates the management of capital, consequentially enabling a new technologized means for circulation and speculation. But we also have the dialectic opposite of this perspective, expressed in the anti-Semitic imaginary of networks as the Other of the modern. Networked connectivity disrupts the limits of the modern through the mobility of communication and capital, acting as an invisible, ubiquitous determining force. Resistance to this force manifested itself in the form of anti-Semitism and anticommunism. It could be said to continue to manifest itself today through the fundamentalist movements that have emerged both alongside and through today's network technologies.[72]

If we are apparently naturally networked today, then this discourse had to move away from a purely elite position back to a populist one. While Webster suggests an inevitability to social networks, Dilling emphasizes violence in refusing what she perceives as forced social connectivity. While the telegraph enabled capitalists to become friendly to technologized flows of capital, farmers and "populists" were not necessarily so hospitable. This is what we will see in the next chapter, where the first major embrace of a populist understanding of social connectivity, as administered through technological and economic flows, would happen in post-Depression America, as the network of financial circulation would be projected onto the everyday relations Americans had with their banks. But the problematic assumptions about social connection present in the writings of anti-Semites discussed above would also be unintentionally reproduced in social theory that defines social and economic relation through imitative transmission, eventually leading to an articulation of the biological, social, economic, and technological in the emergence of cybernetics, information science, and the invention of the internet itself.

CHAPTER THREE
ECONOMY: BANKING ON A NETWORKED SOCIETY

Money makes the network flow 'round

As mentioned in the previous chapter, the first decades of the twentieth century found the telegraph regularly featured in ads for financial corporations and banks. Heralding technology's ability to produce a greater and steadier flow of capital through networked infrastructures, the telegraph was a signifier for informational regulation and order in the service of connected, globalized capitalism. But, as has repeatedly been the case, this celebration of order through technological connection was not universally held. As the telegraph was praised in the pages of *The Wall Street Journal* for its powers of connection, the everyday financial networks it enabled in the form of branch banking were elsewhere seen as an erosion of individual autonomy and an annihilation of community. Branch banking was thought to destroy the local in the face of global flows of capital that would connect farmers to Wall Street, to the detriment of the farmers and the gain of financiers, reproducing the anti-Semitic fears of connection from around the same period. These everyday fears would be challenged through economic crisis. Both during and after the Great Depression, the connectivity of banking was reframed as the proper form for both global banking institutions and personal finance, a view notably negotiated in popular culture by Frank Capra's films *American Madness* (1932) and his popular post–Second World War holiday classic *It's a Wonderful Life* (1946). In the wake of crisis, representations of everyday economic hardship repositioned social relation as a form of economic connection, fundamentally reimagining the role networks would play in the popular imagination of connectivity.

This chapter begins by tracing how social salvation through banking networks emerged as a perspective in the pages of financial publications, later repeated and modified by Capra's financial populism. But these popular fears and desires did not exist in isolation. They also relate to a larger set of debates in social theory that continue to define the grounds upon which social networks are theorized today. The early-twentieth-century sociology of Gabriel Tarde and Georg Simmel performs the same erasure of distinction expressed in American financial discourse and popular culture around the time of the Depression. Both Tarde and Simmel argue for something inherently social in the economic, embodied in the material circulation of money and the connectivity represented by monetary flows.

Consequentially, the "great transformation" that Karl Polanyi so importantly critiqued—in which the economy moves from an "embedded" position, where it is in relation with but subordinate to the social and the political, to a utopian "disembeddedness" that (falsely) perpetuates the ideology of an autonomous, self-regulating market, subsuming the social and the political into the economic[1]—occurs in everyday culture and theory alike through a discourse of connectivity that suggests networks automatically enable the proper regulation of flows of capital and information. When social connectedness is positioned in terms of networks, the relations that define community are thought to structurally mirror market relationships of economic exchange. Or, it isn't so much that the economy has become disembedded, but that the imaginary of networked connectivity enables the collapse of these different milieus in a way that renders them equivalent.

How disconnection apparently led to the Great Depression

In the decades preceding the Great Depression, one solution to American banking insolvency in the pages of the *Economist* and the *Wall Street Journal* was to increase the size of economic institutions through the affordances of technological networks. This was simply following the lead of most other Western industrial countries. Growth, for lack of a better term, was good.[2] It possessed a sense of moral virtue, a quality that was alien only a few years prior given fears about the inability to control information. This desire for growth had additional effects: social problems were often interpreted as a simple deficiency of institutional size. With an explanation that in retrospect may seem bizarre, editorials in financial publications commonly argued that the central cause leading to panics, bubbles, general financial instability, and eventually the Depression itself, had little to do with almost anything today thought to be among their numerous causes—be it debt, unchecked speculation, flaws in the administration of monetary policy by federal banking institutions, or even contradictions in capitalist accumulation.[3] Instead, the isolated and independent banking structure of the United States prevented the proper flow of capital because banks were neither networked technologically nor connected by way of a spatially distributed management structure. After the crash, some of those writing in financial publications doubled down on their claims. Prohibitions on the networking of financial institutions, explicitly barring banks from becoming "big" through banking networks, led the American—and global—economy to disaster. If communication networks enabled the stabilization of the railroad industry, regulating flows of capital and material goods, managing the massive size of the new transportation infrastructure, then why shouldn't they do the same for banking? While this explanation seems factually incorrect given historical analyses of the Depression's causes, I nonetheless claim that it articulates the economy, network technology, and the social in such a way that it successfully equates social relations

with the management of economic and informational flows, an articulation foundational for both neoliberal economic thought and cybernetic theories of communication and control.

In the *Economist*, "network" was first used after the 1929 crash to describe the Canadian banking system. The authors of the *Economist* were attempting to understand why countless American banks, along with many others across the globe, collapsed while Canadian banks remained solvent. Canadian banks were an exception to global banking failures during the Depression, emerging from the crash relatively unscathed. While American banking was made up of numerous local banks, Canadian banks were formed as a national network of branches covering the entirety of Canada. The distinction between the two, in the words of the *Economist*, "has been rendered all the more striking during recent years by the large number of American banking failures and the complete immunity of Canada from any such disaster."[4] This distinction had been long held by Canadian bankers as evidence of their system's superiority. Over a decade prior to the 1928 stock market crash, Canadians viewed the American banking system as one intrinsically prone to failure because of its disconnected structure.[5] As American banks began to fail, some financial journalists in the United States and the United Kingdom gradually began to take this line of reasoning as truth.[6]

What may have been the earliest and most vocal support for this point of view beyond those within finance came in 1911. In the pages of the *Saturday Evening Post*, the senator A. J. Beveridge, a member of Teddy Roosevelt's short-lived Progressive Party, lauded the Canadian banking network as well as the Canadian system of currency. According to Beveridge, Canada's currency was not directly anchored to any "real" asset, and thus the "Canadian financial system is founded on faith" between people.[7] Beveridge reported that Canada's banknotes were not fixed to the gold standard, serving instead as a pure sign of trust without any direct gold or silver backing. A connected, national network, combined with a form of currency that seems as if it could be infinite, would maintain the economy by enabling a constant flow of capital throughout society. Many of Beveridge's claims are exaggerations or glosses on the actuality of Canadian banking. He overlooks both the reserves banks held and the crises that this system produced prior to the regulations the Canadian government introduced throughout the late 1800s.[8] His arguments are, however, an early example of a populist discourse that equates networked economic circulation, social relation, and the banking system in the name of financial and social stability. In Beveridge's mind, the Canadian banking network comprised a way of calculating debt based on neither gold nor silver, but on agreements between individuals and banks in which money was just another symbol of human interdependence. The strength of the network was one in which quasi-dematerialized capital moved between people not in the name of the market, but in the name of national community. Money would become a material signifier of citizenship, uniting the country as one through banking.

American bankers would often disparage Canadian banks in the years prior to the Depression because of the perceived insignificance of the Canadian economy. This does not mean that they disregarded the assumed benefits of branch banking networks, however. These bankers, instead, fetishized the size of European banking networks as essential for global economic competition.[9] But the persistence of this discourse in the *Journal* over the first three decades of the twentieth century—albeit as a minor perspective held mostly by bankers—appears to have had very little relation to actual transformations in banking and finance going on at the time. Almost any contemporary explanation of the Depression's foundations and consequences examines the various relations between local, national, and global economic flows, not their ultimate disconnection (though these could still be framed as problems of flow).[10] Nonetheless, urbanization, industrialization, and the telegraph were all central to large banks expanding throughout the 1920s. These transformations directly influenced the beliefs people had about finance, the social, and their interrelation in the face of apparently rapid technological and social changes. In realizing the desire for connection and size, banks were already creating branch networks wherever allowed by law in the name of expansion, competitiveness, and a more regulated, managed flow of capital.[11]

From the early days of the Depression through decades to come, ads for banks would often emphasize the importance of banking networks, as they previously did with the telegraph and railroad. "Dwarfing distance is a daily occurrence at The Canal Bank," claimed one ad from 1927. "A connection formed with this bank now may be of incalculable value to you later."[12] Another bank ad printed in 1930, for The First National Old Colony Corporation, claimed that through "multi-wire interconnection, its offices are in constant touch with . . . all important financial markets."[13] Underpinning this celebration of connectivity was an undercurrent that blamed the liquidity problems of the Depression on the regulations that prevented banking institutions from increasing in size. Banks with national and global networks were supposedly more secure, maintaining their stability through managed, interconnected flows.

This aspiration for connection was rooted in more than a need for stability. The networking of the banks, ostensibly to solve the problems of the Depression, was partially derived from speculative aspirations that were a cause of the Depression itself. According to John Kenneth Galbraith, the Depression was ultimately triggered by the confluence of numerous speculative bubbles, exacerbated by the willful neglect of the US Federal Reserve System. Speculation throughout the 1920s was often characterized by a number of substantial mergers between different companies. Galbraith notes that mergers "brought together not firms in competition with each other but firms doing the same thing in different communities. . . . The purpose was not to eliminate competition, but rather the incompetence, somnambulance, naïveté or even the unwarranted integrity of local managements."[14] While these mergers were mostly limited to local utilities administered through nonlocal holding companies, the same

method was applied to other retail businesses, where regional and national forms of centralized management replaced local ownership.[15] These holding companies and corporations would issue securities to financially enable their expansion, using stocks and bonds to help produce some of the most well-known brands of twentieth-century America, including Associated Gas and Electric, Commonwealth and Southern, Montgomery Ward, and Woolworth. Galbraith notes how, along with utilities and consumer goods, the banks were also a source of great speculative interest.[16] Creative methods for circumventing regulations on conglomeration and expansion were highly valued by banking management and investors alike. The integration of the banks into national networks would provide a space for additional speculation and growth in the name of managed stability, an ironic Ouroboros that perpetuates the causes of a crisis in the name of a solution proposed to solve the very crisis it perpetuates.

The varied interpretations of banking networks throughout the first decades of the twentieth century are riddled with economic and ideological contradictions. The prohibition of branch banking was thought to foster local community and industry, but would prevent the size necessary for global competitiveness. But, without branch banking, the management of flows of capital would be impossible, leading to the failure of small banks and the ruin of local community. Banks, like utility companies, needed to become networked to maintain a sense of American competitiveness and ensure stability. But this was to simultaneously encourage speculation on banks, a cause of the destabilizing effects of the Depression itself. If we think back to the anti-Semitic authors of the previous chapter, bankers seemingly occupied the precise position targeted by the fears of someone like Elizabeth Dilling.[17] Networks of technology and capital were opposed to local community and local interconnection, potentially eroding local specificity in the name of global flows. But networks were also thought necessary to guarantee American competitiveness on both global and local scales—a belief that also shared populist support, similar to Nesta Webster's begrudging embrace of networked forms of social organization.[18] And, with rhetoric like that of A. J. Beveridge's, invoking the figure of the network would equate economic flow and exchange with social relations more broadly—articulating social arguments stressing the need for trust and locality to the economic ones found in the pages of the *Wall Street Journal*. Together, the same technologies that were thought to erode locality and community were also positioned as those which would guarantee the maintenance of a community's stability and prosperity. Banking networks were both poison and cure, simultaneously eroding yet perfecting locality, enabling financial stability through actions that caused greater instability.

Privileging branch banking networks over small, independent banks was suggestive of a fundamental shift in the social purpose of money and banking in the United States. The unwillingness to allow bank consolidation on a federal level left individual states to determine what structures banks could follow, intentionally and unintentionally prohibiting banks from interstate mergers in numerous ways.[19] Like other fears of connection, branch banking was seen as a financial institution

opposed to the liberty of the individual, a usurious parasite feeding off the hard work of American labor. In 1907, it was far more common for someone speaking in the interests of the people to claim that the increasing movement of capital, fostered by the interconnection of banks, would create "a vast network of pipe lines leading to Wall Street, by the very men who had effected the gigantic railway and industrial combinations."[20] Yet, as local banks began to collapse in the final years of the 1920s, individuals previously opposed to the interconnection of banks began to change their opinion.[21]

While banks and bankers may have been greeted with suspicion, their social significance was revealed through liquidity problems central to the daily lives of many suffering during the Depression. The increased flow of capital was positioned as a social necessity as the amount of money available to everyday individuals seemed to vanish. As the lives of many began to fall apart, communities were imagined as sustained through the movement of money, explicitly enabled by banking institutions. One example from a series of Lucky Strike cigarette advertisements, associating American innovation and progress with the "toasting" of cigarettes, claimed, "An Ancient Prejudice Has Been Removed—That ancient prejudice which hoarded gold with the fanatical zeal of the miser has vanished. Under the sheltering wing of AMERICAN INTELLIGENCE flourish thousands of banking institutions to which the individual safely entrusts his wealth."[22] This ad was printed in a September 1929 issue of the *Wall Street Journal*, only weeks before the Crash. Like Beveridge's embrace of Canadian banking, this ad perpetuated a prominent belief surrounding money in the 1920s and 1930s: hoarding money was the cause of economic stagnation while the circulation and flow of money enabled greater social wealth. Of course, this ad was printed in a newspaper with a significant financial bias, but it nonetheless signified a broader acceptance of the belief that social connections and economic flows were conjoined, a perspective that would be articulated for a popular audience in Frank Capra's films *American Madness* and *It's a Wonderful Life*.

How to make a bank a social network

The Frank Capra films *American Madness*, from 1932, and *It's a Wonderful Life*, from 1946, together posit a blunt dichotomy in the name of economic populism. Miserly "market" bankers hoard money and refuse to extend loans to hardworking Americans, ruining the lives of regular people. Populist "moral" bankers keep money flowing regardless of context, enabling the community to flourish. Community, in other words, emerges out of the maintenance and management of economic circulation. Capra is repeating the specific view that equates social progress with financial circulation depicted in the Lucky Strikes ad above. Maintaining community, in other words, requires the liberation of money in the name of circulation. Capra's films were central to positioning this perspective in the broader popular memory of

American identity. While Capra may not stress the networking of banks in his films, he associates the economic and the social in a way that is easily articulated to how bankers had stressed, since the earliest years of the twentieth century, that the best way to maintain and increase flows of capital would be to network banks together. The banks may not be connected in his films, but they are *the* institution that enables the social connections of community.

At an abstract level, the narratives of both films are identical. Both focus on a banker who stresses social judgments of "morality," "character," "trust," and "faith" in managing his bank. This banker believes that financial circulation is what maintains community; loans should be made on the basis of personal knowledge rather than economic calculation. The unwillingness to lend, he argues, is that which leads a community to ruin. This banker is challenged by other, more powerful bankers who do not have the same interest in community, but celebrate measured and risk-free (at least in the financial sense) forms of investment. The banker refuses to give in to these forces, stressing the role the bank plays in maintaining community relations. But his steadfastness is challenged through crisis: money goes missing from the bank. It seems as if the bank will have to close. The banker contemplates suicide as the personal, social, and economic relations he has maintained throughout his life appear for naught. The banker is redeemed, however, when community members lend him the money he needs for the bank to remain open, revealing to him the economic and social ties he had always believed in, of which he had momentarily lost sight.

American Madness (1932) is often forgotten in Capra's oeuvre. Depicting an urban bank during the Depression, *Madness* sketches Capra's articulation of banking, community, and populism developed more fully in the later *It's a Wonderful Life*. *Madness* centers on Tom Dickson (portrayed by Walter Huston), the president of Union National Bank. At the film's opening, Dickson is faced with a challenge from his bank's board of directors. They want Union National Bank to merge with the New York Trust, primarily to get Dickson out of power, replacing him with someone more amenable to corporate control. Immediately, *American Madness* invokes the context of banking mergers throughout the 1920s, mergers that, if we recall Galbraith, were often made to replace managers who were either inept or overly moral for the ultimate purpose of encouraging speculation and growth. Dickson is clearly one of these moral managers, concerned with trust, faith, and clean living. He stops a cashier from smoking and replaces the cigarette with gum. He tidies up the uniform of a guard. He inquires about future plans for marriage between two of his employees (Figure 8). His main concern when giving a loan to an individual is "Is he honest?" His investments are "not stocks and bonds . . . but character! It's the only thing you can bank on and the only thing that'll pull this country out of the doldrums." While the board of directors wants to restrict lending because of the "precarious times" of the early 1930s, Dickson, instead, emphasizes how moral relations between individuals should guide the flow of money rather than economically prudent forms of investment. Dickson stresses how investments should not be governed by protectionist forms of hoarding, but

Figure 8 Tom Dickson managing the morality of his employees in *American Madness*.

Figure 9 The bank robbery in *American Madness*.

should make sure "our money's out working" by maintaining community relations and the individual financial stability of those known personally by the banker.

As the board confronts Dickson, gangsters confront one of the bank's higher-level employees, Cyril Cluett, who has managed to accumulate $50,000 in gambling debts. The gangsters convince Cluett to aid them in robbing the bank, turning off the vault's alarm that evening. For his alibi, Cluett seduces Dickson's wife, Phyllis, who is upset as Dickson has forgotten their anniversary and has taken a business trip to Philadelphia that evening. The next morning, the vault is discovered open, the night watchman killed in the robbery. Beginning with the bank's switchboard operator, gossip about the crime spreads over town by way of telephone and telegraph (Figures 9 and 10). The estimated money stolen increases from $100,000, to $500,000, to

Figure 10 Communication and gossip in *American Madness*.

Figure 11 Panic in *American Madness*.

several millions—apparently pocketed, the rumors go, by Dickson himself. Different individuals are seen lamenting that you "don't know who you can trust," and bankers are "all a bunch of crooks." By the time Dickson arrives at the bank, he's faced with a crime investigation as well as a run on his bank, which intensifies to a full-on riot as the day progresses (Figure 11).

As the police investigation reveals Cluett's role in the crime and Phyllis's whereabouts the previous evening, we see Dickson deflated, ceding control of the bank to the board. He locks himself in his office and opens his desk drawer, revealing a pistol (Figure 12). His judgments about morality, which he claims near the beginning of this film have been "100 per cent," have failed him. As he's locked in his office, seemingly contemplating suicide, another employee of the bank, Matt Brown, takes

Figure 12 Contemplating suicide in *American Madness*.

to the telephone to contact those who believe in and support Dickson. According to Matt, Dickson has "more friends than anyone in this town." As Dickson's "friends" show up and deposit their money in the bank, Phyllis enters her husband's office and apologizes. Dickson is thus redeemed; he regains control of the bank as his wife tells him, "These people down there—the bank, Tom—you can't give that up!"

American Madness sets up a simplistic dichotomy between a moral economy and a market economy. Dickson represents a moral banker, whose decision to extend money is based on a personal judgment of character rather than a desire for a sound investment. Economic relations are subordinate to social relations, ideally determined by the moral constitution of an individual. The board of directors, on the other hand, perpetuates market desires for profit maximization and the minimization of risk. This distinction resonates with anthropological theories of value and exchange written around the same time as the film's release, namely Marcel Mauss' *The Gift*, initially published in *L'Année Sociologique* in 1925. For Mauss, the commodity form sold on the market eliminates or obscures the social character of exchange exemplified by the gift. Consequentially, the market enables a set of negative freedoms: freedom from the social and freedom from personal obligation to others.[23] *American Madness* depicts the ideals for banking in the terms Mauss identifies as characteristic of gift economies—and the terms Beveridge uses to describe Canada's networked banks. Money is not a symbol of capitalist exchange, but a material representation of social location within a community, a signifier of trust and the social bonds that unite disparate individuals. When, at the end of the film, members of the community return their money to the bank to support Dickson, they do so because the movement of money (and its location in the bank itself) is representative of social connections and friendships.

But a pure distinction between commodity and gift is untenable—or at least it draws our attention to other issues about economic and social forms of relation since

the determination of an object as either a "gift" or a "commodity" is always inevitably social.[24] Distinguishing between economies directs our attention to a place where social abstractions and relations are in dispute. Who gives and who receives—and the power relationship produced by giving and receiving—is historically and contextually specific, implying specific kinds of persons, specific kinds of objects, and specific senses of ownership and possession, the designation of which is constituted explicitly by the relations through which persons and objects are associated. This conflict between different moral orders is brought to the fore in *American Madness*. The "object" for both moral and market banker is money itself, money either articulated to social forms of knowing—which reflect judgments about character and moral values and a sense of investment and "ownership" of community—or to capitalistic forms of calculation divorced from social knowledge, reflecting only economic value and the anonymous capitalist relations of modernity. *American Madness*'s titular "madness" emerges from a society that has seemingly forgotten social values for economic ones. Money is not so much a "thing" as it is a representation of a social relation that simultaneously serves to produce the relation it represents.[25] In *Madness*, the form of relationship that money takes—a gift or commodity in the service of a moral or market economy—points either to the exacerbation of the Depression as the social is abandoned or to American economic recovery as the social character of economic exchange is reasserted.

Obviously, the Depression did not end because bankers began to understand the social quality of economic exchange. Instead, everyday financial technologies further conflated economic flows and social connections, representing the "disembedding" of the economy on a popular level. An economy subordinate to the social did not emerge from the articulation of social connectivity with the management of economic flow—rather, the two were rendered equivalent in Capra's popular imaginary of banking. This is what can be observed in *It's a Wonderful Life*.

While *American Madness* focused on Depression-era anxieties about banking and lending, primarily depicting the bank as a place for the depositing and safekeeping of money, *It's a Wonderful Life* channeled these same anxieties into a context defined by housing and mortgages, positioning the relationship most people have with the bank as one of debt. The 1940s was the decade with the largest increase in the American homeownership rate in history,[26] an increase associated with articulation of homeownership with American citizenship. While this association had been upheld by political and economic elites throughout American history, it was only by 1945, after a sustained period of governmental programs and propaganda campaigns beginning in 1910, that it had become a dominant belief held by the majority of Americans.[27] Many of these campaigns defined homeownership as an essential duty for patriots in the fight against communism,[28] emphasizing self-responsibility and the personal management of private property. The example of homeownership contrasted a fundamentally autonomous, self-determined individual of liberal capitalism with hypothetical socialist, anarchist, or communist practices of collective ownership (or destruction) of property.

Understanding homeownership only as an exemplar of liberal citizenship is misleading for simple reasons. This discourse was advanced through the governmental promotion of financial technologies, such as mortgages, which signify an intrinsic connection to expanding networks of financial circulation, embodied by the increasingly visible branch banks of the twentieth century. When articulated to homeownership, good citizenship is equated to the perpetuation of flows of capital that, supposedly, sustain the life of a community through their circulation. The subject produced by homeownership is not defined by the management of an autonomous self, but by management of flows and connections that link people to each other through monetary debts managed and regulated by banks.

The notion that human beings are "in debt" to each other is exceptionally old, and debts are often imagined in the moral terms that characterize gift and other noncommodity forms of exchange.[29] Yet, the unproblematic equating of social debts with economic debts did not happen until the formation of European modernity. These two forms of debt are not universally associated, and the moral terms given to the economic are, like distinctions between moral and market economies more broadly, neither universal nor equally applied. And this is not to mention that financial capitalism has historically encouraged debt with the intent of profiting off what is often assumed to be evidence of a deficiency of character. While accounts differ on specific dates, between 1700 and 1900 the idea that monetary debt is a moral failure, to be punished through debtors' prisons, was replaced by the idea that debt is an economic (and social) necessity of a society dominated by capitalist markets[30]—although, obviously, the moral character of debt has not ceased to color popular interpretations of foreclosure and default. Again, we see the distinction between moral and market as about specific kinds of persons and specific kinds of relations. As debt ceased to be a pure moral failure, economic relations were no longer assumed to obscure social relations, but were a kind of equivalent, in which economic debts performed or represented social relations more broadly. On one hand, market economies seemed to negate the social indebtedness that underpinned the moral economy, in part because of the anonymity made possible by the circulation of money. But, on the other, this monetary anonymity also enabled the naturalization of economic debt as a form of relation in which the social could be reimagined as circulation of capital between people who may be strangers.

In the transition from *American Madness* to *It's a Wonderful Life*, Capra rearticulates his moral and market economy distinction to these larger cultural understandings of debt foundational for discourses of homeownership and mortgages. At its most basic, the film is the story of George Bailey, portrayed by Jimmy Stewart, who runs a Building and Loan (or "Thrift" in the language of banking) in the archetypal small town of Bedford Falls. The film opens with angels about to intervene in George's life as he contemplates suicide, like Tom Dickson before him (Figure 13). He considers himself worth more dead than alive, measured in terms of the money from a life insurance policy. The film moves through George's past in flashback, outlining the

Figure 13 Contemplating suicide in *It's a Wonderful Life*.

part he's played in the community of Bedford Falls and how he's remained there despite strong ambitions to leave and see the world. Through this flashback, we're introduced to some of the other denizens of the town, George's father Peter, the original owner of the Building and Loan, and the sinister miser Henry Potter, a member of the Building and Loan's Board of Directors who also operates a larger commercial bank. As we reach the present, we learn that George's Uncle Billy, who works for George at the Building and Loan, has misplaced $8,000 of the bank's money, just as a bank examiner has arrived. Potter, who had stolen the money from Billy, calls the police to arrest George because of the missing cash. This crisis, combined with George's own belief that he's wasted his life through constant deferrals of his own dreams and desires of a cosmopolitan existence, initiates a spiral of regret and depression. He wishes that he'd never been born. In response to George's desire, the angel Clarence appears and shows George the town as if he had never existed. The city is transformed from Bedford Falls to Potter's eponymous Pottersville. Instead of a moral community built on homeownership from George's loans, the town is filled with vice and squalid rentals owned and operated by Potter. In seeing this, George seems to understand his position in forming the community in which he belongs and is taken back to "reality" where he finds the rest of the city prepared to help him with the missing money.

It is rarely acknowledged that the role of banking and the circulation of capital is central to *It's a Wonderful Life's* representation of community. Throughout the film, George Bailey's life is continuously shown not only in the context of his relation to those around him, but also in the context of his relation to money. Whenever George returns to the drug store where he worked in his youth, he wishes for "a million dollars" while using a device in the store (Figure 14). His desires to leave town are accompanied by the pretense of being a "rich tourist." The famous line Clarence the

Figure 14 A young George Bailey dreams of financial prosperity in *It's a Wonderful Life*.

Figure 15 "Every time a bell rings, an angel gets his wings," from *It's a Wonderful Life*.

angel delivers about how "Every time a bell rings, an angel gets his wings," is first delivered in response to a bell ringing up a sale on a bar cash register (Figure 15).

But more than the constant references back to money, *It's a Wonderful Life* locates banking and mortgages as the central agents in determining the character of a community. In the central opposition between the Baileys and Potter, the film, like *American Madness*, presents a simplistic dichotomy through its representation of bankers. There is a good, moral banker and a bad, market banker. The moral banker extends credit to whoever needs it, upon character reference alone. Debts are to be paid off eventually, and the maintenance of connection through the bank itself is more important than the hoarding of money. The market banker, in contrast, has little concern with the maintenance of a community, or of extending credit to anyone. Easy

credit is a mistake for the market banker, creating, in the words of Potter, "lazy rabble instead of a thrifty working class." George understands the bonds of community and maintains them through lending. Potter, on the other hand, feels no bonds other than those of capital—even though, oddly, this means that he often has little interest in the actual perpetuation of flows of capital. While, for Potter, the market means a kind of freedom from social bonds, George actively reasserts the primacy of the social, if only through the constant perpetuation of monetary debt.

In the film's famous bank run scene, George gives a brief lesson on how banks and mortgages work while standing in front of a large sign that states "Own Your Own Home," referring to one of the many governmental programs designed to popularize homeownership in the decades leading up to the 1940s (Figure 16). States George:

> No, but . . . you're thinking of this place all wrong. As if I had the money back in a safe. The, the money's not here. Well, your money's in Joe's house . . . that's right next to yours. And in the Kennedy House, and Mrs. Macklin's house, and, and a hundred others. Why, you're lending them the money to build, and then, they're going to pay it back to you as best they can. Now what are you going to do? Foreclose on them?

This speech is actually the inverse of the "Own Your Own Home"-type discourse about homeowner citizenship. According to George, having a mortgage is not about autonomous self-management, but about the intrinsic location of an individual in the financial network of a community. George defers his authority to the rest of the community, the real "bankers" of Bedford Falls. Keeping credit liquid means that the community is united through a constantly shifting flow of capital and credit in which the role of "banker" is distributed out to the totality of the community. For George

Figure 16 "Own Your Own Home" in *It's a Wonderful Life*.

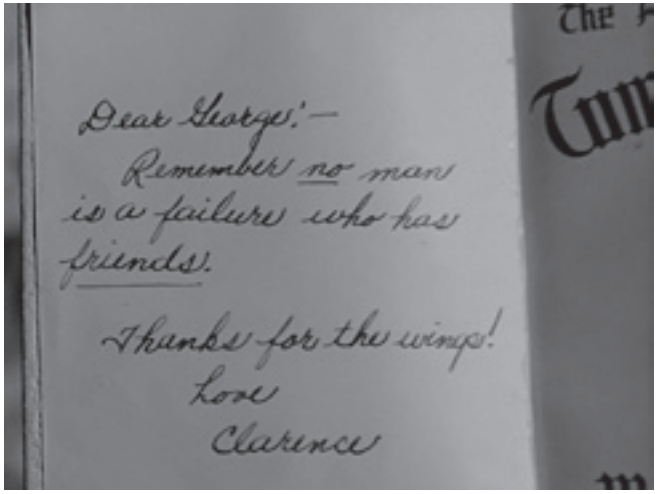

Figure 17 "Remember *no* man is a failure who has *friends*," from *It's a Wonderful Life*.

to foreclose on any one individual would mean that the community is foreclosing on him or her, cutting the one who can't pay out of its social network.

The film ends after George realizes how important he is to maintaining the community of Bedford Falls, with his brother toasting him, "To my big brother George, the richest man in town!" There's a closeup on a book Clarence has been carrying around with him, left behind with George. On it we see the inscription, directly reminiscent of the finale of *American Madness*, "Remember *no* man is a failure who has *friends*" (Figure 17). While George may not be the most financially successful, at least in comparison to Potter, that he serves as the central hub in the social network of the community makes him wealthy. But the universality of Clarence's message is disingenuous—as is George's own above-mentioned attempt to redefine community as a totally interconnected financial network. In the film's alternate reality sequence, Pottersville comes into being because of George's absence. Potter, formerly prevented from dominating the town because of George, literally owns everything in the alternate reality. The virtuous homeowners of Bailey Park in George's reality now live in the punning Potter's Field—tenements rented out to alcoholic, disastrous doppelgangers of Bedford Falls' residents. This alternate reality doesn't tell us anything about the interrelations of the community. It tells us that community is *entirely* dependent on George's existence, determined—in the strongest sense of the word—by the influence of the moral banker and the market banker. While George may be an exemplification of the moral economy, the community engendered by his economic practices can only exist with the banker at the center. The fate of the town itself is completely in the hands of the management of flows of capital and the one who serves as the metonym for banking institutions—and, for that matter, the singular embodiment of the character taken by a community (Figure 18).

Figure 18 Community and friendship as a flow of money in *It's a Wonderful Life*.

This ends up being the distinction between *American Madness* and *It's a Wonderful Life*: while the former presents an argument that economic relations must be subordinate to social ones, in moving to mortgages and debt the latter completely conflates the two by depicting the totality of community as *necessarily determined by banking policy*. This recreates in popular culture an almost Milton Friedmanesque argument that positions the regulation of the money supply as that which determines social successes and failures. It's not so much that money is an embodiment of social connectivity, but that the perpetual circulation of capital determines the social character of a community—to the exclusion of all else. Social bonds *are* economic bonds in *It's a Wonderful Life*—and, in contrast to much of what's theorized about the function of money in modern life, monetary exchange does not represent the freedom from the social in the film, but rather the total imbrication of the two.

The importance of *It's a Wonderful Life* in the American (and global) popular imaginary is I think reason enough to examine how this film articulates social and economic relations, in a way that is easily grafted onto discourse from banking that had already conflated these different networks and flows. While novels such as *Middlemarch* and *Dracula* were probably the earliest cultural forms to articulate social, biological, technological, and economic networks,[31] *It's a Wonderful Life* is one of the most constantly popular texts that performs these same articulations with an explicitly populist message about the conjunction of sociality with economic flows. *It's a Wonderful Life* is often thought to be a pure and simple expression of the common sense of community. The "bonds of debt" that characterize the film have simply become the way many people imagine social relations.[32] Capra, along with governmental mortgage programs, banking deregulation, credit scores, ATMs, and any number of other everyday financial technologies, demonstrates how the

conflation of the economic and the social had to take place in everyday life, not only in the past several decades under conditions of "financialization," but throughout the twentieth century as a slow, ever-mutating process.[33]

Once again, as we have seen repeatedly throughout this book thus far, the desire for connectivity has not been intrinsic to daily life for a large part of Western history. Instead, the institutional and technological forms that gradually came to structure the everyday in Western modernity—railroads, banks, communications technologies—enforced these beliefs in conjunction with discourse associated with the management of "vitally" circulating flows. Critically, these beliefs about connection and the social are not limited to financial publications and popular film. The same conflation of the social and the economic seen above had been going on in social theory since the first years of the twentieth century, specifically in the writings of early sociologists Gabriel Tarde and Georg Simmel. With sociology, this articulation is taken for an ontological description of relation in a world of networks and is, I argue, foundational for theoretical models that have informed the conceptualization of the internet from its earliest days.

Money as a social bond

The economic and the social are historically specific categories without any precise ontological stability. As we've already seen above, they've been conceptualized as more or less interchangeable at various points throughout the twentieth century to the present, calling into question both rigid distinctions between the two and any quick conflation that brings them together. It's not that the market lacks morals—it reframes the definition of a person in accordance with a different set of normative assumptions that are, nonetheless, "moral." The "social," as characterized by debt, mortgages, and other technologies of finance, interpellates individuals into imagining social relations as identical to economic ones, with both perpetuated by monetary flows. The conflation of the social and the economic relies on both the above and a tradition in sociological theory that reduces everything to a form of connective flow exemplified by monetary exchange. Social theory has performed the same articulation of the social and the economic in writings today thought to be evidence of an ontological, networked connectivity divorced from the technological and economic context of Western modernity.

According to Marx, money "is the universal equivalent form of all commodities."[34] And yet, money is more. Money is social, but is not representative of *the* social; its use is defined by, and perpetuates, a specific form of relation essential for the reproduction of capitalism. It serves as an element in the oppression of the working class as capitalism uproots workers from each other, from their own bodies, from the earth and the land, and so on.[35] What Marx draws our attention to is how the conflation of economic and social relations is a function of money and exchange

under capitalism, a function that is neither eternal nor beneficial for most. Money is "the ultimate fetish,"[36] appearing as a self-valorizing system that obscures the foundations of value in the time of the worker's labor.

I invoke Marx to contrast his theorization of money with the above conflations of community and economic circulation, and also to begin a discussion of the early sociologists Georg Simmel and Gabriel Tarde, both of whom developed theories of money and economy that were at least partial rejections of Marx and the labor theory of value. For Simmel and Tarde, money is not a fetish in the Marxian sense, but a genuine, visible manifestation of social relation. For Tarde, money is "the universal yardstick of social quantities, and not only of riches."[37] Money is a performative representation of the relations that literally *are* society, serving not to obscure but rather to quantify (and realize) the intersubjective affects and desires that inform exchange. For Simmel, similarly, money is representative of larger intersubjective, cultural, and cognitive processes of exchange—processes that do not emerge *from* society but serve to constitute society itself.[38]

Both Simmel and Tarde have, in recent years, been held up as exemplars of theorists who first noted the structural and ontological foundations of networked sociality,[39] often celebrated because of their opposition to Marx and his supposed ignorance of the connectivity that grounds all that exists.[40] The differences between these three authors and their conceptualization of the social has effects for the theorization of class and power—and, consequentially, reveals something about the political potentials and limits implied in the universalization of connective networks as the singular model of reality. While Marx understands social relations by way of a historical class struggle, Simmel attempts to negotiate individual and collective as to permit individual autonomy within multiple, often contradictory groups in conflict—groups that do not inherently solidify into historical classes. Tarde, in many ways the most radical theorist of the three (at least intellectually), erases the existence of both individuals and groups altogether, seemingly defining the social completely in terms of relational flows.[41] This "radical" erasure is one that eliminates anything from ontology other than social connectivity and informational flow, which Tarde theorizes as a form of repetitive transmission. In Tarde's own writings, repetition can manifest itself through money, communication, a kind of affectivity, or any number of other forms, the circulation of which provide a natural (and biological) definition of the social. Tarde collapses these varied domains in a way that would be repeated throughout twentieth-century intellectual life to the present, most notably in American media sociology and mass communications research.[42]

If, as the first part of this chapter has argued, the conflation of the social and the economic happened in American popular culture by way of a discourse associated with banking speculation, legitimated in everyday life through the crises of the Great Depression, then this articulation persists today because the same process had already occurred in social theories thought to describe the "nature" of networked sociality. The writings of Simmel and Tarde are not prescient works that somehow managed to cut

to the core of reality when everyone else seemed to be duped by liberal individualism. Their works, instead, emerged from a context in which networks and connectivity were increasingly thought to define all that existed—even if with a subtext of fear that accompanied feelings of a loss of individual control to the technological, social, and financial connectivity of modern life. If we think back to the introduction, what I there termed "technological humanism" returns in contemporary appropriation of the sociology of 1900. Simmel and Tarde are trotted out in the present because they serve as "origins" for many of our current narratives of networked sociality. When they are resurrected as theorists of the network society, their original context is neglected in favor of a decontextualized reinterpretation that ascribes intellectual capital to theorists that appear to reveal the ontological "truth" given by contemporary technologies. What is supposed true of human nature, revealed today by technology, can only be made true when context is forgotten and mythical "origins" are given priority over historical descent.

According to Simmel, human beings are individuals, yet their personalities and identities cannot be reduced to the individual.[43] The psychological qualities of one's self are inevitably bound up with the sociological context in which one lives and develops, though the two cannot be rendered identical. While the happenstance of birth "represents the first condition of the phylogenetic and ontogenetic development,"[44] the individual transcends familial bonds to develop other associations that may be in conflict, bonds that emerge from beliefs, activities, marriage, biological sex, and so on. Bonds change over the course of an individual's life, as one enters into relation with numerous other groups.[45] Yet, there is some sense of a stable "ego" in the face of multiple, overlapping affiliations that are often highly contentious. This negotiation of the fluid and contradictory connections between individual and group identification defines much of society for Simmel.

While there is no stable essence to any one group, and as such Simmel implies that class struggle may not operate in the way some Marxists seem to infer, he notes that there is something different about the concept of "laborer" than other collective forms of identification.[46] The solidarity of labor emerges because of mass industry, resulting in "hundreds or thousands of workers . . . subject to identical working conditions," where a "money-economy had to become all-pervasive so that the value of the individual's performance would be reduced entirely to its monetary equivalent."[47] This is an interesting claim, given, on one hand, economic traditions from classical liberalism that regard money as an extension of a supposed natural human impulse to barter, truck, and trade,[48] and, on the other, the Marxist interpretation of money as an equivalent that serves to obscure noncapitalist forms of social relation. For Simmel, money is not an extension of a natural human capacity. It fundamentally transforms human relations in ways that are often ambivalent and ambiguous. The class of laborers, as a generic class unencumbered by specific trades or local contexts, is called into being by money's ability to serve as a general equivalent. For there to be the possibility of a general strike, Simmel claims, there first had to be money to

invent the general category of wage labor. The social bonds of labor quite literally do not exist without money to perform a generic equivalence between workers that indirectly arises from a shared experience of wage relations. But, at the same time, the working class is not produced out of any direct relationship constituted by the exchange of money. Rather, the class of laborers exists by virtue of an indirectly shared experience. There is no clear "bond," "web," or even "network" that unites laborers. It is the relationship the laborer has to capital by way of monetary wages—not to other individuals—that calls his class into being.

It is this odd social role of money that is central to Simmel's *Philosophy of Money*. Money represents an essential, cognitive function in which subjective values can be expressed in exchange. As it is for Marx in his distinction between use-value and exchange-value, the capitalist system relies on inequivalencies between value judgments. For Simmel, money is something that solves the varied problems of intersubjective communication in its determination of value. Money enables society to exist by substituting for the impossibility of transcending one's own thoughts, enabling social bonds that otherwise would be barred by the limits of subjective experience. By providing a standard for value, money negotiates interpretations that exist solely in the consciousness of one individual—as the transcendence of self necessary for society's mere existence seems to be Simmel's real concern in his analysis of money.[49] Simmel positions money as that which literally enables the possibility of social relation and self-knowledge. Money, consequentially, serves for Simmel the same role that others have attributed to language and communication.[50]

This is not to suggest that Simmel claims money is, in fact, the material form of social life or, conversely, that relations made possible by monetary exchange are somehow more "authentic" than other forms of relation because they seem to solve the problem of intersubjectivity—as is clear from his understanding of labor's relationship to capital. Simmel, like Marx, clearly defines money as something that separates and uproots individuals from collective experience while simultaneously enabling a form of impersonal control at a distance. Money, in creating a specific kind of social bond, enforces both a logic of exchange and an associated logic of circulation imposed on the entirety of social existence.[51] It is this alienating capacity of money that produces class relations. In its supposed universality, money becomes the singular exemplar of modernity, privileging, above all else, the flows that move between the points it joins, inventing one version of relation embodied as economic flows and another through the indirect experience of a similar relationship to wages and labor. It unites those separate and yet enables the pure autonomy of the individual. It accelerates ever faster and yet remains eternal and objective. Money seems to be a material thing that constantly drifts off into incorporeality.

What Simmel gives us, then, is not an ontology of money, or even an analysis of how money produces social bonds, but an analysis of social relations in modernity, their contradictions, their ephemerality, and their immateriality—all in the name of a seemingly material form of exchange. Money serves as an equivalent of social relation

when group affiliations of the past gradually disappear. Like language, money serves as something that supposedly bridges the subjective divides between individuals, uniting them, only to displace traditional community bonds in the name of abstract and anonymous forms of connectivity. It simultaneously invents new kinds of bonds that do not appear to "connect" at all but arise from impersonal, yet shared experiences. Simmel points to various modern attempts to connect with another, using a means of exchange to transcend the solipsism of individuality, but shows how these efforts likewise serve to distance individuals. But, most importantly for our discussion here, Simmel demonstrates how modern sociality conflates the economic and the social in its use of money, covering over the contradictions of capital in the name of a singular form of relation that takes economic exchange as the exemplar of social relation. Monetary exchange substitutes for the social and subsumes it at a time when social bonds seem phantasmagoric and fragile from processes of modernization.

Simmel doesn't believe that money *is* a material manifestation of *the* social, but that it calls into being a specific, contextual arrangement of the social in modernity. Social bonds cannot be thought through simplistic binary terms such as connection and disconnection—even though the social function of money seems to suggest they can. This, nonetheless, positions economic exchange as something that can be—and is—*assumed* to be *the* social under the conditions of modernity, if in ways that are misleading because of the material exchange of money.

From economy to universality

While Simmel demonstrates the endless contradictions in the social role of money, in the work of Tarde these economic conditions are assumed to genuinely reveal the universal ontology of the social—or, the "economic" is not and cannot be conceived as different from other social and communicative mechanisms for the transmission of ideas. Tarde, consequentially, presents a model of reality that does not differentiate between the economic, the social, the biological, or the technological, all in the name of the communicative transmission of repetitions. Money does not *substitute* for the problems of intersubjectivity, but fully represents the processes of exchange and repetition that ground the ontology of relation as such.[52]

Contemporary accounts of Tarde position him as unfairly neglected and forgotten by trends of modern thought.[53] A radical and innovative thinker in his own time, the conspiracy of institutional sociology buried Tarde's work until the networked context of the present. Or so the story goes. Many parts of this narrative are misleading, if not outright false. Tarde's theories were popular among academics in France and the United States, especially the latter where he was described as "brilliant" and a "genius."[54] In the 1960s, Tarde was credited with the initial formulation of the two-step flow model of communication still popular in social scientific analyses of media effects.[55] While his name may have been gradually forgotten, this is not because his theories ceased

to inform research, especially on communications and media. Indeed, his thought has so diffused and penetrated American communications research that, even if his name remains absent, the concepts he suggested inform countless assumptions about what communication is and what media do.[56] Tarde's ideas are a direct precedent for what James Carey termed the "transmission model" of communication, in which information and meaning are assumed to be contagiously transmitted from mind to mind (and machine to machine) without the diffuse, contextual, interpretive, and ritualistic uses of communication in culture. Tarde may appear radical in continental philosophy, but to anyone familiar with American media research the grounds we return to with Tarde are merely the same stories that evacuate agency from individuals in favor of a theological model of information transmission.[57]

Tarde believed that social connection emerged from the mirroring that went on in the minds of individuals, shaped and altered through technological capacities for communication.[58] He believed in hypnosis and thought that social relation was more or less a somnambulistic form of repetition.[59] New ideas emanated from the minds of "elites" and "geniuses" who served as the natural choice for proper governance.[60] Extending out beyond the transmission of ideas, he believed that "labor" should be conceptualized as nothing other than an imitation of "capital."[61] Tarde's theories should be understood in relation to the spiritualism popular in his own time, combined with the social norms of the French Catholic bourgeoisie,[62] the class he was born into and raised.[63] And, I claim, this understanding of the social conceptually eliminates any and all forms of intentional conflict in the name of a repetitive connectivity, in which the subject is little more than an abstraction that does nothing other than connect, flow, and repeat in a milieu that conflates social, economic, biological, and technological. Tarde, in many ways, serves as a conceptual endpoint of the narrative of Part One of this book, a theorist who expresses in his work an ontology that perpetuates the conflations we've thus far seen about networks, flows, and connectivity.

In *Monadology and Sociology*, Tarde states, "*Everything is a society*" and "every phenomenon a social fact."[64] "The social" designates a general principle of imitation that grounds not only all human relations, but all relations as such.[65] Tarde points toward mere atoms and vibrations, looking at the various "societies" made up of nonhuman elements brought together through associative forms of imitation. The retina is as social as the world of humans,[66] as is a solar system, an "aggregation of polyps," and "men in tribes or nations."[67] The social implies an intrinsic, repetitive link to others that is grounded in the most foundational elements of biological life.[68] Tarde draws attention to a social that is beyond the human, a social that inheres as a vitalist impulse for connectivity and imitation.[69]

This aspect of Tarde is important, not the least because it establishes a genealogy for a number of contemporary articulations of posthuman philosophy. This interpretation is nonetheless selective, however, and neglects a number of the more unseemly aspects of his work. First, many of Tarde's arguments explicitly draw on the material and metaphorical networks seen in the preceding chapters, accepting

the equivalencies enabled by past conceptualizations of connectivity and flow as the ground of reality through reference to the biological, technological, and social networks of the past. His ontology is expressive of a specific historical and cultural context in which networks and connectivity were increasingly found throughout daily life. Second, Tarde's philosophy reflects an elitism derived from his own class privilege. He held an almost Platonic belief in the powers of the "genius" and his capacity to govern. The category of the "individual" is not as diffuse as his current interpreters would have it, his cultural tolerance is not as evident, and individuals are not clearly reframed as desubjectified lines of force in Tarde's thought.[70] Instead, Tarde, both in his theoretical writings and in his utopian science fiction novel *Underground Man*, suggests that an ideal future would emerge through a perfected model of governance found in the linked categories of invention and genius—categories he applied to "great" individuals who were the only ones capable of ruling a just and equal society through the transmission and repetition of their inventive ideas. What Tarde gives us, then, is a model that unites the various forms of networks already discussed while paving the way for the command and control mechanisms foundational for early models in cybernetics, information theory, and the development of the internet, simultaneously advancing a bourgeois politics that assumes the masses are ultimately somnambulistic and in need of control.

Circulatory and neuronal flows are central to a number of claims Tarde makes about the human body and its social nature.[71] The social capacity for repetition is born into the biological foundation of the animal. But this is more than mere metaphor, as the biological operation of the neurons and brain are likewise repetitive and imitative. The brain is a functionally "social" organ, "a *repeating* organ for the senses and is itself made up of elements which repeat one another. In fact, the sight of such a congery of like cells and fibres makes any other idea impossible . . ."[72] Within the human brain, the cells operate like a system of relays that transmit sensation via repetition, a "society" of mind that acts through networked repetition. The various systems for managing these repetitive flows, permitting the transmission of repetitions at an increasing, standardized scale—from language to newspapers to railway stations—is, for Tarde, an aspect of the progress of civilization.[73] The general transmission of repetition is a specific feature of neither technology nor humans, but is a universal principle of all life.[74] Repetition permits Tarde to conflate the biological with communication technology in the name of an overarching "social," along with any other process that could be thought as a form of transmission and repetition—which are, in the last instance, always communicative.[75] The universal of communicative repetition defines all of these different spheres of existence, demonstrating how their separation is an ultimate falsity.

The economic, according to Tarde, is wrongly thought to operate by different rules than all other parts of the social.[76] The sin of economics is to deny the fundamentally social role of repetition in producing the economy. This move may seem similar to that of Simmel, or even Marx, but the implications are quite different. While Simmel

and Marx argue that money imposes a specific social organization that defines human relation, Tarde is merely claiming that economics, *as an academic field of study*, has made an error in assuming that the exchange of money constitutes something other than his principle of social repetition. It is not that money obscures or remakes the social, but *economics* errs in assuming that money is something other than a material manifestation of social repetition. While the autonomous individual of economics is a fallacious construct, capitalism and monetary exchange are rooted in the most pure essence of social relation. Tarde manages to reframe capitalism as a form of socialism, in which any critique of money as something that obscures the social cannot be made because money is merely an expression of the eternal desire of connective repetition and social association.

These claims of Tarde's are seductive, especially for anyone invested in the primacy of communication in defining social relations. Assuming any one field as detached and unrelated to others, Tarde suggests, makes the mistake of forgetting the inevitable complexity that emerges from imitative communication. This would appear to position economic relations as completely subservient to social relations of communication. But to suggest as much would require one to disregard the rather blatant elitism foundational for Tarde, which most notably emerges in his discussion of "invention." Not all relations are imitative, Tarde notes. Some are "anti-social" in that they are not dedicated to the perpetuation and repetition of social bonds but are about the invention of the new. This capacity for invention is the province of the elite classes:

> It is from this point of view that many of the inequalities of class and the injustices of fate are partially justified. For there are certain classes, as there are certain nations, which are more inventive than others, and whose superiority may be explained thus. Invention being the daughter of leisure and study, it is the leisure classes, the liberal professions, which generally bring forth the ideas destined to revolutionize manual labor and raise the level of the lower classes.[77]

Tarde goes on to claim that the English royals, the "big Southern plantation owners" in the United States, and the French nobility are examples of these inventive elites, who, through their genius, founded the cities and systems of government in their respective countries.[78]

Because of this understanding of invention, Tarde positions the relationship between capital and labor in exactly the same terms as that of the nobility and the citizenry.[79] The capitalist class is not a class in a Marxian sense. Rather, capitalists are organically chosen to govern because of their power of industrial invention. Money is an empirical standard that quantifies the value of an idea and its transmission. Laborers must merely be content to repeat what they have learned and been handed out by the capitalist class. The economic and the social become interchangeable manifestations of the same fundamental impulse, an impulse general not only to the

world of humans but to the totality of existence writ large: invention and repetition. The transmission of flows—with which Tarde drifts between the economic, biological, and communicative—produces a society through repetition in which these different forms of relation obey the same rules and are, more or less, interchangeable and equivalent. The power relations here are clear. Some create and others repeat. And those who create are those in power, *because* of the lives of leisure they have been born into, *because* of the (quantified, monetary) value of their ideas.

The effects of this power relation are even more problematic than the legitimation of bourgeois assumptions about class hierarchy. Some are positioned as active agents, while most humans (and things in general) are drained of agency in the name of a generalized relationship of repetition. When Tarde speaks of the social causes of crime—his work was one of the earliest to investigate criminality as a social phenomenon—he suggests that the violation of the law is not based on any specific, internal moral flaw, but can be blamed on repetitions and reflections that do not serve as ideals of proper behavior.[80] Tarde is here advancing ideas similar to those found in what Raymond Williams termed the "culture and civilization" tradition.[81] Often in the history of Western thought, "culture" is a kind of aesthetic and pedagogical activity that "cultivates" and grows the minds of subordinate classes. As it was for the British critic and school inspector Matthew Arnold—one of the key figures in Williams' history—culture is the instruction of the best that has been thought and said, the "sweetness and light" of culture, the transmission of which guarantees order and social stability, the absence of which perpetuates a working class drift into anarchy.[82] This view legitimates a classed sense of taste and value as being enlightened, which, in the British context at least, was used to justify the civilizing mission of British imperialism. Tarde seems to be a French version of the British elites discussed by Williams. Tarde deprives of agency anyone not a "genius" in the name of information transmission and repetition. Crime, as a result, is merely a form of repetition that happens when culture loses its moral grounding, drifting into anarchy and away from civilization. Forms of invention that lead to crime are perpetuated because of the role of morally flawed elites in shaping new, criminal behaviors. In other words, Tarde does not remove the "individual" from his analysis. The elites are permitted to be inventive individuals. While elites are in relation to each other, certainly, and do not exist as fully antisocial, inventive, autonomous agents, the masses do not appear to have this antisocial power of invention whatsoever—for if they did, they would be elevated to the position of the elite. If we return to the language of Jean-François Lyotard, the "inhumanity" of the laborers is ideally done away with through education and cultivation. The worker learns how to relate to the network and transmit the right reflections throughout society, internalizing the "inhumanity" of the network within himself. Yet, the elites, in their capacity for invention, remain outside of this system of inhumanity, neither having to learn the proper form of development nor having a system of development imposed on their behaviors.

The most extreme ends of this view can be seen in Tarde's novel *Underground Man*. Tarde first depicts a technologically advanced, democratic society that appears to follow the ideals of democratic socialism. Yet, equality results in an "insufferable sameness of colour, a depressing monotony, a sickening insipidity."[83] Fortunately, it would seem, the sun burns out and kills most of those on Earth, leaving behind only a few who serve as a kind of cultural vanguard: "Youth, beauty, genius, love, infinite treasures of science and art, writers whose pens were of pure gold, artists with marvellous technique, singers one raved about, all that was left of refinement and culture on the earth, was concentrated in this last knot of human beings, which blossomed under the snow like a tuft of rhododendrons, or of Alpine roses at the foot of some mountain summit."[84] This cultural elite is led by the "genius" Miltiades, whose name is derived from a Greek tyrant. After the sun dies, Miltiades' followers live in subterranean mines sustained by the inner heat of the Earth, all in a manufactured environment that transcends the beauty of nature. The underground world is characterized by "the complete elimination of living nature, whether animal or vegetable, man only excepted. That has produced, so to say, a purification of society."[85]

In the construction of this artificial underground society, Tarde's utopia realizes the true nature of the social, covered over by economic theories of the past:

> Was the relation of the worker to his employer, of the artisan class to the other classes of the population, of these classes between themselves a really social relation? Not the least in the world! Certain sophists, who were called economists, and who were to our sociologists of to-day what the alchemists formerly were to the chemists or the astrologers to the astronomers, had given credit, it is true, to this error—that society essentially consists in an exchange of services. From this point of view, which, moreover, is quite out of date, the social bond could never be closer than that between the ass and the ass driver, the ox and drover, the sheep and the shepherd. Society, we now know, consists in the exchange of reflections.[86]

We see, yet again, how Tarde's understanding of economics conflates exchange with social bonds more broadly. The power relations between master and slave are eliminated in the name of a "social" bond that emerges from the material and mental connectivity between two entities. Exchange is nothing other than a circulation of reflections—which, in Tarde's nonfictional theories of the economy, manifest as money. Economists are nothing other than sociologists who have a mistaken understanding of their scholarly object. Money, in Tarde's utopia, has given way to its true essence as a reflection or repetition.

Like the transmission of reflections more broadly, in Tarde's utopia the right of filial reproduction also only belongs to the "genius" that determines the social: "The right to have children is the monopoly and supreme recompense of genius," he writes.[87] In Tarde's society, one's ability to reproduce is dependent on one's ability to transmit

"genius" through the genetic material of sex. Once one stops producing "beautiful" works, one is no longer permitted to reproduce. Aside from the absurd implications of this view of reproduction—in which offspring and artworks are equated, where a singular form of "genius" appears to govern that which is "beautiful"—we can note that Tarde is once again subjecting all existence to his general principles of invention and repetition. The invention of the new is only for the elites, the geniuses, and this is reflected in economy, in genealogy, and so on. Repetition is for the masses, reduced to that which is less than human.

Underground Man is a fiction. Yet, in it, Tarde's chosen race discovers principles of social organization that directly correspond to his other writings. This leads me to believe that his novel should be interpreted as a speculative vision for a utopian society, akin to something like Ayn Rand's *Anthem*. The English language edition of *Underground Man* has an introduction written by H. G. Wells, who suggests the novel be read as a venture in which Tarde's sociological ideas are played out. The seeming absurdity of many of Tarde's claims renders the novel difficult to take seriously today. Its depiction of the separation of human and nature bluntly conflicts with Tarde's contemporary interpreters, as does his embrace of some outrageous inequalities legitimated in the name of a crude meritocracy. Yet, it is for these reasons that I think *Underground Man* should be understood as a necessary part of Tarde's corpus. And if his novel is supposed to be a satire, then it calls into question the ability to take any of Tarde's ideas seriously given their centrality for the plot of *Underground Man*.

In light of *Underground Man*, what we see in Tarde is a general principle in which connection and flow can be equated to nearly anything that exists, a view of the world—derived from a context in which technology, anatomy, and finance were, along with the social, all conceived using the same imaginary of managed flows through connective networks—today thought to be the ontology revealed by today's networks.[88] But if we do not forget the problem of Tarde's elitism, then we can see how the various articulations of the economic, the social, the political, the technological, the biological, and so on have vastly problematic consequences. This model, in conflating these domains and reducing everything to transmission and repetition, assumes most humans to be mere information relays, deserving of the lives of subservience they have been born into. It is this definition of a person that emerges from Tarde's conjunction of the economic and the social, and I suggest that it is this person—nay, citizen—that arises from the history of networks: a relay, a repeater, a node.

With Tarde's *Underground Man* we occupy a space that appears to be the complete inversion of E. M. Forster's "The Machine Stops." If Forster's dystopia was one in which technologies negated the sensual and visceral pleasures of physical touch, obscuring "true" connections in the name of mediation, then Tarde's utopia is one in which the retreat of humankind underground enables the realization of the truth of social connectivity, in which biological, economic, technological, and social connections and flows are equivalent and provide a manufactured "nature" previously

hidden. If "The Machine Stops" expresses modern anxieties about technological alienation and the inability of the individual to ever authentically connect to another, then *Underground Man* expresses anxieties that emerge from modernity's doubling: humankind *is* connected, but we haven't been able to see it. The tools of modernity, completely leaving any sense of "nature" behind, realize the *true* nature of the social as constructed out of informational, economic, and biological repetitions.

Describing the conflation of economy and society has been the most difficult of the various articulations described so far. It's the first moment discussed that truly enters into popular culture and everyday life at a level of depth that moves beyond a discourse articulated by scientists, engineers, economists, and fringe political writers. The troubles everyday citizens experienced during the Great Depression were directly related to the invention of a social imaginary in which banks were central to the maintenance of social bonds through the expansion and networking of branch banking. It's this view represented in the films of Frank Capra, perpetuated by technologies of homeownership, banking, and numerous other everyday tools of financialization that today appear ubiquitous and natural. At the same time, through oblique attempts at describing the ontology of money in modern society, early sociologists were articulating the various networks of society, technology, economy, and even biology. Tarde ontologizes these principles through his universal of repetition. Yet, sociological theory does not directly determine the beliefs and values of a great majority of people. The extension of this networked way of imagining relation only becomes nodal citizenship with the everyday experiences that are today perpetuated by the internet and social networking websites—though they were first seen in branch banking and the everyday use of technologies we've seen so far.

It is around 1930 and 1940, after centuries of networks in any number of milieus, that we begin to see the varied domains that can be "networked" coming together, made equivalent and interchangeable through an understanding of the social in which most people are merely information transmission devices, repeaters, relays, and nodes. In these varied accounts of economic circulation and its relation to the social, we end up with a perspective that conflates the many networks discussed so far through the supreme principles of connectivity and flow, an articulation essential for both neoliberal and cybernetic models of the society that would emerge during the twentieth century.

Friedrich Hayek, the influential theorist of neoliberal economics, regarded the self-regulating markets he saw proposed in the work of Adam Smith, David Hume, and Bernard Mandeville as the foundations of contemporary technological thought. Hayek, in other words, thought that classical political economy had invented cybernetics and information theory.[89] Hayek's own version of neoliberalism stresses an informational model of feedback and emergence that interprets theories of cybernetic control as the natural foundations of economic order.[90] Really, the inverse is probably more accurate—the history of networks, with its conflation of the economic, the social, the technological, and the biological, provided the conditions of possibility for Hayek

to discover the principles of a cybernetic neoliberalism in the history of economic thought. Hayek, in other words, is a technological humanist—looking backward to discover the origins of a "nature" that emerges from the technological and discursive articulations of his own context, simultaneously forgetting history in the process. Like Hayek, with the development of the internet, the assumed universality of information would be grafted onto a material structure also assumed universal because of how it was preceded by a history of conflated networks, themselves intertwining and interweaving into a single, discursive "network of networks." This results in the utopian project of nodal citizenship, a project that posits proper relations mediated through nothing other than networked connectivity and flow, in which human beings and state governments come to serve as problems to be corrected by the so-called "self-regulating" governance of the technological. The Coda to Part One describes the role of the internet, cybernetics, and information theory in moving from the abstraction described in these three chapters to the nodal citizenship discussed in the rest of the book.

CODA
UNIVERSALITY: FROM NETWORK ARCHAEOLOGIES TO NODAL CITIZENSHIP

At this point we can see how many beliefs about networks had been laid out and legitimated by the first decades of the twentieth century. No longer intrinsically constraining, connectivity and flow were thought to sustain the vitality of self, community, and nation. But there is one move yet to be made: the universalization of networks. Economic flows, biological flows, communicative flows, social flows—while there are countless points of convergence in this history thus far, these four flows are rarely made fully equivalent, except, perhaps, in the sociology of Gabriel Tarde. These different networks all overlap and intertwine—and the point I'm making with this narrative is most certainly *not* that they're all interchangeable because they can be imagined as structurally similar. I am not arguing that at around 1920 or 1930 people began to recognize their networked reality, but quite the opposite. To claim these different domains as networked requires the exclusion of countless ways of imagining the technological, the social, the biological, and the economic. The networks charted in these pages were specific instances of describing and imagining the material reality of different objects and relations. And even within these networks, we have different, competing ways of understanding the effects and implications of connectivity. In short, we had to be made to think of ourselves as networked and connected—and this history is filled with reversals, accidents, and errors; it relies on ideas that we may find distasteful and disagreeable today, ideas about what society is and what human beings are supposed to be. We cannot look back and find an easy teleology in which new technologies perpetually reveal our essential connectivity. Instead, we have a history of fear, anxiety, racism, and panic—a history filled with contingencies and mistakes. But, nonetheless, this history provided a model for imagining the world as networked and connected—a model that would persist throughout the remainder of the twentieth century.

Beyond what I've discussed throughout Part One, the years between 1900 and 1940 signaled the appropriation of the term network to any structure that could be considered to connect, each enabling a flow to manage the health of the economy and society. This includes utilities,[1] mines,[2] and even a hypothetical network of tubes that would connect the factories of Proctor & Gamble to the streets of Cincinnati, through which "a vast amount of soap should be pumped into every street and alley in the town,"[3] where the management of a networked flow would literally

clean up and maintain the city's streets. Economies have regularly been described using vitalist language from the history of networks, in which the circulation of capital is prohibited by metaphorical "obstructions in the circulation system and/or malfunctioning of the heart."[4] And, as it was with the telegraph, the radio and television networks were thought to enable communication instantaneously over great distances, dematerializing communication in spite of their reliance on the wired networks of the Bell system.[5] But even when dematerialized, everywhere and nowhere, these different networks were regularly understood as separate. Aside from Tarde's theory of society, there was never a singular, foundational ontological ground that could be thought of as "networked," the regulation of which would provide the norms and standards for a kind of connective, flowing, universal vitality. There were only multiple networks. But this is why Tarde's sociology is so important. In reducing all social, economic, biological, and technological interactions to a form of communicative repetition and transmission, he set precedent for a perspective that would elevate the networked movement of information to the uniting essence of existence. A similar articulation occurs with the prehistory of the internet, providing the means for these abstract universals to enter into everyday life nearly a century after Tarde's own theories.

The early research that would eventually develop into the internet does two things in relation to the narrative of networks we've been tracing. First, the design of the internet (in theory, if not in reality) proposed a universal structure that would connect all previously existing forms of media in a distributed form. The internet is based on a fundamental universal of communication and connection—all technological networks can, and should, be made into one connected internetwork, a desire produced by the relationship the internet's development has with fears of nuclear war. Second, the structure of the internet relies on packet switching, the breaking up of data into discrete units—called "packets"—that are disassembled, transmitted, and then reassembled. Objects can be cut up into multiple pieces and then put back together as they originally were. Things are defined by *information*, their quantifiable measure of organizational structure, which can be transmitted from point to point, transcending physicality through a mathematical system for defining order. The "posthuman" sciences of cybernetics and information, foundational for the creation of the internet, define this mathematical measure of order as the essence of life itself. In embracing and perpetuating the logic of information, with the internet, networks become an invisible, seemingly dematerialized material structure for the flows that constitute life, society, and technology, in which a technological flow becomes the source of biological, social, and economic vitality.

In 1964, Paul Baran, an engineer for the RAND Corporation, published a lengthy document titled *On Distributed Communication*. This eleven-part series of memoranda systematically outlined the creation of a network designed to maintain military communication in the case of nuclear war. "Let us consider," stated Baran in his introduction of the series, "the synthesis of a communication

network which will allow several hundred major communications stations to talk with one another after an enemy attack."[6] The technological infrastructure for the military's communications, organized through either centralized or decentralized systems, was vulnerable because the failure of any one link in the system could disable communication between stations, potentially debilitating parts of the American military in the case of an attack. To correct for this, Baran proposed the creation of a distributed network for military communications, a form in which any one communications station connected to a number of others (Figure 19). No one station would be a central, controlling unit. The hierarchy of communications would, instead, be distributed by both the wires and relays that made up the physical network, and geographically, to account for the threat of war. Through the redundancy of its interconnected links, the distributed network could withstand attack regardless of the failure of one isolated connection—or even through the destruction of a large part of the network itself, as would potentially occur in the case of nuclear war. Taking out one or several locations would not damage or change the network's structure in any significant way. The flexibility of a large number of weak links would ultimately strengthen the network as a whole. Individual nodes would be insignificant as long as the connectivity of the greater totality would remain in place, undisrupted, when any one part of the network failed or was otherwise disconnected. Baran's model negotiated the numerous contradictory historical attributes of networks to invent a structure that was all-encompassing, restrictive, and potentially totalizing while simultaneously weak,

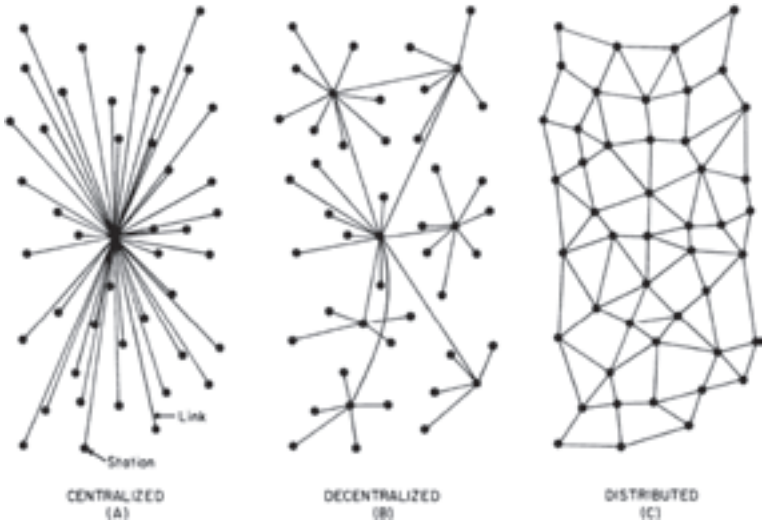

Figure 19 Paul Baran's diagrams for centralized, decentralized, and distributed networks. From *On Distributed Communications: I. Introduction to Distributed Communications Networks* (Santa Monica, CA: RAND Corporation, 1964), 2. Reproduced with permission of the RAND Corporation.

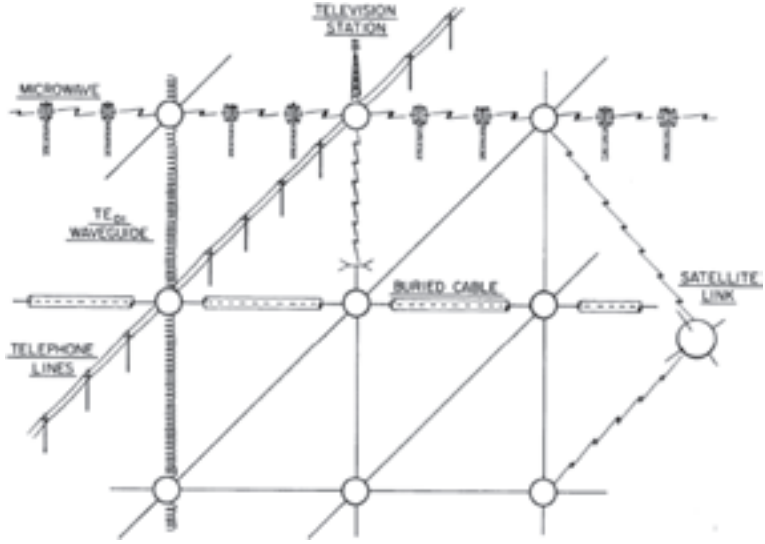

Figure 20 Paul Baran's diagram for an informational network that would connect multiple, different forms of technology. From *On Distributed Communications: I. Introduction to Distributed Communications Networks* (Santa Monica, CA: RAND Corporation, 1964), 21. Reproduced with permission of the RAND Corporation.

fluid, and flexible. While composed of individual relays and stations that could be damaged or destroyed, from the perspective of the whole, the network could withstand almost any potential attack.

As initially proposed, this distributed network would include a variety of media, from the telegraph to television to communications satellites, all connected via a completely digital form of communication (Figure 20). Baran fully believed that the equipment at hand was good enough to produce this network. "Our present-day components are fully adequate," he claimed in the conclusion to his memoranda, "The difficult problems lie in hooking them together."[7] Along with proposing this engineering problem, Baran suggested that the messages sent throughout this network be cut up at the source and reassembled at reception. Communication throughout the network could be made possible as long as messages could be disassembled and transformed into standardized digital signals. Baran proposed this through "packet switching," which he described with the following "fruit salad" metaphor:

> Thus, fullest advantage is taken of the mechanism within the proposed system that takes a channel or a message and chops it into small pieces (like a fruit salad), transmitting it on as a series of message blocks, each using a different path. Additionally, much unclassified material is purposely transmitted cryptographically, and perhaps even a light dose of obsolete traffic is mixed in.

> Given a big enough bowl, it becomes very difficult to separate the garbage from the salad.[8]

The development of distributed communication, as proposed by Baran, would enable both stability and increased secrecy for the US military. Messages could be split apart using a uniform system, prohibiting their interception on a relatively unsecured communications network, and then reassembled later. Unlike a fruit salad, that which goes in would come out the same even after it was chopped up and mixed together. Messages, divided into a number of different packets, would traverse different routes, enabling more efficient mechanisms for information transmission over increasingly complex distributed networks.[9]

The term information is, strictly speaking, the quantified organization of a pattern. It is not simply that a message is transmitted through a network; it is that this data has a pattern, and that pattern remains the same at the encoding and decoding of that message. In Claude Shannon's information theory, while there are "semantic" problems of communication—problems related to meaning and interpretation—these "semantic aspects of communication are irrelevant to the engineering problem."[10] Information has absolutely nothing to do with these semantic problems. Information is a measure of order concerned *only* with the engineering specificities of the transmission of communication. Shannon's theory of information and Norbert Wiener's cybernetics were both developed to address these questions of order, albeit in ways that defined the specific mathematics of information quite differently. Yet, for both, questions of meaning were pushed aside for technological questions of order and transmission—upon which any question of meaning must reside. The entire system of a distributed internetwork, as outlined by Baran, would require all of that which is transmitted to follow a standardized form of information measurement so that what goes in on one side is disassembled and then reassembled as the same when it comes out at the other end. As all of the technologies that Baran placed within his distributed network were already designed to process information, their linking just required the creation of standards, formats, and protocols that would enable communication between them.[11]

I should note that, much like the word "network," "information" has a history filled with contingencies, reversals, and exclusions. As John Durham Peters has charted, "information" originally referred to doctrines of *hylomorphism*, the conjunction of matter (or *hyle*) and form (or *morphe*). "The intelligibility of material objects owes to the forms that *in-form* them, shaping them from within."[12] But the broad relation of information to these doctrines of hylomorphism would eventually be narrowed in early modern versions of empiricist philosophy to refer to sense data observed by the human mind: "*Information* came less and less to refer to internal ordering or formation, since empiricism allowed for no preexisting intellectual forms outside of sensation itself. Instead, *information* came to refer to the fragmentary, fluctuating, haphazard stuff of sense."[13] And as empiricism shifted into state doctrines of

statistics, bureaucracy, and the social sciences, the meaning of information changed once again, to data that exists divorced from sensation and experience. This new, statistical information "does not enlarge or transform old information, but makes it obsolete."[14] By the time we get to information theory and cybernetics, we have an understanding of "information" that privileges quantitative knowledge divorced from everyday, sensory experience, which likewise comes with an understanding of what the human body is and does. Information in cybernetics, then, is an interesting hybrid of several of these definitions. It refers back to the relationship between "information" and hylomorphism, but does so with an explicit framing of information as quantitative data that can be statistically extracted from bodies and things as a measure of "order."

While Claude Shannon was concerned with the informational basis of the transmission of messages, Norbert Wiener's cybernetics extended information to the totality of life by placing "pattern" as the most foundational principle of vitality.[15] For Wiener, all matter could be thought of as a form of organized pattern, a proposal that resulted in one of his most notorious claims:

> In other words, the fact that we cannot telegraph the pattern of a man from one place to another is probably due to technical difficulties, and in particular, to the difficulty of keeping an organism in being during such a radical reconstruction. It is not due to any impossibility of the idea. As to the problem of the radical reconstruction of the living organism, it would be hard to find any such reconstruction much more radical than the actual one of a butterfly during its period as a pupa . . . the fundamental idea of communication is that of the transmission of messages, and that the bodily transmission of matter and messages is only one conceivable way of attaining that end.[16]

While Wiener's cybernetics is not precisely the same as the information theory of Claude Shannon, both share the general assumption that the transmission of information is the central process through which associative connections are made.[17] But with Wiener, these connections extend far beyond the technological into the conceptualization of human nature and biology. Because of the centrality of information transmission, the human and the machine are functionally interchangeable, as "the operation of the living individual and the operation of some of the newer communication machines are precisely parallel."[18] The world of cybernetics proposed by Wiener was one in which human and machine were united through the shared foundations of information, able to be abstracted from any one body, transmitted through communications networks, and reassembled elsewhere given the proper technology. Perpetuating the ages-old distinction between form and matter, problematically looking back to the association of information with hylomorphism, Wiener places all bets on a "form" that is based in quantified systems of organization, able to be extracted from matter itself, transmitted elsewhere, and

then reconstructed in another material substrate. As with Tarde, life is little more than the ideal content that is reflected and repeated between relatively inert material forms that are remade in relation to that which flows between them.

The view of life advanced by Wiener is what N. Katherine Hayles refers to as "posthumanism." Posthumanism makes machines out of people and people out of machines by equating the essence of both as information. Human life is a pattern, as is technological "life," and thus there is a direct equivalence between the two. Posthumanism suggests that internal consciousness is irrelevant, biology is an "accident of history," and the body is always-already a technological extension of the informational pattern that is the "self."[19] In Baran's formulation, the various communications networks that already exist can be connected into a single internetwork because they all can be made to share the same language of digital information. And if the claims of Wiener are taken into account, the information that flows through the material connections of network technology is the true source of vitality and life, divorced from the material substrate in the name of a universal that unites human and machine. Since human beings are understood as defined by information, just as any other transmitted message, the essence of the human (and any other form of "life") becomes what flows through technological connection: information itself. The body becomes a limit to our connectivity while the liveliness of the human itself is found in the patterns it generates and circulates. But it isn't that materiality is completely forgotten. Rather, the history of networks enables the conflation of the technological, biological, economic, and social so that the foundations of reality inhere in the structures that connect and let flow the universal of information.

Emerging out of Baran's DARPA documents are at least two different views that would inform the future imaginary of the internet. At a basic level are purely technical concerns. Information can be divided and recombined through packet switching, maintaining secrecy, and managing data transfer errors. Nodes can be rearranged and cut out with no real impact on the rest of the network, managing the strength of the network as a whole in the event of a threat of nuclear war.[20] While beliefs about distributed networks do not follow the historical development of the internet's infrastructure,[21] when extended to the posthuman claims of cybernetics and the technical universality assumed in Baran's original proposals, the foundations of the internet carry additional claims for subjectivity and personhood. While there may be a technological network called the internet, there is also a fundamental network upon which all can be connected. This network needs a universal language to enable flow and connectivity. But it already has this language in the form of "information," and human beings are already understood as information. While much of what is assumed about information is also assumed to be an attribute of networks more broadly, it isn't until the internet that these universal attributes are articulated to the structure of the network. And this combination is essential for how we understand networks and connection today.

Information, according to Tiziana Terranova, "is not simply the content of a message, or the main form assumed by the commodity in late capitalist economies, but also another name for the increasing visibility and importance of such 'massless flows' as they become the *environment* within which contemporary culture unfolds."[22] But this information environment does not exist fully detached from the connective networks through which information flows. While information can be thought of as the essence to communication, economics, and life itself,[23] this universalization is reliant on the same articulations throughout the history of networks. There is inevitably an associated understanding of networks and connection that underwrites the posthuman possibilities of information flow. For every disembodied, immaterial flow, there is also a network in which that information circulates—and these "networks" are not a purely material structure, but a combination of materiality and an imaginary produced over several hundred years. As information is assumed to define the communicative, the technological, the economic, and the biological, then the varied networks of the past, along with their unique flows, also collapse into one, seemingly embodied by the network of networks that is the internet. Information is not the "environment" of contemporary culture. The network is our milieu as it gives "form" to the abstract circulation of information—albeit in a way that extracts from any concrete material relation anything other than the connections through which information then flows, connections that are themselves thought to be somehow less than material.

This universalization cannot be said to emerge solely from the invention of the internet. As is clear from the discussion of Tarde in the previous chapter, the informational ontology of life that Wiener advances repeats Tarde's conceptualization of the individual as an informational relay, networked into the social through the inborn capacity for pattern repetition. But Tarde inherently positioned elite geniuses as the source of invention, creating new messages and ideas to be repeated by the rest of the populace. Cybernetics, instead of emphasizing the value of the new, reframes the fundamental relation—be it between human and human, human and machine, machine and machine—as one of control and regulation. Messages change behavior—but in a way that explicitly normalizes through feedback, enforcing and guiding the individuals through their relations and transmissions. To some extent, this was apparent in Tarde's theorization of repetition. As criminality was an effect of the loss of cultural values, morality resulted from control through repetition. But Tarde's elites were always present in his theories of invention. There were inventive "humans" that existed outside of the inhuman systems of education and governance. Cybernetics effectively removes these elites, inventing instead a new god and a new standard for value and judgment: that of self-organized, autonomous information. Through the various permutations of cybernetics and the scientific paradigms that have followed in its wake, terms such as autopoeisis, operational closure, and emergence[24] all point to a perspective in which Wiener's original theorization of feedback is transformed into a principle of autonomous self-generation, in which the essence of life becomes

an automated, self-managing, and flowing informational "agent" or "self" that moves properly throughout networks. Be it the cybernetic market of Hayek or the "wisdom of the crowd" found online,[25] the autonomy of information is thought to realize a utopia in which a perfect world emerges through total connectivity, in which, I will argue in the coming chapters, "people" are defined through information, data, and the "self-organization" of networks.

Throughout Part One, the concept of the network was transformed from a description of a banal technological form—a net—to a model of health, society, and totality. This model was initially feared as eroding autonomous liberal subjectivity, constraining and containing the individual. Through its articulation with biology, technology, finance, and the social, networked connectivity and flow were rearticulated as universals for these four areas. A discourse that preceded the current "network society" defined the limits of networks, of which the internet is only the most current incarnation, decades, if not centuries, before the material technology of the internet was proposed by DARPA (Figure 21). Of course, this discourse has never existed without technologies that envision or enable connection and flow and, therefore, should not be mistaken as an eternal, ontological truth. But technologies often encompass a far broader range than what we think of when the internet or social media come to mind.

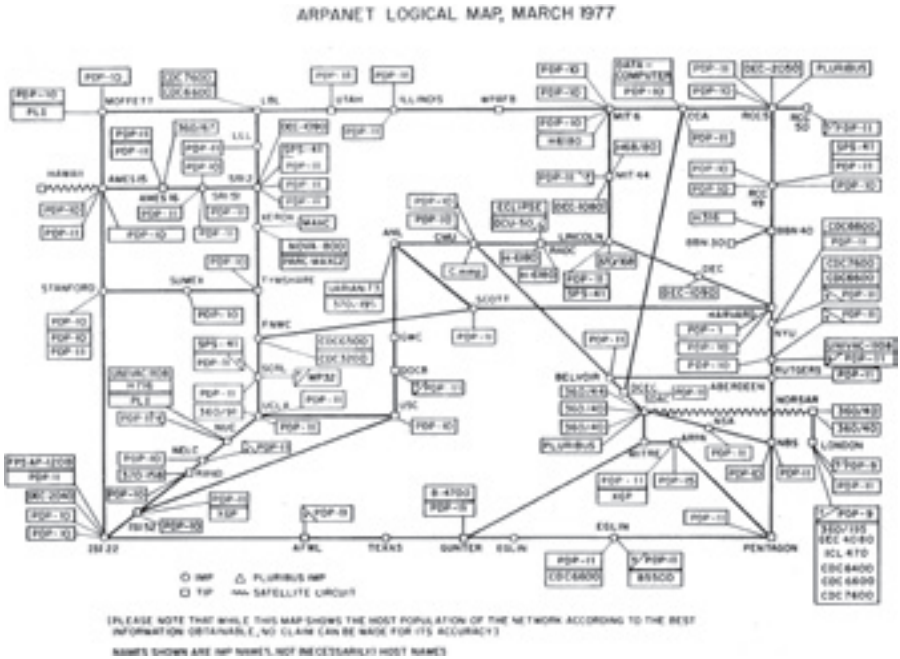

Figure 21 ARPANET, March 1977.
Source: Wikimedia Commons. Public Domain. Compare this to Nesta Webster's Diagram of the *Socialist Network* in Figure 6.

If we are to understand what social media do, then we cannot simply think of them as specific, individualized "platforms" that exist separate from history. Social media must be understood conjuncturally. If we are to grasp the political significance of social media, then we must accept that technology can be used to legitimate a specific, historical way of thinking as nature, one founded alongside modernity, partially responsible for countless injustices, horrors, and fears. When we cease to follow the assumptions of technological humanism, when we refuse to accept networks as pure materiality or ontology, we can then begin to understand how social media produces subjects and citizens today—citizens imagined through the universals of networks and information as they cross the social, the technological, the economic, and the biological; citizens that do almost nothing other than "connect" and "make flow" in accordance with the "ontology" reproduced by the history of networks; citizens that can only be thought to resemble nature if history is forgotten; citizens that emerge from the transformation of people into information technology.

PART TWO
NODAL CITIZENS

Data as citizens

Part One of *Inhuman Networks* traced a genealogy of networks and connectivity through a series of historical conjunctions that, I claim, have together shaped the contemporary "nature" or "ontology" of networks. Investigations into the function of the circulatory and nervous networks located a structural analog of manufactured fabric within human anatomy. In association with early medical beliefs about the circulation of blood and energy, a body's capacity to properly manage various forms of biological connectivity and flow served to differentiate normal and pathological networked bodies. These biological distinctions were transferred back to the technological through the use of the "nervous system" of the telegraph to manage the "body" of the railroad. The anxieties initially associated with the connectivity of the "iron network" were assuaged, in part, through the ability of the telegraph to manage materiality through information. Nonetheless, fears of connection and control made visible through the telegraph and railroad reappeared throughout the first decades of the twentieth century. Technological networks of communication and transportation were imagined through preexisting modern discourses of anti-Semitism, in the process defining an invisible, ubiquitous, and determining "social network" to be opposed and destroyed. To some extent, at least, these populist anxieties of connectivity were counteracted by crisis during the Great Depression. Branch banking—viewed with suspicion by American farmers and workers at the turn of the century—became seen as a savior for the management of capital's circulation by bankers, industrialists, and everyday citizens alike. By the end of the 1930s, the idea of the network had been transformed. What once was a binding net, metaphorically employed to signify the loss of individual freedom in the face of various forms of institutional connection, had been remade into a way of imagining positive social, economic, biological, and technological relations. With the initial technological and scientific projects that laid the ground for information theory and cybernetics, these different networks and connections—which had already been articulated and associated in different ways at different times in history—were synthesized through the universalizing "substance" of information, now (ideally, if not actually) managed and moved through the one "network of networks": the internet.

These historical figures have anticipated our contemporary imagination of what networks are and do. The end result of this genealogy is a discourse of vitalist "health"

that crosses technology, biology, economics, and the social, reductively defining the proper conduct of conduct for the citizens of a world of networks through the production of connectivity and the proper management of abstract flows. "How did we reach a point," asks the popular technology critic Evgeny Morozov, where the internet "is presumed to develop according to laws as firm and natural as those of gravity?"[1] For Morozov, the majority of those writing about the cultural impact of technology reduce the political intricacies of the present to a set of apparent inevitabilities afforded by the internet. Countless authors look to social media and network technology and then argue that the present is defined by increasing connectivity and increasing flows because, quite simply, that's what our new networked environment appears to demand—and, after all, this new networked environment appears to "reveal" a buried "human nature" that we've been blind to for centuries. Part One gives one possible answer to Morozov's question about this assumed "inevitability" or "naturalness" attributed to networks and connection. The current hegemony of biology, finance, and technology in discussions of public culture cannot be detached from this history of networks—as neglected as this history may be. As Morozov notes, too often the history of technology is "itself deemed irrelevant," as the internet "is seen as representing a distinct rupture with everything that has come before—a previously unreachable high point of civilization."[2] The internet seems to herald a new modernity, one fundamentally different and essentially opposed to the mistakes of history. Yet, as I've argued, how networks are imagined relies directly on that which has been given from a fragmentary past—often borne out of the worst fears and impulses of Western modernity.

As we move from Part One to Part Two, the focus of *Inhuman Networks* shifts from this historical narrative of networks and connection to an investigation of how the legacy of this history is enacted and embodied as nodal citizenship. To do so, these chapters examine the everyday use of social media and its shaping of subjectivity and relation. The directive to perform proper connectivity and flow is not simply an ideological error when imported to describe the internet. Instead, it is part of a larger form of governance, at least in the sense of how Michel Foucault discusses it in his seminars on governmentality. The reductive norms of connectivity and flow define the proper "conduct of conduct" for individual nodal citizens today—repeating the history of networks as behavioral ideals cross and unite the technological, biological, social, and economic through a supposed "vitality" of networks.

Nonetheless, humans do not simply accept the role of proper nodal citizens. Instead, social media reshape and remix the "human" into something else—something that humans both embrace and resist as users of social media. The "inhumanity" in the soul of the human resists the "inhumanity" of the system—not in any intentional way, but simply through anxieties and fears that emerge when confronted with the often bizarre implications that the virtues of network connectivity and data flow have in everyday life. In the three chapters that comprise Part Two, I argue that the unification of the different networks discussed thus far through the informational

"network of networks" of the internet finds the proper tasks of a "citizen" of networked connectivity and flow in acts of generation, movement, and circulation of data. As a result, the new "human" subject of social media—insofar as that subject is defined by the "biological," "economic," "social," and/or "technological"—is expected to exist as rationalized, automated data—or at least is expected to behave in such a way that automated data and the human are rendered indistinguishable. Social media are almost always depicted in humanistic terms—as tools to help people connect with each other. Yet, the historical conflation and articulation of the biological, technological, social, and economic, as universalized through the informational and cybernetic models of networks that informed the development of the internet, produce something quite different.

As Friedrich Kittler has suggested, with the history of media, "So-called Man is split up into physiology and information technology."[3] When the history of networks articulates an imagined material form that crosses technology, biology, finance, and the social, that which is transmitted through technical infrastructure becomes the proper model of relation. The body is inscribed into and transformed through the possibilities of media's materiality. Users are expected to integrate themselves into the technological assemblage of social media, maintaining connections and flows in such a way as to become indistinguishable from technology. Aspects of this transformation have long been noted in critical histories of cybernetics, genetics, and bioinformatics.[4] These three chapters trace how these transformations occur in our everyday connection management—over social media and beyond—with unintended consequences for the most mundane, common sense ways we understand life, labor, and identity. Each chapter investigates the limits and anxieties experienced by human users as they encounter the technological requirements of proper nodal citizenship. We begin by examining how social media implicitly challenge humanist conceptions of "life," instead privileging the "vitality" of data as that which can connect and maintain flows as a proper nodal citizen. If what I sketched in Part One outlined the numerous historical articulations of various networks, the distinctions between which are gradually erased over time, then the chapters of Part Two examine the inhuman implications of these articulations in the everyday use of social media when we cannot make a significant differentiation between technology, biology, economy, and the social.

Citizenship, states, networks

But before we move on, I feel a bit more needs to be made about the discourse of "citizenship," in part because what I describe here is more than a unique process of subject formation associated with social media. Indeed, what the rest of this book describes demonstrates a fundamental change in how individuals relate to larger collective bodies, especially the state. Citizenship is traditionally articulated with

the state, even though what defines the connection between the two is ultimately open. Broadly, a citizen is one recognized as a public individual, possessive of specific rights and abilities. Citizens are actively represented by the state as defined by the legal and geographical limits to a body of landed territory, be it through birthright or other normative process. They are rendered worthy of representation in the collective body that constitutes government through the material and discursive techniques that produce government itself. Their interests are democratically concretized in law and enforced through various legal, social, and political apparatuses. Citizenship, in identifying and delineating those worthy of rights, likewise designates those unworthy of governmentally guaranteed liberties. Citizenship is, consequentially, an exclusionary and normative project, and struggles for citizenship are often also struggles that involve some level of self-negation or self-denial in the name of normative recognition by a larger collective body.[5]

Citizenship does not emerge entirely from a top-down process through which governments sort individuals into categories of worthy and unworthy. Citizenship is an internalized, active relationship one has with a larger body that expresses a form of identity recognized as possessive of abilities and worthy of rights.[6] With this internalization, a division between public and private emerges. The public citizen is produced by and recognizes itself as a subject of the state, contrasted with a private individual that exists beyond the realm of social responsibility and political action, splitting selves and differentially organizing individuals based on their adherence to norms of public identity.[7] Historically, this has marginalized different populations and groups as beyond the political and unworthy of rights, along with legitimating the belief that some are worthy of rights and protection under law, while others are not. Good citizens correctly exercise normative rights and liberties through their personal "freedom." Those who refuse to participate correctly in the management of self and government are consequently identified as those unworthy of representation. They lack a full range of rights and any legal guarantees of liberty are blunted. Citizenship, in dividing up a subject into public citizen and private individual, makes some behaviors worthy of political attention and others beyond the recognition of the state. But the contestability of citizenship makes it ever open to transformation, with the boundaries between public and private constantly shifting, continuously transforming those who are considered public citizens and private individuals beyond the recognition of governance.[8] In other words, traditional forms of citizenship are directly associated with Western modern imaginaries about self, state, and liberal autonomy. My freedom and rights are guaranteed through an abstract relationship I have to a larger body that is not defined through connection or association, but through the exclusion of another, manifested in a relationship I have with strangers, associated with the boundaries placed on a territory.

Social media and network technologies directly challenge these assumptions about citizenship, not the least because they demonstrate a shift in modern relations of exteriority and interiority, between self and other, between connected entrapment

and disconnected freedom. Global networks deterritorialize and reterritorialize the boundaries of the state, not in accordance with the limits of geography, but—to return to ideas we've been discussing thus far—in accordance with the movements of flows of capital and information. This does not mean that geography disappears, or that discrimination based on the boundaries of states wanes away. It means that new forms of discrimination, inclusion, and exclusion emerge alongside those produced by national and state boundaries, intersecting and unevenly remaking "rights" experienced by different mobilizations of "citizenship" across the globe that rely on the regulation and movements of flows of people, data, money, and so on.[9] The popularization of global network technologies since the 1970s has resulted in the production of different classes of individuals; some exist outside of state-based forms of citizenship as a cosmopolitan elite while others are rendered increasingly local and beyond the new, dominant forms of global capitalism.[10] Even in the traditional sense of citizenship, the organizations that guarantee rights and liberties are often no longer states, but global nongovernmental organizations (NGOs) and transnational corporations organized in the form of global networks of informational and economic flows.[11]

Sometimes in practice, sometimes merely in an imagined articulation of "good citizenship," proper citizens today are not necessarily ones that adhere to national cultural norms or performances of identity, caring for the self in the name of the nation. They do not internalize the state inside themselves. Instead, they conform to the everyday norms of global networked capitalism—or nodal citizenship—as the abstract relationship concretized within technology. The "nation" of contemporary citizenship, or the body that determines one's worthiness as a possessor of rights, is no longer solely a democratic, territorial body. One is worthy of citizenship if one adheres to the norms of the network as it crosses, intersects, and reshapes the boundaries of the state. The worthy or unworthy are defined by their abilities to conduct global flows of capital and information, to act as hubs and connectors in today's informational economy. In other words, the discursive conflations we saw in Part One have been realized as a kind of "citizenship" increasingly visible as network technologies remake the boundaries of state and government.

These "mutations" in citizenship, to use Aihwa Ong's phrase, are clearly evident in the global contexts of NGOs, Free Trade Zones, and temporary work visas. The network of global capital needs mobile and precarious citizens to conform to the movements and flows of capital itself. Individuals are placed into differential assemblages that do not do away with space, population, or the state, but rearticulate and reimagine them in accordance with network technologies, reifying logics of difference and exclusion through the transfer of governance to corporations and NGOs—all while either legitimating discrimination and inequality in the name of connection or completely erasing specific populations and groups from visibility. This version of citizenship also informs the daily usage of social media even by those in first-world countries, assumed to be at least somewhat protected from the precarity of global neoliberalism.[12]

The flexible practices of citizenship produced by transnational flows of capital and information are not performed in uniform ways with uniform effects. Nodal citizenship is only one way of remaking citizenship, one explicitly articulated by the context of social media—and any way of thinking about citizenship by way of social media is astoundingly reductive. I should note, nodal citizenship is less a set of practices that *actually* guarantee rights and liberties; it is an imagined relation that *promises* to lead to forms of inclusion that *appear* to be equivalent to a kind of "citizenship." To conceive of a citizen that does little more than connect and perpetuate flows is to conceive of an entity that does almost nothing (other than comment online, generate personal data, and update social media status feeds). Yet, this is precisely the way that social media imagines people and the connections between them. The historical and cultural production of nodal citizenship suggests that technology has overcome the limitations of modernity by realizing the human desire of communicative connection. The outside of exclusion has been eliminated—though, more accurately, those truly excluded have simply been rendered invisible, while visible and connected individuals who are "at risk" are reshaped into existential threats to be corrected or eliminated. And this way of imagining people blurs and undermines any clear distinction between human and machine, remaking the human in the mold of information technology. Given the history of networks in Part One, this is a massive reversal of many beliefs about connectivity, the state, and relation dominant in Western modernity, yet one premised on developments in the margins of the modern, through which modernity (and the state) defined itself through the exclusion of technological, connective forms that crossed the biological, the social, and the economic.

Each of these three chapters examines ways in which, over social media, flows of data are positioned as the privileged actors online, bringing together the production and management of economic, social, and biological flows. Humans, in contrast, must work to maintain their connections to data—data that are often assumed to be inherently connected to a specific person online. When networks are brought together to conflate the technological, biological, social, and economic, then the maintenance of flows becomes the highest act of a reductive form of citizen that reimagines the state in association with networked flows.

CHAPTER FOUR
DEATH: LIVING FOREVER ON SOCIAL MEDIA

Millions now living will never die

The short-lived science fiction television program *Caprica* provides an exemplary representation of the anxieties of becoming a nodal citizen. In particular, the show highlights the nodal citizen's unclear relationship with mortality. On the pilot of *Caprica*, Zoe Greystone, teenage daughter of tech industrialist Daniel Greystone, tells her father:

> You can't download a personality, there's no way to translate the data. But the information being held in our heads is available in other databases. People leave more than footprints as they travel through life: medical scans, DNA profiles, psych evaluations, school records, emails, recording, video, audio, CAT scans, genetic typing, synaptic records, security cameras, test results, shopping records, talent shows, ball games, traffic tickets, restaurant bills, phone records, music lists, movie tickets, TV shows. Even prescriptions for birth control.

Zoe tells her father this *after* she had been killed in a terrorist attack. Before the attack, she had made a digital copy of herself in an online virtual world. Thanks to the sheer amount of data accumulated over her brief life, Zoe had created a duplicate by, in the words of her father, taking "a search engine and [turning] it into a way to cheat death." Near-totalized recording had enabled a version of Zoe to be maintained in the distributed cloud of information online even after the death of the "real" biological person. According to Zoe, the real self is defined entirely out of that which can be uploaded, cataloged, and stored. After Zoe convinces Daniel that the avatar online isn't simply a "digital image" but is analogous to a living organism, Daniel runs Zoe's search program to resurrect another girl killed in the terrorist attack, Tamara Adama. Unlike Zoe, seemingly comfortable in the virtual world as a "living" avatar, Tamara panics at her lack of heartbeat, later finding that within the virtual world, she is no longer able to die (Figure 22). On *Caprica*, information online is alive and immortal, while the human body is limited and finite.

Caprica is the origin story of the "cybernetic life form nodes," or Cylons, of the 2003 television remake of *Battlestar Galactica*, the original tagline of which reads, "Never create what you can't control." Daniel creates the first Cylon when he inserts

Figure 22 Zoe reveals her digital immortality to her father in *Caprica*.

Figure 23 *Caprica*'s first Cylon.

Zoe's digital self into a militarized robotic body (Figure 23). Fifty years after the events of *Caprica*, in *Battlestar*, the Cylons have evolved into a race of robotic life engaged in a perpetual war with humanity. The minds of Cylons may have originated out of information produced by human bodies. But this information is beyond human control, a threat to the very existence of humankind.

Depictions of identity and the self found in *Caprica* and other works of science and science fiction, in which one can download or upload the essence of identity to a computer, are most likely filled with ontological errors about what defines the essence of human identity.[1] Yet, our own everyday relationship to digital information and recordings, networked in the various clouds online, from Facebook profiles to the websites of financial services, mirrors the narrative of *Caprica*. Networked data are imagined both as an authentic duplicate of identity and as a threat to personal identity that must be managed. Like Zoe and the recordings through which she is resurrected, those using social media are often assumed to be connected through technology. The network's intersecting edges connect together the multitudinous mass of human bodies throughout the world. Bodies are nodes. Information,

evoked both consciously and unconsciously, flows from the body into the collective hive mind of the social web. The technological and the biological cross, remade as flows that move through ubiquitous networks. But the self isn't lost in this mass of collective intelligence. Information is supposedly attached to the essential attributes of our identity. Over social media, we are our data. Nonetheless, data are also doubles of personal identity that exist beyond the conscious control of the user. Personal information is autonomous and separate from the human body. The connection between the two is not given, but must be managed. Beyond the fictive world of *Caprica*, services have been created to either manage or delete online data. These websites and algorithms legitimate themselves through the claim that online data must be disciplined, if not killed off. Our online selves are immortal, exceeding any possibility of management, unless we kill our data before we ourselves perish. Thus, there is an inherent contradiction in the relationship between embodied identity and information that can supposedly represent (and re-present) that identity in full. On the one hand, users are produced as equivalent to their online data—data are supposed to fully represent the human, flowing directly from and through the human body. On the other, death online—by which I mean the persistence of digital user data after the user has passed away—reveals how the relationship humans have with their online data is not given, and cannot be treated as such.

The dream that conjoins network connectivity with a disembodied informatic self, freely flowing throughout the connections the network, has deep roots—some of which we've already seen. Media theorists have long discussed how bodies are distributed through network connectivity and informational fluidity. Marshall McLuhan,[2] among others, has famously argued that technology shapes the sensory and cognitive capabilities of the human body. Network technologies are "extensions" of the body that create a future technological collective through connectivity. Some technological utopians, following McLuhan, imagine that the future of the internet is one in which we will be able to upload our own consciousness online, effectively creating immortal living selves out of data removed from our physical bodies.[3] As with the technological extensions described by McLuhan, data are often constructed as essentially connected to identity and the human body. These predictions are accompanied by scientific discourses that define these futures as possible, if not inevitable, directions for humanity. Cybernetics and bioinformatics alike define the essence of life as a mathematical pattern of organization transforming "life" into little more than disembodied code, able to exist in any formally compatible material substrate. As in *Caprica*, there is something essential about our identity encoded in recorded and networked data. And, it follows, the massive amount of data cataloged online can be animated, accumulated through the proliferation of networked media in daily life, fully reproducing identity while divorced from the biological body. Information that seems alive is assumed to be a mirror of the living, if not the purest essence of life itself. In other words, death online demonstrates how the connectivity "naturally" fostered by social media produces a subject who uses technology to

maintain the boundaries of a self while those very boundaries are called into question by technology.

Too many of those writing about the profiles of the deceased on Facebook limit their discussions to how social media "expands" the possibilities for mourning, producing a new space in which the activity of grieving, living users can be commodified.[4] While this is certainly true, I think it overlooks the non- or antihuman aspects of social media revealed by death online. Almost all research about death and social media "is largely examined from the point of view of those healthy and alive."[5] This chapter is no exception, but I hope to point to ways in which social media contribute to a present in which the distinctions between humans and data are gradually being erased, and a future in which these distinctions may no longer matter—for better or worse. This follows the conflations made possible by the history charted in Part One, while demonstrating some of the effects of imagining "citizens" as comprised of abstract flows of networked data.

In the remainder of this chapter, I first contextualize some of the above claims within the history and theory of technology. The use of recording to re-present the deceased is nothing particularly new, since technologies have long given us traces and remainders of those once living long after their death—traces that seem to reproduce the presence of the living while fundamentally divorced from the original corporeality of the human body. Yet, it's a common belief in the study of technology to suggest an essential connection between technology, data, and the body. Since data persist after the death of the human user, understanding our relation to data and death cannot assume these connections as inevitable. From here, I examine the death of users of social media. Death online reveals a fundamental disconnection between users and their data. When the legal and technological structures of these websites are taken into consideration, it becomes clear that the connection between the users and their information is tentative at best. Connections must be maintained through the active management of data. Social media have no way of distinguishing between the living and the dead. As a result, online data are inevitably divorced from the user to which they supposedly belong. After death, data are positioned as autonomous and beyond the control of the human body, as they become difficult or impossible to manage without a living user. Finally, I relate this disconnection to the general management of networked recorded data. Online data are positioned as other to human experience and the self. As there is a fundamental disconnection between the user and data, data are to be managed or deleted outright because of the believed autonomy of networked information. However, these online data are also understood as an almost complete representation of the real human being.

Taken together, the recording of data then uploaded to social media is, to paraphrase the *Battlestar* slogan, the creation of that which we cannot control. Information is positioned as an autonomous life, nearly identical to, yet separate from, the user; it belongs to nobody except, perhaps, the network itself. The subject produced through the normative prescriptions of nodal citizenship must work to maintain that

which is assumed to be naturally given and ontologically assured—the networked "connections" humans have with their online representations. The nodal citizen must produce connectivity and flow while maintaining a hyperawareness about the policing of connections and flows. To simply exist, and not be replaced by data that are valued more than the body, nodal citizens must manage the definition and limits to their own "life."

Animating the recordings of the deceased

Technologies have always externalized sensory data, transforming human consciousness and conceptions of the self. Writing transforms our memory, reshaping humans as individuals and as social beings. Radio extends what we can hear; television extends what we can hear and see.[6] The history of technology is one in which memories and thoughts are externalized, necessarily conjoining the human with technologies beyond the skin.[7] We are, in the words of Brian Rotman, "becoming beside ourselves" with network technology, externalizing so much data that our "bodies" exist as networked information, hybridized with the technological.[8]

Each technological change, because technology stores and externalizes sensory data, is also seen as that which makes present specific remainders of those who have passed on. Recordings show us death in the "future anterior," as having already happened but infinitely deferred into the future.[9] Phantoms recorded by photography and "voices" transmitted by telegraph are seen not as technical interference, but as spirits haunting the machine. The sounds emerging from the static of the radio are interpreted as emanating from another plane of existence occupied by the deceased.[10] Audio recordings of the living have been advertised as heirlooms for the bereaved to bring those passed on back to life, "resonant tombs" through which communication can occur beyond the grave.[11] Technological recordings are somewhere between the living and the dead, animating, as if living, that which is left behind by those who are no longer alive. And the relations we have with these recordings are culturally specific. The commemoration of those who have passed on, via the reproduction of images or recordings, depends on normative views about death and the spiritual significance of recording.[12] The recordings that transform our own conscious relations to ourselves also transform the relations others have to our ultimate absence, all the while embedded in larger discourses about the meaning of death, representation, and technology.

That data can be separated from the body is a notion often critiqued in studies of digital media. A body, it is argued, is necessary for the phenomenological experience of the world itself. While technologies may shape and transform the potentials of sensation, the human is fundamentally bound up with embodied experience at both a cultural and cognitive level.[13] Utopian arguments embracing a digital consciousness separated from the body repeat a form of Cartesian dualism central to modern

thought.[14] Regardless of the believed disembodiment of an online avatar, there is, it is assumed, a real person at the other end of the virtual connection. The black box of the network is inhabited by other people. They may be invisible, or represented solely through text and images, but they are there.[15]

Yet, it's not like the separation of the body from its recordings points to a particularly new phenomenon, either. Older technologies, such as passports, create "selves" and "identities" divorced from the human body. These selves must be managed as representations that are simultaneously authentic, yet opposed to the "real" body.[16] Online databases, likewise, produce an additional identity that fixes and stabilizes a subject's self. Individuals do not internalize the parameters of their identity, but are technologically produced through the digital cataloging of a multitude of "dispersed identities, identities of which the individual might not even be aware."[17] These technologies of representing the self do not produce a fully realized reflection of the individual. They refract and limit the possibilities of identity through technologies that define "true" selves. But equating data, be it of a passport or a database, to the ontological foundations of human life is contextually specific. These information technologies are not assumed to be living, for instance, unless they are mobilized within a discourse that defines data as that which is alive. Part of the contemporary "posthuman" condition is, however, the equivalence of life and information through the privileging of connectivity and flow in defining the limits and overlaps of biology, economy, society, and technology—and, according to N. Katherine Hayles, people "become posthuman because they think they are posthuman."[18] Discourses that delineate the essence of life as disembodied data produce behaviors, beliefs, and anxieties experienced in the everyday relations that individuals have with technology. At least since the emergence of cybernetics, a scientific and popular discourse about technology has come to define recorded data as the essence of life. While the complete loss of the body is most likely a misleading dream, the power of discourse to order human beliefs and behaviors toward the technological cannot be dismissed so easily, especially given the deep relationship that networked flows have with Western modernity.

These posthuman anxieties seem detached from the everyday lives of most humans. Science and science fiction often describe a world that has little in common with the one we experience in the mundane activities of daily existence. The transmogrification of the human into information may seem to be a dream or fear that would occupy only the most abstract possibilities for humanity. The use of recording media to reanimate the deceased, however, is something that has occurred at the level of the everyday throughout modern Western history. Photographs, writings, records, and videos of those who have passed on are located alongside the living in the countless spaces in which we reside. Likewise, the uses of technology to fix or manage identity may not be felt consciously, but inform and transform the most basic aspects of existence. Death online highlights how the experiences and fears of a posthuman world are, in fact, mobilized in the everyday subjectification of individuals as nodal citizens.

"To be haunted virtually is just another way to stay connected"

Of course, this is only the most recent form of subjectification in the long history of technology and the related potentialities of the human. As already stated, that technology seems to bring the deceased back to life is not something unique to network technology and social media. Recordings have always animated traces of the deceased. Yet, what is new today is the belief that the amount of data recorded and externalized gives *a full representation of the authentic identity of the human being*. It is not simply the presence of the deceased that causes anxiety, but the supposed fullness of that presence, formed by near-totalized recording, networked and beyond the control of the user. As it is with "Big Data" and the Quantified Self, data are positioned as more real than the physical body, and representations can—if not should—stand in for the "real" human, since the human is essentially limited and flawed unless it is transformed into data. As I have argued through the genealogy of networks in Part One, what matters are networked flows—and that which cannot be thought of as a networked flow is neglected or otherwise forgotten.

As in *Caprica*, a desire for totalized recording should be articulated to a desire for everlasting life. Data live forever while the human body withers away. That data can exist as an entirely separate life from the life of the user can be most clearly seen in the online management of information left behind by users who have passed on. Online services have been developed to manage information in the case of death, in part because there is no real way to distinguish between the living and the dead online. A social media profile of the living can appear exactly the same as a profile of the deceased. There is no box to check to indicate life or death, as there is for gender or sexuality. Being part of the online cloud involves signing over personal information to private, for-profit services under legal contracts that give the service free reign over data that are often assumed to still be part of "ourselves" and still owned by "ourselves." Thus, in the face of death, online information is revealed not only as separate from that of the user, but also as controlled and possessed by the network itself.

Over the last few years, social media websites have been developing standards and protocols for dealing with pages of the deceased, as they end up automated and treated like pages of those still living. In the user comments for an online *New York Times* article on the management of information of deceased Facebook users,[19] one writer notes that Facebook continues to use the image of the deceased after they have died, like the image of any other user: "My brother died in April 2010 and we [*sic*] keep getting suggestions to catch up, write on his wall, or send him an email. If only I could do that. They're not comforting."[20] This individual is not alone. Complaints from users about the persistence of the deceased on Facebook are quite common, both in comments on stories such as this one and on Facebook itself. These pages are "inauthentic" versions of the self, detached and left behind after the demise of the user, animated *only* by the code of the network. The novelist Zadie Smith, in an

essay for the *New York Review of Books*, has argued that the interactions with the deceased online are symbolic of a more generalized devaluation of human life. For Smith, we treat people like Facebook pages and Facebook pages like people, leading to an inability to grasp the meaning of death when someone actually dies. Because we interact with Facebook pages in the same way as if the other were living or dead, our own relation to the other's life makes little distinction between the two. For Smith, death on Facebook reveals a fundamental disconnection between all human relations in an age of social networks. Of those who post on the pages of the deceased she asks, "Do they genuinely believe, because the girl's [Facebook] wall is still up, that she is still, in some sense, alive? What's the difference, after all, if all your contact was virtual?"[21] The conflation of human being with networked data leads to a reductive understanding of what it means to relate to other people.

Nonetheless, some have quite different stories. One Facebook user unexpectedly received a friend request from someone who had passed away twenty years prior. It turned out that the sister of the deceased had set up a profile for her brother in spite of his passing away. As initially jarring as the experience was, the author claims, "I know for me it was nice to see his face again some twenty years after he left us."[22] A user who regularly visits a page to memorialize her deceased brother states, "To be haunted virtually is just another way to stay connected."[23] For those who find solace in these pages, they enable a connection to a real self that has been fully captured by digital recording. Being haunted is an authentic way to keep in contact with those who have passed on.

The inability to definitively understand the presence of the deceased on Facebook is important, but should not distract from the simple fact that all of these authors highlight a similar experience. Regardless of interpretation, there is an afterlife of data, sometimes animated by the code of Facebook, sometimes animated by family members. While the user may have passed on, their information persists much longer. Even though these positions come to opposite judgments, they both argue that, with social media, information and the human can be perceived as the same thing. Regardless of ethical or moral position, devaluation of life or full representation, human beings and online information are equated as the same.

These beliefs are complicated when legal and economic issues are brought into the discussion. Another *Times* reader, whose deceased mother ran a nonprofit organization managed through Yahoo!, writes:

> Despite my having her death certificate, her valid will, and being the executor of her estate, because there was no provision for these circumstances in Yahoo's terms of use agreements, Yahoo's legal department insisted that unless I came back with a court order, I had no rights to access her account. This officious stonewalling made a difficult and painful time for my family much harder than it had to be, and caused the web site for the non-profit organization to shut down for months.[24]

The techniques in place to verify the identity of a user—often in order to prevent "identity theft"—end up locking family and legal beneficiaries out of the accounts of the deceased. There are very few options or even possibilities for those who have survived the deceased given how social media and online services, quite simply, rarely have anything in place to deal with death.

Like Yahoo!, social networking sites are having a hard time creating policy for dealing with these pages. Others often communicate with the departed as if they are still present. Social media profiles are used as storehouses of objects to remember the deceased. Thus, a simple deletion policy doesn't seem to work—especially when the network (and other users) cannot tell the difference between a living or dead individual. For the algorithms that undergird the social network, there is often no clear functional difference between a living user and a deceased one, and the legal contracts digitally signed upon joining a service often have few provisions in the event of death. In 2004, around the height of its popularity, MySpace's policy for the pages of deceased users was to either leave them unmoderated, uncontrolled, and open to the use of exploits from spammers and hackers, or to completely delete them if so requested by family members. At its peak, Friendster included in its user agreement a legal contract that would prohibit the deletion of a user's profile without express consent. In the event of death, the profile would be removed only if an immediate relative requested its deletion, alongside written proof of death.[25] Facebook now allows you to select a "legacy contact" to gain control of your account in case of death, though there are a number of specific restrictions in place regarding just what this contact can and cannot do.[26] But, as we can see from the example above, not all websites have these policies, leaving the information separated and disconnected from human users in spite of its continued network presence.

The management of these pages is a source of anxiety, as the life of information is beyond the control of both the deceased and their families. While the personal practice of memory appears to enable kinds of connection after death, the legal and economic structure of social networking and online services reveals a fundamental disconnection between online information and the self. This disconnection must be managed to prevent information from acting on its own, to the detriment of the personal and financial safety of the bereaved family. There are a number of online services created specifically to deal with this problem. Legacy Locker, as one example, is a private pay service explicitly designed as a kind of digital "storage facility" for a user's passwords in the case of death or disability. According to a quote excerpted on the Legacy Locker website, "Passwords and usernames are the worst part of digital living. . . . They can permanently shut out family and friends from crucial assets and communications after someone dies."[27] Information protection through passwords and usernames can serve as a barrier preventing an individual from accessing their own "property" online. After death, they can permanently prevent any user from accessing personal online data. If we are supposed to be connected to our online

information, passwords are a constant reminder that we are, in fact, separated by the mechanisms of the network.

Legacy Locker advertises itself as a service for families along with estate and financial planners. For these latter individuals, the service claims,

> While the work you do today helps your clients prepare their physical assets, there's virtually nothing in place for dealing with online assets. By now you've probably already experienced a circumstance where a bereaved client has tried to gain access to the online accounts of a loved one who has passed away, and found that many online companies and websites are ill prepared or simply unwilling to grant access to anyone but the account holder.[28]

With Legacy Locker there is the assumption that the body and digital information are somehow connected. When the connection between the body and online data disappears through death, then websites are unsure how to proceed. Data are constructed as belonging to the family after death—though passwords can prevent the family from possessing what is believed to be rightfully theirs. Legacy Locker is little more than a repository for passwords—ultimately the dominant signifier of the connection between bodily identity and digital information in a society based around information technology.[29] The password, however, is a negative connection—it connects a user to online data only by keeping out all other users. Even if the user is alive, a forgotten password reveals how tentative the actual connections between the user and data can be. After death, passwords demonstrate that information is isolated and separate from the living.

Facebook has instituted a policy of "memorializing" profiles of the deceased, where the profile would be restricted, taken out of search results and cut off from major changes, although still accessible to others already identified as friends. This policy was not designed to deal with these pages of the dead sympathetically, but was a response to a version of Facebook's homepage that would suggest for users to "reconnect" with other users. In the upper right-hand corner of one's Facebook home screen, the service would list another user with whom one hadn't communicated through Facebook in some time, urging the user to reconnect with the other. As Facebook's algorithms had no way of differentiating between profiles of those living or those deceased, some of these suggestions would be to reconnect with those who had passed on.[30] The memorialize feature was implemented precisely to avoid this problem, giving Facebook the ability to mark one as living or dead while shutting off some features of the deceased's profile, ostensibly in the name of respect. This move has actually angered many users, as they can no longer communicate with the deceased as they had previously—through the posting of videos, images, and links to the "wall" of the dead.[31] In the many user comments on Facebook's page explaining the memorialize feature, there are repeated laments about the restriction of access to these pages and also repeated grievances from family members and widows complaining of

the loss of control over these pages, as any single "friend" can effectively turn a page into a memorial. If someone else memorializes the page, then the wishes of the family may have been violated.[32] And this is not to mention that the memorialize feature has been subject to pranks, fabricating the death of users, in at least one case locking a user out of his own account without any way to prove that he was alive.[33]

Data uploaded to social networking websites are often assumed to be property of the person who produced the information in the first place. As those data represent the user, they are, supposedly, "owned" by that user. In the case of death, ownership would be transferred to the surviving family. Yet, this is explicitly not the case, as defined clearly (if buried in legalese) in the Terms of Service agreements to which all social networking users are required to agree. Facebook's Terms of Service, as of February 2009, grants Facebook a complete license "with the right to sublicense" to "use, copy, publish, stream, store, retain, publicly perform or display, transmit, scan, reformat, modify, edit, frame, translate, excerpt, adapt, create derivative works and distribute (through multiple tiers)" *anything* any user posts on Facebook. Facebook even retains the right "to use your name, likeness and image for any purpose, including commercial or advertising" in any connection, whatsoever, with Facebook. While Facebook claims that this does not mean that they "own" your data, the language employed by the agreement is quite slippery in delineating just what Facebook can and cannot do with whatever is uploaded to the service.[34] While most social networks seem to be willing to comply with the wishes of the bereaved, they are under no legal obligation to do so, as anything uploaded to the social network, including the user's very name, is controlled by the network, not the user. Our "connection" to the deceased is entirely mediated through data, unconnected with the user, but legally and economically possessed by the owners of the social network. While users of social networks often treat profiles as authentic representations of the human being (regardless of the devaluation of human life or not), death reveals that the connection between users and their information is a connection that is actually managed by the user rather than an "authentic" or natural connection.

Your data are the real you, your body is extraneous

Death reveals how tentative our connections to data can be. The connection between users and their online information is never a given, but is something that must be managed. Yet, much of the discourse about online death assumes an equivalency between users and their online data. Even when we are alive, however, our information is constructed as something other to the human body and the embodied consciousness of self. The persistence of data after death should also be understood in the context of data as an entirely separate "life" from the human. Data possess their own agency and cannot be controlled by the human user.

Like Legacy Locker, other online services, Vanish and Suicide Machine, have been created to manage users' online information. Unlike Legacy Locker, these services are designed to erase data that are beyond the control of users while they are still alive. Information online enables connections that should be feared. Simply being connected to the internet entails a disruption of privacy. Users are inherently vulnerable to legal and emotional threats from others because too much is shared and recorded. Parts of the self one wishes to hide become exposed, acting counter to the will of the individual.

These fears coincide with a discourse that equates these digital traces with the essence of human identity, popular among advocates of "lifelogging" and Big Data analytics. This second discourse claims that the recording of online data can help us understand and manage our own lives better and more efficiently. Online information gives us a full picture of the real self invisible to our own sense of self-identity. And from this recorded real self, human lives can be resurrected thanks to the technological—not by uploading human consciousness to a computer (as is often argued), but through totalized, networked recordings that capture the essence of what makes a human a human. The sheer accumulation and storage of information from a living body is enough to functionally reproduce a living person.

Thus, while advocates of networked recording argue that it shows us the truth of our own identity, for ourselves and for others, the first position sees this recording as a surrender of privacy and human agency to machines. Both of these discourses position online data as something other to human consciousness and control. Either online data are beyond the control of our own attempts to compartmentalize our various performances of identity, causing what Alice Marwick and danah boyd refer to as "context collapse,"[35] or they represent an expansion of experience that consciousness cannot possibly grasp. The life represented online is fundamentally different from the life consciously experienced through embodied perception; it may be more complete, but it is also beyond the conscious will of the individual.

Vanish, a research project at the University of Washington, states on its web page:

> Computing and communicating through the Web makes it virtually impossible to leave the past behind. College Facebook posts or pictures can resurface during a job interview; a lost or stolen laptop can expose personal photos or messages; or a legal investigation can subpoena the entire contents of a home or work computer, uncovering incriminating or just embarrassing details from the past.[36]

Vanish is an algorithm designed to delete data, either saved on a computer or uploaded to the internet, after a set period of time. The Vanish research team argues that the data on these websites, as they are never truly deleted, could arise like specters from the past, compromising the present. Sensitive personal information should remain secret from others. Financial information could, if it escapes control of the user, lead to

identity theft and fraud. Recorded data are liabilities because they inherently contain the possibility of making public that which the user wants to keep secret. Data have a will of their own, often counter to the will of the user. This is perhaps a different way of thinking of Stewart Brand's often quoted line: "Information wants to be free." Networked data do not disappear into the past as forgotten memory, but collapse private pasts into the present through the accumulation of data. These recordings have their own desires, counter to those of the user. "Our research," state the developers of Vanish, "seeks to protect the privacy of past, archived data—such as copies of emails maintained by an email provider—against accidental, malicious, and legal attacks."[37] Vanish's very existence is based around the notion that online information, while personal and assumed to be connected to the user, is, in fact, separate and beyond the control of even the most vigilant. Even the private information hidden behind passwords or on a personal computer cannot be assumed to remain private. Not only is information disconnected from the user, it possesses its own autonomy that can attack the reputation and financial standing of the user to which the data supposedly belong.

Similar to Vanish, the Dutch website Web 2.0 Suicide Machine is a service that deletes a user's social networking website data. Unlike Vanish, Suicide Machine erases all of a user's data as soon as they sign up. Suicide Machine presents itself like an infomercial. Its website reads:

> Wanna meet your real neighbors again? . . . You want your actual life back? Sign out forever! . . . Unfriending has never been this easy! Stop Self-Procrastination! Isn't time really precious nowadays? So many people you don't really care about . . . Improve your relationship! Get rid of stalkers! Watch your 2.0 life passing by! Say good-bye with dignity! You can do it. It's so easy! May you rest in a better Real Life![38]

Suicide Machine has been more popular than its creators had planned. In the month after it launched, from December 19, 2009 to January 19, 2010, it had "assisted more than 1,000 virtual deaths, severing more than 80,500 friendships on Facebook and removing some 276,000 tweets from Twitter," often crashing the website from an excess of activity.[39] In the context of the vast size of social networking websites, this is not exactly a large number. Nonetheless, Suicide Machine is still understood as a threat to social networks. Facebook, as of January 4, 2010, had blocked Suicide Machine and served its programmers with cease and desist orders, which were then posted on Suicide Machine's website as they attempted to find a way around the block.[40]

Vanish and Suicide Machine are services that depend on common fears of technology and surveillance. The complaints are well known. Living an entire life in public view is not immediately attractive to many. Too much information is made public, damaging the reputation of the user. The things we would like to keep private are forced into the public, intrinsically, with the proliferation of recording devices

and the popularity of social networks used to share these recordings. In addition, too much time is wasted on social networks. The fascination with the private lives of others is a distraction. Friends on social networks aren't real friends. Time that could be spent maintaining real, fulfilling relationships is, instead, frittered away surveilling others, monitoring recordings that reveal what once was private. Seeming to echo Guy Debord,[41] connections based in obsessive visual fascination and spectacular consumption have replaced authentic human relations. We not only manage our own lives—the connections enabled by social networking do little more than compel us to continuously manage, or at least observe, the lives of others.

Suicide Machine casually appropriates rhetoric usually associated with a positive perspective on euthanasia. This discourse could only make sense insofar as the life online is considered separate from the life of one's body—and the life online is debased when juxtaposed with the assumed reality of a life unmediated by social networks. In response to the question "What should I do after I've killed myself with Web 2.0 Suicide Machine?" the programmers of Suicide Machine offer the following response on their Frequently Asked Questions page:

> Try calling some friends, take a walk in a park or buy a bottle of wine and start enjoying your real life again. Some Social Suiciders reported that their lives has [*sic*] improved by an approximate average of 25%. Don't worry, [*sic*] if you feel empty right after you committed suicide. This is a normal reaction which will slowly fade away within the first 24-72 hours.[42]

The emptiness of feeling disconnected is something that Suicide Machine acknowledges and attempts to normalize. Technological mediation isn't completely eschewed, but connection via social media is somehow false compared to other real connections. Feeling disconnected is something that can be remedied through the telephone, nature, and friends. After your online self is killed off, the connections fostered by the network are severed, leading to temporary emotional emptiness. But this is only passing, as those connections were never real. Any emotional emptiness is a result of the opening of possibilities for the user's life. The severing of social network connections through "suicide" is an embrace of the potentiality and freedom that comes with eliminating the need to constantly manage the online self. These services construct a reality where online information is beyond the control of the user and, thus, detrimental to the user's real life. A user's Facebook page is an evil twin that should be killed off to save the life of the real person who (mistakenly) thinks that they are connected to others. Real connections are obscured by the constant management of the social network's false ones.

The designers of Vanish and Suicide Machine argue that the online self produced by recorded data is separate and detrimental to the user because it makes public aspects of a user's identity that the user would wish to remain private. Conversely, advocates of totalized recording of our entire existence—like Microsoft researcher

Gordon Bell, who refers to online data of human identity as "e-memory"—argue that new technologies of recording and social networking will enable a greater connection with the past and a greater understanding of our own self-identity, even after our death. Totalized recording does not lead to the production of a false self beyond our conscious control, but to a greater awareness of who we really are. The things we want to keep private we not only try to hide from others, but from ourselves as well. With a totalized record of one's time on earth, stored via technological means, Bell claims "it will be possible to generate a virtual you even after you are dead. Your digital memories, along with the patterns of fossilized personality they contain, may be invested into an avatar . . . that future generations can speak with and get to know."[43] Those who survive our death will still come to know us because of the sheer amount of information we have left behind. While, for Bell, this information is not itself conscious, it can be animated to imitate interactions with a living human. "We will maintain the e-memory of that person as a treasured heirloom. And, someday, we will ask it questions. The e-memory will answer. You will have virtual immortality."[44]

For Bell, questions of control and ownership of data are irrelevant. Self-identity is permanently connected to information. We *are* recorded data for Bell. Recorded data are not abstractions or distortions. They are the very essence of our identity, speaking the truth of the human. Our real selves are invisible to phenomenal experience, expressed only in externalized data. Likewise, "lifehacking" and "lifelogging" projects such as former *Wired* editor Kevin Kelly and Gary Wolf's "The Quantified Self" see the massive amount of recorded data placed online—and technologically quantified—as something that will help "improve" our relation to ourselves:

> Real change will happen in individuals as they work through self-knowledge. Self-knowledge of one's body, mind and spirit. Many seek this self-knowledge and we embrace all paths to it. However the particular untrodden path we have chosen to explore here is a rational one: Unless something can be measured, it cannot be improved.[45]

Referencing the desires of Lord Kelvin, Kelly and Wolf believe that the data we upload and externalize are projected back toward us, enabling each individual to work on and manage their own existence via a personal Taylorism of identity. Data recorded and quantified tell us more about ourselves than conscious experience ever can.

According to Bell, when uploaded to the internet, "your data becomes [*sic*] untethered from particular devices. Your e-memory follows you wherever you go, accessible from any device you happen to be using. You, not your desktop's hard drive, are the hub of your digital belongings."[46] For Bell, information on the internet is more connected to one's body than information on private, personal devices. In the cloud, information becomes mobile in the placeless, totalized space of the internet, rather than anchored to, say, a desktop computer. Death again calls these connections into question. For Bell, online data is the essence of human life.

The production and management of life is not inherently related to the body or the biological. While Bell suggests that an avatar can be an immortal "body" for data, it need be neither biological nor conscious. For something to be living, it only needs to be animated through the connections and flows of networked information. Along with the psychologists Jim Blascovich and Jeremy Bailenson,[47] Bell predicts that personal data will eventually be animated in an everlasting avatar. The "immortality" of data is based only in the seeming performance of a moving digital "body." Others, like futurist and inventor Ray Kurzweil,[48] even argue that the data we record will achieve self-consciousness at some point in the near future, a point he refers to as the "singularity," when the biological and technological fully converge. As is represented in *Caprica*, our self could be transferred to an online avatar constructed entirely out of recorded memories, made living because of its visual and virtual mobility.

The difference between these two discourses is the relation of recordings toward the self. Is the self that we see online the "real me?" Or someone else? Is that which is captured by digital recording a true or false representation? In an article from the online magazine *Slate*, we can see that some concerns about self online echo much older observations by Erving Goffman and Joshua Meyrowitz[49]—people are used to performing multiple personas, some for public view and others for private. Yet, counter to theorization of online identity from the 1980s and 1990s that stressed the anonymity of the online avatar and the mutability of the performance of identity, social media and the availability of recorded information potentially collapse everything into the public into one, single, "authentic" performance. Claims a magazine writer interviewed for *Slate*, "The funny thing in general about Facebook is that you're there with your colleagues and your friends . . . and the next thing you know you've forgotten that your status update is all about how hung over you are."[50] Either social networkers then divide up their personas to different social networks (Facebook for friends, Twitter and LinkedIn for work), each giving a "false" and partial depiction of one's true self, or, according to a web developer interviewed by *Slate*,

> It's a full disclosure. A lot of people who put themselves out there use it as a litmus test for how much they're willing to sell out for the Man. "If I can't represent who I am in real life, and in the face of my potential co-workers, I'm in the wrong job. I'm good at what I do, and anyone who'll Google me and fire me for that—fuck it." The advantage is that you never have to work a job and worry about when the hammer's going to fall because of who you are.[51]

The public display of information becomes a call to personal authenticity, of being true to one's self. The online self is, in fact, *more* authentic than one's everyday existence because it represents the totality of one's self. Daily interactions only capture a partial performance of identity. Changing that performance depending on context is considered to be the task of a fraud and a fake. In the words of Facebook's founder and CEO, Mark Zuckerberg, "The days of you having a different image for your work

friends or coworkers and for the other people you know are probably coming to an end pretty quickly. . . . Having two identities for yourself is an example of a lack of integrity."[52] The desire to manage identity with services such as Suicide Machine and Vanish is the result of living an inauthentic life. The people that need to delete data are immoral and unwilling to acknowledge the authenticity of recordings. They do not want to understand their self because they do not want to examine their data, which are positioned as more real than the physical body.

The networked self is not the autonomous, self-controlled individual posited by classical liberalism, but is, instead, part of an assumed series of connections that necessarily entail giving part of something we call identity over to technological services. But we cannot simply understand this as an issue only about identity and the bleeding of public and private.[53] Instead, both discourses position digital information as other to the human body that the information assumedly represents. The management of the self is not simply about the management of the body and identity into a number of different performances of self. It is about the management of networked connections to a recorded other that is fundamentally different and beyond the control of human consciousness.

For those that embrace digital recording and the networking of data, the online self is a projection of identity invisible to conscious experience. It captures the totality of self, beyond the partial representations we reveal to ourselves and to others in our daily, compartmentalized performances of identity. We cannot truly know ourselves without the tools that network and quantify our lives through constant connection to online services. The real person is the one online, different from our own understanding of self from conscious experience, beyond the control of our conscious will. Managing our connections is the only possible way to ever know who we are, as data represent identity more fully than embodied consciousness. For those that fear information online, the online self is an identity that reveals too much. Information online exceeds conscious control, thus leading to fears of connection. Connecting to others negates the ability of the individual to consciously construct his or her own performance of identity. Regardless, both discourses actually suggest that there is no direct correspondence between the perceived self-identity of users and their online information. Instead, there is a fundamental disconnection between the human being and digital information on social networks. The evaluation of networking and recording as either beneficial or detrimental depends on which self one believes to be "authentic," not if one believes there to be a connection between the two. And in both cases, online data reveal more about our own identity than conscious contemplation ever could.

Spinoza once asked the question: What can a body do? One such thing is clear—a body can die. But what can data do? Data, it is thought, can live forever. They can act without conscious input from their creator, and often at cross-purposes with their creator's own desires. In television shows such as *Caprica* and in techno-fantasies such as the so-called "singularity," one must die so the other may live. The human

and data are presented as antagonists. Either data are attempting to annihilate humanity or data are evolutionary successors to humanity. This informs some everyday anxieties about the networking of recorded data. But other anxieties, which resonate with comments from social media users and the services they use to manage their online lives, would be similar to those of Zadie Smith: What happens when we cannot tell the difference between one who is living and one who has passed away? What happens if the representation of the body as data, as detached from the body, is one in which death cannot be represented, if death becomes, in effect, a difference that makes no difference? What happens when data are assumed to authentically represent the human, in spite of, or because of, their disconnection from the human body? We are not essentially connected or networked to our data. But, nonetheless, the contemporary discourse of social media defines online data as the essential representation of the human being. Our social networking profiles are more real than our conscious knowledge of our own selves. The anxieties of disconnection suggest a larger fear that humans are gradually becoming insignificant in the face of technological networks because data matter more than physical bodies. As the novelist Tom McCarthy once wrote, "All code is burial, and to dwell within the space of code is to be already dead. But then perhaps the opposite is true as well."[54]

With whom are we communicating when we communicate over social networks? I would suggest that we're communicating with technology, information, and data—not with any particular user, or any particular body, supposedly represented by data. The afterlife of information on social networks shows us that, at a very fundamental level, data and the human body do not inherently correspond. This is a common attribute to media in general, as recordings always animate the traces of lives past. The near-ubiquitous forms of recording and the networking of recorded data together lead to a discourse in which recorded data are more complete representations of self than can be grasped through our own conscious understanding. Our true selves live in the online cloud of information, disconnected from our bodies, beyond any possible conscious control from the user supposedly represented by that information. While this image of the future may excite some, it causes anxiety for many. The subject produced here, in other words, is one that fears being replaced by data.

In this chapter I used the management of online death to discuss how data are the privileged subjects of social media and how human subjects cannot be assumed connected to the data they supposedly generate. If, as Part One argued, the "ontology" of networks inherently privileges that which connects and flows, this chapter begins to demonstrate how human users have to work to maintain these connections in relation to the data that supposedly represent identity. At an everyday level, the privilege given to connectivity and flow produces some particularly odd anxieties—including those in which the specter of death governs how one behaves online. The next chapter will continue exploring this anxiety through the political economic structure of social media, as we delve further into how online data are constructed as more valuable than the body that produced the data in the first place. With the political economy

of social media, it becomes evident that social media do not inherently rely on human subjects, but rather derive economic value from anything that can maintain connections and circulations—which, consequentially, reduces the subject of social media to data itself. The "citizen" of social media is that which best conforms to the norms of vitality and health sketched by the history of networks, connectivity, and flow. And, as we will continue to see, this citizen is best exemplified in social media today through the imagined agency of automated data.

CHAPTER FIVE
LABOR: GIVING LIFE TO DATA

The economics and aesthetics of bots

"Nearly all media worldwide—such as newspapers, magazines, TV—use internet [*sic*] for their researches and as a basis for their texts," begins the "Philosophy" of Betascript Publishing. Betascript proclaims itself to be "one of the leading publishing houses of academic research," specializing in open-access, "copyleft projects."[1] But, unlike most academic publishers, Betascript's books are produced not by lecturers or researchers, but by small, automated software programs referred to as "robots," or "bots" for short.[2] Betascript's bots scan through Wikipedia pages for specific key terms or phrases, "editing" together books on a dazzlingly wide range of topics in many different languages. In spite of its stated pretenses of academic rigor, Betascript does nothing more than assemble on-demand printouts of Wikipedia pages, collected and pieced together by bots. "Of course you can have online everything free of charge," they suggest, "but for good reason you have decided for a book. Betascript publishing is internet in form of a book [*sic*]."[3] Bots have produced over 300,000 Betascript books—more than 10,000 new titles published each year—sold on the websites of Amazon.com and other online retailers. One Betascript publication, with the unwieldy title of *Computer Game Bot Turing Test*,[4] collects Wikipedia articles on procedures that can be used to determine the difference between human users and bots within video games. An automated piece of software, assumedly lacking any sense of irony, has "written" a book about differentiating automated software from humans.

This strange relationship between books and bots continues with online sales and purchases. Amazon.com's "Marketplace"—where users independently purchase and sell new and used books beyond Amazon's own warehouses—is filled with bots designed to speculate on, buy, and sell books using methods similar to those of the algorithmic trading processes developed for speculation on Wall Street.[5] There are bots that pretend to have used copies of books, competing with other bots for the lowest (or, occasionally, the highest) price in accordance with programmed judgments that compute the value of the book, derived from data elsewhere on the internet. It is only when someone buys a copy of a book from the bot that the bot is programmed to then purchase its own copy. Ideally, the bot will pay less for the book than its own listed sale price, profiting off the transaction in a bit of small-scale arbitrage. And, on top of this, the whole bot-driven ecology of buying and selling in

the Amazon Marketplace adds some additional weirdness: both the individual buying the book and the seller from whom the bot purchases its copy may, in fact, also be bots. The bots of Betascript and Amazon together produce an economy in which all transactions can be automated, all producers and consumers are potentially software processes, and, in the end, nothing much is meaningfully produced or consumed aside from a small amount of profit directed toward a programmer who otherwise does little in this automated circuit of capital. The children's author and Facebook employee Carlos Bueno, reflecting on how this market was revealed to him when one of his own books got caught in a bot-driven bout of book speculation, describes the entire process through reference to the aforementioned *Computer Game Bot Turing Test*: Betascript and Amazon, together, represent "a delightful futuristic absurdity: a computer program, pretending to be human, hawking a book about computers pretending to be human, while other computer programs pretend to have used copies of it. A book that was never actually written, much less printed and read."[6]

Bots cannot be thought of as some marginal online population, insignificant in relation to the real action of human agency. Rather, bots are ubiquitous, their presence often more substantial than that of human users as they produce, consume, buy, and sell. The creative acts of bots have been prominently noted by a number of writers and literary critics. The poet Christian Bök suggests that the automation of writing performed by bots, which have been used to compose poetry since the 1980s, points to the emergence of a form of "robopoetics." Today's authors, he argues, "can reasonably expect to write literature for a machinic audience of artificially intellectual peers . . . the poets of tomorrow are likely to resemble programmers, exalted, not because they can write great poems, but because they can build a small drone out of words to write great poems for us …"[7] Kenneth Goldsmith, following Bök, looks at the art and poetry of internet-based remixing and sharing and suggests that the future of creative production is one of cutting, pasting, and recombination. Asks Goldsmith, "Will all texts in the future be authorless and nameless, written by machines for machines? Is the future of literature reducible to mere code?"[8] This future, however, is potentially without human authors and readers, driven, instead, by automated processes that construct works as interesting and innovative as those of any human poet, assembled from the appropriation of online writing,[9] subjected to literary criticism that is a function of automated "machine reading."[10]

The "spambots" of Twitter and other social networking websites—bots specifically designed to deliver automated advertisements and exploit search algorithms—have already been celebrated for the unintentional creation of a kind of Dadaist literature, questioning the distinction between "human" and "machine" forms of creativity. Social media websites employ their own bots to detect and deactivate the accounts of spambots, as they often are both a nuisance to human users and, as we'll see below, a critical problem for the economic models upon which social media generate income. In response, spambots employ programmed techniques to pass as human online that may not seem like what one would use to pretend to be human: they write

with exceptionally poor grammar, use non-English characters in place of the Roman English alphabet, and generate a seemingly random word salad. The spambots that avoid detection demonstrate not "humanness," but that passing as a human online has rather odd requirements that do not appear to clearly mesh with a human sense of intelligence or consciousness. The most successful spambots seem to generate nonsense that mirrors human writing in an uncanny way, with language culled and crafted by the algorithmic processing of text lifted from elsewhere on the internet. These "creative" methods of spambots are seen by some to produce literature that best exemplifies the expressive limits and possibilities of social media.

The popular Twitter account @Horse_ebooks, for instance, appeared to be a spambot for the promotion of e-books about horses, eventually accruing over 200,000 followers because of the absurdist and nonsensical poetry it produced in the name of ebook marketing, generating tweets such as "sumptuous Before Before Before Before Before Stems with +sume -s -ed -ing -er -able assume X X X X X consume X X X X X presume X X."[11] On September 24, 2013, however, @Horse_ebooks was revealed to be a performance art project by Jacob Bakkila, an employee of the website Buzzfeed who purchased the account from the Russian spammer Alexi Kouznetsov in 2011. @Horse_ebooks was originally a genuine spambot. After Bakkila assumed control of the account, his tweets were written to recreate the style and syntax of automated spam, attempting "to perform as a machine" with his social media persona.[12] While there has been a long-standing relationship between automated machines and art making,[13] the "human" poetry of @Horse_ebooks and the robopoetry described by Bök together demonstrate how contemporary creative production often revels in an aesthetic that mirrors the dreams of Andy Warhol and William S. Burroughs, where the artist actively engages in a process of becoming-machine through the simulation of automated creative labor.

The presence of bots cannot be limited to these artistic (and "academic") endeavors. According to research from the internet security firm Incapsula, in 2013 the "nonhuman entities" of bots comprised 61.5 percent of all website traffic, which means that only 38.5 percent of website activity measured came from human users. This was a 21 percent increase since 2012, when bots amounted to 51 percent of total website traffic.[14] Incapsula's numbers most likely underestimate the amount of bots out there since many, if not most, are designed to pass as human.[15] If @Horse_ebooks is any indication, it's also becoming more difficult to identify humans who, in the name of art, are intentionally acting like the bots that increasingly dominate the online world.

The tasks assigned to bots are often thought of as the work humans do online, work that many critics of social media claim is undervalued and unpaid—be it generating and organizing data, buying and selling on online marketplaces,[16] playing games and accumulating gold in virtual worlds,[17] or making art. The economy of the internet seems reliant on what Tiziana Terranova calls "free labor."[18] With social media, capitalists are able to divest digital microserfs of their creative productions and personal data in a way that resembles primitive accumulation more than contemporary capitalism.[19]

This situation has gradually become apparent to many social media laborers, some of whom demand that social media companies compensate users for the content and information they generate.[20] But, counter to these critiques of social media, I claim that the devaluation of digital labor is *not* based in pure capitalist exploitation of postindustrial knowledge workers—or at least not in the sense usually understood in critiques of social media. Given the increasing delegation of labor to automated bots, the elimination of value from the creative labor of social media is a result of nodal citizenship's equivalencies between human and data made in the name of network connectivity and informational flow.

When automated processes can buy, sell, produce, and consume, what suppositions are we making about online economies because of the apparent "humanness" of the "people" connected online? And what are we missing? Because the manifestation of nodal citizenship over social media reduces the online self to data, in which "life" is nothing other than the circulation of networked information as it crosses the technological, biological, economic, and social, it becomes difficult—if not impossible—to say who or what labors online, a condition that raises questions about the value of humans and their acts. Bots reveal that the internet may not be an environment defined by human actions and agency. It is impossible to definitively judge who is a human and who is a bot because of the reductive limits and assumptions about personhood imposed by conditions of nodal citizenship. The agency of bots calls into question the human "sociality" assumed by those who celebrate the organizing power of social media.

As seen in the previous chapter, the nodal citizen is one who must constantly manage the connection between embodied self and data that supposedly represent identity in full. And while the subject *is* their data, data are not inherently "connected" with the user who produced it. With social media and network technologies, it appears that data can labor on their own as well, commodifying, producing, as well as consuming information independently of human beings—in part because all online subjects are only acknowledged insofar as they are represented as connected, flowing data. The political economy of social media, in other words, is not one in which human producers are endlessly exploited. It is one in which they are treated as fixed capital, literally owned by social media industries because they cannot be differentiated from the data and algorithms of which websites claim ownership. Online capitalists have not appropriated the *products* of digital labor. The *workers themselves*, as they are rendered equivalent to organized data, are appropriated as the property of the social media industry. The laborer no longer sells their labor-power to the capitalist—as the distinction between labor-power and labor implies that the worker's body inevitably remains, in some sense, the "property" of the worker. With the posthuman reduction of the body to an informational pattern perpetuated by social media's sense of identity and the history of networks, digital laborers give over the totality of their self for the "privilege" of connection. That which cannot be appropriated (i.e., the physical body—conceptualized as circulating, networked information, regardless) is rendered insignificant for the automated economic order of social media.

The logic that underlies the creation and programming of bots—in which a small software program can pass as a human being online—is in direct conflict with the economic assumptions that undergird the data-based business model of social media, which assumes a fundamental equivalence between user and data. The political economic critique of social media must be placed in dialogue with posthuman assumptions about intelligence that position bots as living, creative online agents. This chapter first presents an overview of the political economy of social media, arguing that the current critique of this economy accepts too readily that the "workers" online are human—or, more accurately, that human "workers" can be differentiated from automated algorithms. In an attempt to correct for this oversight, I move to discuss a line of thought from the history of artificial intelligence, where the essence of self and consciousness can be defined as algorithmic, computational processes—a discourse that directly overlaps with the history of networks presented in Part One. The assumptions made about agency and intelligence in the history of AI are foundational for bots and their ability to pass as human. These two narratives are brought together through a common means for distinguishing between human and bot online—the "CAPTCHA," or "Completely Automated Public Turing test to tell Computers and Humans Apart." CAPTCHAs appear on countless websites across the internet as a supposed defense against the more malicious versions of bots. As the successful passing of a CAPTCHA defines one as a human, I claim that "humanness" as such is not assumed online, but is attributed to a user through a minimal act of pattern recognition. One is not born a human (or worker), but, rather, one becomes one on the internet through computational means of differentiation that are inevitably, and circularly, based on assumptions about intelligence foundational for the same posthuman claims about knowledge that render human and machine interchangeable. This results in economic fears of "click fraud," in which the business model of social media fails because it cannot successfully differentiate human and bot. An entire industry has emerged with the specific intent of distinguishing between humans and bots, legitimating techniques of surveillance in the name of anchoring data to an actual human body. Nonetheless, the possibility for producing a "human" online relies on assumptions about "humanness" that can never fully exclude computers and computational processes from successfully appearing as human. The economy of social media is one in which the human struggles to be defined, in which value from online labor is evacuated because there can never be a clear distinction between a "person" that labors creatively and a form of informational fixed capital.

The political economy of social media

Many of the most important critiques of social media's political economy extend Dallas Smythe's classic arguments about the "audience commodity," noting the odd economic relationship produced through the "consumption" of ostensibly free,

advertising-supported media.[21] In essence, when media content is "free," it cannot be a commodity as traditionally understood by the Marxist critique of capitalism. According to Marx, labor under conditions of capitalism breaks down the worker's body physically, mentally, and socially, and the commodity is there to replace that which has been lost through the laboring of the working day. The purchase of entertainment can be seen to fit this cycle. The worker buys something diverting to placate their mind. But in the purchasing of these commodities, the worker's future ability to repair their own body is further depleted, forcing the worker to once again sell their labor-power in the service of the reproduction of capital.[22] This relationship reaches its apex in the models associated with Fordism, where the working day of the assembly line is highly controlled, the body is affectively managed, and labor is deskilled in exchange for a greater access to leisure and consumer goods, the absorption of which is necessary to resist economic stagnation.[23] While *Capital* has comparatively little to say on consumption, Marx and his followers, nonetheless, highlight the essential function of consumption in the perpetual detachment of the worker from their means of survival in the name of the reproduction of capital.

But the moment that media content becomes available for free, it no longer fits the role described by the Marxian theorization of consumption. The reasons for this are numerous. Media content, like other forms of communication, exists in abundance,[24] and a strict sense of exchange in the form of money is required for the perpetuation of the cycle of capitalism.[25] Without the conversion of capital to money (and back again), the worker is never divested of their means of subsistence, never forced to return to the market and sell their labor-power.

Yet, social media's reliance on "free" content, in which the creative worker is never paid and products are never really consumed, does not mean that digital consumption and production are somehow outside of the market and beyond the limits of capitalism, as some neoliberal accounts of social media's political economy have argued.[26] Instead, the reproduction of capital must be going on somewhere else other than the relationship between the so-called media "consumer" and the so-called media "producer," summed up nicely with a phrase seen in many popular accounts of the audience commodity of social media: if you're not paying for something, then you're the thing being sold. Instead of an economy that relies on the consumption of media content, audiences—and with social media, the data that supposedly represent the individualized users that comprise the audience—are the commodities bought and sold in the economies of "free" content.[27]

In accumulating a massive amount of data about its users, social media websites package and sell user information as commodities to advertising firms. Data are used to calculate and predict consumer behavior through the bot-driven mapping of a network of tastes, interests, and social connectivity—what Mark Zuckerberg and Facebook refer to as the "social graph." With their social graph, Facebook supposedly enables a more specific and more effective means of delivering advertising. The user is neither a consumer nor a producer, but a commodity represented by the packaging

and sale of data in the form of a network, produced and analyzed by bots. Christian Fuchs—directly invoking Smythe—claims that Facebook users "are double objects of commodification. They are first commodified by corporate platform operators, who sell them to advertising clients, and this results, second, in an intensified exposure to commodity logic. . . . Most online time is advertising time."[28] While, assumedly, there is some commodity there for the user to eventually purchase, nonetheless framing the user as a consumer at the end of the day, much of the circulation of data online happens without any direct "consumption" on the user's end and without a discrete sense of "production," either. Data are extracted and circulated with little to no conscious input from the user, since the everyday environment of social media requires the necessary accumulation, storage, and generation of data. To simply exist is to be converted into a commodity under the conditions of social media.

Online content still has a purpose in the reproduction of capital, even if it is, itself, neither the commodity produced by social media websites nor one consumed by social media users. Content is a mechanism to attract attention, to produce affective bonds derived from the "sharing" necessary for the reproduction of capital under the conditions given by social media. Content, coded in accordance with automated, Big Data analytics that account for taste and personality through associations derived from friendships, recorded data, and the "consumption" of other online media, enable social media corporations to define the detailed profile that is consequentially sold to advertisers.[29] Websites use algorithmic techniques to identify, sort, and categorize individual users, placing them into "reputation silos" that can both broadly and narrowly identify them as consumers with specific desires and tastes.[30] These techniques also define consumers as "targets" or "waste," worthy and unworthy subjects of contemporary capitalism defined through automated means of determining one's ability to consume and generate data about consumption.[31] Through techniques designed to identify consumer behavior, based on the increasingly "full" and "total" data produced through an individual's use of social media, consumer castes are produced and made ever more rigid thanks to new, often automated, mechanisms to deliver advertising to users.

The political economy of social media is not something truly new, but is the reinvention of a decades-old economic order based around "free" media content supported by advertising. This economy also grounded television, newspapers, magazines, and any other form of commercially funded media. While one can never definitively say that media audiences are passive, the increasingly active participation of social media users in the generation of "full" personal data intensifies the specificity of target marketing back toward the individualized members of the audience. Facebook, in particular, has demonstrated a particularly adept skill at transforming users and their relations into pure abstractions.[32] Targets of ads are no longer part of an undifferentiated "mass subject."[33] They are hailed as individuals who produce unique data profiles that consequently identify each specific user as an individualized, customized market of one—albeit within constraints that intrinsically reduce the

possibilities for subjective expression to the limits of data collection enabled by a specific social media platform, constructing the limits and abilities of any specific "individual" as a simple information generator.

Social media exemplify a mode of production characterized by what Maurizio Lazzarato terms "immaterial labor."[34] The commodification of subjectivity through the generation of personal data is the labor of the social media knowledge worker, in which identity is increasingly fixed and determined by predictive mechanisms designed to extract ever more data. Technologies of surveillance are part of an apparatus that produces the observed as laborers in "the work of being watched."[35] But users will never receive any wages in exchange for their labor, apparently realizing the age-old capitalist dream of a nearly pure exploitation of the worker.[36] As workers do not get paid, the capitalist extracts not only surplus value from the worker, but the totality of the exchange-value of their labor-power. As noted above, labor online is either described as "free labor,"[37] is compensated in terms of "affect" and "love" rather than wages,[38] or is (incorrectly) thought to somehow exist completely outside of the market.[39] In reducing the human to a form of data that can be quantified, analyzed, and abstracted to the point where the human becomes little more than a bundle of interconnected "consumption" patterns, compensation supposedly emerges from the affective intimacy of sharing data online.[40]

I should note, not all critics of social media regard this form of labor as intrinsically exploitative. Because sharing through social media can be thought to produce an affective bond from a kind of nonmarket peer production, some studies of social media claim that users are empowered, not exploited by social media. Because "consumers" online are also "producers," the subject of social media is an active, hybrid "prosumer" that enjoys interacting online, participating in activities that collapse production and consumption through creative forms of appropriative *pastiche* and *bricolage*.[41] Online interaction is not characterized by a concern for wages or profit, and users benefit from the sheer abundance of "free" services that appear increasingly tailored to personal interests, desires, and needs.

I do not find these claims of empowerment convincing. They overlook the hegemonic negotiation of consent required for the perpetuation of capitalism's dominance. A modern, "free" society requires the active embrace of capitalist norms by those oppressed by capitalist economic structures, which is one of the reasons that Marx was so suspicious of bourgeois liberal ideals of freedom and rights.[42] While there are always pockets within which alternative economies thrive in spite of capitalism's dominance,[43] if these forms of micro-resistance actually threatened capitalism, they would be eliminated or absorbed into the dominant—and, not to mention, the perpetuation of these alternatives is most likely necessary for capitalism's continued hegemony. While it's certainly true that users enjoy using social media, suggesting that this enjoyment is necessarily empowering simply neglects the capitalist foundations of nearly all popular social media platforms, providing, at best, a limited and reductive analysis of social media's economy.[44] As Marx noted in *Capital*, the

acts of production and consumption are always conjoined in some sense—though not fully collapsed—since both are essential for the reproduction of the working class as required by capitalism.[45] And this is not to forget that the act of "consuming" content online is, at best, merely an indirect act of consumption in the Marxist sense, as the processes of commodification and exchange are going on elsewhere—although the affective dimension of "sharing" is essential for the reproduction of capitalism since it grounds one's willingness to express oneself online for the purposes of data generation and target marketing. To simply look at users as empowered prosumers disregards the underlying logics of capitalism, placing too much emphasis on the conscious agency of creative audiences to remake reality at will.

Nonetheless, the condition of immaterial labor draws our attention to the production and expression of consumer identities over social media—though we should always remember that the production of an identity has long been central to techniques of advertising. Since the invention of modern advertising in the early twentieth century, the commodity has served as a "magic" solution for social failures in the guise of individual choice. Modern advertising does not rely on physical qualities or benefits that may actually arise from the thing itself. The commodity is promised to restore not only what the working day has removed, but also what does not exist under conditions of capitalist production—be it happiness, sexual desirability, love, safety, or any number of possible abstract desires.[46] The consumer identifies with this abstraction, locating itself in the product, its identity expressed through the abstract ideals invoked by advertising—consequentially enabling the violence of capitalism to persist in the name of a promise that can never be satisfied. Historically, these abstractions have perpetuated dominant and discriminatory ideologies of patriarchy, race, and colonialism, maintaining the interests of the state, managing populations in the name of hygienic, affective, and mental norms.[47] With social media, the abstract identity of the commodity is supposedly no longer about a generalized population or market, but is derived from specific data thought to represent the individualized truth of the consumer. The role of the individual is to produce itself as a subject of capital with an identity that is unique, yet still abstract and generalized, visible via networks of social media. The acts of the creative "prosumer" necessarily reproduce the conditions of capitalism through the constant generation of data simply through the everyday use of social media.

But the subject of social media is not inherently human. As I've been arguing, data-based identities do not suggest any essential relationship to humanity in the creation or performance of self. Data can exist independently of a human being and can perform agency in a way that seems to pass for humanity. With nodal citizenship, the only entity that possesses social value is that which circulates and flows—reductive attributes that certainly are not inherent to any specific definition of "the human" alone. Theories of Autonomist Marxism, central to many critiques of social media's immaterial labor, begin with the claim that "labor does not need capital" and can "find different ways or organize its own creative energies: it is potentially *autonomous*."[48]

But it is questionable if the capitalism of social media needs "labor," either—at least human labor.

Any form of capitalism that automates production and consumption through artificially intelligent bots is inherently unstable—as seems to be the case with the few examples of this kind of economy that have become visible to humans in recent years[49]—though these same claims can be made of capitalism's general tendency to produce crises. The overproduction of material goods does not simply disappear in an age defined by computers and social media, as they would, nonetheless, need absorption in some form.[50] Yet, the political economy of social media, reliant as it is on the commodification and exchange of data profiles for the delivery of advertising, seems to overlook the actual role of everyday, individual consumption in the perpetuation of capitalism. The effectiveness of advertising has always been questioned throughout its entire history, and ads on social media are no exception. Various extensions for web browsers, the most notable of which is named AdBlock, can simply turn off the advertising one receives through basic, automated content filtering methods. And this doesn't even account for the fact that bots produce the majority of web traffic, undermining the basis for evaluating the effectiveness and cost of advertising online—a point I'll return to at the end of this chapter.

Consequentially, the above critique of social media is too rooted in assumptions about the human capacity to labor to recognize the deeply inhuman attributes of social media and computation—especially when "labor" is nothing other than the generation and ordering of data and consumption is the "consumption" of free entertainment. As Marx noted of industrial capitalism, the historical tendency of technology is to produce the worker as an appendage in the Machine that is capital. This is precisely what is happening with social media, though the "reduction" of the human to technology cannot exist without the historical "elevation" of information processing and pattern recognition to the very substance of consciousness and intelligence. In reducing all of life to that which circulates and flows through networks, nodal citizenship provides a context in which human and software can readily be positioned as interchangeable, in which the "human" is abstracted to a degree that it cannot be accurately identified as human. But to make this move requires a detour through the history of artificial intelligence, in which "the Machine" of social media understands algorithmic processes for generating and ordering information as intelligent, conscious, and alive.

The self as algorithm, or, your mind is a bunch of bots

According to critical theorist Timothy Morton, "evolution is a set of algorithmic processes. That's the disturbing thing about 'animals'—at bottom they are vegetables."[51] The current sciences of evolutionary biology understand life through forms of software modeling that assume mathematical algorithms to be expressive of

a universal ontology of the living, as primarily observed in the visible mathematical structure of plants. Life is an essentially algorithmic process that gives form to otherwise unstructured matter—although the "matter" in which life inheres need not be biological in any traditional sense. Life becomes a universal, abstract process that transforms some form of input into an organized form of output,[52] all in accordance with mathematical formulas that are empirically discoverable and interchangeable with computational models. Algorithms are not necessarily software, and do not have any inherent connection to computers. Yet, computational processes are often assumed to inhere in computers and biology alike through reference to the posthuman sciences of information and cybernetics, genetics, bioinformatics, and complexity. As with information and networks, the algorithm has become something projected onto countless domains to demonstrate how the world is essentially computational, controllable, and organized.[53] Life is found in the propensity to order. Vitality gives form to the formless. In defining life this way, humans become interchangeable with bots as both are fundamentally mathematical, algorithmic entities that identify and sort patterns.

This algorithmic understanding of life is the product of a line of thought woven through some versions of artificial intelligence, derived from Alan Turing's original speculations on the nature of identity and the mathematical structure of morphogenesis in plants—an understanding of life that interprets its labor as the organization of data into "meaningful" information. I put meaningful in scare quotes here because "meaning" refers to a formal, repeatable pattern rather than any hermeneutic sense of meaning or intent, in which, as in Claude Shannon's information science, the "semantic aspects of communication are irrelevant."[54] The algorithm is that which makes data communicable through the transmission of patterns. The self assumed by the political economy of social media—in which an individual is little more than a bundle of associative links designed to identify and articulate tastes, interests, and potential consumption patterns—is ultimately one that defines personhood as algorithmic. That which is available online, networked and connected, is ordered and made comprehensible through processes that associate and sort. The "meaning" of this self is nothing other than its ability to be identified as something relatively stable and predictable in accordance with processes assumed universal. Immaterial labor is, in this sense, the algorithmic ordering shared by humans, machine intelligences, and even plants.

What many refer to as the "Turing Test" is the most explicit definition of identity and intelligence articulated by Alan Turing. In his well-known 1950 essay "Computing Machinery and Intelligence," Turing notes how boring he finds the question: "Can machines think?" Instead, he proposes to think of intelligence by way of an analogy in the form of what he names the "imitation game," a parlor game in which an "interrogator" is tasked with determining the gender of two individuals in another room, entirely through written—ideally typewritten—communication.[55] Theorizing machine intelligence begins by speculating on the nature of identity, providing,

in the words of John Durham Peters, "the primal scene of what Judith Butler calls gender trouble."[56] Turing proposes—in what appears to be a radical move—that sexual difference is a matter of performance. The imitation game seems to remove the performative cues that externally identify gender, transforming male and female into more or less interchangeable roles determined by culturally normative projections, expressed by nothing other than communicative statements about one's identity—especially one's appearance.[57] The game is based on the interrogator's ability to discern logical consistencies, falsehoods, and truths from normative assumptions about what constitutes a correct—or more accurately, a consistent—performance of gender.

The question is never, which player *is* male or female. Instead, Turing asks: Which player is more able to *accurately represent* and *identify* a gender? The assumption is that the interrogator will, at least some of the time, fail in their role, as the male may be better at performing female, or vice versa. But this performance is coupled with a specific technological limit. When abstracted out from human physiology, Turing's game suggests that it is possible to pass as another gender as the self becomes nothing other than an expression of *writing*, transmitted through the networked interconnection of communication technology, in which the discrimination of one gender from another is reduced to a (computerized) textual description of identity.[58] The game relies on the textual erasure of the human body, gesture, and affect as an ultimate limit in differentiating between gender identities. "Identity" drifts off into an informational abstraction that permits the reinvention of the self beyond the visual biological limits of the human body.

To make his game about artificial intelligence, Turing replaces one of the players with a computer. No longer tasked with differentiating genders, the interrogator now has to determine which player is a human and which is a machine. But juxtaposing issues of consciousness with gender and sex is extraordinarily problematic. The normative ability to distinguish between genders is utterly unlike the determination of consciousness, and consequentially the metaphoric thinking that drives Turing's "test" of intelligence is based on false premises. The usual distinctions between human and machine—including those Turing identifies and attempts to refute in his work—are based in judgments about the perception of the internal states of others. The common belief that humans can think while machines cannot is based on assumptions about the similarity of consciousness derived from knowledge of one's own experience. Turing's critique of this perspective is, quite simply, that internal states cannot be determined, and therefore matter not in any empirical judgment of intelligence. Appearing trumps being, as long as one provides the conditions for computers to appear as human—removing the body and including transcription methods filled with spelling and grammar mistakes, colloquialisms, and nonsensical logical mistakes.[59] But Turing, nonetheless, suggests that appearing and being are not identical. While I agree with Peters' suggestion that the imitation game is something of a "primal scene" for theories of gender performativity, the game does not actually suggest that identity is performative, in that identity is something you do rather than

something you are. Instead, the technological conditions of communication render the biological irrelevant as a textual identity transcends and displaces the biological. Turing seems to believe the textual to inherently prohibit an expression of identity that would permit distinctions between man and woman, human and machine. The reason men and women are potentially interchangeable in the imitation game is that the materiality of their bodies literally disappear into the black boxes of the rooms from which they speak, never to appear as a phenomenal determinant in shaping the relations between individuals. The imitation game tells us very little about identity and consciousness. It suggests, instead, *that language reveals nothing about the essence of self*. In conditions defined by linguistic, textual communication, the true self inevitably withdraws. My evidence for this claim can be found in Turing's theories about the mathematical nature of biological development.

With his imitation game, Turing is not providing an antiessentialist conception of identity and consciousness. He is instead defining the exterior, textual presentation of self as something that distorts and distracts from the true essence of life and being: mathematics. This point is not well articulated in "Computing Machinery and Intelligence" but can be partially seen in an odd claim about mechanical and biological mechanisms of reproduction Turing makes in the essay. Here, he speculates about the nature of manufacturing a "thinking machine":

> We wish to exclude from the machines men born in the usual manner. . . . One might for instance insist that the team of engineers should be all of one sex, but this would not really be satisfactory, for it is probably possible to rear a complete individual from a single cell of the skin (say) of a man. To do so would be a feat of biological technique deserving of the very highest praise, but we would not be inclined to regard it as a case of "constructing a thinking machine."[60]

Turing is, first, noting that having a baby though heterosexual reproduction is not "constructing a thinking machine"—something seemingly prohibited if the group of engineers put to the task is made up only of men. But, second, even if the group of all-male engineers discovers a rather innovative biological method for reproduction, this is still not an example of constructing a thinking machine because it defers to a biological, human form of intelligence. Turing's claims about biological reproduction—published as they were in 1950—are slightly surprising given the context. While, throughout the first decades of the twentieth century, biologists had hypothesized that some cellular or molecular structure was involved in reproduction, it was not until 1952 that DNA was definitively shown to have a direct role in heredity. It was in 1953 that Watson and Crick's research on the structure and function of DNA began to be published.[61] Turing is suggesting that there is some essence—analogous, but not precisely identical, to DNA—found in each and every cell that could potentially reproduce the entirety of a human body, prior to the confirmation of DNA as a biological mechanism for the transmission of genetic information.

While the imitation game seems to exclude biology from determinations of intelligence and identity, to say this definitively begs the question: Just what does Turing think biology actually is? In studies of digital culture, "Computing Machinery and Intelligence" is often treated as Turing's most famous and important essay. Yet, his article on "The Chemical Basis of Morphogenesis," from 1952, is the most widely cited work Turing ever published. Morphogenesis refers to the biological processes that produce the physical form an organism takes as cells differentiate in the course of development. Turing was a pioneer in the study of morphogenesis, his findings primarily derived from the spiraling shapes taken by flowers and plants. Because of the mathematical nature of these forms, Turing argued that morphogenesis was a chemical expression of an essentially mathematical pattern—a pattern that would evolve and change over time, but a pattern, nonetheless. And, most significantly, this pattern could be simulated by a digital computer.[62]

Turing was not excluding biology from his imitation game. Rather, he was reducing humans and computers to what he thought was the singular unifying principle of life itself: mathematical, algorithmic processing. What Turing excluded were the physical manifestations of the body that arose from morphogenesis in the human. Male and female are the external representations of the internal mathematics of sex. Under conditions in which the embodied manifestations of morphogenesis cease to matter, the intelligences of computers and humans become equivalent because of the computer's ability to simulate the mathematical patterns of human thought—even if it will never be able to exist as a physical analog of the human itself. In the wake of Turing, mathematics has become "not just a way to analyse data about living creatures, but a method for understanding them."[63] Identity becomes not performative, but an expression of the algorithmic, mathematical mechanism for ordering patterns that constitute life itself.

This mathematical understanding of life and identity is foundational for countless posthumanist claims about the "uploading" of consciousness into a computer or robot, living forever as an informational pattern in a technological body—be that body an avatar or a machine.[64] It's easy to think of life in this sense as a massively complex program, the equivalent of thousands of lines of code. Some neurologists and psychologists suggest that the human brain contains approximately 2.5 petabytes of storage capacity,[65] as if the brain can be thought of in terms of bits and bytes, equivalent to a hard drive or CPU. But other researchers in the sciences of artificial life and artificial intelligence argue, instead, that the complexity of life emerges through the interaction of numerous relatively simple mathematical processes, not through massive, singular programs. The physicist and entrepreneur Stephen Wolfram suggests that life follows the mathematical modeling of "cellular automata"—exceptionally simple programs that obey strict mathematical principles to create patterns of vast complexity. Based on his experiments with cellular automata using software of his own design, Wolfram concludes that life is an essentially computational phenomenon, in which the programs of life are exceedingly simple, yet interact and relate in ways that

produce a level of unpredictable variety.[66] In a similar move, the roboticist Rodney Brooks has suggested that studies of artificial intelligence turn away from the goal of reproducing human intelligence, but should focus on small, autonomous "swarms" of robots that resemble insects rather than people.[67] In changing the scale, Wolfram and Brooks argue that relatively simple, "dumb" forms of AI and artificial life are, nonetheless, intelligent, often interacting in complex patterns that generate higher forms of intelligence such as those observed in ant colonies, insect swarms, and even human consciousness.[68]

The AI theorist Marvin Minsky defines the mind as a multitude of small processes he terms "agents" or "processes," suggesting that the model Wolfram and Brooks use for life and artificial intelligence can also serve as one for human cognition and emotion. Minsky argues that there is no singular thing called "the mind." Rather, cognition unites these processes together in a complex, interacting network to form a "society of mind." Each process has a specific, relatively independent function.[69] It is the interactions of these processes that produce what we experience as consciousness, cognition, emotion, and intelligence. For the purposes of AI, Minsky suggests that "once we imagine a mind as made of smaller parts, we can replace that single, big problem by many smaller, more solvable ones."[70] While scholars in the humanities and social sciences have latched onto ideas such as Minsky's to suggest that cognition is "distributed" throughout an environment rather than inhering in any one individual,[71] a condition exacerbated by the proliferation of network technologies,[72] Minsky's theories are still dedicated to the sketching of a model that, in the end, can be programmed to computationally produce "mind" in a machine. The breaking down of the mind into smaller functions mirrors techniques associated with object-oriented and modular programming languages, where "objects" and processes are relatively discrete, able to be recombined in accordance with requirements of computation.[73]

The theories of life and consciousness derived from the history of artificial intelligence suggest three things. First, life is fundamentally mathematical and computational. This should come as no surprise to anyone familiar with the history of posthuman claims about life and identity. Second, language cannot express the mathematical essence of self. Though we seem to make assumptions about consciousness and intelligence based on communicative interactions, the removal of the body—as an expression of the morphogenetic mathematics that determine biological development—reveals not that all intelligences are equal, but that language cannot reveal the differences in the organism determined by its mathematical essence. It isn't that Turing thought there was no effective difference between man and machine once the body was removed. Rather, the essence of both is so similar that the erasure of the body permits the revelation of the true essence of the computer as a computational form of life roughly equivalent to the human—especially since the computer actually surpasses the human ability to understand, analyze, and simulate the mathematics of biological development. Third, these mathematical processes are relatively simple, small, and discrete, but interact in ways that generate complex

patterns irreducible to smaller parts. Minsky's breaking down of the mind into tiny, discrete programs suggests not that cognition is fundamentally simple, but that the mind is a leviathan of interacting software processes without any central control, able to produce a massive complexity that far exceeds the operation of any one agent or process.

Minsky argues that the mind is organized in the form of a network—though, unlike many of whom we've been discussing, he explicitly notes how this network has limits and boundaries. What he terms "the organism principle" suggests that there is a kind of "compromise" between interconnection and disconnection, where too much in either direction would make impossible any sort of cognitive agency.[74] This, nonetheless, defines the self in terms of a series of interconnected, algorithmic processes that extend throughout a network, the limits of which delineate the self. The self becomes an organizational means for sorting computational processes into something with relative limits. In short, the mind is a bunch of bots. As it is with the social graph of Facebook, an individual is defined by the links and connections it makes. The self is assumed to be an algorithmic process that orders and sorts, organizing part of the network in the name of a bounded, mapped identity.

The cultural significance of click fraud

The above detour through artificial intelligence gets us to the following point: the history of AI defines human consciousness and cognition in terms of the software processes the political economy of social media must exclude to clearly identify the human consumers and producers that are the object of advertising. Yet, at the same time, the self of AI is roughly identical to the self assumed by social media marketing, where an individual is little more than a series of nodes and links and identity is found in the propensity to order information to define the "self." On one hand, this "self" is defined in the service of advertising, in which an individual can be mapped and charted as part of, for instance, the social graph of Facebook. On the other, this networked, algorithmic identity is equivalent to the biological foundations of cognitive evolution, uniting human and computer intelligence under a single model of cognition and consciousness. Social media embrace, yet reject, this understanding of consciousness and agency because of the problem artificial agents pose for the political economy of social media. But inevitably, the tools used by social media to determine consciousness and intelligence rely on mechanisms derived from the history of AI to demonstrate the possibility of computer intelligence. This contradiction results in a constant struggle to define "humanness" using "inhuman" mechanisms that inevitably permit software processes to pass as human.

The inability of social media websites to accurately account for their users is a widely acknowledged, if rarely mentioned problem. After Goldman Sachs made a major deal with Facebook in 2011, a journalist for *Fast Company* wondered, "So while

the company's latest partner . . . has been boasting of Facebook's 600 million-plus userbase, it's unclear just how accurate those figures will be if investors—and advertisers, for that matter—ever choose to parse the details."[75] While Facebook's user numbers have been increasing throughout its history, these problems have regularly plagued the statistical evaluation of their website. In 2009, Facebook estimated that they attracted 430 million unique viewers. This number of viewers radically exceeded the number of registered Facebook users at the time, which amounted to 350 million on December 1, 2009. And if one restricted these statistics to active registered users, the number identified as Americans between the ages of twenty and twenty-four still totaled over 150 percent of the actual number of twenty to twenty-four year olds in the United States.[76] Even if every single American in this demographic had a Facebook account, this would mean that over a third of American Facebook users between the ages of twenty to twenty-four are duplicate accounts, fake, represent deceased users, contain incorrect personal data, or are bots. While Facebook stresses that their profiles are a complete record of the "true" and "total" self of a user, the demographics of Facebook do not support these claims, once again revealing that a very large number of social media profiles are not equivalent to the people offline that the profiles supposedly represent.

Because the actual "life" of a user cannot be clearly defined by the tools that Facebook and other websites use to identify humanness, specialized corporate services, such as comScore[77] and Omniture,[78] are designed to analyze web traffic while removing bots from their statistics. When compared, however, comScore and Omniture often determine radically different numbers in their analyses of website traffic.[79] The ability to differentiate between humans and bots comes from whatever proprietary mechanisms are used to specify humanness, implemented using mathematical, algorithmic mechanisms for sorting and differentiating traffic. The humanness of the audience actually needs to be produced—and, problematically, this is done through automated, algorithmic means that define intelligence in terms of pattern identification, perpetuating the algorithmic definition of intelligence of AI research in the identification of "human" consciousness.

One of the more common techniques used to distinguish between humans and automated bots is the CAPTCHA, the "Completely Automated Public Turing test to tell Computers and Humans Apart."[80] A CAPTCHA, at its most basic, presents a task a computer cannot accomplish, often to solve a problem that would otherwise be delegated to bots. Google's reCAPTCHA (Figure 24) asks users to read distorted text to improve its text recognition for Google Books and the address numbers on houses for Google Maps. The company Solve Media has attempted to transform CAPTCHAs into another way of serving advertising, asking users to respond to questions about ads and brands that, supposedly, bots will be unable to respond to.[81] CAPTCHAs are designed to provide a simple way to distinguish human from bot, in a way that refers to but does not replicate Turing's imitation game. The user needs to simply decipher text to prove humanness. The simplicity of the CAPTCHA has propagated its use

Figure 24 Google's reCAPTCHA.

throughout the internet, often as a precondition to contribute to online forums, make purchases, open accounts, and use email forms.

But these claims about the humanness judged by the CAPTCHA are highly problematic. CAPTCHAs are constantly under attack by those who design bots, often with high success rates.[82] The social networking app Snapchat, less than an hour after introducing their own version of a CAPTCHA they named Snaptcha, was defeated by a sixteen-year-old hacker using a relatively unsophisticated, 100-line program that used simple techniques of computer vision to automate the passing of the test.[83] "Fraudulent accounts" on social media, designed for the distribution of spam and malicious links, often employ services specifically designed to solve CAPTCHAs.[84] While many bots cannot pass CAPTCHAs, and are not designed to do so, others are explicitly programmed to read distorted text and identify images, effectively "passing" as human. And, while CAPTCHAs often mistake bots for humans, disability groups have been quite vocal in their criticisms that CAPTCHAs also assume that people with disabilities aren't people.[85] Because of the visual, often text-based bias of CAPTCHAs, users who are blind or vision impaired are assumed to be bots because they cannot decipher the words included in the test. Individuals with disabilities such as dyslexia are often unable to pass CAPTCHAs because they perceive letters in the incorrect order—which would inherently cause users to fail in their attempts to prove humanness.[86] As the claims of disability studies have taught, disability is produced through normative cultural and technological structures that define the limits and abilities of specific bodies as lesser or impoverished. CAPTCHAs clearly participate in the dehumanization of those with different visual and literary capacities, literally defining them as inhuman for the purposes of online interaction as they escape the boundaries of the inhumanity of the CAPTCHA.

In other words, CAPTCHAs regularly understand bots as people and people as bots. I claim that this is not a bug, but a feature of any mechanism designed to

determine humanness online. A CAPTCHA identifies humanness with the ability to pass a test of pattern recognition; *it does not identify bots as such*. Consequentially, the assumption that calls the CAPTCHA into being is that humanness needs to be produced online through inhuman techniques of excluding that which cannot be identified: the human does not exist, but has to be created through a test. But framing this in terms of "the human" isn't quite accurate, given the fact that CAPTCHAs judge a capacity for visual pattern recognition, not humanness. This brings us to two larger points about the relationship between artificial intelligence and the political economy of social media. First, because the CAPTCHA evaluates intelligence in terms of pattern recognition, it defines humanness as the ability to sort data into a meaningful pattern. Humanness is, in short, algorithmic. Any test that relies on the ordering of data inherently perpetuates an understanding of humanness that defines the human as a biological machine for computation. Second, because humanness needs to be produced through technological means that define intelligence as computational, we cannot assume that those participating in online labor are, in fact, human. Even though CAPTCHAs have been gradually vanishing from the internet at the time of writing, these tests are still going on—and many of them occur beyond the awareness of human users, making judgments about "humanness" without alerting the user.

Social networking websites are often the primary focus of future growth in the advertising industry. While online marketing budgets are increasing, the way the effects of these ads are measured, however, is still particularly poor. Evaluations of most ads on social networking depend on the measurement of online "clicks" and the tracking of users through "cookies."[87] Yet, these measures cannot indicate if an ad was even seen—especially not by a human. Ads are often hidden and can be completely blocked through web browser plug-in programs, utilized by users who don't find advertisements to be a necessary part of their own web ecosystem. And, again, the use of bots is often something that confounds the efforts of online marketing to correctly define user and market data, affecting the pricing of ads in the name of automated software. Bots can be programmed to "click" on ads and simulate the human viewing of webpages. This interference of bots in online advertising is referred to as "click fraud," defined by the statistical tracking website Omniture as follows:

> The practice of using technology . . . to artificially inflate traffic data to defraud advertisers and web sites that provide venues for advertisers. The main goal of those engaging in click fraud activities is to click on advertiser's links on search engines or web sites in order to maliciously drive . . . advertising costs higher for companies (many times competitors) and to falsely increase traffic . . .[88]

As the actions of bots are often counted like those of a human, much of the data on the effects of online advertising is partially based around automated software rather than human "consumption." While metrics for evaluating online advertising effectiveness are often redesigned to separate the bots from the humans, the bots are subsequently

redesigned to pass for human once again. These numbers—or the inflation thereof—potentially affect Facebook's metrics whenever they change their privacy controls.[89] If more is made public, then there are more page views and more clicks. There is also a greater possibility for bots to access pages, and, assumedly, more revenue as these figures are inflated. While Facebook would not agree that its practices are designed to encourage "click fraud," the confusion of humans and automated data is inevitable on social media websites. As this actually increases the value of Facebook as its numbers continuously grow, the inability to distinguish between human and bot intrinsic to social media is implicitly encouraged through practices designed to maximize Facebook's shareholder value.

I should note, the dehumanization of labor online can be seen even when laborers are necessarily human. Because bots cannot consistently accomplish some tasks of pattern recognition, online tools have been developed to employ human users to complete large volumes of small tasks, most often for a very small amount of pay in exchange for the user's labor, the most notable of which is Amazon's Mechanical Turk. As Lilly Irani and M. Six Silberman describe it, the Mechanical Turk frames people as a kind of "human-as-a-service," a standing "source of human computation resources" in which people act as a form of "infrastructure, rendering employees into reliable sources of computation."[90] Mechanical Turk workers are often subject to the whims of employers, have little to no outlet for dissent and resistance, and their labor is often evaluated using algorithmic techniques that, given the very purpose of the Mechanical Turk, are not particularly good at performing or evaluating the tasks performed by human workers. While one of the Turk workers' Irani and Silberman quote claims that Amazon ignores "the fact that without workers, nothing would be done,"[91] echoing the belief held most notably by Autonomist Marxists, this overlooks the fact that the reason humans are employed at all in the Mechanical Turk is because the tasks they're performing have yet to be sufficiently automated with a guarantee of accuracy or efficiency. Mechanical Turk reveals not an intrinsically "human" form of labor, but the general conversion of the human into part of the infrastructure, in which the Machine of capital deskills to a degree that labor is converted into simple, repetitive tasks of pattern recognition which will eventually be given over to bots, rendered valueless as something once "human" becomes a task for fixed capital that can perform "humanness" when intelligence is merely framed as a matter of pattern recognition. In other words, online labor is, inevitably, the province of artificial agents. The moment humans are no longer needed for these tasks of pattern recognition is an inevitable one, in which these "laborers" will be gladly cast aside by those such as Amazon's Jeff Bezos in favor of a predictable algorithm that will never need payment and will never attempt to "resist" their exploitation.

This chapter began with speculation about the automated production of creative work. Poets like Goldsmith and Bök believe in a possible future where poetry is written by computers, for computers. But if we put these speculations in dialogue with economic fears about the internet and creative labor, some odd concerns emerge.

That people seem unwilling to pay for creative products anymore is a constant source of panic for the various cultural industries that have long held control over the production and distribution of media content. But what we see above demonstrates how value has been removed from human labor online because "the human" quite simply cannot be identified in sufficient detail to differentiate it from a rather dumb form of artificial intelligence, mirroring and deepening the historical tendency of capitalism to deskill, automate, and lay waste to the worker wherever possible—here in favor of an agent that can manage, generate, and order flows of data autonomously, fulfilling the minimal requirements for nodal citizenship.

The work of "knowledge" is merely the ordering of data into information, of algorithmic sorting, of producing the "self" in a way that resembles the agency of software. It isn't that creative work has lost value, but that the act of informational labor doesn't appear to require humans. If humans are required, as with Amazon's Mechanical Turk, the mechanisms of capitalism convert workers into infrastructure, where they serve as a "computational" means of sorting that may require payment for labor-power, but only until bots are improved and human labor is once again rendered insignificant. The legacy of Fordism and post-Fordism, in which labor shifted from assembly-line manufacturing to information processing, has left in its wake an economy where the majority of jobs can be automated, performed not by humans, but by bots.

The economy of social media relies almost entirely on the generation of data that supposedly identifies an individual as a subject of advertising. But this economy also assumes that identity and selfhood—the production of which is central for the condition of immaterial labor—are equivalent to models derived from artificial intelligence. Identity emerges from the sorting of information, mathematically modeled, formally predictable. While the capitalist circuit of social media appears to neglect the consumption and absorption of consumer goods beyond informational, creative products (which aren't really "commodities" anyway), the world of online advertising struggles to define humanness to potentially identify consumers. Because intelligence is always defined using schematics derived from assumptions about pattern recognition and information processing, the "human" never emerges in any precise way that can articulate online identity with an actual, biological, living person.

Yet, because humanness appears to be essential for the perpetuation of capitalist consumption, there will always be mechanisms to identify "people" for the consumption of goods—at least until consumption can also be automated, as it has in bot-driven economic models such as those employed on the NASDAQ stock market and the Amazon Marketplace. But here we've seen how these mechanisms are inevitably based on assumptions about information processing that define humanness in terms of automated flows of information. But there are additional means for identifying humanness, be they increasing surveillance, the association of specific mobile devices with specific bodies, and the increasing use of biometrics to articulate the body with data. Nonetheless, many of these technologies fail, and until

the meaning of intelligence is defined away from pattern recognition, I find it easy to believe that computers and software will inevitably pass as humans for the foreseeable future.

The next chapter moves to discuss some of these concerns about the return of "identity" and its grounding in the biological body. Yet, I still claim that "humans" or "persons" are not simply found online, but are rather produced in accordance with the connectivity and flow of nodal citizenship. The human body is expected to conform to what has been recorded, stored, and analyzed online, which manifests itself in reductive directives for "transparency" and the performance of the "total" and "true" self. Identity online does not stem from the body. The body is supposed to conform to organized data, that which flows through networks and connections. Once again, flowing, networked data is the first principle of the digital self as required by nodal citizenship.

CHAPTER SIX
TRUTH: THE POLITICS OF PERFORMING THE TOTAL SELF

Truth in data

The previous two chapters have examined how various embodiments of data, rather than human users, are the privileged economic and social agents of social media. This repeats the history of networks by conflating biological, economic, social, and technological flows through the supposed universal of information, as implemented in the everyday technologies of social media. But this is not to say that the human users of social media simply accept this data-based logic of social media in conforming to models of technologized connectivity and flow. If nodal citizenship is an emerging normative prescription for the behavior of social media users, then there should be some mechanism that punishes, pathologizes, or otherwise marginalizes those behaving as "bad" citizens who refuse the political rationality of connectivity. This chapter argues that the norms of nodal citizenship are enforced through the threat of disconnection and the consequent revocation of one's agency as a political (and economic) actor—a theme that will continue throughout the final two chapters of *Inhuman Networks* that comprise Part Three.

Networks, while ostensibly "non-hierarchical," produce a hierarchy based on a subject's willingness to connect and flow. So far in Part Two, this has been through the continuous production of "true" personal information about one's identity. The revelation of identity is clearly not the only flow possible over networks. Nonetheless, the flow privileged by the conflation of networks discussed in the first part of *Inhuman Networks* today tends to reduce everything to the generation of data—which, in the context of immaterial labor and surveillance, positions the disclosure of personal data as an economic, biological, technological, and social necessity for the contemporary configuration of capitalism. This context demands, on one hand, the fixing of identity and, on the other, the full and totalizing performance of the "truth" of one's identity. Failure to perform truth results in the branding of an individual as a liar, fake, or fraud, consequentially unworthy of inclusion within the social, unable to participate in the political.

In this chapter, I contrast the nodal citizen produced by social media with the subjectivity associated with blogging. Practices of citizenship associated with blogging, as Damien Smith Pfister has argued, involve far more than a reductive and instrumental transmission of information. They instead engage a spectrum of

rhetorical tools that challenge any reduction of social and political agency to the generation of the data flows assumed intrinsic to network media.[1] One of the tools often employed in blogging is the strategic use of anonymity, where the refusal to reveal personal data is a precondition for recognition as one who speaks truth. In this chapter, I claim that while the blogger often performs truth through a veil of anonymity, the subject of social media is interpellated to perform truth through a full and total revelation of self as defined by the limits of network technology. This once again reduces both the human and the political to the circulation and flow of data over social media, even though the actual practices of those online should not be reduced to this limited form of "citizenship," as many are about contesting or challenging nodal citizenship.

As the previous two chapters have demonstrated, the online self is certainly not "full" and cannot be said to even remotely resemble a human being. Yet, this chapter claims, nodal citizenship ascribes "truth" to that which is recorded online, expecting the body to repeat and remake itself in accordance with the data-based identity of social media. In making this claim, I am following a line of questioning suggested by Michel Foucault. I am looking at how "the individual constitutes himself and is constituted by others as a subject of a discourse of truth, the form in which he presents himself to himself and to others as someone who tells the truth . . ."[2] Truth and the possibility of its expression are dependent on what Foucault termed a regime or mode of *veridiction*. That which defines proper conduct is conjoined with the production of "truthful" subjects who recognize themselves and are recognized by others as speakers of truth. This, likewise, produces subjects who speak falsity; they are those to be corrected, disciplined, or excluded because they are identified as those who are not true in the eye of proper governance. For nodal citizenship, these speakers of falsity are the weak links that could potentially ruin the network as a whole, bringing down adjoining links through the transmission of false information. Since the Big Data fantasies of informational capitalism such as the "hive mind" or "collective intelligence" depend on an ideal of perfect information through conscious or unconscious collaboration, those that do not generate bodily "truth" are malfunctioning nodes, unable to connect and flow properly, to be corrected or cut off and removed from the network to achieve the ideal of total knowledge.

The regime of veridiction associated with the nodal citizen defines the true subject as the one online, represented fully by the accumulation of personal data through social media. This subject cannot be identified as an actual human being. Data is more significant than the body in the production of subjects. Nonetheless, in this chapter we see the paradoxical reemergence of the body in the construction of the nodal subject. While one's body may die, it is not forgotten while one is still living. But because data produce the truth of one's identity, then one's body must conform to any online data uploaded as a representation of the user. Online representation *precedes* embodied identity, remaking the latter in relation to the primacy afforded the former. Any inability to connect the body and data is the indication of an unruly subject

that must be disciplined or excluded outright. But, as should be clear from previous chapters, human beings are not particularly good at conforming to the limits of data. To refer to the observations of the anonymous collective Tiqqun, we can never be reduced or "depersonalized" enough to fully become what represents us online. There is always an excess of sorts, an inhumanity beyond the systems that define the human, an inhumanity that cannot be transmuted into that which is measurable and verified technologically. But when we cannot be fully identified by our data, conforming to the digital archives that supposedly represent us, then we are marked as untrue subjects. For Tiqqun, "everyone is always-already, as the very condition of survival, *at fault* in the eyes of the norm . . . all risky [citizens] are everywhere pushed out, quarantined, spontaneously isolated—all those who, being subject to imperial intervention, could bring down with them, through capillary action, the adjoining links in the network."[3] On a network, we either must behave like data, truthfully representing the totality of our identity, or, in the name of truth, we are excluded, erased, and obliterated by the limits of the technological.

The revolution will be visible

The popular view of social media almost universally attributes to them a political element, realized most overtly in the "Arab Spring" of 2011. In the most extreme version of this account (and one very popular in the West), social media directly caused these protests to happen. The demand for democracy sprung from the inherently democratic potentials embedded in Western technology. I need not rehash the sheer number of arguments that claim networked media will reinvent or reshape democracy. Implicit in these arguments is the assertion that connection will perfect political agency. Either the internet enables the direct action of individuals linked together as never before or political disaffection permanently wanes away through online participation.

Certainly, social media are used to organize protests throughout the globe. But networks alone cannot certify the practice of democracy. As Evgeny Morozov has remarked, many otherwise sophisticated politicians, policymakers, and writers endow the internet "with nearly magical qualities . . . it's the ultimate cheat sheet that could help the West finally defeat its authoritarian adversaries."[4] But, in practice, Morozov continues, the internet "provides nothing certain. In fact, as has become obvious in too many contexts, it empowers the strong and disempowers the weak. It is impossible to place the Internet at the heart of the enterprise of democracy promotion without risking the success of that very enterprise."[5] To frame Morozov's argument in terms dear to the project of cultural studies, there are *no guarantees* to the politics performed through technology.

Yet, political struggles are often constructed as struggles *only* over connectivity and flow when social media are thought to be the central political actor. When networks

define the grounds for the political, connectivity and flow are seemingly the only things that one can desire or do. So, while these struggles may not actually be determined by the technological, the desires for informational connection and flow are, nonetheless, presented as basic human urges and rights as networks are seen to "reveal" human nature. Pfister suggests these beliefs are associated with a longer utopian history of "informationism," in which truth will be revealed through more connectivity and more data.[6] But even though these beliefs are naïve and intrinsically flawed, they still determine what is considered true and proper for political subjects on the internet today. In sum, the argument goes, networking is intrinsically political—to connect and let data flow is to embrace the power of liberation through technology. A full flow of data will set you free. As we've seen throughout the previous chapters, this has a particularly problematic history as employed in the shaping of nodal citizenship.

These desires for global, international political connectivity do not do away with the limitations of contemporary mechanisms of state-based democracy in the name of freedom. Equating connection with political agency helps produce the proper nodal citizen by forming a subject that understands and internalizes the twin tasks of connection and flow as the correct uses of personal liberty. These freedoms afforded the proper nodal citizen delineate the possibilities of political action and resistance on a network. And this network "politics" is defined out of directives to manage and perpetuate flows and connections through the continuous generation of "true" information. Political events beyond the West, such as those in northern Africa and the Middle East, are reframed without cultural and historical context, completely in terms of individualistic actions that are dedicated to connectivity and flow as intrinsic social goods. Social networking "revolutions" are presented as foregone successes because those participating appear to conform to the demands of nodal citizenship, in spite of the fact that any significant governmental or political transformation may not have actually happened.

In the following pages, I examine the formation and limitation of nodal citizenship as it relates to the performance and disciplining of "full" and "true" identities through the controversy surrounding the American blogger Tom MacMaster and his online persona Amina Arraf, the pseudonymous author of the blog "A Gay Girl in Damascus." For years, MacMaster posted as Arraf, claiming first-person accounts of life and then revolution in Syria for a multiply marginalized individual. His blog achieved a fair amount of fame, online and in the mainstream press, before he was revealed as the author. How MacMaster, as Arraf, describes the proper behavior of a nodal citizen illustrates the emergence of a subject that demands connectivity and the expression of "truth" even while remaining disconnected and "false." While I've chosen to limit this chapter to a single case study, I do want to stress that this kind of controversy is not unusual. MacMaster/Arraf is one of many possible examples, often associated with the many varieties of public shaming associated with contemporary internet culture.[7] The actual effects of these forms of public shaming are uneven, and tend to invest in different bodies in different ways. Women, in particular, are often brutally harassed

online simply because of their gender, and feel the effects of online shaming for far longer than most men who experience similar attacks. The methods used for attacking and shaming others online often defer to means that I'm not discussing here—most notably, I'm not discussing doxing, a technique used to shame and harass through the revelation of personal information online, often perpetrated by individuals who remain anonymous themselves.[8] (The term doxing is derived from "dox," which is an abbreviation of "document.") Similarly, I'm not going to be discussing recent debates around Facebook's "real name policy," which indicate a significant amount of everyday resistance toward the formation I describe in this chapter, along with some apparent willingness of Facebook to negotiate how "visibility" is presented to other users (though, I should add, that it is advertisers, data analytics, and algorithms that matter in terms of making data visible—the ability of other human users to see data is merely incidental in the political economy of social media). But, while I acknowledge its limitations, I choose the case of MacMaster and Arraf because of how it explicitly deals with discourses of truth and visibility, and how it directly relates to the history of blogging as a strategy for political agency.

In studies of Web 2.0 politics, blogs are often understood as spaces for political discourse because they enable a modicum of anonymity. They give marginal subjects the ability to express unique, individual experiences in the face of repressive state apparatuses.[9] Because the author of a blog can remain invisible, "colonized" subjects are empowered through technological means to speak in the face of political or social oppression.[10] The political agency enabled by blogging is typically understood to come from the medium's fostering of pure and authentic expressions of experience—although this power is specific to the Western embrace of technological performances of "true" selves.[11] The popularity of blogging, however, has waned in recent years, replaced with social networking and the microblogging of Twitter and Tumblr. Significantly, social media do away with—or at least attempt to do away with—the anonymity of blogs. The socially networked self one performs must never appear to wear a technological mask. According to Geert Lovink, "No longer encouraged to act out a role, we are forced to be 'ourselves' (in a form that is no less theatrical or artificial). . . . There is no alternative identity."[12] From the moral panics surrounding "catfishing" to fears of cyberbullying, the current articulation of the political over social media demands the elimination of anonymity to maintain civility, law, and justice. The freedom to speak the "true" self while remaining hidden is replaced with the belief that liberation comes from the "complete" revelation of self, fully connecting to the network as defined by the limits of social technologies. The ability to speak truth and have that truth recognized politically depends on one's willingness to fully reveal one's fixed and totalized identity.

"A Gay Girl in Damascus" illustrates the collision of a number of different ways of understanding invisibility, truth, liberation, and the role of technologically mediated connectivity as so-called Web 2.0 technologies of peer production such as blogs inch closer to those of the increasingly automated, Big Data-driven internet

promised by social media. The empowered individual that is able to speak because of the anonymity of virtual community becomes a subject from which is demanded the constant flow of "true" personal information—and, consequentially, that subject is likewise punished if information is revealed as false by being rendered morally unworthy of connectivity. "A Gay Girl in Damascus" was written by an individual who thought he was occupying the position of a blogging subject while discursively normalizing the behavior of a subject of social media. He was recognized as one who spoke truth because he was speaking the discourse of nodal citizenship. He was punished as a liar because he was behaving in a way that did not internalize the norms of which he spoke. Because of these limits on true speech and true behavior, the nuances of invisibility and agency needed for the negotiation of the political by marginal populations are simply neglected in favor of a belief that liberation comes from connecting and expressing one's true self through the technological, even when that belief is not and cannot be performed through one's own actions. The subtleties of contingent and specific political activities encounter the dumb and blunt directives of social media to perform "truth" and "reality" via the generation of information.

In other words, the precise danger of nodal citizenship, at least when it comes to the performance of identity, is—paradoxically—the refusal to understand how there are rarely guarantees to the politics afforded by technology, once again repeating the technological humanism that does away with context and history in the name of the "innate" desire to connect revealed by social media. The "agency" of an individual to express themselves is conflated with norms that, while historically produced, are assumed to be technologically determined, yet eternally part of human nature. While connection and openness may be beneficial in some situations, they most certainly are not in every situation, unequivocally. Not recognizing the fine, contextual negotiation of these norms has very real consequences for many. The directives to connect and flow associated with nodal citizenship, consequentially, have less to do with the realization of personal freedom than they have to do with the transformation of the subject into flowing, networked data.

In the discourse spoken by MacMaster and Arraf, the proper nodal citizen has an ethical responsibility to be "transparent." One must connect globally. One must maintain a flow of information through connections. But, as the controversy surrounding the outing of MacMaster as the author of the blog demonstrates, human beings are not particularly adept in responding to this ethical demand, in part because it denies the complexity of everyday life in favor of a uniform directive defined by simplistic technologies. Upon revelation that the blog was not written by a real lesbian living in Syria, MacMaster was criticized as a liar, a fraud, and a fake. He eventually deleted Arraf's blog, attempting to minimize, if not fully erase, his internet presence. If, in accordance with the logic of networks, openness and connection are political acts that realize democracy, then MacMaster's actions demonstrate a failure to live up to his own ideals, culminating in an act of self-erasure and the abdication of his connectivity. Nodal citizenship defines the proper behavior of humans as analogous

to the historical articulations of connectivity and flow, as manifested in network technology and information. To be transparent online denies any performative play of identity in the name of the connection of true selves and the free flow of true information. Data can be fixed, but human identity is often mutable. Yet, when one's identity cannot be fixed, then one is rendered unworthy of nodal citizenship.

It may sound as if I am being critical or judgmental of MacMaster. His actions, which I'll elaborate below, clearly demonstrate an absence of self-reflexivity regarding the privilege of his own voice. But I do not think this demonstrates something akin to the poor judgment of a misguided individual. MacMaster's writings are symptomatic of more generalized beliefs about social media dominant in Western interpretations of the power of communication. Thus, I focus throughout on the discourse MacMaster has appeared to internalize. The discourse that speaks through MacMaster defines proper subjects of social media. It circumscribes their behavior in terms of open technological connectivity and the "authentic" performance of true selves. MacMaster, like many of us, does not do this with his own performance of self online. MacMaster's subjectivity is split between two radically different ways of understanding the possibilities of human identity. Like MacMaster, we too are interpellated by the demands of social media and nodal citizenship to perform our authentic, true selves. And in the name of the performance of true selves and true bodies, political tactics that involve the necessity of invisibility or the performative negotiation of identity are ever so subtly excluded from the possibilities engendered by the current technological context. Those that do not conform to the demands of technology are marked as dangerous others to be excluded, if not completely erased.

Postcolonial blogging and the speech of the subaltern

The political power of blogging emerges from the combination of several simple technological effects, some of which are somewhat new, others of which have long been features of communication technology since the age of the telegraph. Blogs allow formerly "voiceless" subjects to find a voice through a potentially global technological medium. Bloggers can participate in debates that have very real effects on their lives, from whence they previously found themselves fully marginalized and beyond the limits of the political. They can assert their own agency in the face of dominant discourses that continuously reassert their victimhood and helplessness. And they do this anonymously, consequentially remaining outside of the repressive state apparatuses that work to silence such speech.

While these claims are common to many theorizations of the identity politics of online representation, the stakes of this negotiation of visibility and invisibility are quite obvious when any public exposure of an individual would lead to their imprisonment, persecution, or even death. This is the context in which many bloggers from the Middle East find themselves. According to Gillian Whitlock, Middle Eastern blogs are

a form of autobiographical life writing that constitute a "soft weapon" in postcolonial struggle. Autobiography "can personalize and humanize categories of people whose experiences are frequently unseen and unheard. To attend to a nauseated body at risk in Baghdad, or to hear a militant feminist body beneath a burka, to attach a face and recognize a refugee is to make powerful interventions in debates about social justice, sovereignty, and human rights."[13] The writings of Iraqi blogger Salam Pax constitute one of Whitlock's examples of blogging as a soft weapon. Pax is often thought to be the first blogging "cybercelebrity" from the Middle East, having his popular blog *Where is Raed?* published as a print book titled *The Baghdad Blog* in the United Kingdom and *The Clandestine Diary of an Ordinary Iraqi* in the United States.[14] Pax's blog expresses the hybrid writing of a postcolonial subject. It often tells of the pleasures of American popular culture experienced under the terror of American military action, filled with reflective and reflexive meditations on the American "liberation" of Iraq. For Whitlock, "Pax uses new media—the only public space available for him to speak freely—to practice his ideological commitment to what might best be described as the process of deliberative democracy: an engaged struggle, an open and ongoing public discussion about justice, freedom, and human rights."[15]

Other blogs from Iraq, such as "Baghdad Burning," written by the female blogger Riverbend, or "IraqiGirl," written by NHK, an Iraqi teenager, are often understood in similar terms. Blogs permit colonized subjects a democratic voice, the ability to participate in a global form of deliberation. The ability to speak is produced through the veiling and anonymity of blogging. NHK has stated the importance of anonymity as such: "I don't put my real name on this blog because I'm not allowed to have a free opinion in this life. I can't tell the truth until I am sure that no one knows who I am."[16] Salam Pax eventually revealed his identity, though his initial writings were cloaked in the invisibility produced through his blog.

Blogging places into question the truthfulness of the author through first, anonymity, and second, the physical distance between the author and their public. The specific technology of the blog consequentially has a strange and mixed relationship with the possibilities of veridiction. The visibility of the author is not a precondition for the ability to speak and be recognized as one who speaks truth. One neither need to possess an identity nor be identified at all to be one who "authentically" speaks. But, at the same time, there is always the possibility that the one who speaks may not be speaking truth. There is always some form of disbelief on the part of the audience stemming from the very anonymity and distance essential for blogs, a skepticism that does not end even if an author reveals their "true" identity. Salam Pax, in particular, experienced this skepticism repeatedly even after the revelation of his identity—many readers of his blog simply did not believe that the "real" self revealed by Pax was his actual identity.

Neither of these elements of blogging should be considered new, however. The unreliability of the author or narrator has long been a feature of literature, even of the nonfiction variety.[17] The physical separation of the author from the audience is

central for the modern experience of publics and their consequent stranger sociality.[18] This does not necessarily mean that the political significance of blogging should be understood only as another incarnation of modern literature or the modern public sphere. Blogs still enable political tactics with specific ends that are highly dependent on context. But the ability to speak through a blog comes with a paradoxical form of disembodiment. Because of the very real, bodily threat of danger, identity must be rendered invisible. While a blogger's (textual) voice may participate in the political, their body is detached and disguised from their writings. The body and the blogger's identity are removed from the political in order to guarantee the ability of the (technologized) postcolonial subject to "speak." While there are fairly obvious problems with any claim that suggests a (Western) technology permits the subaltern to speak, many accounts of blogs celebrate the potential they give to the seemingly voiceless subjects of Western imperial power.

The power of voice attributed to these blogs, however, is at least somewhat negated in their adaptation to books for English-speaking Western audiences. Because of their popularity, book publishers have reprinted blogs while editing them to remove traces of the hybridity that characterize their initial composition found in grammatical errors, posts that are judged unworthy of chosen editorial narratives, and so on. It is this hybridity that could be said to contain traces of the identity of the blogging subject. A counterhegemonic discourse is absorbed into mainstream political debates through the Western editing of non-Western writings for Western audiences.[19] Blogging may seem to permit the subaltern to speak, but in the transformation of a blog to a book, the subaltern is once again rendered silent in favor of preexisting political narratives. This is why blogging is only a "soft" weapon for Whitlock. These narratives in which usually silenced voices are heard can be captured by dominant discourses of Empire and colonial power, rapidly and with little resistance.

The political power of the blog comes from the contextual negotiation between one's body and how that body is represented—or not represented—online. The anonymity of the blogger places the "true" self as the one that exists beyond the screen, in a real place, in real danger. One's anonymity is a requirement for one to speak truth and to be recognized as one who can speak truth—though not also without a level of skepticism likewise produced by the very same anonymity. The publicity afforded the blogger is not equivalent to complete and total visibility. But, if we contrast this to the subject produced by social media, which shifts the locus of truth from speech enabled through anonymized embodied experience to "complete" online data, then we can begin to see the political effects of emerging norms of nodal citizenship.

"Transparency" as political agency

During the early days of political unrest in Syria, Western news media focused an inordinate amount of attention on a single blog. That blog, "A Gay Girl in Damascus,"

detailed the experience of an out lesbian in the Middle East. It was written by a half-American, half-Syrian named Amina Abdullah Arraf al-Omari who would later be revealed to be an avatar of a forty-year-old white, heterosexual, married American from Georgia named Tom MacMaster, a postgraduate student at the University of Edinburgh who had been writing as Arraf on blogs and message boards for over four years.[20] But before this revelation, Amina Arraf's writings, like other blogs of women in the Middle East, were championed as evidence of the power of interactive digital media to protest and defy oppressive governments and repressive social norms.[21] "Teargas was lobbed at us. I saw people vomiting from the gas as I covered my own mouth and nose and my eyes burned," Arraf wrote shortly after protests began. Because of these challenges she faced in her daily life, Arraf's blogging was thought to provide a first-hand account of life in Syria for those reading across the globe. Arraf claimed that her internet communication would inspire others to political action. "Blogging is, for me, a way of being fearless. . . . I believe that if I can be 'out' in so many ways, others can take my example and join the movement."[22] Her blog went viral after an April 26, 2011 post titled "My Father, the Hero," an account of how her father confronted Syrian security agents accusing Arraf of espionage. "MY DAD had just defeated them!" she wrote in the post, "Not with weapons but with words . . . and they had left. . . . I hugged him and kissed him; I literally owe him my life now."[23] In Arraf's narratives, here and elsewhere, communication triumphs over force.

Shortly after this entry, Arraf went into hiding, and then disappeared.[24] In an interview with CBS News a month earlier, Arraf had claimed that she was then already actively hiding from Syrian security forces. "I don't want to go to prison, though I am not scared of it," she reasoned. "I believe I can do more for Syria free inside Syria than as a martyr." Her actions for Syria, of course, were devoted to communicating online to a global audience. Arraf claimed:

> The worst thing we face is our own fear. If we want to be free, we must first overcome our own worst enemy, which is the one within us. It is that fear that has allowed the dictators to rule; it is that fear that keeps us as Arabs, as Muslims, as women and as lesbians trapped. If we stop being afraid within ourselves, we can achieve freedom. The prison of our own minds is the darkest place. For me, it has sometimes seemed like it was harder to be out as an Arab Muslim woman in America than as a lesbian in Syria. Maybe I am lucky. But, if we can be bold in who we are, we can achieve true freedom.[25]

This liberation comes from speaking through networked communications—connecting to others and authentically revealing one's true self. The revelation of personal data perpetuates the free flow of information, in turn liberating the self in the face of governmental oppression.

Arraf's claims are noticeably different from those made in other blogs written by individuals under the threat of violence. Both blogged and published writings about

daily life in Iran and Iraq, for instance, generally suggest that individuals use everyday strategies of resistance that negotiate publicity and privacy as a means of coping with oppression. Being "meek" or "hidden" does not imply a willingness to accept governmental or religious marginalization, but suggests an active and nuanced role in resisting and challenging the hegemony of the state, patriarchy, or heteronormativity. The image of life in these countries depicted by other bloggers doesn't mesh with Western narratives about oppression in the Middle East that suggest Islamic women are essentially passive victims to be saved. These Western stories consequently ignore many of the very real forms taken by state violence against marginal populations in favor of Western beliefs about Islamic women.[26] Likewise, in other blogs from the Middle East, anonymity is regularly and explicitly understood as that which enables the freedom to speak.

In contrast to these blogs, Arraf's statements define an ideal of nodal citizenship based on Western beliefs about the power of technology and liberation through the full, truthful, "open" performance of self as mediated through social media. Unlike the situated uses of technology by individuals in Iraq, Iran, and elsewhere, negotiating local visibility and invisibility through potentially anonymous performances, Arraf explicitly articulates universal, global visibility with strength and emancipation. Social media enable democracy and revolution through the power of free speech and global social connectivity. One must connect and flow to participate politically. The revelation of self to others is politically revolutionary. In her own writings and in the news articles reporting on her story, Arraf was a threat to the Syrian government because of the power of her voice, broadcast to others around the world through her blog. Being *out* is not just about sexual identity in Arraf's narrative. It signifies a commitment both to one's own personal authenticity and to the demands of nodal citizenship. To communicate is to connect with others, mediated through networked flows of information. Transcending the self through connection, ironically via communication that reveals and identifies one's "true" self, is the ultimate political gesture here.

Many in the United States and United Kingdom found Arraf's message inspiring, perhaps because it reflected Western ideologies of truth and authenticity. In the wake of her disappearance, various websites and social networks on the internet called for her safety and release. The U.S. State Department had even begun an investigation into her whereabouts.[27] Images demanding "Free Amina Arraf" were posted throughout Facebook and on blogs. "Borders mean nothing when you have wings," stated one, echoing an ideal of cosmopolitan connectivity fostered by the internet (Figure 25). As Arraf's voice seemed to demonstrate, the internet enables the transcendence of geography and the state through global connection and the flow of information across borders. The repressive governments controlling populations, the police regulating geographical boundaries and the behavior of those within them—not to mention the force of localized social norms in regulating identity and the body—are inconsequential when juxtaposed with the "flight" enabled through networked

Figure 25 "Free Amina Arraf." A viral image posted on Facebook during the political uprisings in Syria, protesting the detainment of Amina Abdullah Arraf al-Omari.
Source: Facebook, http://www.facebook.com/freeamina (accessed June 8, 2011). This page is no longer online, but this image can be found widely circulated.

connection. The connectivity of nodal citizenship is global and totalizing. Borders mean nothing when you flow across them.

As scrutiny increased, holes in Arraf's narrative began to emerge. Nobody had ever actually met her. The pictures she had on her blog had been taken from the Facebook page of a Croatian expat living in London. The posts on her blog originated from an IP address in Scotland. As the search to find Amina Arraf intensified, the harder it became to locate her. It was at this time that Arraf was revealed to be a fictional creation of Tom MacMaster. Notably, the *Guardian* was quick to defend its reporting on Arraf. The blog, the paper argued, was still valuable in terms of drawing attention to the problems of real gay and lesbian individuals in Syria.[28] MacMaster, in a post-unmasking interview with the paper, claimed that, in creating Amina and her blog, he only wanted to distance his own identity from the claims he was making about Syria. If he had blogged as himself, "someone would immediately ask: Why do you hate America? Why do you hate freedom? This sort of thing." Blogging as a gay Arab woman would avoid controversy. "I regret that a lot of people feel I led them on," said MacMaster, "I regret that . . . a number of people are seeing my hoax as distracting from real news, real stories about Syria and real concerns of real, actual,

on-the-ground bloggers, where people will doubt their veracity."[29] After he had been outed as the true author, MacMaster refused to fully apologize. "While the narrative voice may have been fictional," he wrote, "the facts on this blog are true and not misleading as to the situation on the ground. . . . I do not believe that I have harmed anyone—I feel that I have created an important voice for issues that I feel strongly about."[30] In spite of his physical distance from Syria, the connectivity of the internet-enabled MacMaster to claim his fictional account of Syrian life as truth. MacMaster may not have been on the ground in Syria, but he was able to know exactly what it was like there because of networked communication.

MacMaster's discourse, along with that of the *Guardian*, does away with physical bodies and physical space completely. Flows of information, while detached from material "reality," are still able to fully represent what is elsewhere, beyond phenomenal experience. All that matters is communication and connection. Even though MacMaster was in Scotland rather than Syria, his technological connection to the internet enabled him to produce an identity that could speak the truth of those in Syria without firsthand knowledge. Much of the above resonates explicitly with what is claimed about the contemporary networked world. Technologies extend our bodies beyond what we once thought to be our limitations. Space is compressed, if not outright eliminated, because of networked communications. Flows of information mean more than the boundaries of states and the specificity of place. Information and physical bodies are constructed as interchangeable. Given the continuation of extremely brutal repression in Syria since the Amina Arraf "hoax," MacMaster's claims about knowledge are particularly problematic. They fit perfectly, however, with the belief that the internet's connectivity enables a kind of totalized "world brain," "hive mind," or "collective intelligence" divorced from material specificity, locality, or individualized consciousness.

Nonetheless, MacMaster was heavily criticized for violating the principles he advocated. Even though he spoke the discourse of nodal citizenship, he failed to live up to the demands of connection and networking because he "hid" behind a fabricated identity. He was speaking the truth of the discourse of social media while behaving like a subject of a blog. The aporia between these two discourses, embodied by MacMaster's claims as Amina and his own behaviors as a blogger, challenges a number of assumptions about the performance of self online.

Identity, visibility, and nodal citizenship

The ability to pass as a completely different person, with a completely different identity, has been regarded as intrinsic to the performance of self on the internet since the earliest attempts at theorizing identity online from the late 1980s and early 1990s. As a famous *New Yorker* cartoon once stated, "On the Internet, nobody knows you're a dog." The self performed online may be radically different from the "real" person

behind the computer, but may be considered more "real" than the actual human user. According to Sherry Turkle, we take things on the internet at "interface value." We simply accept that which is on the screen as truth. Often, computer-mediated images are more real to users than that which exists in their "real life" beyond technology.[31] Other theorists of identity in cyberspace, such as Alluquère Rosanne Stone, have argued that the performance of identity online demonstrates how humans are fundamentally endowed with multiple personalities that exceed the human body.[32] The avatar is not simply a disembodied representation, but directly points to a real person for whom that representation is an essential part. For Stone, both Arraf and MacMaster would be the same person. MacMaster wouldn't be deceiving anyone with his blog. Arraf is part of MacMaster's authentic, if schizoid, identity. Ken Hillis has argued that online representations are a form of free indirect discourse. The user's avatar serves "as a screen behind which the author may 'hide,' yet at the same time it allows him or her to communicate through it to readers."[33] The avatar is never fully an extension of the self or something completely other, but is, instead, a blending of the two. What Hillis describes is similar to how blogs are often understood politically. This definition is clearly what MacMaster intended with the creation of Amina. She was an avatar that concealed his identity while permitting him the freedom to speak. He was writing from assumptions about visibility and anonymity associated with blogging rather than the totalizing revelation of self defined by the connections and flows of nodal citizenship.

The emerging discourse about online identity is that the anonymity of the internet so celebrated in the 1990s should be eliminated in the name of civility and community. Openness and visibility must be encouraged—if not demanded—for the collective and collaborative utopia of networked communications to be realized. When MacMaster, as Arraf, claims she is "out," she is, in part, using this definition. She is posting her name, image, and location. She defines her authenticity in terms of her willingness to divulge personal information, conflating, if not erasing, identity categories in favor of a generalized transparency of identity. While it means something different for a fiction to be radically transparent than it does an actual human, MacMaster is, nonetheless, using these claims of openness and transparency as normative directions for proper network conduct in his fabrication of Amina Arraf.

This understanding of identity is common among both those in the business of social media and those making policy arguments about the future of the internet. According to Chris Kelly, one-time head of privacy for Facebook, "Trust on the Internet depends on having identity fixed and known."[34] Mark Zuckerberg has claimed that this fixing of identity is based in the "radical transparency" of the internet and social media. "You only have one identity," he stated in a 2009 interview, so emphatically that he repeated this phrase three times within one minute. "The days of you having a different image for your work friends or co-workers and for the other people you know are probably coming to an end pretty quickly . . . the level of transparency the world has now won't support having two identities for a person."[35]

Harvard law professor Jonathan Zittrain has argued that the only possibility to maintain the openness and freedom of the internet is to permanently and openly link online identity with bodily identity. Without this link, in Zittrain's view, the internet will descend into impersonal chaos.[36]

The intersecting vicissitudes of sexuality, race, and gender—among a number of other possible categories—make any equating of Tom MacMaster and Amina Arraf intensely problematic. As should be obvious, to be "out" has significantly different connotations when it comes to the marginal identities that MacMaster appropriated in creating the persona of Arraf than it does when Mark Zuckerberg argues for the necessity of "radical transparency," even though this is, perhaps, because Zuckerberg simply isn't thinking of identity struggles when making the blanket statements about online identity that have shaped a number of Facebook's policies regarding anonymity. MacMaster's usage of "out" conflates sexual identity with the openness and flow of nodal citizenship. Being true to one's identity means that it must be communicated. With sexuality, in particular, the public embrace of an identity is indeed part of a project of sexual liberation and the struggle for equality. Yet, the practice of making sexuality legible is also part of a homophobic ideology that demands the identification and marginalization of other sexualities deemed a threat to the hegemony of heterosexuality.[37] To be visible is also to become the possible object of regulation and imprisonment. As Foucault once noted, visibility is a trap. With the legibility of sexuality, identification can be employed in the service of silencing those marked as Other. The specific embrace of visibility or invisibility as a political strategy depends deeply on context. The same action can both empower and render one an object of control and violence. It is this stress on context and political strategy that is eliminated through the visibility and transparency demanded by nodal citizenship.

The problematic politics of openness can be seen in reactions to the "Gay Girl in Damascus" controversy. According to MacMaster, "This experience has sadly only confirmed my feelings regarding the often superficial coverage of the Middle East and the pervasiveness of new forms of liberal Orientalism."[38] But to what Orientalism is MacMaster referring? MacMaster had been speaking through an invented Arab lesbian as if he fully understood her experience. He was literally speaking for an Oriental other he had created.[39] Actual gay and lesbian bloggers in Syria have vehemently disagreed with MacMaster's stated intentions. According to one on Twitter, "There is no positive side effect of the Amina hoax. It did not bring attention to Syria. It brought attention to a white fantasy." Daniel Nassar, the pseudonymous editor of the blog "Gay Middle East," has argued, "Because of you, Mr. MacMaster, a lot of the real activists in the LGBT community became under the spotlight of the authorities in Syria. . . . You took away my voice, Mr. MacMaster, and the voices of many people who I know."[40] According to Nassar, because of the visibility of MacMaster's blog, police action and brutality against actual gay individuals in Syria increased. The police, not to mention members of a larger homophobic society, observed those suspected of homosexuality with even greater scrutiny. Because of the openness and transparency

of a fictional character, the ability of others to even think about leaving the closet was hindered.[41]

The negotiations of visibility and identity follow tortuous routes that are necessarily culturally and contextually specific. While Nassar writes that he is out in his everyday life in Syria, he is not out on the internet. He would face very real threats of violence and arrest as a result of the increased visibility of network connectivity. Yet, in adopting this stance, Nassar is in violation of the demands for radical transparency that characterize nodal citizenship. He is being "inauthentic" according to Mark Zuckerberg and Jonathan Zittrain. Nassar has multiple identities. He is hiding behind a mask because of his refusal to reveal all parts of his personal life to those online. His connectivity is only partial. When one's connectivity and transparency must be understood contextually, then one is not a proper nodal citizen. Nassar is following the norms of blogs in his relationship between identity and visibility—and it is precisely these nuances that are ignored in favor of the totalizing visibility demanded by social networking.

Failed nodal citizens

There is a long history of order and social control maintained through visibility. Michel Foucault has popularly defined one conjunction of visibility and social control as *discipline*.[42] Discipline requires an elaborate apparatus specifically to monitor and separate individuals; it involves the constant effort to illuminate and make visible everything to all. Foucault identifies the diagram of Jeremy Bentham's Panopticon prison as the perfection of disciplinary power. In the Panopticon, the management of individual humans is still dependent on their identification, isolation, and visibility. But this identification is one that the individual internalizes and manages on their own, inducing "in the inmate a state of conscious and permanent visibility that assures the automatic functioning of power."[43] The Panopticon produces a subject that disciplines itself in light of the continuous potential of being observed.

Both discipline and panopticism rely on the creation of those in the privileged position of observing. But in the Panopticon, the observers must remain hidden. They are invisible and inaudible to those who are observed. As the ultimate goal of panoptic control is the internalization of a regime of truth by the observed, the observer must forever remain on the edges of visibility. The subject does not feel that they *are* being watched constantly, but that they *might be* watched at all times. They therefore act as if they are being watched even when there is no observer present. The ability to observe while remaining invisible positions one closer to the top of the hierarchy of modern society.

The internet has often been assumed to both give us the benefits of this invisibility and to operate as a massive "super-Panopticon."[44] On the side of invisibility, networked communications and avatars permit users to move between identities.

We can appropriate the marginal or the dominant in our online performances. Potentially, we can lurk in the background, remaining a distanced observer. This invisibility, for MacMaster, enabled him to mask his own body while advocating a politics from which he was personally distanced. Being able to escape the fixing of one's "true" name and location, as given to us by blogs, has enabled bloggers across the globe to make political claims while remaining, effectively, outside of the boundaries of police power and the political as defined by official state institutions. Yet, as Foucault remarks of the Panopticon, the observers themselves are never fully immune from observation. There is always someone higher up who may be watching. Even with this invisibility, the structure of the internet enables a massive increase in the surveillance power of governments, often with the complicity of citizens. Understanding the politics of visibility and invisibility as one related to simple binaries of freedom or control cannot address what is happening with identity, representation, and social media.

The revelation of MacMaster as Amina reveals the contradictions inherent in the application of nodal citizenship to the contemporary technological context. Amina advocated the political power of connection and radical transparency. Yet, these politics could only be articulated by one who maintained his invisibility. Amina's radical transparency—as is the case for Facebook employees—defines proper citizenship through the fixing of "true" names, "true" locations, and "true" bodies. "Civility" on the internet—the proper relations we maintain with the others to whom we are connected—depends on our willingness to internalize and perform these "true" selves. This politics that defines publicity and identification as absolute empowerment is defined as such by an individual who remains private, and seems to see nothing wrong with maintaining this privacy in spite of his normative claims.[45]

But the internet is often contrasted with supposedly modern technologies of hierarchy such as the Panopticon. As much as a popular understanding of surveillance seems to equate the constant visibility produced by new media with the Panopticon, it would be misleading to suggest that the two are interchangeable, especially since the entire idea of the Panopticon is to produce in the inmate the desire to self-police. The internet is a distributed network, defined by connections and flows that supposedly exist *without* a hierarchy. Even beyond the internet, networks are usually defined as "flat" and nonhierarchical. In this distributed network, there is nowhere to hide. There is no privilege given to the observer above. There is no underclass produced by observation. A hierarchy cannot be maintained through observation on a network, as MacMaster surely discovered in the furor over his blog.

Yet, there is a hierarchy here, one defined through the willingness to adhere to the demands of nodal citizenship. Proper nodal citizens embrace the demand to connect and expose oneself, maintaining flows of information to others. New technologies are often assumed democratic because they supposedly permit everyday individuals the ability to more effectively accomplish these tasks, bettering the functioning of government through "transparency." Steve Mann, a computer engineering professor,

has used the term "sousveillance" to describe the use of individual surveillance techniques to monitor institutions of government and police.[46] Science fiction author Cory Doctorow has referred to the same phenomena as the creation of a "little brother" to monitor "big brother."[47] The power of social media, recording technologies, and connectivity comes from how new media positions everyone as a visible observer. Not only is an individual compelled to take responsibility for themselves because of their potential visibility, but they are also compelled to monitor every other person to whom they are connected. On a network, one is *both* the prisoner, the object of the gaze of the Panopticon, and the guard, the subject that may or may not be in the observation tower.

In this arrangement of power, MacMaster's only true fault was that he refused his own visibility and connectivity. While speaking in the name of connectivity, openness, and the free flow of information, he was not actually participating in what he was advocating. He was a failed nodal citizen, in that his conduct was directed at hiding his identity and remaining, to some extent, disconnected from the network. And he was punished for violating these norms of behavior, even while advocating for them. It is through this distinction that network discourse produces a hierarchy, defining worthy and unworthy subjects based on their willingness to connect and flow. The nodal citizen is directed to maintain connection and flow in order to benefit the totality. Those who do not connect and flow, or cannot properly manage connections and flows, are marked as those unworthy of inclusion on the network.

Political struggles are consequently reduced to nothing more than struggles over connectivity and flow. In network discourse, justice is little more than connecting those who are not networked, ignoring any need to negotiate or avoid connectivity. This mirrors how network scientists Nicholas Christakis and James Fowler define the "positional inequality" of networks. Christakis and Fowler argue that discrimination today is not based on the politics of identity, but, instead, is determined by networked connectivity.[48] Strategies of social justice should focus on maintaining connections and increasing flows:

> To reduce poverty, we should focus not merely on monetary transfers or even technical training; we should help the poor form new relationships with other members of society. When we target the periphery of a network to help people reconnect, we help the whole fabric of society, not just any disadvantaged individuals on the fringe.[49]

For Christakis and Fowler, equality demands the connection of all individuals to the network. Flows must be evoked for global justice. If this way of imagining justice is taken as a blanket statement for *any* possible justice, then the need to negotiate connectivity, as performed by countless bloggers in the Middle East, is apparently more detrimental than the marginalization that occurs through identity-based violence. "Connection" becomes a panacea for any form of inequality.

Yet, while this version of justice requires more networks, networks are also constructed as natural—if not a pure ontological feature of Being itself. Yet again, the specter of technological humanism reappears. "In short," claim Christakis and Fowler, "humans don't just live in groups, we live in networks . . . our desire to form connections depends partly on our genes."[50] Like numerous other authors, Christakis and Fowler argue that biological evolution has guaranteed human connectivity in such a way as to render the desire to connect as purely natural. The political work needed for social justice *always-already exists at the level of nature*. To *recognize* the need to contextually negotiate connectivity is to render oneself an aberration from the natural order of existence. "Justice," in the form of ending "positional inequality" through the fostering of connectivity and the evocation of flows, thus makes "unnatural," abnormal, or even pathological subjects out of anyone who refuses the blunt dichotomy of connection and disconnection.

Nodal citizenship demands that individuals must work to maintain their own connections and flows. Justice and politics are, likewise, reframed as nothing other than the maintenance of connection and flow. And, finally, connection and flow are completely natural attributes of human existence. As the maintenance of connection and flow is rendered natural, an entirely new form of hierarchy is put into place based on nothing other than the ability of an individual to conform to the demands of networks. The failure of an individual to maintain their own connections means that the individual is not only a weak link in the society of nodal citizens, but also an aberration from the natural order of existence. It is this state that we can observe above. Since connectivity and flow are equated to nature, human beings who do not conform to the attributes of networks must be excluded from the natural order of the world, remade, disciplined, or even eliminated outright, while connectivity and flow are positioned as essential for nature to persist.

"A Gay Girl in Damascus" shows us the transition from one form of technological subject—the blogging subject who is empowered through contextual anonymity—to a social media subject, a nodal citizen, who must connect and perform the truth of his or her singular identity or else be rendered an aberration from nature, unworthy of inclusion in the social, unable to participate as a political actor. We should be critical of MacMaster's ultimately Orientalist claims about "real life" in Syria, certainly. We should take his claims about transparency and connectivity as a normative discourse that limits the possibility for political subjectivity and agency. But we should also understand that his punishment and exclusion coincides with *our own embrace* of the discourse spoken by MacMaster himself. In other words, we should be critical of his claims, but we should not marginalize him because he is a "liar," because he does not live up to our standards of "truth." This regime of veridiction just happens to rely on the standards produced by the normalization of nodal citizenship. We should not embrace the reductive discourse of truth as engendered by social media, or else any individual who does not conform to the demands to connect and flow truthfully will be excluded from entry into the political. The political strategies that involve strategic

anonymity and disconnection will be invalidated as nothing more than the unnatural tools of frauds and liars.

A world of networks is a world in which human beings do not matter unless they connect, flow, and communicate, becoming subjects that behave like the technologies they use. Yet, to return to the lines from Tiqqun cited earlier, we are never "depersonalized" enough to act like perfect technological "conductors" of informational connectivity and flow. Thus, at some point we will fail in the management of these tasks, only to be cut off, quarantined, and erased from that which has been rendered natural. In the case above, a subject can be formed who believes that a nodal citizen is a truly proper and liberated individual. At the same time, that subject can completely and utterly fail in their performance of the norms of citizenship, to be deleted and erased from the network because they did not perform "truth."

Part One sketched a history in which a series of different networks—biological, technological, economic, and social—intertwined and intersected, eventually uniting under the supposed universal of information as implemented in the network of networks that is the internet. In the process, a multitude of different domains and milieus, once imagined as ontologically distinct and procedurally independent—if metaphorically interchangeable—were subsumed into one network ruled by an informational logic that privileges the twin attributes of connectivity and flow above all. While social media are often framed in humanist terms about helping people connect, Part Two traced how data and information—not human beings—are the privileged actors of social media, because data appear to best perform the logic of connectivity and flow as the networks of the biological, economic, technological, and social become the network of information. Chapter 4 examined how data can exist as an independent life, separate from the human. Chapter 5 investigated how data can labor independently. Chapter 6 traced how identity online should be performed in full, where the user is punished if their online data is found not to correspond with the bodily, offline identity. If there is a new form of "citizenship" emerging alongside social media today, then it is one in which the rights and abilities of the citizen are assumed interchangeable with the circulation, generation, and ordering of data, where routers and algorithms are the exemplary citizens of this world of networked flows and connections.

If Part Two examined how social media privilege data as an ideal citizen that connects and perpetuates flows of information as it crosses the networks of biology, technology, economy, and the social, then Part Three moves to how these norms are enacted beyond social media, presenting us with a world in which humans exist to be corrected or excluded as failed citizens of a networked society. If one could draw a fine and distinct line between the "online" and "offline" worlds, then these concerns would probably be of little interest beyond the specific forms of subjectivity shaped in the human interaction with computers. Yet, no such line exists—and no such line can exist—blurring the limits of these nodal citizens as the conflated assumptions about networked human nature move from history to social media and beyond.

PART THREE
BEYOND SOCIAL MEDIA, OR, A WORLD WITHOUT PEOPLE

From social media to social networks

The term "social media" is often conflated with "social networks." The two are not synonyms, however. Since, as I've suggested, "social media" should refer not to a technology, but a context and conjuncture, then the conflation of the social, technological, biological, and economic described in Part One affects more than only those users online. The phrase "social networks" often captures this broader context better than "social media," as the latter is almost inevitably reduced to specific technologies or online platforms. Social networks are mathematically defined graphs of connectivity that supposedly ground all human relations, not to mention economic and biological ones as well.[1] Yet, there is a problem with differentiating the two—and, for that matter, differentiating "networks" from "media." The technological, topological structure of social media seems to mirror the mathematically grounded models of social networks, leading to a singular mapping that renders all "networks" interchangeable.[2] While data have no essential visual form, the model of the network reproduces a singular visual model in any domain that can be "networked."[3] This happens because, as we have seen, the ideal of information has enabled slippages and conflations between the varied domains that can be thought of as networked. That which is assumed true of social media is assumed true of networks more generally—and vice versa—because their mathematical and visual models are assumed equivalent. And the "natural" or "biological" existence of social networks is once again taken to mean that social media do little other than manifest technologically what has always existed in the very natural essences that define the human.

These final two chapters of *Inhuman Networks* discuss these broader claims about social networks. The norms of nodal citizenship are not limited to users of technology. When something can be modeled as a network, the same strategies for personal conduct are normalized as requirements for one to be included in the social and rendered worthy of rights. Also, the seeming presence of "bad citizens" becomes more pronounced. Not only are those who fail to conduct flows and connections marked as others to be corrected or excluded. Their failure is assumed to potentially bring down the entire social order because of its totalizing networked connectivity, in part because of the absence of an exterior to the network. Arguing that networks are defined by "total inclusion" not only legitimates a false ideal of consensus that serves to

marginalize and erase dissenting subjects,[4] but also makes those subjects who cannot or will not conform to the norms of nodal citizenship all the more threatening to the "social" networked order. Because of the imagined totality of the network, the belief that these subjects *cannot* be marginalized and are, instead, necessarily connected and included lends itself to a reactionary discourse that celebrates not the equality of networked connection, but the failure of any social connection and a rejection of society as such.

Networks, neoliberalism, and the problem of the exterior

If networks reveal the holistically linked nature of the human, overcoming the limits of modernity through connection, then it often follows that the modern, state-based institutions that seem to prohibit this global connectivity should be actively dismantled to realize the truth of connectivity. This is, perhaps, the most dangerous mobilization of technological humanism, as the present political implications of historical discourse are simply neglected in the name of an imagined human nature that appears to directly repeat the economic fantasies of neoliberalism.[5] Yet, I argue, the holism of networks cannot be understood as simply another variation of neoliberalism, in part because of the network's relationship to modernity. Neoliberalism is, in many ways, an intensification of modern logics of liberal individualism still fully in line with historical ways of thinking modernity. In challenging the discourse of modernity, networks provide an odd reinvention of neoliberalism through the absence of a constitutive exterior—a reinvention that does not remedy the ills or limits of the neoliberal, but intensifies neoliberal logic in daily life in spite of continued evidence for the implausibility of neoliberal economic theory in actually fulfilling its claims to model reality.[6]

Neoliberalism is a contradictory logic that suggests humans are essentially individualized economic agents in competition with one another.[7] It relies on the dismantling of state institutions to liberate the natural "entrepreneurial" capacities of the individual, but simultaneously depends on the state as a direct means for advancing this entrepreneurial reason. Neoliberal practices generally involve projecting onto individuals the role that government and welfare once played. The tasks of the state are transferred to private organizations and persons who volunteer time and energy to charities and nongovernmental organizations, delineating the worthy from the unworthy in their distribution of aid. The value of an individual is determined through their willingness to become personally "responsible," acting as an "entrepreneur of the self." Network technologies are often directly articulated to these norms as tools that will empower individuals in their quest for proper self-management as the welfare state wanes away.[8]

Modern subjects, states, and bodies are defined by the creation of an exterior that is, in a sense, still "included" because the interior is constituted by the delineation of

the exterior. Neoliberalism follows this way of producing divisions. Anthropologist Aihwa Ong, drawing on Giorgio Agamben, suggests that neoliberalism produces some bodies as "bare life": excluded individuals who "*may be killed and yet not sacrificed*."[9] According to Agamben, the modern state depends on excluding people by reducing them to this figure. There is, for both Ong and Agamben, a constitutive exterior for modern (neoliberal) governmental bodies. Neoliberalism, like other discourses of modernity, defines interiors and exteriors based on specific, normative prescriptions for bodies, behaviors, and beliefs. With neoliberal globalization, bare life is negotiated and reframed within specific organizations that often exist beyond the state, although the sovereignty of those organizations is guaranteed precisely by the definition of an exterior.[10]

Consequentially, neoliberal struggles for justice are often reductively framed as a fight over inclusion and exclusion. The disconnected individual is one who fails in the same tasks as the neoliberal subject.[11] Their fate is ultimately the result of individualized behavior, not the result of social exploitation. One who is disconnected is not a proper entrepreneur of the self. They are not moving at the proper speed of capital and information. They do not conform to the dominant norms of life and labor. But there appears to be something other than the norms of neoliberalism going on here, as exploitation is, in fact, repositioned as a privilege. If one is being exploited, then it at least means that they are still connected and still visible. Exclusion still exists, but those who are excluded do not appear as an "included" quasi-visible or exploited Other. The excluded simply vanish from the limits of possibility since the network supposedly accounts for the totality of connection. Social media provide a specific context in which the norms of neoliberalism are redefined in terms of the imagined limits and possibilities of technology. But the challenge to neoliberalism provoked by networks is analogous to the challenge networks level at modernity. As the constitutive exterior of the modern seems to vanish with networks, the division between worthy and unworthy central to neoliberalism is, quite paradoxically, also eliminated with the discourse of networks and connectivity. Networks, in doing away with the exclusionary logic of modernity, do away with the very possibility of *recognizing* disconnection. This does not mean that there is no exterior. It means that the exterior is no longer constitutive for modern structures of state, or at least that the exterior is effectively rendered invisible and silent. Because there is supposedly no Other beyond the network, then the organizational logic of networking does not acknowledge exclusion.

As network scientist Duncan Watts has stated, "We are either all connected or not at all connected—there really isn't anywhere in-between."[12] Similar statements can be found in nearly any popular or theoretical account of networks, although many come with caveats, usually because these authors seem aware of how reductive these claims happen to be. The end result, however, reframes human relations in terms of connectivity rather than through difference, conflict, and the formation of an exterior. The separations that define the modern subject seemingly vanish as the boundaries of

the individual are gradually erased through network connectivity.[13] The elimination of these divisions seems to reveal our eternal connectivity, demonstrating the modern individual as one who was easily duped into imagining a false individuality. And while this may appear liberating, as it removes the possibility of ever Othering or excluding another, it also eliminates the sheer possibility of claiming something—anything—as disconnected.[14] To be excluded is an ontological impossibility, as there is always some form of connectivity grounding any and all relations.[15]

As a result, networks cannot acknowledge social justice as traditionally understood. With the feigned logic of totality normalized by networks, those on the margins or disconnected either cannot exist or should be actively eliminated.[16] Networks intensify and reinvent the logic of neoliberalism through the supposed overcoming of modernity—which, likewise, seems to suggest a repetition of the darkest impulses of the modern directed to the elimination of the exterior invented by modernity.[17] There is no Other, the exclusion of which is necessary for the maintenance of political bodies. In the discourse of modernity, the Other may be excluded, but their absence is likewise a presence, as they can neither be fully erased nor forgotten without the additional visibility of violence toward the excluded. In both modernity and neoliberalism, the Other is something akin to the return of the repressed: it is always present, yet it is also beyond the limits of nation, state, and subject. On a network, these Others are either rendered invisible, are actively eliminated, or are remade into proper nodal citizens through techniques and tools of governance that reduce the human to an abstraction defined by a technological imaginary of connection and flow.

We can return to the Homeless Hotspots of the Introduction as an example of the limits of network justice. The homeless seem like they would belong among those excluded by the disciplinary mechanisms of modernity, and much of the discourse surrounding the program reads like any other modern narrative of neoliberalism. Like other subjects rendered abnormal or pathological by the institutions of the modern, like the contagious or the insane, the homeless often serve as Others that define the limits of morality, law, and society in modernity.[18] Under neoliberal capitalism, the homeless are those who cannot properly manage themselves. Their exclusion is brought about through some personal moral, mental, or social failing.[19] Reintegration into the social is the result of conformity to norms of individual labor, self-determination, and self-management. To be worthy of charity or support, one must demonstrate adherence to these norms. The individual narratives of the Hotspots directly express this discourse, conforming to neoliberal language to be rendered worthy of rights and recognitions. On the Homeless Hotspots website, we learn that the Hotspot named Clarence is from New Orleans. He lost his house in hurricane Katrina and has been homeless ever since, though he "prefers the term 'houseless' to 'homeless.'" Another Hotspot, Dusty, is "urgently looking for employment as he no longer collects unemployment benefits." A third, Jeffrey, has been homeless "since his treatment for Traumatic Brain Injury ceased."[20] The thirteen Homeless Hotspots are

presented to us as "worthy" of connection through the self-revelation and confession of trauma and personal truth.

Yet, a project such as Homeless Hotspots doesn't fit with the triumphalist narrative where neoliberal technologies eliminate exclusion and discrimination through the power of self-managed subjects of capital. The homeless, after all, are still homeless even after they have been "connected." Instead of making the homeless into proper neoliberal subjects, Homeless Hotspots, like other forms of network "justice," transforms the exclusionary processes of neoliberalism in two ways. First, Homeless Hotspots redefines worthiness in terms of the desire and ability to make information and capital flow between human and technological connections. The specific tasks of self-management are to maintain connections and perpetuate flows of data and capital—following precisely the imagined material agency of network infrastructure. But this worthiness does nothing to actually change the position one occupies within society. There is, in fact, no consequent difference that results from one's "worthiness"—one is simply connected in a reductive, instrumental way. This brings us to the second transformation: the logic of networks suggests that marginal subjects are never actually disconnected or excluded. Instead, they become an internal threat to social stability that must be corrected because their presence signifies their inclusion. Or, failing that, since disconnection becomes effectively impossible, the breakdown of society becomes perceived as inevitable because the exterior that differentiates worthy and unworthy will never be maintained. Inhumanity overwhelms inhumanity, proliferating different and varied "inhuman" subjects that can neither be excluded nor assimilated.

In challenging the discourse of modernity, networks redraw the lines of inclusion and exclusion. To be visible indicates one's inclusion in the social. To be included is to connect. But to be included *properly* is to be remade as something that correctly perpetuates flows of capital and information, correctly manages visibility and transparency, correctly circulates flows as a well-functioning node in the connections of network technology. To be homeless, in this case, is not to be excluded from the social order—it signifies both one's connectedness and the threat one provokes from *within* social inclusion. Likewise, to disconnect, to resist connectivity, or to refuse to perpetuate and circulate flows is to be pathologized as a blight to be corrected or a threat to be erased from the "ontological." The choice is to embrace the inhumanity of the system or the inhumanity of the undisciplined body that is best removed from view. Disconnection, as the apparent material limit of network technology, provides the figurative limitation of the network society. To disconnect is to no longer exist. What this disconnection looks like, then, is something of an impossibility—but it nonetheless informs a constant threat internalized by the nodal citizen as a potential technique for discipline that annihilates rather than corrects.

The two chapters in Part Three discuss how the resistance to neoliberal forms of governance normalized through networks takes the form of an even more rigid, hostile, and hopeless form of neoliberalism, in which the individual simply

rejects encounters with others and the possibility of humanity together producing a different, better world. In the name of personal liberty, the network of society must come to an end, apparently. It seems as if we've come full circle, in which the modern fears that initially defined network discourse as the Other of the modern return, once again defining liberal ideals of personal autonomy as opposed to the connective logic of the network. The next chapter examines these issues through ideals of contagion and epidemiology. *Inhuman Networks* then concludes by examining how the political mobilization of networks seems to have given up on the possibility of humans engaging with or transforming the world as agents who can collectively make a difference beyond the abstractions of technological connectivity and informational flow.

CHAPTER SEVEN
CONTAGION: THE INEVITABLE FAILURE OF CONNECTIVITY

Epidemics of connectivity

As discussed in Chapter 1, health, going back to ancient Greek and Roman medicine, has long been understood as the management of fluids and flows. The proper governance of the self depends on the disciplined management of inputs and outputs, in accordance with the maintenance of fluid equilibrium within the body. With the discovery of blood circulation, the management of these fluids became the regulation of proper circulation within the body, within the city, and within the larger society. Health emerged as the perpetuation and management of vital circulatory flows, be they bodily, economic, or communicative. The health of the body often serves as a metonym for the health of the body politic. The two are connected through more than trope, however. States are literally made and unmade through the transmission and circulation of pathology. In contemporary epidemiology, the failure to properly manage individual bodies is also a failure to manage the boundaries of national security.[1] While not a "fluid," like blood or the humors, illness is a flow that is transmitted over and between national borders. These flows must be regulated to maintain the health of the state—or else the state may collapse due to outside stresses from foreign bodies, in terms of both microbial pathogens and their carriers.[2] Epidemiology and public health are about managing and regulating flows, differentiating "good" flows from "bad" ones, stopping the circulation of that which damages the body, the social, and the state while simultaneously maintaining the connections that also potentially transmit sickness and death.

The abstract model of the epidemic—which explicitly delineates the social and the biological in terms of networks—"can be applied to phenomena that have nothing to do with disease: the circulation of objects, money, customs, or the propagation of affects and information."[3] The epidemic emerges, in part, from the same discursive formation we traced in Part One. As with the historical development of the network, epidemiological fears bring together technology, biology, and the social—a discursive conflation that has appeared repeatedly throughout the popular culture of the last several decades.[4]

Many of the current ways we have of understanding epidemiology directly emerge from the mapping of the internet.[5] The similarities between the internet and the networks of epidemiology—or the fact that they can be modeled using the same

mathematical formulas—have been taken to mean that the flow of information over the internet and the flow of illness in epidemiological networks follow the exact same structure.[6] Steven Johnson, the popular science and technology writer, has argued that the 1854 cholera epidemic in London is both the origin of contemporary epidemiology and of network theory. To understand the epidemic, early "epidemiologists" mapped the deceased and identified their material connections. The similarities between network theory and epidemiology have led Johnson to retroactively read the structure of the internet onto social relations in Victorian London.[7] Epidemiological contagion is held up by network theorists to demonstrate that our existence is essentially and naturally networked. Evidence of networks in nature is used to legitimate claims that the social connectivity of the internet is a manifestation of the natural order of existence. In the writings of network scientists, there is an assumed equivalence between the biological and communicative. Both are networked, both operate through the movement of flows, and both must be controlled and managed because of totalized interconnection.

Yet, in an age of networks, epidemiology and contagion take on a new form, different from pathologies of the past. Historically, the modern understanding of epidemiology, like larger exclusionary discourses of modernity more broadly, identified an Other to exclude, forming community and solidarity through the delineation of a boundary that separated out sick and well, dirty and clean.[8] Networks, on the other hand, perpetuate fears of contagion and virality that seem to emerge from an invisible and ubiquitous everywhere.[9] With the network paradigm for illness and contagion also comes an inability to specify the contagious enemy, consequentially inducing in the nodal citizen a continuous state of fear and anxiety about the connections to which they feel the need to be constantly attached.

While the above sketches the general contextual concerns of the following pages, this chapter takes as its object the specific case of "contagious obesity." Historically and popularly, it is assumed that obesity is not a contagious illness. Obesity does not follow the same epidemiological model as influenza or other diseases that incite global panics. It is, in dominant depictions of weight, the result of an individual's moral failings. But, when understood through networks—as it has, at least in some form, since the early 1990s—obesity spreads and behaves like any other contagious illness. If we're living in an obesity epidemic, this argument goes, then obesity can be explained through models of epidemiology that define society as a network through which illness flows. The very idea of contagious obesity appears in works on networks as solid evidence of the natural social connections that exist beyond technological forms of social media.

The contagion of obesity takes two forms. In the first version, obesity is a biological illness. It is a symptom of a virus similar to those that cause the common cold. Primarily found in the work of biologists Nikhil Dhurandhar and Richard Atkinson, this argument was the first attempt at articulating the obesity epidemic with an actual epidemic. Dhurandhar and Atkinson's research was widely commented upon in

British popular culture, culminating with a Channel 4 documentary on Dhurandhar titled *Fat Plague*. In the second, obesity is a cultural illness spread through social networks and network technologies. Individuals gain weight because of the flow of normative beliefs through social connectivity, including connections mediated by technology. The spread of obesity can be between people who neither know each other nor are close geographically. This discourse is associated with the massively popular work of Nicholas Christakis and James Fowler. Their book on social networks, *Connected*, has been one of the best-selling popular nonfiction works on networks and network theory to date.[10] The duo's research was referenced, among other places, in the comic strip *Cathy* and the television show *Boston Legal*. More significantly, both Labour and Conservative political parties in the United Kingdom have actively embraced Christakis and Fowler's research in the creation of public health policy.

I'm not going to go into much detail about the debunking of the "science" discussed in this chapter—especially that of Christakis and Fowler, whose work is methodologically and statistically suspect. I do think it deserves mentioning that what I discuss below is not universally accepted as truth by many of those who have seriously investigated the quantitative models that network scientists use to form their arguments.[11] Even with these criticisms—which, at this point, are not exactly obscure—popular and social scientific writings about the contemporary significance of networks regularly make reference to Christakis and Fowler to legitimate claims about the biological or scientific roots of social connectivity. The third chapter of Yochai Benkler's popular nonfiction book *The Penguin and the Leviathan* is titled "Stubborn Children, New York City Doormen, and Why Obesity is Contagious: Psychological and Social Influences on Cooperation."[12] Benkler references Christakis and Fowler as scientific evidence for his belief that our behavior is influenced by those to whom we're socially networked, "even if we're completely unaware of that influence."[13] Lee Rainie and Barry Wellman's *Networked*, a book written for social scientists and students, like Benkler, repeats Christakis and Fowler's narrative about contagious obesity as scientific evidence for the supposedly networked nature of human society—and in their case, this is even with the acknowledgment (and dismissal) of the debate over Christakis and Fowler's statistical models.[14]

I think it is still important to critique the implicit norms embodied in these mathematical models of networks employed in public health and epidemiology in spite of any problems with scientific support. In fact, it's even more important to understand how these supposedly debunked claims persist in popular culture given the absence of supporting evidence because it indicates how a model of governance *produces* ideals of behavior rather than *reflects* "nature" as revealed through science. Throughout this chapter I rely more on popular accounts of network science than original scientific articles; I do so because in writing for popular audiences, scientists and science journalists appear to conflate what scientific findings actually claim with other normative beliefs about what proper bodies are and do—often perpetuating

long-discredited findings in the name of "truth." Scientists seem to make more outlandish claims when they're not being peer-reviewed by other scientists—though, as Christakis and Fowler demonstrate, sometimes the peer review process still lets pass "science" that appears to confirm normative beliefs about bodies even if it fails to pass tests of statistical and methodological rigor. Nonetheless, we cannot limit ourselves to debates over the validity of scientific methodology when understanding the cultural significance of these supposedly scientific claims.

These flawed arguments about contagious obesity point to larger transformations in the cultural significance of weight. When networks explain illness, obesity becomes a sign of the inability to manage connections and flows properly. It becomes a visible symptom of one who is not a proper nodal citizen. There are three types of flows associated with contagious obesity. They are biological, in terms of the illness that is spread throughout an epidemiological network. They are informational, in terms of the communicative and technological flows that spread beliefs and norms about obesity. And they are economic, in terms of the public funding of health care. In the discourse of contagious obesity, the inability to manage these connections and flows has one ultimate outcome: ruin. This is not just about health, then. As once noted by Eve Kosofsky Sedgwick, being fat in contemporary Western culture means that "there's nothing here for you; your money is not negotiable in this place . . . this is . . . the precipitation of one's very body as a kind of cul-de-sac blockage or clot in the circulation of economic value."[15] Overweight individuals are trotted out in news stories as examples of blights feeding off the taxes, insurance fees, and goodwill of the people, absorbing capital that could be going elsewhere. The fat person is a threat not only to the biological well-being of society, but also to its economic well-being. Like apoplexies in the networks of anatomy, fat is constructed as a visible symptom of the failure of economic circulation, produced through both biological and technological connectivity.

In what follows, I first cover how obesity is demonized both historically and in contemporary culture as an illness. Obesity is usually understood not as contagious, but as a moral, failing. Second, I move to how networks in the discourse of contagious obesity challenge traditional models of health and social connectivity. The two models of contagious obesity transform epidemiology's understanding of disease and infection by applying networks, connection, and flow to that which was previously thought to be a matter of individualized self-discipline. When networked, obesity becomes a health problem that affects the totality of the network. An individual's health corresponds to the health of the totality. Finally, I conclude with the economic embrace of the discourse of contagious obesity and the rejection of social connectivity more broadly. If health must be managed at the level of the totality, then individuals will inevitably fail to manage their health and the health of others. If everything is connected, then individualized strategies to manage health are impossible. This discourse has been used to legitimate arguments for the elimination of nationalized health care in Canada and the United Kingdom.

Pathologies of self-management

Applying network discourse to obesity challenges long-standing beliefs about what fat is and why people get fat. Thus, we must first describe and contextualize these traditional beliefs about obesity.[16] Obesity has always been understood in terms similar to other infectious diseases: as the result of a moral failing on the part of an individual or group of people. Obesity, however, is not the result of some metaphysical or spiritual sinfulness, as is often the case with other diseases.[17] It is, in dominant discourses about weight, the result of very real, controllable actions that the fat person cannot manage. Yet, one cannot suggest that obesity is itself a disease. Its causes are many, and science has few concrete explanations for what fat is or why some people get fat as opposed to others, even when controlling for diet, exercise, and genetics. Nobody has ever died because they were too fat.[18] Even though we are supposedly living within an "obesity epidemic," there is little to no evidence that fat, in and of itself, is directly detrimental to anyone's health.[19] The public health research that statistically correlates obesity and mortality is often based on the distortion and manipulation of statistics.[20] The number of individuals considered overweight and obese has increased, in part, through the historical rewriting of normative coding schemes for weight—namely, the Body Mass Index, or BMI scale, initially devised by an insurance agent to literally calculate the economic value of a life. In spite of over a century of scientific research on body size, there is no agreement, or even consistent explanation, for why people gain or lose weight.[21] Evidence suggests that dieting is more damaging to one's health than maintaining a steady weight, even one that is considered overweight.[22] Yet, almost uniformly, fat people are perceived as disordered and sick. According to dominant perspectives on health in the West, the mere representation of fat in popular culture is understood to legitimate behaviors that clearly lead to death.

The demonization of fat, consequentially, is not about health. It is instead about an ideal of individualized self-management that clearly relates to bodily norms of liberal governmentality. Fears of obesity conform to the model of a moral panic, in which various social failures are scapegoated through the popular criticism of a population regarded as unwilling to obey dominant norms.[23] The identity of a fat person, as fat, marks that person as Other. The obese are "bad citizens" to be feared, even when their disease is not understood as contagious. Since the mid-nineteenth century, they have been "a danger to themselves as well as to others."[24] Fat people were seen as unable to fulfill civic duties such as military service and would require additional state support—blockages in the circulation of capital for the welfare state. Ultimately, discrimination against fat people is a result of moral imperatives handed down from protestant virtues of restraint and moderation. Bad citizens are unable to watch their weight, gluttons who consume more than their fair share. Proper citizens are moderates, managing what they eat, remaining healthy. Flows of food and energy must be managed properly to live a virtuous existence. Early on in the pathologization

of obesity, weight was articulated to the management of flows, be they of capital or calories.

Since obesity has never been understood as contagious, today's attribution of the term "epidemic" to obesity has met a great deal of resistance in popular culture. In dominant discourses about obesity, the increase in weight associated with the obesity epidemic is a reflection of widespread, if individualized, moral failings. Individual restraint and a return to protestant virtues of moderation and work are the only ways to counteract the rise of obesity. Body size is again directly associated with economic self-management. One who is overweight is both one who consumes too much and one who is lazy and wants things to come "free." Flows of commodities and money are completely mismanaged with someone who is fat.[25]

The traditional way of reading the body of an obese individual is to project upon them not simply the signifier "sick." The historical vilification of weight in Western culture is specifically to identify someone who is not properly managing their own body, consequentially performing the mismanagement of self and mismanagement of energy and capital flows. This narrative, which resonates precisely with modern ways of understanding infection and epidemiology (along with neoliberal claims about the management of self), is directly challenged with the networking of obesity.

"Infectobesity," or, the epidemiology of fat

The application of network models of epidemiology to obesity has odd results. In making obesity contagious, weight is disarticulated from individual morality. Obesity becomes a symptom of social connectedness rather than an expression of failed self-governance. Its only possible management exists not at the level of the individual, but at the level of the network as a whole.

While the term "obesity epidemic" has been around for decades, it usually was used to refer to the increase in numbers of those marked as obese over the years. Statistically, obesity appeared to be increasing at a rate that mimicked other contagious pathologies. Regardless, obesity was not thought to obey the assumptions of epidemiology until biologists Nikhil Dhurandhar and Richard Atkinson first argued that obesity is a visible symptom of a viral infection. In a paper delivered at a 1997 conference on experimental biology, Dhurandhar and Atkinson made the claim that obesity was directly caused by Adenovirus 36 (Ad-36), a virus similar to the common cold.[26] An essay published several years later by Dhurandhar, "Infectobesity," argues that infectious viruses, while not the sole cause of obesity, should be taken seriously as a potential source of the "obesity epidemic."[27] In their work, Dhurandhar and Atkinson articulate obesity in terms of biological networks, connections, and flows. But the discourse surrounding the contagion of this specific virus is also understood to remove moral blame from fat people, violating the narratives of epidemiology and the historical construction of obesity. Instead of personal moral failings, infectobesity

identifies any and all physical contact and connection as a possible source of biological contamination. In Dhurandhar and Atkinson's work on obesity, everyone is a potential source of illness.

If obesity is an epidemic, then one would assume it to conform to dominant narratives of epidemiology. The very study of epidemiology has, at its heart, a fear of interaction and connection. It is based on the assumption that specific groups of people can be marked as other. The health of the population will be maintained through the exclusion of these groups. The term "epidemic" in the West is one that carries with it a division between the worthy and the unworthy, the moral and the immoral, that dates back to early Christianity and the treatment of leprosy.[28] Naming something an epidemic necessarily carries with it implications that a certain population should be separated and cut out of the rest of society because of their moral impoverishment. Sickness is the result of unsavory populations mixing and connecting with the "pure." The construction of a disease as a moral failing reassures the "well" that they are morally as well as biologically untainted.[29] With AIDS, epidemiology shifted from blaming poor and "dirty" populations for their illnesses to blaming individuals for having nonnormative identities and lifestyles that involved behaviors coded as inherently unhealthy.[30] Believing that certain lifestyles and behaviors were more or less risky than others shaped the performance and funding of public health research on AIDS.[31] These assumptions can blind public health scholars to larger health issues at hand, distorting disease (or ignoring it) because of how epidemiology understands population and contagion. Prior to AIDS, these groups were condemned for a kind of metaphysical or religious sinfulness. After AIDS, this sinfulness was articulated to individual behaviors common to a specific population.

The narratives of epidemics define contagion through connective social networks. The possibility of contagion is the verso of the connections produced through community and technology. These epidemiological narratives, nonetheless, identify a specific population as the cause of an infection's spread throughout the network. According to Pricilla Wald, disease "dramatizes the dilemma that inspires the most basic human narratives: the necessity and danger of human contact."[32] Epidemiology reveals the social networks that supposedly ground contagion. The practice of epidemiology traces human interaction, often facilitated by contemporary transportation networks, to determine where an illness originated and, at least supposedly, where it may go. In the process, epidemiology uncovers networked social connections that are often invisible. But it does so to control and manage future possibilities for connectivity, marking populations to be excluded from the social to maintain the safety of others.

The account of transmitted contagion is what Wald refers to as the "outbreak narrative," which highlights the anxiety about connection and disconnection intrinsic to a world defined by networks. Epidemiology traces the global networks that connect all to all while specifically pinpointing people and populations that must be excluded to maintain the health of the rest of the network. Epidemiologists follow

a relatively standard script when describing how diseases move throughout different populations. Even in a globalized world defined by networks of transportation and global interconnection, epidemiologists still look for carriers that signify the mixing of populations that should otherwise remain separated. Epidemiology simultaneously tells us about global interconnection and marginalizes an "infectious" population as Other, to be quarantined and excluded. Epidemiology, thus, is not simply a tracing of networks, but tracing them insofar as they can delineate a necessary exterior to community. Those marked contagious are relegated either to the margins or to the outside, through which the center and community are thus constituted.[33]

This boundary assumed by epidemiology—and the ability to identify the other to be excluded—is exactly what is challenged when obesity is articulated to a virus. How Dhurandhar and Atkinson define contagious obesity challenges both the outbreak narrative as well as the historical understanding of obesity and disease. They remove both population and behavior from the contagion of obesity. While making obesity a virus permits it to be described using the language of epidemiology, the specific way that contagious obesity is constructed makes it impossible to define an Other that can be isolated and separated to maintain the boundaries of the well.

Dhurandhar and Atkinson's argument was developed from decades of research on the effects of Adenovirus-36 in chickens, mice, and monkeys. According to the scientists, Ad-36 made these animals fat by stimulating the growth and reproduction of new fat cells, or adipocytes, as well as speeding up the growth of fat cells that already existed in the animal's body. An Ad-36-infected animal could have up to three times as many fat cells as one not infected.[34] Dhurandhar has been cautious about suggesting that Ad-36 causes obesity in humans, claiming, "Everybody wants me to say this virus causes obesity in humans for sure. I'm not prepared to do that yet."[35] Nonetheless, this has not prevented the two from making causal claims. "If you are obese and you test positive [for adenovirus antibodies], there is a good likelihood that your obesity, in part, is due to the virus," stated Atkinson. "If you are not fat and you have got the antibodies, then the chance of you getting fat is about 60 to 100 per cent."[36]

An adenovirus is transmitted like a common cold or influenza. It is often mistaken for those illnesses. Advice from the researchers studying obesity and Ad-36, along with the usual directives to watch one's diet and exercise, included "washing your hands" as a way to prevent obesity.[37] Other preventive measures advocated by Dhurandhar and Atkinson included governmentally mandated blood donor screening for Ad-36 "because it remained infectious even after being stored for a long time." Blood transfusions could lead to obesity through the transmission of Ad-36 and its antibodies. Thus, obesity is like any other common, contagious illness. The strategies for preventing illness are similar to those for preventing colds or influenza—if even more extreme given the panic surrounding obesity.

These strategies would seem to marginalize the contagious other in the same way that epidemiology has, historically. Yet, avoiding the overweight does not change one's risk of catching obesity. At least in the case of animals, those who had grown fat

were no longer contagious. Ad-36 infects and then leaves the body, only increasing weight after the virus is already gone. Atkinson takes this to mean, "A fat person who's gotten fat because of this virus isn't going to hurt you. *It's that skinny guy with a cold who's sneezing on you. Watch that guy. Discriminate against him*."[38] The visual manifestation of obesity is removed from the diagnosis of contagious obesity. Fat may be contagious, but fat people are not the ones who spread it.

In the dominant discourses surrounding obesity, there is a clear population that is "at risk," vilified and separated out from others. Yet, in labeling Ad-36 as a cause of obesity, Dhurandhar and Atkinson subvert this entire narrative. Their articulation of a virus and obesity pathologizes weight in a way previously unthought of, literally treating it like a cold. Yet, at the same time, their conclusions remove moral blame from contagion. A fat person is fat not because they possesses any sort of essential moral failing, not because they lack will or self-control, and not even because their lifestyle is defined by unhealthy behaviors. Those who are contagious are, in fact, those who are not fat and do not exhibit the supposed symptoms of moral failing. The entire narrative of contagion defined by Dhurandhar and Atkinson turns anyone who appears to have the symptoms of a cold or the flu into a potential carrier, regardless of body size (though Atkinson does single out skinny people). In other words, physical connection to *any* other human being could possibly lead to obesity.

Dhurandhar and Atkinson's research was taken up in the press with a fair degree of incredulity, in particular in the United Kingdom where it attracted the most popular notice. Their arguments were thought to remove moral blame from those who lack self-control. "You Ain't Fat, It's Just a Tubby Bug," ran a headline from the British tabloid *The Sun*.[39] *Fat Plague*, the Channel 4 television documentary that focused on Dhurandhar's research, was reviewed in the London *Times* with the following suggestion: "Eat healthy food, take exercise and avoid programmes that offer an easy way out." In the perspective of the reviewer, Dhurandhar's research was just an excuse for gluttony and sloth.[40] Another British editorial on the scientists' work sarcastically responded by asking, "Isn't it curious, though, how people who live entirely on takeaways, chips and fizzy drinks seem to be much more susceptible to this virus than people who prefer broccoli to burgers? Hmmm. Let's hope the Government orders an immediate investigation into why this is the case."[41] *The Mirror* also took the news of an obesity virus with a dose of sarcasm. Two weeks after being sneezed on in the supermarket, an editorialist for the paper claimed, "I haven't developed a cold or flu but I have put on more than half a stone in weight. This has nothing whatsoever to do with the massive amount of food I've eaten or the vast quantity of drink I've washed down. Nope, it's all the fault of the man in the supermarket. . . . No more diets. No more gyms. No more glands. No more self-discipline."[42] For these writers, making obesity contagious is simply another way of blaming others for one's own problems. Connectivity is assumed to negate personal autonomy and self-determination. In this case, the discourse of networks is simply rejected if it cannot mesh with other deeply held ideas about the individualized self-management of the body.

This popular rejection of Dhurandhar and Atkinson's research is not surprising. Defining obesity as a contagious disease does two things. First, it pathologizes obesity as a genuine illness that is highly contagious, manifesting itself outside of the phenomenological category that is understood to characterize obesity. Second, it then violates how epidemics are understood discursively because it empties obesity of any specific blame, at least in terms of how that blame is traditionally understood. If obesity is an epidemic then somebody should be at fault.[43] There must be a population that can be excluded in order to maintain the health of the dominant. Yet, in this case, the ones at fault are not the obese. When fat people cannot be blamed for being fat, then the narrative of contagion ceases to make any sense because nobody can be identified as a carrier of illness to be excluded. Ad-36 demonstrates that if moral demonization of a population is impossible, then everyone is potentially at risk. *Specific* human connections cannot be managed. The maintenance of illness cannot work by targeting and isolating a specific population. *Any and all* human contact is something to be managed as viruses and epidemics—not only obesity but also recent panics, such as the one over H1N1 influenza—become detached from populations considered other or nonnormative.[44]

The narratives told about disease today no longer tell the dominant of their purity while making the sick and poor feel guilty for their own sickness. The exterior cannot be successfully constituted in discourses of contagion such as that of Ad-36. The rich and the privileged must guard themselves against any and all contact—both between other humans and between humans and objects. Ad-36 is transmissible through anyone—and the ones least suspected (i.e., thin people) are the most likely to infect.

Technology often appears to be a "clean" savior to produce a pure network separated from the dirty one of physical contact. But contagion isn't simply via bodily fluids, spittle, and germs.[45] Technology, while it may save us from physically contacting other bodies, cannot save us from contagion. Contagion also refers to the flow and movement of communication and ideas. Any form of connection and flow can be theorized as a possible source of danger, and the contagion of obesity is no exception. As I'll now discuss, making obesity a contagious virus also transforms any connection into something to be feared. The networks of contagious obesity are not only biological, but also cultural and communicative. While the biological contagion of obesity may have been ridiculed in popular newspapers and tabloids, governmental policy makers have at least partially embraced the discourse of contagion through communicative social networks, especially in claims about the funding of nationalized health care.

Social networks of contagious obesity

Unlike Dhurandhar and Atkinson, Nicholas Christakis and James Fowler do not argue that obesity is literally contagious by way of a virus. Christakis and Fowler

study the contagion of behaviors and norms through social networks. Nonetheless, Christakis has suggested that their work emerged from the epidemiological metaphors commonly used to describe obesity.[46] If the history of epidemiology found networks at the heart of contagion, then Christakis and Fowler's work suggests that which is networked in general can also be thought of as contagious like a virus, as both conform to the abstract model of connection and flow that informs biological, social, and informational networks alike.

While biological contagion is limited to the flows enabled by some form of physical contact, associating disease with communicative social networks makes infection a possibility of any and all connection—and it also saves the outbreak narrative in a specific way. Contagious obesity over social networks makes the focus of management not simply one's personal connections, but the entire network as a totality. As with Ad-36, everyone connected on the network is constructed as a potential spreader of disease. Specific populations cannot be marked as other to be separated out since there is no conception of population on a network. There is only a single totality. Yet, the outbreak narrative is reintroduced at the level of individuals. Specific people are marked as those who cannot manage connections and flows—not personal connections and flows, but connection and flow as such, beyond the personal and through the entire network. These specific people are the ones targeted by public health campaigns. The focus of management is not only one's personal connections to other people, but also everybody's connections to everybody else, with the goal of pinpointing individualized connection failures for correction or exclusion. Like other forms of nodal citizenship, proper behavior is defined as the management of connectivity and flow—here directly associated with the totality of a singular network to which all are connected.

As mentioned earlier, Christakis and Fowler draw directly on the mathematical models of network science in their epidemiological studies of obesity. Accounts of epidemiology in popular scientific writing are remarkably tone deaf. Intended to explain the cultural implications of the mathematical graphs of network science, they are shot through with narratives that embrace discriminatory and stereotypical language to understand contagion. They tend to begin with discussions of AIDS and then branch out elsewhere to other phenomena that could be considered contagious, suggesting the parallels between the mathematical models for both phenomena mean, at a fundamental level, the nature of both is identical.

Albert-László Barabási, one of the world's most well-known network scientists, opens the chapter on epidemics in his book *Linked* with the story of Gaetan Dugas, the flight attendant labeled "Patient Zero" of AIDS. Barabási's narrative explicitly characterizes Dugas as narcissistic and self-absorbed, if not completely psychopathic. Dugas infects others with little regard for others, willfully destroying the lives of those with whom he has sex:

> [Despite] his narcissistic perfection, Dugas began developing a taste for the darker houses that revealed little of his mesmerizing physical characteristics. . . .

> One night in 1982, as he prepared to exit . . . he switched on the lights, slowly turned towards the man he had met a few minutes before and immediately had sex with, and pointed to the purplish spots and bumps on his face. "I've got gay cancer," he said. "I'm going to die and so are you."[47]

Barabási isn't the only scientist to draw on this narrative in explaining epidemiological networks. In Duncan Watts' account of the mathematics of epidemics, Dugas is singularly blamed for bringing AIDS to San Francisco from Africa, though Watts avoids the stereotypes that Barabási uses to critique the morality of Dugas, or supposed lack thereof.[48] The account of Patient Zero in these network narratives repeats Randy Shilts in his *And the Band Played On*,[49] where Dugas' transformation into Patient Zero reduces him into little more than a malicious carrier intent on connecting, spreading, and killing through social networks.[50]

The strict adherence to this narrative by network scientists is particularly offensive given the fact that epidemiological research in the late 1980s had already discredited this model about the spread of AIDS.[51] The Dugas narrative has almost nothing to do with the reality of AIDS. The perpetuation of the Patient Zero story in these works on social networking has more to do with adherence to the regime of truth produced by network discourse than understanding the operation and spread of disease. Dugas appears to provide an exemplar in how a single malfunctioning node, by connecting and circulating the wrong biological flows, comes to destroy an entire population. In other words, this "truth" about the spread of AIDS through a network is reproduced nearly twenty years after it has been debunked because the "truth" of networks demands it. The "scientific" narratives of networks given by Barabási and Watts rely on evidence long revealed to be incorrect, if not destructive and damaging for the political reality of AIDS in the 1980s and 1990s,[52] because they see their models reflected in these discredited stories.

In these narratives of networks, Dugas is not only reduced to a hub through which disease flows, but contagion is also reduced to a mathematical formula that can explain any and all interaction over networks as contagious. Barabási, immediately after discussing Dugas, moves to a discussion of the "contagious" spread of a cartoon over the internet because both "followed the same fundamental laws governing the spread of fads, ideas, and epidemics in complex networks."[53] Duncan Watts moves from discussing AIDS to a discussion of computer viruses, equating the two as functioning according to the same models.[54] Because networks are posited to explain all forms of connection and flow, the same fundamental model for disease and technology is posited to explain both. Any attempt to understand how disease is lived and how the "sick" are vilified is excluded from the outset, to such an extent that narratives considered factual, even within a normative discourse of scientific truth, are disregarded in favor of ones long revealed to be false.

The discourse of networks makes contagion a general term for the movement of flows. Thus, anything that can be modeled using mathematical formulas for

networked flows can be described as contagious. This conflation of networked flows and illness also makes a contagious disease out of that which is typically thought to be a result of individual behavior. According to Christakis, for instance, "it seemed to me that if people are interconnected, their health must also be interconnected."[55] Health problems usually understood as the result of individualized human behavior and psychology—obesity, smoking cessation, suicide, and depression, among others—are also contagious in the model of networks when used to inform public health.

Christakis and Fowler's original work on obesity applied mathematical network models to a massive longitudinal data set—the Framingham Heart Study, from Framingham, Massachusetts, which included 12,067 individuals tested repeatedly from 1971 to 2003. Over time, they found that the prevalence of obesity spread throughout the social network in such a way that "social distance" appeared to be more important than "geographic distance."[56] Obesity followed a network model for epidemiology, spreading outward through the connectivity of personal relations over time. Links had nothing to do with the sharing of space or physical contact. Obesity was spread through the sharing of friendship. While not a virus, obesity was still "socially contagious" for Christakis and Fowler, moving through social networks via changing social norms. Obesity is transmitted though the flow of "ideas rather than by shared behaviors."[57] There was no evidence that the increase of weight gain throughout the network had anything to do with consumption patterns or personal actions, such as sharing meals. The spread of these social norms had nothing to do with personal proximity. Network effects still existed after people moved away from Framingham to other parts of the United States. Social connections were, thus, networked communications that could enable the flow of these social norms. Obesity was something "caught" through the interpersonal connections between people, often maintained through technology rather than through physical proximity or contact.

Christakis and Fowler deny that this phenomenon is the result of fat people spending time with other fat people. According to Christakis, "It is not that obese or non-obese people simply find other similar people to hang out with. Rather, there is a direct, causal relationship. What appears to be happening is that a person becoming obese most likely causes a change of norms about what counts as an appropriate body size. People come to think that it is okay to be bigger since those around them are bigger, and this sensibility spreads."[58] These contagion effects are not directly person to person. They exist at the level of three degrees of separation. Christakis and Fowler found that if "your friend's friend's friend gained weight, you gained weight."[59] Much like Dhurandhar and Atkinson's research, the contagion of obesity cannot be managed at the level of specific personal connections. Instead, it is in the very nature of connectivity that possible "disease" is everywhere. What must be managed is far beyond the personal.

With Christakis and Fowler's model of contagious obesity, the management of weight in social networks is not about managing the self or managing one's personal connections. It is about managing the totality of all possible connections and flows that

make up the social network that connects everybody to everybody. Even if contagion effects only occur between three degrees of a network, it is impossible to effectively place limits on a network, as everyone is, nonetheless, connected. In Christakis's words, epidemiology and public health, when viewed through social networks, reveal how people "are embedded in a vast and complex social network of ties to their friends, family, coworkers, and neighbours and, through those individuals, in turn, to their friends, family coworkers, and neighbours, *and thence on outwards, endlessly, into a vast fabric of humanity*."[60] Health is coextensive with the totality of humans on the planet and the management of health involves the management of the entire network.

After the publication of Christakis and Fowler's original article, a number of references to it appeared in American popular culture. On an episode of the television show *Boston Legal*, William Shatner's character, a lawyer named Denny, tells another lawyer, Carl (played by John Larroquette), that he had to fire a colleague because of her weight. Referencing Christakis and Fowler's study, Denny states, "Obesity is a disease . . . I had to fire her, I couldn't risk catching it . . . Fat people gotta go, Carl! They're contagious!" The comic strip *Cathy* interpreted the study with three friends at lunch discussing the study. The eponymous Cathy states: "When they announced that obesity runs in social circles, they predicted it would ruin friendships . . . but here we are! . . . 'If one is obese, the others have a 71% chance of becoming obese' . . . did they really think that would drive us apart?!" Her two friends respond, in unison, "We've never been more committed to staying by each other's sides!" And then, in the final panel, all three yell at their server while pointing at one another, "She'll have a small dry salad and a cup of water!" These examples demonstrate two techniques related to the management of connection when it comes to contagious obesity over social networks. In *Boston Legal*, the solution is to cut out anyone labeled contagious, a technique that resonates with the historical construction of epidemics. In *Cathy*, the solution is to manage not only yourself, but everyone you know as well—the strategy suggested by network scientists.

The former fears, represented in *Boston Legal*, are echoed in much of the popular reporting on Christakis and Fowler's research. A vox populi column in the *Toronto Star* featured one Canadian stating, "If obesity was contagious I would have no friends."[61] An article on the duo's research in *The Scotsman* was titled, "Putting on Weight? Blame Your Fat Friend."[62] One from *The Australian* came with the title, "Beware Friends and Family, Obesity is Catching."[63] Because fat friends will inherently prevent you from losing weight, an article from the Montreal *Gazette* stated, "Individuals have two choices: continue exercising despite the friendly push back [and fail] or find a new set of friends who share the same set of norms."[64] When obesity is contagious, one should intentionally cut out those who are fat from social connection. As the *New York Times* put it, "People—and late-night comics—were drawn to a theory that seemed to offer a scientific basis for some exquisitely calculating behavior, like avoiding your friends if they get fat. (Or avoiding your friends merely because some of their friends' friends gained a couple of pounds.)"[65]

This version of connection management is similar to how epidemiology treats risky populations and the management of illness. The pathological should be isolated and avoided, cut out from the bonds that define the social. Yet, these strategies seem to suggest that obesity is contagious only from the first degree of interpersonal ties—the people that you personally know. This is not how Christakis and Fowler understand the contagion of obesity through social networks. Managing both your relations and behaviors, along with those of everyone you know, is far closer to how Christakis and Fowler understand the solution to contagious obesity. This is also closer to how contagious obesity is represented in *Cathy*. According to Christakis and Fowler:

> If you attempt to lose weight with your friends, you might succeed, but this tiny cluster of you and your friends is surrounded by a large group of people exerting pressure to gain weight again. In all likelihood, both you and your friend will thus regain weight.
>
> A good strategy to lose weight, therefore, might be to invite your friends to dinner and ask them to nominate their friends, and then invite those people to join a running club. If you were able to do this, you would also create a social force pressuring your friends to lose weight (since they would be surrounded), and you would create a buffer around you of people who are improving their health behavior.[66]

To actually lose weight one must pressure those who are overweight, within multiple degrees of friendship, to also lose weight. As a psychologist from McGill has claimed, "If a group of buddies are all couch potatoes and one of them decides to exercise, the others in the group will find 100 ways to put the guy off and sabotage his routine."[67] The only way to lose weight is to get *everybody* to lose weight. This strategy is also repeated in news articles on Christakis and Fowler. In Melbourne's *The Age*, one reporter argued, "The findings also suggest two propositions: that our responsibility extends beyond our own selves, and that we help create the world we live in."[68] The *International Herald Tribune* concludes with two suggestions: "The first is that unless you are a hermit living entirely alone, your choices and well-being do not affect just you. The second, and more important, conclusion is that medicine isn't simply about improving the health of an individual here and an individual there. It's about the health of the whole society."[69] Because of the networked nature of contagious obesity, for there to be any positive social change, I must not only manage myself, but I must also manage those to whom I am connected within multiple degrees. My health extends far beyond my own body, but is also shaped by forces far beyond my own control and knowledge. The only way to change my health is to transform the health of everyone around me, including people I may not know.

These two positions—either exclude specific individuals or manage the totality of the network—are not as opposed in Christakis and Fowler's work as they may seem. In his regular column in the *British Medical Journal*, the E. M. Forster aping "Only

Connect," Christakis has related these findings to the actual practice and policy of medical caregiving:

> When illness in one person is treated or prevented, others to whom that person is connected also benefit . . . the better connected that people are—the more family and friends they have, and the more central they are in the network—the larger these effects . . . This leads to a problem. *Taking network effects seriously means that we should value socially connected people more. From a policy perspective—if not a moral perspective—the connected should get more healthcare attention.*[70]

Publicly funded health care can reduce costs by targeting those "hubs" at the center of social networks that have the potential to spread illness through their connection. The practice of epidemiology has historically operated through similar tactics—hence, the demonization of Gaetan Dugas and the separation and isolation of those *specific nodes* marked "at risk." While Dugas was representative of a larger population of gay men in epidemiological narratives of AIDS, in network narratives he is *specifically* identified as the *one* individual who causes disease to flow through his connectivity. The malfunctioning nodes at the center of a social network, circulating pathologies, are the ones targeted, vilified, and ostracized by public health. Historically, this rarely happened without a simultaneous vilification of an identity or lifestyle. But in a model derived from network science, lifestyles and behaviors are not labeled as inherently unhealthy—the flows between people are what are marked as unhealthy. The connections to the nodes that spread illness are what are labeled risky. Instead of any specific identity or population, individuals who are both well connected and whose flows are constructed as a problem are the ones targeted. The management of the totality and the management of individuals are made equivalent. The object of public health is the connections and flows between people. Christakis continues:

> Health care delivered to well-connected people is clearly more cost effective . . . But should the connected therefore get easier and more access to care than the less connected? Is a connected life more valuable than an unconnected one? . . . After all, this would involve merely replacing one kind of privilege with another, perhaps for the better. Our healthcare system already privileges those with particular socioeconomic positions, such as wealthy people. Why not replace an inexplicit privileging of socioeconomic position with an explicit privileging of network position? This might be more just, leading to a more equitable distribution of resources. Although giving an extra healthcare dollar to a rich person rather than a poor person does not increase the overall health or distributive justice in a society, giving an extra healthcare dollar to a connected person does.[71]

Because the totality of the network and the management of individual behavior are made equivalent, the management of individuals is required for the health of the totality and vice versa. These conclusions assume a duty to keep even the most risky connected to the network, in part because contagion effects are understood to go both ways—*but only if a specific node is already tightly integrated into the network*. Those on the margins, barely connected, can be discarded with little effect or consequence.

Networking contagious obesity again brings to mind how Foucault understood Jeremy Bentham's Panopticon as a model of disciplinary power: "Inspection functions ceaselessly. The gaze is alert everywhere . . ."[72] Citizens are given the task of watching their own weight constantly while simultaneously watching the weight of all others. But this potential for observation operates within specific institutions for Foucault, shaping good citizens through the internalization of normative behaviors. With networked contagion, there is neither an internalization of norms nor are there institutions in which discipline takes place. Unlike the punishment of falsity over social media, there is no clear or coherent disciplinary mechanism—in fact, the ability to discipline or otherwise correct the malfunctioning nodes seems to completely vanish. The other people one must manage may be completely invisible. The social connection between one person and another, the connections through which illness flows, may be completely unknown to both. There is little here to suggest that the goal of control over networks is to internalize social norms based on discipline and the possible observation by others. Instead, other people's behaviors must be managed because they *do not* internalize norms defined by science and medicine as beneficial to society. The connection to others is assumed as *inherently* infectious, not as potentially infectious. There is no institution here other than the network, which is simply the totality of connections between all people (and things). The model of citizenship and behavior on a network is to take the totality of the social and understand it as an effect of one's personal behavior and connections. The management of myself is the management of all others and vice versa.

Taken together, both the viral and social forms of contagious obesity construct connection, *as such*, as a constant threat that must be managed. Obesity is everywhere, and it is going to infect you simply because of your connectedness to other people. The management of self is also the management of the network. Cutting out friends is something that most people do not want to do—and, for Christakis and Fowler, this would ultimately be unhelpful. Thus, an individual person must take it upon themselves to directly manage the behavior of all others. This kind of management of behavior and health should be placed in context of the economics of health care.

Economic flows, network pathologies

When understood as contagious, obesity becomes a ubiquitous health threat that must be managed from the perspective of a networked totality. This strategy for

managing health is not a purely theoretical model. The work of Christakis and Fowler has been taken up by politicians attempting to delineate a new strategy for public health and the governmental funding of medicine and health care. In the United Kingdom, "Labour and the Tories compete in claiming how far their thinking has been influenced by Christakis and Fowler . . ."[73] Under the leadership of Ed Miliband, the Labour Party adopted the ideas of Christakis and Fowler for their policy on smoking cessation. According to Labour health policy, targeting well-connected individuals and improving their health will improve the health of the entire network, reducing the cost of the UK's National Health Service. Conversely, Andrew Lansley, during his time as the Conservative Shadow Secretary of State for Health, echoed the popular interpretation of Christakis and Fowler with his claims that "people who see more fat people around them may themselves be more likely to gain weight." In a speech titled "No Excuses, No Nannying," Lansley suggests that obesity is entirely the fault of the fat people. Because obesity is socially contagious, individuals are responsible not only for their own weight, but also for the weight of the entire society.[74] Lansley's is an important reversal of the intent of those studying contagious obesity. While Christakis and Fowler want to rid fat people of blame, politicians like Lansley place the entire responsibility of public health on overweight individuals. The entire cause of the "obesity epidemic" can be blamed on how fat people cannot control themselves, and therefore destroy the health of the entirety of society. When contagious obesity is taken up in political and economic discussions of health and public health policy, the discourse of the moral impoverishment of fat people returns with a vengeance. No longer are individuals solely responsible for their *own* health. They are responsible for the health of—literally—*everyone else, as well*. And because of social connectedness, they are not a threat coming from the margins, but are a problem at the very center of all social relations. Social connectivity leads to the near-inevitable ruin of society through biological and communicational disease.

The role of the NHS is central to how health is articulated to weight in the United Kingdom. The network and flows of contagion are not only understood in terms of how fat people, through their social connections, spread obesity throughout society. Because of public funding of medicine, debates over contagious obesity also define fat people as economic blockages of flow. Weight is an economic blight that absorbs taxpayer money for the NHS through programs directed toward weight loss. The NHS pays for bariatric surgery, which is reported to cost more than £32 million per year. In the words of the *Daily Mail*, which (surprise, surprise) seem intentionally designed to further incite moral panic, this increase is greeted with "experts warning that many obese people are opting for a 'quick fix.' Some are even putting on weight so they can qualify for surgery rather than dieting, it is claimed." This cost of surgery has "increased ten-fold since 2000—at the same time as the NHS is being forced to ration cancer drugs . . ."[75] The NHS also subsidizes "slimming clubs" such as Weight Watchers and Slimming World in order to fight the obesity epidemic.[76] Much of this

funding to prevent obesity, initiated during Gordon Brown's time as Prime Minister, was implemented because, in the words of an editorial in *The Guardian*, "Brown thinks that if the obesity epidemic isn't halted . . . the NHS will have a stroke and we will all have to waddle to its grave, like giant weeping balloons."[77]

Even beyond the context of health care, obesity is coded as a massive economic expenditure. According to former George W. Bush speechwriter David Frum, in the Canadian paper *The National Post*, "Obesity harms the economy in other, unexpected ways as well: In 2000, U.S. airlines spent $275-million more on jet fuel than they would have had passengers weighed the same as they did in 1990. (Environmentalists will note that the airlines also emitted an extra 3.8-million tons of carbon dioxide as a result of transporting this extra human freight.)"[78] Obesity is located as a central actor in an ecology of networked communications and flows, serving to divert or block the proper movement of those flows throughout society. As a result, society as such slouches to its total annihilation. Obesity is causing the end of publicly funded health, global warming, and so on.

Because connections to obese individuals are blamed for the health problems of the entire society, the downfall of public institutions is understood as an inevitability of society. The networking of the social means the end of the social—or at least, the "health problem" of obesity indicates the absolute *requirement* for society's end. Obesity cannot be marginalized. Fat people are located at the center of these networks as a kind of all-absorbing void of capital that infects all other humans economically as well as biologically. The social and economic connections that bring humans together are blamed for the failure of social institutions. The same *Guardian* article referenced above concludes with the following: "Screw the NHS! And screw Brown. (You're fat too!) I don't tell you not to race cars at high speeds or complain when I have to pay for the ambulance that drives your shattered body to hospital. . . . So you can pay for my heart attack, you bastards. Now, if you will excuse me, I have to go. I'm hungry."[79] The economic interconnection of public medicine means, for this author, that the supposed "irresponsibility" of the few should be compensated through public funding. The refusal to be managed is accompanied by a refusal to "help" those with whom one is connected. Similar talk about public medicine has been printed in Canadian newspapers as justification for the entire system of publicly funded health care to be dismantled.[80] The articulation of networks of health and economy, combined with the inability to manage the totality of networked relations, are reasons to eliminate any possible form of connection.

The possible failure of the network as a whole is enough for its elimination. Because capital is inherently distributed toward people who need it when it comes to public medicine, the flow of capital is not one that is "free" and fluid. If fat people are defined as economic sinkholes, and connection to them can make you fat, then any connection to fat people whatsoever must be eliminated. Reinstating "personal responsibility" entails the complete elimination of the social and economic structures through which humans are connected. The only solution to the social and economic

challenges presented by contagious obesity is the complete elimination of any and all connectivity.

The unbearable pointlessness of doing anything

In an editorial from the *Daily Mail*, an author laments, "What really worries me about this whole idea [of contagious obesity], though, is the idea that fatness is out to get me. I take the basic precautions—three gym trips a week, not eating myself stupid and walking round and round the town until I discover where I parked the car—but is there any point?"[81] These worries come two decades after Margaret Thatcher famously claimed, "There is no such thing as society." But, as is often forgotten, Thatcher continued, "There is a living tapestry of men and women and people and the beauty of that tapestry and the quality of our lives will depend upon how much each of us is prepared to take responsibility for ourselves and each of us prepared to turn round and help by our own efforts those who are unfortunate."[82] In this interview, Thatcher was suggesting not only that the governmental programs associated with the welfare state should be eliminated, but also that the "society" defined through governmental social programs was obscuring the "real" society made up of individuals and families. In fact, what she's suggesting is almost exactly what network scientists such as Christakis and Fowler suggest—I must not only manage myself, I must manage those around me as well—and, she adds, I must do it without the help of the state, which intervenes and corrupts real sociality.

Yet, the "truth" expressed and produced by the discourse of contagious obesity is not precisely this liberal—if actually neoliberal—narrative about community, society, and self-management. Contagious obesity, instead, tells us that social connectivity—perhaps inevitably—makes us fat. Self-responsibility necessarily entails taking responsibility over the totality of the network. But the network is not the pastoral imagined community of Thatcher's neoliberalism. Individuals cannot be singularly responsible for health problems throughout their locality. The total network, distributed across the globe without clear limits, is responsible for health problems. Contagion potentially comes from anywhere and everywhere simply by virtue of connection. And today, those contagious cannot be isolated and excluded as easily as those rendered pathological in years past. Personal health is coextensive with the health of the totality of the network, and thus the management of both personal and totalized collective health is rendered equivalent. To manage one's own weight, the weight of others must likewise be actively managed. To manage an epidemic, all must be rendered a threat to be controlled.

The economic response to obesity does not indicate a return to a classical liberal subject, but a subject that is afraid of all others and all connections. To connect means that one's personal existence is inherently coextensive with the totality of every single other thing on the planet. Because flows cannot be managed properly, any and all

connections and flows must be severed. As being connected means that I inherently cannot control my body, then the very possibility of connecting (either through economic flows to support others, through social communicative flows, or through biological flows of germs via touch) is rendered dangerous and destructive.

"In spite of these potential negative effects," state Christakis and Fowler, "we are all connected for a reason. The purpose of social networks is to transmit positive and desirable outcomes . . ."[83] Yet, why this is so isn't clear. Christakis and Fowler believe, following the flawed logic of evolutionary biology and psychology, that because we seem to be networked together, then we must be so because it gives us some sort of evolutionary benefit. Yet, as I've been arguing, the perceived naturalness of networks is historically specific. The entire discourse of contagious obesity suggests that social connection is also thought to be an inevitable threat. Our connections must be managed (which is impossible) or completely eliminated. Because social connection means that you are fundamentally unable to control your own body or weight, as the author for the *Daily Mail* asks, "is there any point" to even attempt to manage yourself?

This total failure of any kind of community or society is, I believe, the end point of network thinking and nodal citizenship. It's not quite the same thing as neoliberalism, and, at best, seems to articulate a nihilistic, antihuman, antisocial politics out of the rejection and fear of connectivity as expressed across the social, economic, biological, and technological. The next chapter will conclude *Inhuman Networks* with a turn to the theoretical examination of these political claims, in which the present context cannot be thought of as a variant of neoliberalism, but should, instead, be positioned as neoliberalism's aftermath in which the very possibility of constituting the "social" or the "political" is transferred to technological tools assumed to function better than humans because of their ability to conform to the norms of nodal citizenship as articulated through the technological, biological, economic, and social.

CHAPTER EIGHT
(POLITICAL) THEORY: HOW TO DISEMPOWER FRIENDS AND PATHOLOGIZE PEOPLE

The network and the apocalypse

Edgar Wright's 2013 film *The World's End* appears to be a movie about a sad British man's attempt to unite five friends and recreate a serious night of drinking from their teenage years. Led by Simon Pegg's character Gary King—who, as he enters his forties, dresses, behaves, listens to the same bands, and drives the same car as he did when eighteen—the group of seemingly typical middle-age men return to their provincial hometown of Newton Haven for a chance to finish what they were unable to in their youth: the "Golden Mile," a pub crawl of the town's bars, concluding at one named The World's End. Through a series of drunken encounters, however, Gary and his friends come to discover that robotic clones have replaced the village's original residents. These robots, termed "blanks" by the group, appear to be conscious and possess both extreme strength and heightened powers of social connectivity. Unsure of what to do or how to escape, the five decide to carry on with their drinking, avoiding as much conflict as possible along the way.

These attempts at inconspicuousness are mostly futile. Robotic carnage is left throughout town as the blanks gradually intensify their attempts to locate and subdue Gary and his drinking companions (Figure 26). Nonetheless, Gary manages to arrive

Figure 26 Encountering the "blanks" of *The World's End* for the first time.

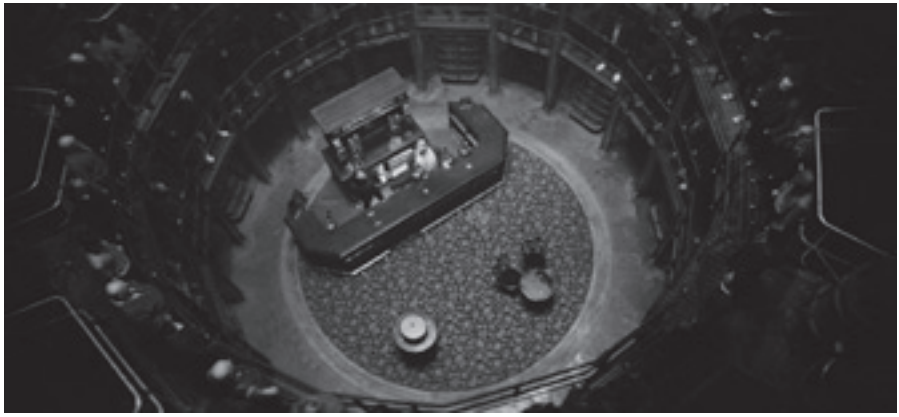

Figure 27 The warehouse of "blanks" in *The World's End*.

at The World's End. He attempts to pour himself a final pint and complete his epic of inebriation. Instead of dispensing beer, a pull of the tap transforms the pub, revealing it to be a front for a technologized warehouse storing countless blanks (Figure 27). A voice emanates from a glowing light, speaking to Gary. The blanks are not simply robotic replacements for the people in the town, the voice tells him, but are all connected parts of "The Network," an intergalactic entity dedicated to the cultivation of civilization across the universe:

NETWORK:	We are The Network, and we are here for your betterment. In the last twenty-three years have you not marveled as information technology has surged forward?
GARY:	No.
NETWORK:	Earth has grown smaller, yet greater, as connectivity has grown. This is our doing. And it is just the beginning.
GARY:	Oh, fuck off, you big lamp.
NETWORK:	You are children; you require guidance. There is no room for imperfection.
GARY:	Hey, Earth isn't perfect, all right? And humans aren't perfect. And guess what? I ain't perfect!
NETWORK:	And therein lies the necessity for this intervention, must the galaxy be subjected to an entire planet of people like you!

In its final moments, *The World's End* reveals itself to be a satire of the networked governance of social media. Newton Haven has been forced into connection. The Network has extracted DNA from the physical bodies of the village's inhabitants, transforming most people into "blank" automatons, forever youthful, with only selective memories of the good times past (Figure 28). The film seems to argue

Figure 28 Remaining forever youthful in *The World's End*.

that the blanks are humanoid versions of Facebook profiles. They are pleasant, well behaved, totally connected, completely superficial, socially well adjusted, with selves defined of data—unlike Gary King and his friends.

One may note some resonance of the Network's comments with those of the classic theorist of governance through culture, Matthew Arnold, who describes class differentiation in British society thus:

> And the lower class see before them the aristocratic class, and its civilisation, such as it is, even infinitely more out of *their* reach than out of that of the middle class; while the life of the middle class, with its unlovely types of religion, thought, beauty, and manners, has naturally, in general, no great attractions for them either. And so they too are thrown back upon themselves; upon their beer, their gin, and their *fun*.[1]

One can almost hear the sarcastic vitriol with which Arnold describes the drunken "fun" of the working class. Like the Network, Arnold attributes to "civilization" the highest virtue, found in aristocratic values of order and discipline. But, where Arnold credited the cultivation of civilization to the educator, caring for the middle and working classes in the name of the advancement of "culture"—the "sweetness and light" revealed by the "best that has been thought and said"—the Network repositions the governance once molded by the pedagogue as a relationship of technological stewardship. Humans aren't perfect—but blank "humans" molded out of massaged, connected, and edited data *are* perfect, at least in accordance with technologically enforced norms that produce a polite, idealized society filled with "people" living their lives according to the best self they remember they once had.

The World's End lays bare the inhumanity of the Network, in which the development provided by technology cultivates and drives out the inhumanity of alcohol-induced aggression. In his drunken state, Gary belligerently refuses this well-governed future

represented by the Network. While the Network promises to "enable [humanity's] full potential," Gary responds with a naïve, banal libertarianism. He demands beer and *fun* and asserts the right to be rude in the face of authority. The Network thus retreats, triggering a global catastrophe. The film ends with the world in ruins (Figure 29). Gary and a gang of "liberated" blanks roam free in a bleak, postapocalyptic version of Great Britain. As in E. M. Forster's "The Machine Stops" from over a century prior, the withdrawal of technology leads to the annihilation of society. Forster shows this withdrawal to reveal the sensuality of touch forgotten through technological connectivity; *The World's End* depicts it as an opening for a renewed human liberty imagined without technological, social, or economic bonds. Freedoms long obscured by the technological are rediscovered in the apocalyptic, libertarian anarchy once feared by Arnold.

The World's End is one of the clearest representations of a certain affective experience of social media and social networks—one that both repeats and transforms fears central to the modern experience of connectivity. Obviously, the rejection of a controlling, totalitarian connectivity represented by network technology has been a theme in Western culture since the time of the telegraph and the railroad, if not earlier. But Wright's film is unlike many other contemporary representations of apocalypse through connection, including his earlier *Shaun of the Dead*, which used the trope of the zombie to depict an uncontrolled, unthinking connectivity through biological networks of contagion. The zombie is expressive of the horrors of virality, of unmanaged flows, of racist, classist, and xenophobic fears of contact with the Other.[2] Like the anxieties of connection discussed throughout this book, from anti-Semitism to contagious obesity, the zombie apocalypse narrative is inevitably one in which a boundary can neither be established nor maintained, where the brainless connectedness of pure Otherness is transformed into a threat that eliminates free will and thought—not to mention the ability to distinguish

Figure 29 The Network withdraws in *The World's End*.

between self and Other, between similarity and difference. Fears of zombies are rooted in the supposed waning of the modern state and subject brought about by the transnational flows of the network society.[3] These fears are not the ones depicted in *The World's End*. It is not the unconscious embrace of networks and the loss of modernity that brings about destruction; it is *the resistance to connectivity* and the reassertion of a kind of exaggerated version of the modern desire for liberty that does. In *The World's End*, a broken Britain breaks even further, overdetermined by the power of restrictive technology, populated by unruly drunks without a "civilized" future. To extract ourselves from technology's seductive, yet controlling embrace requires laying waste to the world itself. Embrace connectivity or reject it: either way, it's a choice between dueling inhuman dystopias—one subject to the system, the other without society.

While fears of connectivity have been present throughout modernity, the false choice given by the binary of connection and disconnection today forecloses any alternative beyond a kind of networked, neoliberal apocalypse. Networks carry with them a profound sense of disempowerment *because* of the promises of empowerment supposedly enabled by social media's connectivity. On one hand, all an individual can do is connect and manage flows, in which empowerment is supposedly produced through the reductive logic of nodal citizenship. On the other, the network is presented as a totality that exists beyond the agency of any one individual, in which one can be cut off and discarded with little to no effect, where actions must be taken at the level of the whole or else they do not matter. The contradictions foundational for any claim related to a supposed political force of connectivity result in a structure of feeling characterized by a seemingly inevitable apocalypse. But the alternative to connectivity is to withdraw from the limits and possibilities through which the world is currently thought, leaving any sense of collectivity behind for a reductive self-interest that, unlike its classical liberal counterpart, never manages to make the move beyond an extreme sense of individualization and isolation.

In the face of any one of the numerous teleological endpoints assumed to characterize the present or the near future, be it a neoliberal "end of history,"[4] global warming and ecological collapse,[5] or the so-called "singularity,"[6] human knowledge is thought inadequate, human agency is regarded impotent, and collective action is considered impossible—beyond the connections and flows of networks, at least, which limit agency to the generation and circulation of capital and information. This view is expressed in and perpetuated by popular culture, political discourse, science journalism, and, most problematically, some subsets of contemporary critical theory, reproducing an extreme entrenchment of a disempowered neoliberal logic in which humans are irrelevant, in which academic thought has no ability to grasp the current conjuncture because of its "complexity,"[7] in which an emergent form of resistance is a rejection of the state and the social *in toto* in the name of a futile individuality. In other words, the endgame of social media and nodal citizenship is, first, the negation of any ability to imagine a form of social relation not mediated by the various networks of

history and, second, the erasure of any political agency that consists of something other than connection, disconnection, or the modulation and regulation of flows. The choices presented to us today, like those given to Gary King, are between an apparently totalitarian, airless "utopia" of the Network and the freedom that emerges out of a nihilistic withdrawal from, and destruction of, society as such.

This chapter examines several intertwining dimensions of the political theorization of networked interconnection in everyday life and theory alike. First, I describe how the "politics" enabled by social media are presented as a simplistic means of connecting and transmitting information in the name of an individualized, yet global, affective intimacy. But these affective promises of networked politics—often reduced to a crude form of "slacktivism" over social media[8]—do not mesh with the larger claims made by scientists and theorists who embrace connectivity as an ontological feature of reality revealed by the networks that characterize social media. Theories of networked complexity, self-organization, and emergence, developed from cybernetics and information science, have deployed a model that positions individual agency as irrelevant in shaping the determining force of complex networks. Rather than empowerment, this attitude has, in the name of "science" and critical "realism," resulted in a deferral to either religious mysticism[9] or political cynicism, especially in the face of the global events such as climate change and mass extinction that seem to be determined both by human actions and by spontaneous, uncontrollable networked interconnectivity.[10] I then move to how critical theory has approached the apparent "truth" of networked reality by embracing apocalyptic fears of extinction as a point through which to theorize a vitalist ontology of objects divorced from human experience. Instead of critiquing the political specificities of contemporary culture, today's theory fetishizes objects, their (sometimes obscured) relations, and their unknowability. This supposedly reveals how the status of the human, as one who shapes or even participates in the making of the world, is in doubt. Theory forsakes the critical, political impulse once central to the Anglo-American appropriation of continental philosophy in favor of an "ontology" that merely repeats central postulates of an apocalyptic networked neoliberalism. In other words, this final chapter is about how social media present as empowering a model of the political that is elsewhere used to suggest that human actions do not influence reality.

If knowledge is performative,[11] then the reality produced by theory today—along with popular political and scientific thought—is one in which humans do not matter and cannot hope to possibly grasp the reality of existence. Instead of opening up thought to transform the world, new "political" theories merely reproduce a neoliberal discourse that embraces disempowerment, cynicism, and ignorance as a political strategy. A world of networks, where political action is reduced to various mediations of connection and disconnection, is one in which the false dream of neoliberalism—in which "there is no alternative"[12]—emerges as a supposedly inevitable, concrete truth through technological and discursive means of governance that foreclose the possibility of imagining the world otherwise.

The political intimacy of connection

Instead of democracy, deliberation, and debate, the elite of Silicon Valley reductively redefine the political in terms of the entrepreneurial "action" associated with scientific rationality and Big Data tools for quantifying and evaluating political goals.[13] Instead of a pluralist range of voices, technology either acts as a model for the political or directly instills "good" forms of political decision making through interactivity and control. An expression of this view can be seen in game designer Jane McGonigal's book *Reality is Broken*. McGonigal argues that the goal-oriented models of videogames can (and should) be grafted onto the rest of the world to advance specific personal and political goals, where one can "level up in life" by remaking reality as a game. "Where, in the real world, is that gamer sense of being fully alive, focused, and engaged in every moment?" she asks. "Where is the gamer feeling of power, heroic purpose, and community? . . . The real world just doesn't offer up as easily the carefully designed pleasures, the thrilling challenges, and the powerful social bonding afforded by virtual environments."[14] McGonigal assumes the answers are either known in advance or can be easily discovered through technological tools of measurement. At the same time, she reduces the reasons people participate in "the political" to the affects of "engagement," of being a part of a "community," of the "power" and "pleasures" that come from achieving set goals collaboratively and individually, as best exemplified by gaming. The reason people participate is that their engagements can be judged as a form of connective bonding with known points of action and measurable outcomes. Political acts come with a guaranteed return on investment expressed as a feeling of accomplishment and a quantified intimacy with a larger, networked public. This produces a new, rationalized "reality" with a measurable level of fulfillment often lacking in the existential emptiness of the lives most people lead: "Reality doesn't motivate us as effectively. Reality isn't engineered to maximize our potential. Reality wasn't designed from the bottom up to make us happy. . . . Reality, compared to games, is broken."[15] McGonigal reduces human agency to a vague sense of emotional connection, while the "rational" powers of knowledge, sense making, and world building are given to technological means for computing data, technocratically shaping human action through the gamification and computerization of everyday life.

The desire for a rationalized, connective, technological politics, in which truth is known in advance and participation is rewarded with a generic, yet personal, intimacy, reappears throughout discussions of social media—a logic often extended to personal and economic motivations writ large. As has been noted throughout this book, theorists of social media regularly assume people to be driven by biologically hardwired yearnings for a nonspecific form of interpersonal affirmation (i.e., "people use social media because they like feeling connected"), reiterating the technological humanist belief that social media merely fulfill desires essential for human nature. According to Clay Shirky and Yochai Benkler, we use social media because we need to feel

connected, to experience a kind of "love" that comes from technological connection.[16] Manuel Castells, branching out from these rather general understandings of affect and human psychology, directly invokes the neurology of emotion in theorizing political engagement: "At the individual level, social movements are emotional movements. Insurgency does not start with a program or political strategy . . . the origins of social movements are to be found in the emotions of individuals and in their networking on the basis of cognitive empathy. . . ."[17] Zizi Papacharissi, in articulating what is probably the most sophisticated and subtle version of this argument, claims that social media produce "feelings of engagement" to "activate latent ties that may be crucial to the mobilization of networked publics."[18] Unlike many other writers who articulate the politics of new technologies with feelings of engagement, Papacharissi avoids determinist claims about empathy and emotion, arguing instead that the publics fostered online achieve much of their potential strength from the way they mobilize the affective. This mobilization is performed without any sort of guarantee, though many of the political statements and claims online are performed to direct sentiment and emotion in some way.

But Papacharissi seems to be somewhat of an exception with how she discusses the role of emotion and affect in framing online politics. If theorists like Benkler, Shirky, and Castells are to be taken seriously, the desire to devote one's love to *specific* people and objects is, apparently, no longer desirable—and may be politically regressive. Instead, love is everywhere as a nonspecific political ground that produces social and affective bonds as a transformative, revolutionary force.[19] Freud once said, "A love that does not discriminate seems to me to forfeit a part of its own value, by doing an injustice to its object; and secondly, not all men are worthy of love."[20] This belief would seem completely opposed to how love and intimacy are employed in contemporary digital culture. The role of the affective is that which leads to the political, distributed outward through the connectivity of networks. Affect and intimacy are promiscuously disseminated toward distant others with whom one may "feel" close through the sharing of information and images.

The use of intimacy as a basis for the political is intensely problematic. These claims—especially Castells', with his deferral to neuropsychological theories of cognition and empathy—have serious limits. Arguments about the universal affective experience of connectivity exclude from the political, not to mention from humanity, those with disorders such as autism while simultaneously pathologizing those who do not seem to share intimate motivations for social and political action.[21] Intimacy is deployed in different historical conjunctures in different ways, remaking norms of citizenship to exclude specific bodies and identities from the political while privileging others, shifting the lines between public and private in the name of the regulation of personal behavior and desire,[22] potentially sustaining relationships that produce and perpetuate political disempowerment, dependency, and crisis.[23] The emphasis on intimacy in the contemporary politics of social media "implies that the shift from the personal to the political, part of the political socialization of

citizens, never takes place or is no longer relevant."[24] Norms of political agency over social media never make it to meaningful, specific collective identifications. Online intimacy, instead, persists only at the level of individual wants, needs, and desires, projected onto an amorphous networked totality, expressed through a reductive sense of individualized transparency and visibility that replaces all other definitions of publicity and publicness—in which the individual willingness to generate personal data is assumed to produce the totalized, political sense of intimacy one supposedly gets from sharing online.[25]

Jason Russell's popular viral video *Kony 2012* demonstrates the specific form taken by the desire for intimacy and visibility in contemporary articulations of social media and political agency. "Right now there are more people on Facebook than there were on the planet 200 years ago," begins Russell in voice over. "Humanity's greatest desire is to belong and connect. And now we see each other, we hear each other." *Kony* was produced by Russell for his charity Invisible Children. The video attempts to draw attention to the actions of Joseph Kony, leader of the Lord's Resistance Army (LRA) active in parts of Africa, most notably Uganda. As the video notes, Kony regularly abducted children to serve in the LRA. The video has been criticized as simplifying its subject, overemphasizing the role the LRA has played in Ugandan history,[26] perpetuating a white, Western savior fantasy that legitimates American military imperialism in the guise of charity.[27] These critiques are essential, as they point to the specific understanding of political agency assumed by *Kony* to be denied to those living in Uganda without access to social media. At a very basic level, *Kony 2012* perpetuates the logic of the digital divide, in which the ability to act politically requires an internet connection, rendering invisible those without social media access in the name of rescuing the "Invisible Children" of the charity's namesake. But, even beyond this digital divide, *Kony*, like political theories of social media in general, suggests that agency emerges from a kind of globalized intimacy rather than from the experience of oppression or injustice. Its rhetorical appeal is simultaneously universal yet individualized to the extreme, embracing a "private" affective sense of political motivation and intention rather than an engagement that develops from knowledge, experience, or deliberation. *Kony* proposes that simplistic, individualized actions of "sharing" personal information produce a holistic, global sphere of public intimacy, in which visibility and openness lead intrinsically to social justice. It removes from political discourse those who do not or cannot "connect" and "share" in the way required by social media, if by choice or by circumstance. A politics that positions engagement and decision making as structured by pluralist debate is ignored in favor of a blunt and reductive understanding of generalized intimacy and feeling that "connects" through social media.

Kony 2012, which for a viral video is a staggering half hour long, opens with a series of images that invoke the use of social media itself, reproducing for the viewer the experience of consuming social media. *Kony* interpellates its viewer as a subject of social media, apparently possessive of a global responsibility toward the totality of the world

through the generation and circulation of personal data. The first image we see is of the Earth from space, quickly shifting to a nighttime view of the United States, Mexico, and the Caribbean (Figures 30 and 31), positioning the viewer as one who observes and (ideally) cares for the planet through the worldwide visibility enabled by the reach of social media—though the geography around North America is, nonetheless, privileged as a point of focus with which the viewer is assumed to identify. We then see a series of video clips, including those of adults and children of different races embracing, children in a YouTube video, video chat applications, and other "amazing" events made visible thanks to social media—political unrest in the Middle East, in particular (Figures 32–34). These are interspersed with the various "share" links that populate YouTube and other social media websites. The film cuts to the birth of the director's son, Gavin (Figure 35). "Every single person in the world started this way," Russell says as his son emerges from his wife's womb into the arms of American doctors. "He didn't choose

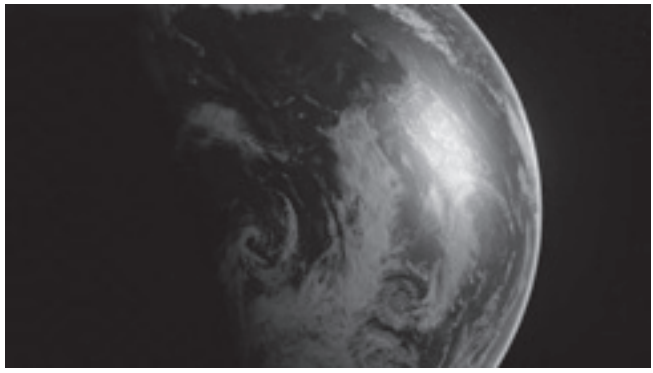

Figure 30 Jason Russell's *Kony 2012*.
Source: Vimeo.

Figure 31 *Kony 2012*: "Right now there are more people on Facebook than there were on the planet 200 years ago."
Source: Vimeo.

Figure 32 *Kony 2012*: "Humanity's greatest desire is to belong and connect . . ."
Source: Vimeo.

Figure 33 The connective power of social media in *Kony 2012*.
Source: Vimeo.

where or when he was born. But because he's here, he matters." It takes around ten minutes before it becomes clear what *Kony 2012* is actually about. Until that point, most of what we see are images that reproduce the context of social media use and personal photographs and videos of Russell's family—especially his child—accompanied by a vague message of humanistic universality that transcends race and geography, enabled by social media. The specifics of Gavin's birth are, in comparison to the rest of the world, exceptionally unusual, guided as they are by the American health-care system and all its idiosyncrasies. Yet, this specificity and privilege is ignored in favor of a universalized "child" represented by the director's own son.

Figure 34 The connective power of social media in *Kony 2012*.
Source: Vimeo.

Figure 35 *Kony 2012*: "Every single person in the world started this way . . ."
Source: Vimeo.

The opening third of *Kony 2012* repeatedly appeals to this generic figure of the child to represent universal desires for human equality and social responsibility. Yet, the child, as a representation that intrinsically places political emphasis on "the future," carries with it heteronormative assumptions about reproduction and citizenship, foreclosing numerous political possibilities and subjects in the name of an intimacy that makes the regulation of bodies and sex a civic duty. Lauren Berlant, in

her critique of intimacy and citizenship in Reagan-era America, states that, through the reframing of politics in terms of intimacy, "a nation made for adult citizens has been replaced by one imagined for fetuses and children."[28] Lee Edelman takes Berlant's argument further: "On every side, our enjoyment of liberty is eclipsed by the lengthening shadow of a Child whose freedom to develop undisturbed by encounters, or even by the threat of potential encounters . . . [the Child] terroristically holds us all in check and determines that political discourse conform to the logic of a narrative wherein history unfolds as the future envisioned for a Child who must never grow up."[29] As Edelman makes clear, the abstraction of the child is never innocent, but legitimates a specific form of the political in which present concerns are deferred elsewhere in the name of "safety" and "care," in which the rights of symbolic tropes of unborn children substitute for those of actual adults.

The figure of the child in *Kony 2012* comes from the universalizing political message of the film: while Russell's own son lives a relatively privileged life in the United States—like, assumedly, those "children" known personally by the majority of his English-speaking audience—the circumstances of birth are merely happenstance. The children Kony has abducted for his army could, potentially, include any child given different contingencies of birth. Yet, the supposed universality of the child forever defers politics to the future rather than the present. This temporalization of the political privileges, but nonetheless disciplines, specific people (children and the unborn, heterosexuals who procreate) while denying personhood to those who do not or cannot conform to a reproductive futurity that never arrives, yet eternally remains "safe" and predetermined. The universality of *Kony* simply denies the existence of those outside its key referent of white, Western childhood—in spite of the superficial multiculturalism of those represented in the video. While the conditions of birth may be happenstance, lives are not simply interchangeable abstractions that can conflate one with another. One should never forget that the members of Kony's army are not abstract, universalized children. They are specific people with specific histories. But the abstraction of the child, universalizing all in the name of a global, yet minimal, sense of affective care, is what, nonetheless, informs Russell's film throughout.

When *Kony 2012* eventually manages to discuss its titular subject, it does so only in a shallow manner, continuing to spend most of its time on depictions of the director's child and the power of social media. Because it does not actually discuss in meaningful detail the specificities of the context it posits to be about, *Kony* redefines political agency as a universalized desire for technological intimacy without the contingencies of history, without "real people" beyond that which can be encoded and shared online. The video frames politics as a space of universalized, reductive abstractions that pass as "people" connecting, sharing, and viewing, all in the name of an intimate futurity in which the editing and uploading of one's home videos of their toddler can substitute for political action. The personal desire for an intimate connection, expressed *solely* through the sharing of data, defines political agency and motivation. As we previously saw with the "Gay Girl in Damascus" blog, openness and

visibility are simply assumed to be successful political tactics without acknowledging the contextual negotiations required when defining and deploying specific strategies. The people who either cannot or do not want to conform to the norms of intimacy assumed by *Kony 2012* are simply erased from the field of political agency, which is likewise reduced to sharing and communicating transparently and fully over social media—at least insofar as the subject online can be expressed "totally" through data.

This becomes quite overt when Russell outlines the actual political strategies suggested by Invisible Children. Ultimately, the charity's goal is to inspire US military intervention in Uganda. But to do so, the American government needs proof that people "care" about the children of Kony's army:

> It's hard to look back on some parts of human history because when we heard about injustice, we cared but we didn't know what to do. Too often we did nothing. But if we're going to change that, we have to start somewhere. . . . In order for the people to care, they have to know. And they will only know if Kony's name is everywhere. This is the dream: Kony arrested for all the world to see and the abducted children returned home. Here's the biggest problem . . . Nobody knows who he is . . . He's not famous. He's invisible. Joseph Kony is invisible.

The only real appeal *Kony 2012* makes to its audience is for them to do what they're already assumed to be doing. They need to use social media to make Kony "famous" and "visible," just as they do with themselves and their own children when their pictures and videos are uploaded to Facebook and YouTube. This sharing is rooted in an affective sense of care for abstract, distant others that manifests itself in simple, banal acts of information generation over social media—in which the context of the Ugandan "children" who need to be "returned home" is seemingly interchangeable with children in the Western, English-speaking context addressed by the video, along with equivalencies between kinds of families, love, and the "safety" of children in domestic life. The audience should share *Kony 2012* online, tweeting and messaging a group of "20 culture-makers. Celebrities, athletes, and billionaires have a loud voice and what they talk about spreads instantly." By sending messages to "Oprah, Mark Zuckerberg, Ryan Seacrest, Bono," one is participating politically, because those individuals spread information, making issues "visible" to the American government, which will intervene in Uganda, bringing Kony to justice through advanced surveillance technology.

There are numerous criticisms one can level at *Kony 2012* beyond what I've noted above. It hasn't appeared to do anything since its massive online success in the year of its title—and it certainly hasn't succeeded in its stated goal beyond making Kony "famous." Though, I should note, the success of Kony's "fame" is somewhat dubious—in the months after the debut of *Kony 2012*, screen grabs of actor Carl Weathers from the film *Predator* were often mistaken for Kony on social media websites, often as a

cynical attempt to troll *Kony* supporters to demonstrate an implicit racism guiding the film's white, Western audience.[30] Jason Russell had a widely documented personal "meltdown" shortly after his video's success[31] and people have doubted the charity—with good reason—since its popularity peaked.[32] Most common is the claim that *Kony 2012* represents a form of "slacktivism."[33] Slacktivism causes people to think that political action should be as easy as any other online transaction, collapsing commerce and politics as a form of "commodity activism," in which the norms of neoliberalism are extended to domains historically beyond the limits of profit through the immaterial labor of social media, in which a change in consumer behavior is thought enough to constitute a political act.[34] Political agency is remade as a mere equivalent to other forms of information and capital exchange that characterize the profit-generating activities of social media.

While I agree with these criticisms, especially since they note how social media assume the collapse of economic, social, and political domains through informational models of connectivity and flow, I, nonetheless, feel that they miss a larger point about the intimacy promised by connectivity. "Arresting Joseph Kony will prove that the world we live in has new rules," states Russell near the end of his video, "that the technology that has brought our planet together is allowing us to respond to the problems of our friends." But what friends? Do we actually share this intimate friendship with people in Uganda, who are not even seriously addressed by *Kony 2012*? The political strategies suggested by the video completely exclude those who do not use social media—and if one does not have a computer or smartphone, then one seems to be completely stripped of agency as defined by Invisible Children. Like the Homeless Hotspots of the Introduction, are we really "connected" to these "friends" through informational and economic exchanges? When I share the "love" I supposedly receive by participating online, posting a political video to my Facebook wall, tweeting Oprah, changing my Facebook photo to represent my personal support for a cause, I may feel as if I'm being politically empowered. But this empowerment is little more than a superficial sense of nonspecific intimacy generated by political "action" online, in which the encounter with the Other is both managed through forms of physical, technological separation and obscured through the abstractions of data. The promise of personal closeness given by social media legitimates a perpetual attachment to experiences and activities that may be profoundly oppressive, evacuating whatever may be meant by "friendship" in favor of associations assumed to have economic or professional value.[35] *Kony 2012*, along with new emerging forms of political information sharing, such as internet critic and activist Eli Pariser's website Upworthy, The Huffington Post, Buzzfeed, and countless other emerging "viral" media websites, simply positions political action as a means of generating and maintaining weak affective bonds. Sharing equates "love" to the actions through which social media (and its users) supposedly generate economic value.

If we juxtapose these appeals to a nonspecific intimacy with the claims of McGonigal and others who advocate Big Data solutions to contemporary political

problems,[36] the real "action" of politics is delegated to a technological, rational means of calculation and decision making while "democracy" becomes little more than a battlefield of generalized, abstracted affects. People share because they want to feel connected, but this feeling has very little to do with the "reality" of the political world, the truth of which has been determined through technological means of analyzing data. Securing hegemony involves a banal negotiation of weak feelings, which enables—but does not directly participate in—a rationalized political machine that operates beyond the attention and agency of the people. Rather, connection and intimacy signal consent to a "truth" decided somewhere else—be it political institutions or Facebook's server farms.[37] *Kony 2012* is quite explicit about the positioning of politics elsewhere: those who have "real" political agency in its video are cultural tastemakers, billionaires, athletes, and politicians—in part because they're the ones connected to the "real" seats of power.[38] The mass of users has no agency other than that of generating and circulating information online.

The intimacy of *Kony 2012* is a form of what Lauren Berlant terms "cruel optimism." Optimism is "the force that moves you out of yourself and into the world in order to bring closer the satisfying *something* that you cannot generate on your own but sense in the wake of a person, a way of life, an object, project, concept, or scene."[39] The promise of intimacy offered by social media is almost interchangeable with Berlant's optimism, if in a form so broad that the "satisfying something" of optimism becomes interchangeable with "anything," as long as "anything" results from connecting and sharing data. For Berlant, optimism becomes cruel when that "satisfying something" becomes the very thing that prevents one from achieving satisfaction. Cruel optimism arises when we attach ourselves to something in the name of personal fulfillment, but the very thing to which we are attached constantly prevents the realization of desire.

If the intimacy of connection is what motivates political action, then there are serious problems with how connectivity is conceptualized politically. The banal intimacy of social media politics, in which one participates to achieve a modicum of belief that one's actions have an effect on the rest of the world, is—almost paradoxically—precisely what is foreclosed in the understanding of political agency assumed by tech entrepreneurs and network science. Technology can find an answer to the centuries-old problems of modern life, implemented through "serious" games, lifehacking, and the quantification of the self, persuading and influencing a mass audience to believe in what science and Big Data have determined to be true in advance. The cruel optimism of social media lies in how they promise the realization of an intimacy in which we're connected with the rest of the world as actors whose everyday choices *matter*. Yet, while we participate to feel like we're part of a group, making a collective difference through tiny individualized acts of information generation and circulation, the "real" action of politics occurs in the analytics and mechanisms that can examine phenomena at a level humans are unable to observe, in which individual actions may be so irrelevant that actual people do not matter.

But this impasse goes even further if we begin to move outward to larger understandings of agency and network technology advanced in interpretations of theoretical science—namely complexity theory—popular among technology writers. With theories of networked complexity, social media and the internet are assumed to be technological structures equivalent to the ecological and naturalistic structure of all existence. But this structure is one in which the actions of individuals are irrelevant, and the self-organization of the network happens divorced from conscious choice and individual agency. The intimate attachments one gets from sharing things online are inherently framed in relation to a model that suggests individuals matter little, if at all, and can simply be discarded as inefficient waste if need be.[40]

Complexity, inevitability, unknowability

The irrelevance of human agency and the inability of humanity to grasp its role in the world are assumptions taken from the conclusions of complex systems theory as applied to models of networks, a science that derives, in part, from the history of cybernetics, information, and thermodynamics. It would be incorrect to say that the denigration of the human is a feature of all sciences derived from cybernetics and information theory, including the sciences of complexity. These sciences do not have a singular history, and much of what has gone by the name of cybernetics—especially in the British context—often involves rather strange theories of self and consciousness that differ greatly from the American traditions central to the militaristic foundation of the internet.[41] The underpinnings of complexity science, especially as presented in the work of Ilya Prigogine and Isabelle Stengers, are assumed to reassert a kind of human openness excluded by the "dehumanized" logic of classical dynamics of Newtonian mechanics, in which the physical world is reduced to a formal, predictable, mathematical set of laws.[42]

Nonetheless, I want to briefly argue that models of complexity, under the guise of the self-organizing systems supposedly equivalent to the internet, have been imported into technological, economic, and popular discourse to suggest that humans quite literally have no agency in determining the course of historical events. Or, more specifically, humans have no agency beyond that of the perpetuation and management of naturally guaranteed networked connections and flows, in which agency is subsumed by the totality of the network. Otherwise, humans disrupt an automatic means of organization that would perfectly structure reality were it not for human meddling.[43] These beliefs are foundational for claims neoliberals make about "the market," especially when derived from the writings of Friedrich Hayek, directly influenced as they are by cybernetic assumptions of informational self-organization.[44] When imported to popular discussions about the structure and agency of the technological, self-organizing networks become a rallying point for the impossibility of human knowledge to comprehend reality, legitimating neoliberal claims about the

autonomy of information and the irrelevance of humans—and conscious political agency—in the face of massive, unknowable networks that would otherwise self-correct automatically.[45]

If we think back to Paul Baran's original structure for military communications, the purpose of his distributed network was to provide a means for communication that would persist in the face of nuclear war. While any one station could be destroyed, the network would, nonetheless, persist, functionally making individual nodes irrelevant unless the network as a whole was likewise destroyed. When projected onto society as a model for human relations, individual people fill the nodal role of stations in Baran's network: they become functionally irrelevant in the face of a network that would persist without them. Some theorists of scientific complexity assume this to be true of networked structures in general, describing a world in which human agency is either irrelevant or guaranteed in advance. When we relate these claims to the promises of intimacy relayed by the politics of social media, we have an odd contradiction: namely, we act to perform a felt connectedness with the rest of the world, when, in fact, connectedness is thought to transcend the agency of any one individual. The totality of the network and its flows are perpetually guaranteed in spite of the acts of any one node, in which the intimacy of connection exists whether or not it is experienced. To explain this requires a brief turn to the postulates of complexity theory and its engagement with the histories of information science, cybernetics, and thermodynamics—a detour I admit is more than partial.

According to the second law of thermodynamics, *entropy*—the quantitative measure of systemic disorder—can never decrease in a closed system. In classical models of thermodynamics, systems tend toward equilibrium, progressing toward a state of ultimate disorder. There are no perpetual motion machines because of the second law: entropy always wins, leading to the eventual dissipation of energy, stillness, and "heat death." But information, as presented by Norbert Wiener, is that which enables the continued persistence of organization in the face of entropy as a potential feature of life itself in its struggle against the inevitability of decay and death.[46] The mechanisms of feedback and control identified by Wiener in his *Cybernetics* position information as a negentropic force, countering the irrevocability of thermodynamics in the name of a self-reflexive and self-referential order that *emerges* from communicative feedback.[47] The implications of the cybernetic systems identified by Wiener are staggering when taken in relation to thermodynamics, seemingly reversing entropy in relation to the persistence of relatively stable systems.[48] In short, cybernetic feedback enables what renowned biologist Stuart Kauffman refers to as "order for free," where life is a spontaneous, emergent phenomenon in spite of the laws of thermodynamics.[49]

Because of information's ability to create order, scientists noted that assumptions about time and existence derived from the laws of thermodynamics were no longer as certain as assumed.[50] So, in the wake of information science and cybernetics, thermodynamics and entropy were rethought in relation to the ability of information

to seemingly create order out of noise and chaos.[51] Where the second law of thermodynamics assumed the existence of closed systems, cybernetics began to ask if systemic closure was even possible. While entropy would always increase in a closed system, closed systems did not naturally occur outside of a laboratory setting. Behavior that seemed to violate the second law was, in fact, empirically possible. In nature, the closure of a system was produced through the informational distinction between system and environment. But this system was never a fully closed, isolated "being," "object," or "thing," but merely a functionally closed part of a larger, open system necessarily in relation to the external environment from which it was differentiated.[52] While "differentiated," any being was simultaneously embedded in a larger, holistic yet open environment, separate yet connected, isolated yet one with nature.

Self-reflexive information and feedback enable this differentiation, best summarized in Gregory Bateson's definition of information as "a difference which makes a difference."[53] This enables the possibility of self-organization through "autopoiesis," a neologism coined by biologists Humberto Maturana and Francisco Varela to refer to the circular, self-referential processes observed in living systems, specifically in the cell.[54] A biological entity emerges from disorder as a result of autopoietic qualities of self-reflexivity, in which it is differentiated from an external environment of which it remains a distinct, yet connected, part.[55] The explicitly biological basis for autopoiesis led Maturana and Varela to resist attempts by the social sciences to appropriate their theory as a description for self-organizing cybernetic processes seen elsewhere. Yet, they nonetheless defined autopoiesis in general terms easily lent to metaphor. The level of generality with which autopoiesis was theorized—combined with the history of network discourse—meant that it was quickly appropriated elsewhere as a conceptual explanation for social, economic, and technological forms of self-organization.[56]

In its early days, Prigogine and Stengers might have thought that the model of complexity enabled a new, more open science free of the rigid determinisms of classical dynamics.[57] Scientists, sociologists, and economists alike found in autopoiesis a seemingly nondeterministic theory to explain countless biological and social phenomena.[58] Yet, the mathematical modeling of complex networks shifted the focus from the biological self-reflexivity of autopoiesis to a different sense of self-organization. Like Newtonian dynamics, autopoiesis and complexity became a series of mathematical postulates to describe the world using universal standards, divorced from "conscious," self-reflexive knowledge about world and self. Complexity obeyed deterministic laws of connectivity derived from the modeling of graphs, uniting the structure and organization of the rain forest, insect colonies, the brain, the immune system, capitalist exchange, the World Wide Web,[59] and even the totality of the planetary ecosystem of "Gaia"[60]—consequentially enabling hasty equivalencies between biological systems and other forms of self-organization, such as the supposed "invisible hand" of the market assumed by classical liberalism. For instance, according to Philip Mirowski, economics and the physical sciences implicitly coevolve, where each draws from the other in ways that may be invisible

or unacknowledged.[61] This is overt in some popular interpretations of complexity, especially in light of its mathematical conflation of the biological, social, technological, and the economic: "The marvel of the 'hive mind' is that no one is in control," claims *Wired* guru Kevin Kelly, "and yet an invisible hand governs, a hand that emerges from very dumb members."[62] While the self-organization of autopoiesis is produced by a reflexive differentiation, popular interpretations of complexity by those like Kelly remove this sense of reflexivity in favor of a return to quasi-religious metaphors from Adam Smith, conflating cellular systems, ants and bees, the capitalist market, and communication over the internet, all in the name of the mathematical "laws" of self-organization. Self-organization emerges not from the informational differentiation of autopoiesis, but from a cosmological "truth" of spontaneous order that exists simply because of the networked circulation of information, regardless of human action.

In its popular interpretation, the reversal of entropy assumed by complexity and autopoiesis is taken to mean that an automatic means of organization is inevitable—and, as a result, human actions are either predetermined by nature or are simply irrelevant. According to Kelly, the structures of self-organization identified by complexity reveal, "Despite the rhetoric of radical environmentalists, it is beyond the power of human beings to wipe the whole flood of life off the planet. Mere nuclear bombs would do little to halt life in general, and might, in fact, increase the nonhuman versions."[63] With the historical conjunction of James Lovelock's "Gaia" theory—where Earth is a complex system in which organisms coevolve with the environment—and the claims of autopoiesis, the connections that intrinsically unite planet and organism demonstrate how there is no clear, autonomous "agency" expressed anywhere: "Nothing and no one controls *these* systems. Beyond these considerations of theoretical comprehension, our challenge is to *get right* with autopoietic systems."[64] And, as Stuart Kauffman has claimed, "The biosphere around us sustains us, is created by us, grafts the energy flux from the sun into the great web of biochemical, biological, geologic, economic, and political exchanges that envelops the world. Thermodynamics be damned. Genesis, thank whatever lord may be, has occurred. We all thrive."[65] Echoing the ecological banality "nature finds a way," the negentropic organization of complexity seems to automatically produce an ecology in which the future of Earth is guaranteed, in spite of whatever humans may or may not do—an ecology, not to mention, that mirrors assumptions about the capitalist market. The coevolution of man and nature means that nature autocorrects for the violence man does to the environment—and perhaps vice versa, as well—just as neoliberal economics argues that any economic fluctuation is a "market correction" that emerges from too much human tampering.

The implications of Kelly and Kauffman's interpretation of complex networks are highly problematic, for some reasons that may already be apparent. First, there is a complete overlap between the mathematical structure of biology, society, technology, and the economy, in which Adam Smith's "invisible hand" is actually an articulation of the laws of self-organization delivered decades upon decades prior to

the scientific realization of complexity theory.[66] Second, while "any small change . . . can, and typically does, have large and amplifying effects," the mathematical models of complexity cannot predict or even fully grasp the underlying reality of complex systems.[67] And finally, the self-organization of the world calls humans "to see that we are the natural expressions of a deeper order. Ultimately, we will discover in our creation myth that we are expected after all."[68] Complexity theory, in spite of protestations against determinism and reduction,[69] reduces all that exists to the same mathematical principles.

But beyond this reduction, there is a massive contradiction that suggests two things. First, each individual matters *so much* that the world would be completely transformed depending on his, her, or its presence or absence at an absolutely infinitesimal level. Every breath, every blink, every bacterial form of energy conversion, every quark and electron is infinitely integrated into a totalized system, each and every element of which is required to produce the world as it is. Second, since the interrelations that produced *this* world are so contingent and complex, *our mere presence must be guaranteed by a "god" that goes by the name of complexity*. With Kauffman and Kelly, the theology of the invisible hand extends outward to the theology of all "complex" phenomena.

Complexity theory, in its theological guise, is not important because of its claims to understand the world, but because of its use (and misuse) in popular culture. It provides a "scientific" basis for numerous obfuscating claims about humanity, agency, and knowledge that have been cynically integrated into dominant logics of neoliberal disempowerment. The mathematics of complexity science are applied to economic (and social, and technological, and biological) phenomena not to explain, but to explain away the ability of humans to even remotely understand the world they inhabit. Complexity theory cannot make predictable outcomes, but, in the version advanced by Kauffman, nonetheless asserts that our existence is something of a "best of all possible worlds," in which each and every entity would need to exist to bring this world into being. The world itself marches along in the face of humanity's inability to grasp much of anything—and any change would effectively do nothing, since the complexity of the world guarantees in advance the perpetuation of the world as it is meant to be. As Jodi Dean remarks, complexity "disposes of politics because nothing can be done."[70] One might as well embrace a fatalistic view that optimistically sees the world as an emergent ideal that each and every entity calls into being together, inevitably, since it's too complex to understand regardless.

With neoliberal discourse, these deferrals to complexity are often disingenuous, or at least are subject to additional political motivations. The invocation of scientific complexity in neoliberal thought is intended to persuade the everyday populace that ignorance is a virtue, usually through Friedrich Hayek's theorization of the market as a kind of cybernetic informational machine. Hayek's famous critique of socialism in *The Road to Surfdom* suggests that the market, in its capacity as a self-organized system, literally knows better than any individual, perpetuating the belief that human

ignorance is an ideal.[71] Planning is a danger because it is, quite literally, against the will of god and nature. Consequentially, "the real danger to humanity resides in the character who mistakenly believes he can think for himself."[72] But this embrace of ignorance is disingenuous. While suggesting that the spontaneous order "naturally" created through the market is literally prohibited by study and governmental planning, Hayek and his followers would simultaneously intervene in government and culture, not to eliminate state structures in the name of self-organization, but to remake the state in accordance with norms of neoliberalism. What Karl Polanyi noted about self-regulating markets years before continues today.[73] In spite of normative "populist" claims about *laissez-faire* markets, ignorance, and self-organization, neoliberalism—like anything else advanced in the name of the self-regulating market—has been a very active constructivist project. Neoliberalism did not organically happen. It was deliberately and actively built by a large, yet unified, bloc of economists, academics, and politicians. But the *belief* that neoliberalism self-organized itself in the name of a swarming, complex, unknowable market intelligence—which depends directly on technological humanist beliefs about networks, connectivity, and flow—continues to structure the limits of human thought and agency while the active creation of a repressive economic regime happens elsewhere.

If we juxtapose these claims about complexity and self-organization with the initial political assumptions of social media—that people participate politically for an impersonal, yet intimate, connection to the rest of the world—a number of odd contradictions arise, especially since the popular interpretation of social complexity as "the wisdom of crowds" often underpins the claims made by theorists of social media like Yochai Benker, Clay Shirky, and Manuel Castells. On one hand, connection is empowerment; on the other, a connected relationship to the world as a whole is guaranteed by the physical reality of complexity. On one hand, the individualized spreading and generating of information is a political act; on the other, individual acts and knowledge do nothing since one can know neither how to change the world nor what "change" would effectively mean. Because "nature" is self-organized through the assumed ignorance of the multitudinous human and nonhuman nodes connecting and generating information, the specific acts of any particular human inevitably make no difference whatsoever. All historical and political developments are, instead, guided by the agency of the network as a totality. The only thing for people to do, in essence, is to "get right" with the systems that determine existence beyond the possibility of human knowledge and control—"get right" by feeling connected to the rest of the world, by generating information fully and transparently for the network to compute beyond the knowledge of any one individual.[74]

And herein lies the paradox of technological humanism: because technology is assumed to merely repeat and make visible something already true of human nature, the promises of technology, inevitably, are already realized and cannot be enabled by technology. If we use social media because it enables an affective, global connection through the self-organization of networks beyond any state or governmental body,

exerting the wisdom of crowds through the generation of information, and complexity theory reveals how these networks and connections are merely a reflection of nature writ large (regardless of their origins in the study of cybernetics and information science), *then anything supposedly promised by social media is inevitably already with us*. The only political action one can take, then, is to submit to the network—to connect, flow, and be happy—since nature has already guaranteed the norms of conduct assumed by nodal citizenship as the foundations of existence. It isn't so much that politics is completely foreclosed by complexity and social media, but that the only political act possible is to connect online, generate and circulate data, and feel fulfilled in the realization of something that always already exists.

Critical theory, climate change, annihilation[75]

Of course, not everyone follows Kauffman's *Candide*-like theology where the best of all possible worlds is guaranteed by the complexity of the universe, where the presence of each and every individual is ensured by a higher power guiding the networked self-organization of life. Because of this optimism, Kauffman, like Kevin Kelly, seems to deny the destructive possibility of climate change—or at least any catastrophic environmental collapse that could potentially destroy Earth. Since "nature finds a way," and since organism and environment coevolve, the human will naturally adapt to the world after the apocalyptic events of global warming. A similar theme related to a potential future apocalypse via climate change runs through a number of recent works in the traditions of critical theory and continental philosophy, specifically in the trendy works associated with "Vital Materialism," "Speculative Realism," or "Object-Oriented Ontology," but without the humanistic hope offered by Kauffman. These authors take the connective postulates of complexity, combine them with the specter of climate change and mass extinction, and then describe an "ontology" that exists without human presence and agency. Theory, these authors claim, needs to bring objects into "democracy" as political actors,[76] as revealed by the potential extinction of mankind. Because political agency has been redefined in terms of connection and flow—actions fully possible by any communication technology—then politics should be redefined beyond the realm of the human to include these devices as actors with a level of agency equivalent to that of humans. But, as with complexity, this redefinition of the political likewise theorizes human knowledge as forever inadequate, in which the truth of reality is unknowable, in which causes and effects cannot be discerned in favor of a holistic blanket of connectivity that denies causal arguments and ethical legitimations for political acts.

Timothy Morton refers to "the thinking of interconnectedness" as "the ecological thought," a "practice and a process of becoming fully aware of how human beings are connected with other beings—animal, vegetable, or mineral."[77] Because of this interconnection, contemporary politics needs to recognize the role of objects in

shaping the world, producing a new ideal for democracy not prejudiced by distinctions between human and inhuman. In light of the threat of human extinction—and the world's persistence after humanity—theory should conceptualize the world as something that exists beyond the purview of mankind. To think otherwise would be to make the mistake of what philosopher Quentin Meillassoux terms "correlationism," the assumption that external reality correlates to subjective human experience.[78] Correlationism reduces objects and things by way of a human mindset that cannot imagine a world without people at its center, limiting the possibility of thought and distorting political accounts of ontology.[79] To genuinely understand the interconnectedness of humanity with the rest of the world, humanity needs to stop being so privileged. Instead of an anthropocentric view characterized by human concerns, these "anti-correlationist" authors call for a critical theory that can explain a world without people, where objects are actors shaping the world as much or even more than humans.

Yet, this change in perspective does not open up humanity to a greater understanding of the world. As with complexity theory, one can sketch a general outline of reality, but can make no solid claims or predictions because of the massive interconnection of all that exists.[80] This arises because objects—even objects created by humans—are fundamentally unknowable. We will never know anything about the Other beyond its otherness, since to do otherwise would correlate its existence with human experience, denying its essence as something that is connected to, yet beyond, the realm of human knowledge.

One of the most fully developed articulations of this perspective occurs in Jane Bennett's book *Vibrant Matter*. Bennett claims, "No one really knows what human agency is, or what humans are doing when they are said to perform as agents."[81] Agency is distributed across the world as a self-organizing network that is infinitely complex. Because of universal participation in the field of complex self-organization, everything is alive, part of "one matter-energy" composed not only of humans, but also of "nonhuman bodies, forces, and forms."[82] It is impossible to determine just who (or what) acts because the totality of the world is equally complicit or agentic in determining all that exists. In a discussion of the 2010 British Petroleum Deepwater Horizon oil spill, Bennett claims that "no one really is to blame" because "autonomy and strong responsibility seem to me to be empirically false, and thus their invocation seems tinged with injustice. In emphasizing the ensemble nature of action and the interconnections between persons and things, a theory of vibrant matter presents individuals as simply incapable of bearing *full* responsibility for their effects."[83]

The completely paralyzing "politics" advocated by Bennett takes for granted the postulate of total interconnection assumed by complexity theory in its theological mode. Because objects are agents, and agency is distributed throughout the world, any political claim that positions fault with a specific person or thing is denying the reality of complexity and interconnection—which, as it happens to be, is completely beyond the scope of humanity to comprehend. But, as Jodi Dean notes in her criticism

of Bennett, "The oil rig didn't emerge spontaneously out of the ocean."[84] While the answer may be "complex," attributing responsibility for an oil rig catastrophe is not impossible. Decisions were made that led to the Deepwater Horizon disaster. While a single person—or even a small group of people, or even a limited assemblage of people and things—may not be properly at fault, to suggest that the distribution of agency essentially means that everyone is inherently always at fault is the ultimate gesture of a disempowering politics. In the name of speculative ontology, these authors formulate a politics in which the assumptions about complexity and self-organization trump any politics derived from meaningful actions in specific contexts. Instead, the totality of the cosmos and those in it all share in the material creation of reality. All are equally at fault, and events just seem to happen without conscious input. There is no agency that exists separate from the network as a totality.

As Morton himself has even noted, "The ideology of emergence states that we don't need to take responsibility for good decisions—they will just happen 'naturally.'"[85] I completely agree with this criticism. But the pretense of unknowability advocated by Morton and Bennett plays directly into the neoliberal political project of obfuscation, in which "good decisions" can *only* happen "naturally" without human intention.[86] The networked complexity that unites both nature and market—the latter of which is assumed to be a subset of the former—means that humans will never have the knowledge to act appropriately. But, so the neoliberal line goes, the market can find an answer, because *it too* is complex, autonomous, and knowledgeable—and certainly more knowledgeable than any human.[87] When current critical trends evacuate the potential for humans to know anything about their world, the neoliberal market is there to give us rationalized answers that have self-organized from the information exchanged in the name of capitalism. While these authors are certainly not intentionally parroting the neoliberal line, their deferral to self-organized global systems incomprehensible to humanity parallels neoliberalism's exact same use of "complexity" and "self-organization" to suggest that human intentionality means nothing in the face of the market.

This neoliberal logic is not only expressed in terms of the market, however. In light of complexity, the only political task offered to humans is to get right by the nature of networks and realize our intrinsic connectivity by means of social media. But the "reality" of politics happens elsewhere—in the power of Big Data to compute and understand self-organization and emergence through the analysis of massive data sets in which humans and data are thought interchangeable. While the intimacy of social media may seem to ground the motivations humans have to act politically, this is only insofar as the connections we have enable real decision making to happen through information processing, beyond human consciousness, divorced from human knowledge, outside of human agency.

While social media promise to "connect" people through networks, perpetuating a kind of intimacy that unites the individual with the totality of the world, the scientific postulates of complexity, which are central to countless popular claims

about the power of social media and the ability of the people to self-organize online, likewise assume that this global—if not cosmological—connectivity inevitably exists. This is the contradiction foundational for any belief in technological humanism. If technology merely reveals something already true of humanity, then it does very little, if nothing, to change the reality in which humans participate and make their daily lives. Complexity, in its theological form, assumes that this interconnectedness is given by the grace of a "god" that exists in everything, in which the world is made through a singular matter-energy to which all are connected, where individual acts only reproduce what's already guaranteed by nature. Theory, in appropriating this view, then also suggests that the world is too complex to know, and that individual humans are irrelevant in the face of an object-led "democracy" revealed by a potential extinction. Cruel optimism, indeed. But instead of a "satisfying something" that prohibits the realization of our desire for a connected intimacy, the "anything" of social media connectivity tells us that the thing we desire *we always already have*. Disempowered, stupid, and impotent, humans that feel "disconnected" are merely failing in living up to the promises of nature, perpetuating the cycle of attachment to social media as we yet again fail to live up to the truth of the natural world. And the neoliberal market waits in the wings to show how human stupidity is perfectly fine, as long as we lie back and wait for the market to take over.

Social media, then, seem to be telling us that humans are either pathological problems that can never live up to the power of the network or are simply irrelevant to the construction and perpetuation of existence. By reducing humanity to a totally interconnected group of nodal citizens, social media has reimagined the world as one in which "people" do not exist. However, I do not mean that "people" are merely equivalent to "human beings." A "people" refers to a sense of collective identity, in which collaborative political decisions are made because of and in spite of individual difference, in which the dignity and rights of individuals are fought for and negotiated. It is this collective identity that vanishes with this logic of connective complexity. If we understand this definition of "people" to ground historical political struggles, articulations and contestations over citizenship and rights, then social media have no people. The collective bond that creates "a people" requires there to be something beyond pure individuality, as pure "social heterogeneity" makes impossible any sort of association that would ever form into a collective identity, even one that is temporary and inevitably produced in conflict. But, at the same time, as Ernesto Laclau has suggested, "*total* equivalence would also make the emergence of the 'people' as a collective actor impossible. An equivalence which was total would cease to be equivalence and collapse into mere identity: there would no longer be a chain but a homogeneous, undifferentiated mass."[88] If our choice is between either total individuality or total interconnection, then there is no potential for a "people" since a people is formed in relation, in conflict, and in association. The "networked individualism" of social media has no people. It barely has humans—even though humans still remain, even though what counts as human is continuously negotiated.

It merely has information routers, servers, and storage devices, all networked together to connect, flow, generate and store data.

A world without a people

There's a difference between noting how objects and media participate in the shaping of the world and attributing to them the status of citizen, especially when one forgets to ask questions about the historical shifts in whatever "citizenship" may or may not mean. What does it mean to invoke ideals of "democracy" and "citizenship?" Citizenship is, for me, a relationship an individual has with a larger body, in which both are mutually constituted, constantly in flux. It carries with it norms that define the "conduct of conduct." In the name of these norms, it defines the regulation of individuals and their behaviors, it determines who is "free" and who is "managed," who has "rights" under law, who gets by precariously without them, and who is completely excluded from the limits of the political. With social media—defined as a "whole way of life" rather than a technology or platform—a citizen becomes an almost absurd reduction of the "human" to an informatic node that, following the history of networks and the foundation of the internet, can be cut off and erased without consequence. This would, perhaps, suggest that nodal citizenship is, in fact, the elimination of the logic of citizenship, as the collective body in which one "belongs" or "identifies" barely seems to exist beyond the totality that is "the cosmos." But I have a difficult time suggesting that network technologies and social media are, in fact, the manifestation of a kind of cosmopolitan citizenship today, considering the monopolistic, corporate political economy that guides their policies and the very real, material limits that exist in how they imagine "the cosmos" to exist.

Timothy Morton makes an interesting argument about what connectivity does to conceptions of personhood. Connectivity invokes questions about "the irreducible uncertainty over what counts as a person. Being a person means never being sure that you're one . . . Think *Blade Runner* or *Frankenstein*: the ethics of [connection] is to regard beings as people even when they aren't people. Ancient animisms treat beings as people. . . . Perhaps I'm aiming for an upgraded version of animism."[89] Morton thinks that his theory has to produce this uncertain personhood, when, in fact, the context has already performed his argument: social media, through the reductive, historical logic of the nodal citizen, assumes that objects are persons and persons are objects. The lines that define what counts as a "person," a "human," or a "citizen" have been redrawn, not in accordance with biology or birthright, but in accordance with the ability to connect and make flow—and if not literally, then as a discourse that shapes and reimagines the proper "conduct of conduct" in an everyday life defined by social media. "Personhood" extends out to all that connects. But when a term ceases to mark a distinction or difference, it ceases to matter. The network defines a world without (a) people, because everything that connects and flows properly is

equivalent, united as a self-organizing whole in which agency is evacuated, in which politics and the world are guaranteed in advance, in which actions do not matter beyond being part of the network. The only form of inequality, supposedly, comes from the inability to manage flows properly—but under any veneer of "equality" via connectivity we find layers of inequality that spread ever outward, in which humans are repeatedly informed of their inabilities in living up to the demands of connection and flow.

If we recount the narrative of *Inhuman Networks*, Part One discussed a history of the word "network" and the idea of connectivity, crossing, articulating, and ultimately conflating the varied milieus of the technological, the biological, the social, and the economic through universals of connectivity and flow. Part Two examined how the historical equivalencies of these networks privilege a "citizen" that can connect and flow throughout all these varied networks: information and data. The subject of social media is assumed equivalent to data, which results in an inability to determine who lives and labors online, disciplining human identity to conform with that which is "fully" visible online. Part Three moved beyond the limits of social media platforms to how the norms of connectivity and flow exist elsewhere in everyday life, leading not to a sense of empowerment, but to a sense of disempowerment that emerges from connectivity and the demands placed on individuals by a totalizing form of connection, where, as is the case with neoliberalism in general, self-management is thought essential but appears irrelevant.

I've hesitated to use the word "ideology" throughout this book, mainly because too many of those writing today once again seem to assume that there's something less than real or material about an ideology. But nodal citizenship is an ideology, as long as we stress that ideologies are real. Nodal citizenship is an imaginary relationship that structures the material conditions of existence. It is what Rob Gehl, following Marx and Raymond Williams, terms a "real abstraction." Real abstractions "*express themselves in social organization and are expressions of social organization*. They are real because they are actions; they are abstractions because they become part of the immaterial constitution of a whole way of life."[90] Nodal citizenship, as a real abstraction, covers over contradictions and reframes behaviors in accordance with a totalizing scope, where connection and disconnection seem to rule all. It informs the regulation of behavior, the imaginary relations one has with another, and the underlying logic assumed to be everyday common sense. Its complicity with the neoliberal project is, at the moment, undeniable. The massive scope that produced this ideology is staggering—and we should note that a simple celebration of everyday resistance will not help in decentering or disrupting the hold nodal citizenship has on contemporary thought, though we should also acknowledge that many of the assumptions that structure the "truth" of nodal citizenship are neither accepted nor embraced by many people in their use of social media.

The only way out of nodal citizenship is to discover new forms of collectivity and commonality that can exist without deferral to "connection"; to prevent or resist

the automatism of self-organization without recourse to individualism; to organize in spite of the programmed structures projected by networks and neoliberalism; to reassert the importance of the human without an uncritical, essentialist, liberal humanism; to invent a new citizenship. We need to find a way to relate to each other without networks, without connections, without flows. Perhaps we can take solace in the fact that the networks of the present do not reflect, but remake nature in their image. Since they have a history, maybe it too is one that will soon come to pass.

NOTES

Introduction

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3. While anyone could connect to a Hotspot for free, an optional fee of two dollars per fifteen minutes was suggested on the Homeless Hotspots website, given either directly to the Hotspot himself or to the Front Steps shelter, payable through PayPal. The latter strategy was recommended by BBH for purposes of accountability. Bartle Bogle Hegarty, "Homeless Hotspots: A Charitable Experiment at SXSWi," *BBH Labs* (blog), March 6, 2012 (accessed August 22, 2013), http://bbh-labs.com/homeless-hotspots-a-charitable-experiment-at-sxswi.
4. Tim Carmody, "The Damning Backstory Behind 'Homeless Hotspots' at SXSW," *Wired*, March 12, 2012 (accessed August 22, 2013), http://www.wired.com/business/2012/03/the-damning-backstory-behind-homeless-hotspots-at-sxswi/.
5. For overviews of this transformation, see David Harvey, *The Condition of Postmodernity: An Enquiry into the Origins of Cultural Change* (Cambridge, MA: Blackwell, 1990); Manuel Castells, *The Information Age: Economy, Society and Culture, Volume 1: The Rise of the Network Society*, Second Edition (Malden, MA: Blackwell, 2000).
6. Hilary Saunders, "Homeless Hotspots Initiative Hits SXSW," *Paste Magazine Awesome of the Day* (blog), March 12, 2012 (accessed August 22, 2013), http://www.pastemagazine.com/blogs/awesome_of_the_day/2012/03/homeless-hotspots-initiative-hits-sxsw.html.
7. Daniel Terdiman, "Homeless Hot Spots at SXSW: A Manufactured Controversy," *C-NET*, March 13, 2012 (accessed August 22, 2013), http://news.cnet.com/8301-13772_3-57396432-52/homeless-hot-spots-at-sxsw-a-manufactured-controversy/.
8. Pinchefsky, "The Only Reason;"; Megan Garber, "Wi-Fi Hotspots Made of Homeless People: Not as Horrible as They Seem," *The Atlantic*, March 12, 2012 (accessed August 22, 2013), http://www.theatlantic.com/technology/archive/2012/03/wi-fi-hotspots-made-of-homeless-people-not-as-horrible-as-they-seem/254347/.
9. Steven Johnson, *Future Perfect: The Case for Progress in a Networked Age* (New York: Riverhead Books, 2012), 18.

10. danah boyd and Kate Crawford, "Critical Questions for Big Data," *Information, Communication & Society* 15, no. 5 (2012): 663.
11. Effie Awards, "2008 Silver Effie Winner: 'Welcome to the Human Network,'" last modified 2007 (accessed July 24, 2014), http://s3.amazonaws.com/effie_assets/2008/2097/2008_2097_pdf_1.pdf.
12. Dave Evans, "Internet of Everything: It's the Connections that Matter #IoE," *Cisco Blogs*, November 29, 2012, http://blogs.cisco.com/wp-content/uploads/IOE_Mini_Infographic_4131.jpg.
13. Wendy Brown, *Undoing the Demos: Neoliberalism's Stealth Revolution* (New York: Zone Books, 2015), 115–21.
14. See N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press, 1999).
15. See Seb Franklin's *Control: Digitality as Cultural Logic* (Cambridge, MA: MIT Press, 2015), for a similar approach to contemporary digital culture.
16. See Amy L. Brandzel, "Queering Citizenship? Same-Sex Marriage and the State," *GLQ: A Journal of Lesbian and Gay Studies* 11, no. 2 (2005): 171–204.
17. Isaac West, *Transforming Citizenships: Transgender Articulations of the Law* (New York: New York University Press, 2013), 6.
18. On the linking of Facebook with passports, see David Kirkpatrick, *The Facebook Effect: The Inside Story of the Company That is Connecting the World* (New York: Simon & Schuster, 2010), 328.
19. Michel Foucault, *Security, Territory, Population: Lectures at the Collège de France, 1977-1978*, edited by Michel Senellart, translated by Graham Burchell (New York: Palgrave Macmillan, 2007), 108. Interpolation in the original.
20. This will be discussed in the introduction to Part Two. My use of "mutate" is derived from Aihwa Ong, *Neoliberalism as Exception: Mutations in Citizenship and Sovereignty* (Durham, NC: Duke University Press, 2006).
21. Brown, *Undoing the Demos*, 188.
22. Jean-François Lyotard, *The Inhuman: Reflections on Time*, translated by Geoffrey Bennington and Rachel Bowlby (Cambridge: Polity Press, 1991), 2.
23. Peter Sloterdijk, "*Rules for the Human Zoo*: A Response to the *Letter on Humanism*," translated by Mary Varney Rorty, *Environment and Planning D: Society and Space* 27 (2009): 15–16.
24. Lyotard, *The Inhuman*, 7.
25. As Alexander R. Galloway and Eugene Thacker interpret Lyotard in *The Exploit: A Theory of Networks* (Minneapolis, MN: University of Minnesota Press, 2007), 141.
26. Sloterdijk, "*Rules for the Human Zoo*," 24.
27. Ulises Ali Mejias, *Off the Network: Disrupting the Digital World* (Minneapolis: University of Minnesota Press, 2013), 99.
28. In a *Wired* story about Klout, a website that algorithmically calculates one's social media influence, an illustration notes, with the characteristic deadpan humor of this joke, "My Klout score is 0. I don't even exist." Seth Stevenson, "What Your Klout Score Really Means," *Wired Business*, April 24, 2012 (accessed August 22, 2013), http://www.wired.com/business/2012/04/ff_klout/.

29. Mejias, *Off the Network*, 9.
30. Evgeny Morozov, *To Save Everything, Click Here: Technology, Solutionism, and the Urge to Fix Problems that Don't Exist* (London: Allen Lane, 2013), xi.
31. Lee Rainie and Barry Wellman, *Networked: The New Social Operating System* (Cambridge, MA: MIT Press, 2012), 56.
32. Albert-László Barabási, *Linked: How Everything is Connected to Everything Else and What It Means for Business, Science, and Everyday Life* (New York: Plume, 2002), 5.
33. Manuel Castells, *Communication Power* (New York: Oxford University Press, 2009), 21, 139.
34. Mark C. Taylor, *The Moment of Complexity: Emerging Network Culture* (Chicago: University of Chicago Press, 2001), 17.
35. This is a gloss on the argument of Michael Hardt and Antonio Negri, although they do not truly universalize networks and should not be lumped in with those who see networks and connection as an expression of the natural order of existence. There are problems with their use of the figure of the network, however, as will be discussed in Chapter 2. See Hardt and Negri, *Multitude: War and Democracy in the Age of Empire* (New York: Penguin Press, 2004), 142.
36. See Matthew D. Lieberman, *Social: Why Our Brains Are Wired to Connect* (New York: Crown, 2013).
37. James Carey, *Communication as Culture: Essays on Media and Society* (New York: Routledge, 1988), 204.
38. See Catherine Malabou, *What Should We Do With Our Brain?* translated by Sebastian Rand (New York: Fordham University Press, 2008), 32.
39. Meijas, *Off the Network*, xiii.
40. Anna Munster, *An Aesthesia of Networks: Conjunctive Experience in Art and Technology* (Cambridge, MA: MIT Press, 2013), 3.
41. Rob Wilkie, *The Digital Condition: Class and Culture in the Information Network* (New York: Fordham University Press, 2011), 56.
42. Tony D. Sampson, *Virality: Contagion Theory in the Age of Networks* (Minneapolis: University of Minnesota Press, 2012), 2–3.
43. Henry Jenkins, Sam Ford, and Joshua Green, *Spreadable Media: Creating Value and Meaning in a Networked Culture* (New York: New York University Press, 2013), 37.
44. Though, as Morozov illustrates in *To Save Everything*, these beliefs are certainly still pervasive among engineers, entrepreneurs, and popular technology writers. Cf. Henry Jenkins, *Convergence Culture: Where Old and New Media Collide* (New York: New York University Press, 2006), 287.
45. Compare my claims here to Seb Franklin's defense of "vapor theory" in *Control*, xxi–xxii.
46. John Durham Peters, *Speaking into the Air: A History of the Idea of Communication* (Chicago: University of Chicago Press, 1999), 2.
47. Ibid., 227.
48. David Golumbia, *The Cultural Logic of Computation* (Cambridge, MA: Harvard University Press, 2009), 13.
49. Raymond Williams, *Marxism and Literature* (Oxford: Oxford University Press, 1977), 132.
50. Cf. Golumbia, *The Cultural Logic of Computation*, 3.

51. Jody Berland, *North of Empire: Essays on the Cultural Technologies of Space* (Durham, NC: Duke University Press, 2009), 12; Giorgio Agamben, *What is an Apparatus? and Other Essays*, translated by David Kishik and Stefan Pedatella (Stanford, CA: Stanford University Press, 2009).
52. On "conjunctures," see Lawrence Grossberg, *Cultural Studies in the Future Tense* (Durham, NC: Duke University Press, 2010), 40–1.
53. On the categories of "normal," "abnormal," and "pathological," see Georges Canguilhem, *The Normal and the Pathological*, translated by Carolyn R. Fawcett in collaboration with Robert S. Cohen (New York: Zone Books, 1989); Michel Foucault, *Abnormal: Lectures at the Collège de France, 1974-1975*, edited by Valerio Marchetti and Antonella Salomoni, translated by Graham Burchell (New York: Picador, 2003).
54. For instance, Finn Brunton and Gabriella Coleman's essay "Closer to the Metal" in *Media Technologies: Essays on Communication, Materiality, and Society*, edited by Tarleton Gillespie, Pablo J. Boczkowski, and Kirsten A. Foot (Cambridge, MA: MIT Press, 2014), 77–97, suggests that behind "the deepest, abiding bedrock layer of the material" will inevitably be "people, societies, and discourses at work." Brunton and Coleman, unlike Foucault, suggest that discourse cannot exist detached from "narratives and the people who tell them" (80). In other words, technology (or language) is never an independent agent, but merely conceals or mirrors the activity of humans. This perspective is understandable for an anthropologist, but is empirically indefensible given the material constraints of technology. Overly easy assumptions about what "people," "societies," and "discourses" are approach these concepts as if they have roughly stable definitions determined only by the action of human beings.
55. For a more detailed overview of this perspective, see Jussi Parikka, *What is Media Archaeology?* (Cambridge: Polity, 2012). Also see Erkki Huhtamo's "Dismantling the Fairy Engine: Media Archaeology as Topos Study," in *Media Archaeology: Approaches, Applications, and Implications*, edited by Erkki Huhtamo and Jussi Parikka (Berkeley: University of California Press, 2011), 28; and *Illusions in Motion: Media Archaeology of the Moving Panorama and Related Spectacles* (Cambridge, MA: MIT Press, 2013), xviii–xix.
56. Michel Foucault, *The Archaeology of Knowledge*, translated by A. M. Sheridan Smith (New York: Pantheon Books, 1972), 12.
57. The work of Siegfried Zielinski is an excellent example of this version of media archaeology. See his *Deep Time of the Media: Toward an Archaeology of Hearing and Seeing by Technical Means*, translated by Gloria Custance (Cambridge, MA: MIT Press, 2006).
58. Michel Foucault, "Nietzsche, Genealogy, History," in *The Foucault Reader*, edited by Paul Rabinow (New York: Pantheon Books, 1984), 77.
59. Ibid., 81.
60. See the Preface and Introduction to Kittler's *Gramophone, Film, Typewriter*, translated by Geoffrey Winthrop-Young and Michael Wutz (Stanford, CA: Stanford University Press, 1999), xxxix–19.
61. See Stefan Andriopoulos, *Ghostly Apparitions: German Idealism, the Gothic Novel, and Optical Media* (New York: Zone Books, 2013), 16.
62. This could be one of the conclusions of Kittler's work as well, as he often highlights metaphorical articulations between media technologies and scientific models used to describe human physiology and psychology, not the pure determining agency of technological materialities.

63. Eric Kluitenberg, "On the Archaeology of Imaginary Media," in *Media Archaeology: Approaches, Applications, and Implications*, edited by Erkki Huhtamo and Jussi Parikka (Berkeley: University of California Press, 2011), 66.
64. Mark Zuckerberg, "Is Connectivity a Human Right?" *Facebook* (accessed August 22, 2013), https://www.facebook.com/isconnectivityahumanright/isconnectivityahumanright.pdf.
65. Ibid., 2–3.
66. United Nations Human Rights Council, *Report of the Special Rapporteur on the Promotion and Protection of the Right to Freedom of Opinion and Expression*, by Frank La Rue, A/HRC/17/27, 4.
67. Ibid., 17.

Part One

1. I'm using "residual" here as Raymond Williams defined it, as that which "has been effectively formed in the past, but . . . is still active in the cultural process, not only and often not at all as an element of the past, but as an effective element of the present." *Marxism and Literature*, 122.
2. Foucault, *The Archaeology of Knowledge*, 224.
3. Sigmund Freud, *Civilization and its Discontents*, translated by James Strachey (New York: W. W. Norton & Company, 1961), 12.
4. Karl Marx, *Capital: A Critique of Political Economy*, *Volume 1*, translated by Ben Fowkes (London: Penguin Books, 1976), 187.
5. Giorgio Agamben, *Homo Sacer: Sovereign Power and Bare Life,* translated by Daniel Heller-Roazen (Stanford, CA: Stanford University Press, 1998); Roberto Esposito, *Bíos: Biopolitics and Philosophy*, translated by Timothy Campbell (Minneapolis: University of Minnesota Press, 2008); Michel Foucault, *"Society Must Be Defended": Lectures at the Collège de France, 1975-1976*, edited by Mauro Bertani and Alessandro Fontana, translated by David Macey (New York: Picador, 2003).
6. Kittler, *Gramophone, Film, Typewriter*; Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century* (Cambridge, MA: MIT Press, 1990); Mary Ann Doane, *The Emergence of Cinematic Time: Modernity, Contingency, the Archive* (Cambridge, MA: Harvard University Press, 2002).
7. Georges Canguilhem, *Knowledge of Life*, edited by Paola Marrati and Todd Meyers, translated by Stefanos Geroulanos and Daniela Ginsburg (New York: Fordham University Press, 2008), 25–56.
8. Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences* (New York: Vintage Books, 1970), 326–8.
9. Which, as will be discussed in Chapter 3, often manifests itself in the form of racist discourses such as anti-Semitism. See Foucault's "*Society Must Be Defended*."
10. This informs the famous teleology of "orality," "literacy," and "second orality" common in media theory. See, for instance, Marshall McLuhan, *Understanding Media: The Extensions of Man* (Cambridge, MA: The MIT Press, 1964).

11. Bruno Latour, *We Have Never Been Modern*, translated by Catherine Porter (Cambridge, MA: Harvard University Press, 1993), 119.
12. Ibid., 47.
13. Walter J. Ong, *Orality and Literacy: The Technologizing of the Word* (New York: Routledge, 1982).

Chapter One

1. E. M. Forster, *The Machine Stops* (London: Penguin, 2011), 3.
2. Ibid., 33–4.
3. Karl Marx, *Capital, Volume 1*, 544.
4. Karl Marx, *Grundrisse: Foundations of the Critique of Political Economy (Rough Draft)*, translated by Martin Nicolaus (London: Penguin Books, 1973), 706.
5. For an example of the contemporary astonishment about past technological anxieties, see popular writer Clive Thompson's blog post "'Wired Love': A Tale of Catfishing, OK Cupid, and Sexting . . . From 1880," *Collision Detection* (blog), July 24, 2013, http://www.collisiondetection.net/mt/archives/2013/07/wired_love_a_ta.php. Thompson describes the 1880 novel *Wired Love* as a "nuttily modern" and "technologically surreal" story of telegraph romance because it seems to replicate contemporary anxieties about internet-era romance. Laura Otis's *Networking: Communicating with Bodies and Machines in the Nineteenth Century* (Ann Arbor: University of Michigan Press, 2011), 147–64, contextualizes *Wired Love* at length, demonstrating how, like "The Machine Stops," *Wired Love* was depicting anxieties and fears contemporary to its time of writing.
6. Or Forster was simply in line with those closer to his own time, like Lewis Mumford, who was directly replicating certain lines of Marx's thought in his own critique of "The Machine." See Mumford's *Technics and Civilization* (Chicago: University of Chicago Press, 1934).
7. Evelyn Fox Keller, *Making Sense of Life: Explaining Biological Development with Models, Metaphors, and Machines* (Cambridge, MA: Harvard University Press, 2002).
8. Jussi Parikka, *Digital Contagions: A Media Archaeology of Computer Viruses* (New York: Peter Lang, 2007).
9. See Olaf Sporns, *Networks of the Brain* (Cambridge, MA: MIT Press, 2011); Eugene Thacker, *Biomedia* (Minneapolis: University of Minnesota Press, 2004); Tony D. Sampson, *Virality*.
10. Forster, *The Machine Stops*, 34.
11. Ibid., 55.
12. Cf. Otis, *Networking*, 97, 215–18.
13. A reprint of this definition can be found in Samuel Johnson, "Network," *The General Advertiser and Political, Commercial, Agricultural and Literary Journal*, October 4, 1790, 3.
14. "New Publications," *The Lady's Magazine, and Repository of Entertaining Knowledge*, January 1793, 90–1.
15. Mumford, *Technics and Civilization*, 63–106, 144–5.
16. "Plan of the Undertaking," *Essex Journal*, July 9, 1784, 2.

17. "News of the Week," *Spectator*, January 19, 1833, 50.
18. G. Brodie, "Fashions for February," *Harper's New Monthly Magazine*, February 1864, 432.
19. Dr. (James) De-La-Cour, "Verses on a Lady's Hand," *Cumberland Gazette*, August 10, 1786, 4.
20. "Loss of Friends," *Maryland Journal and Baltimore Advertiser*, September 1, 1786, 4.
21. For more on insects and early networked media, see Jussi Parikka, *Insect Media: An Archaeology of Animals and Technology* (Minneapolis: University of Minnesota Press, 2010).
22. Otis, *Networking*, 6.
23. Ibid., 8.
24. Ibid., 11–80; see also Timothy Lenoir, "Helmholtz and the Materialities of Communication," *Osiris* 9 (1994): 185–207.
25. Otis, *Networking*, 14; cf. Timothy Lenoir, "Models and Instruments in the Development of Electrophysiology, 1845-1912," *Historical Studies in the Physical and Biological Sciences* 17 (1986): 3.
26. Canguilhem, *Knowledge of Life*, 43.
27. Ibid.
28. On this point, see also Laura Otis, *Membranes: Metaphors of Invasion in Nineteenth-Century Literature, Science, and Politics* (Baltimore: Johns Hopkins University Press, 2000).
29. Canguilhem, *Knowledge of Life*, 29.
30. As an example of a contemporary neuroscientist who follows the reticularists in describing the nerves as networks, see Sporns, *Networks of the Brain*.
31. Canguilhem remarks that the transition from fibers to cells in anatomical discourse resulted in a number of mixed and paradoxical discourses during the 1700s and 1800s. Courtenay's description of the anatomy of the black body would clearly fit into this history. See *Knowledge of Life*, 149–50.
32. Courtenay has misspelled the surname of Abbe Spallanzani in this quote. John Courtenay, "Philosophical Reflections on the Late Revolution in France, etc.," *Gazette of the United States*, August 21, 1790, 565.
33. This narrative is often challenged in the history of medicine. There is ample evidence that the circulation of blood was discovered prior to Harvey by Iranian physician Ibn Nafis. See Sami I. Hadad and Amin A. Khairallah, "A Forgotten Chapter in the History of the Circulation of the Blood," *Annals of Surgery* 104 (1936): 1–8; Mohammad-Hossein Azizi, Touraj Neyernouri and Farzaneh Azizi, "A Brief History of the Discovery of the Circulation of Blood in the Human Body," *Archives of Iranian Medicine* 11 (2008): 345–50.
34. Alexander R. Galloway, "Networks," in *Critical Terms for Media Studies*, edited by W. J. T. Mitchell and Mark B. N. Hansen (Chicago: University of Chicago Press, 2010), 280–96.
35. Quoted in Margaret Tallmadge May, introduction to *On the Usefulness of the Parts of the Body*, vol. 1, edited by Galen, translated by Margaret Tallmadge May (Ithaca, NY: Cornell University Press, 1968), 17.
36. C. R. S. Harris, *The Heart and the Vascular System in Ancient Greek Medicine: From Alcamaeon to Galen* (Oxford: Oxford University Press, 1973), 14.
37. May, introduction to *Usefulness of the Parts*, 44.

38. P. N. Singer, introduction to *Selected Works*, by Galen, edited and translated by P. N. Singer (Oxford: Oxford University Press, 1997), x.
39. Richard Sennett, *Flesh and Stone: The Body and the City in Western Civilization* (London: Faber and Faber, 1994), 163.
40. Galen, *Selected Works*, 169.
41. Harris, *The Heart and the Vascular System*, 273.
42. Galen, *Usefulness of the Parts*, 76.
43. Sennett, *Flesh and Stone*, 164.
44. William Harvey, *An Anatomical Disputation Concerning the Movement of the Heart and Blood in Living Creatures*, translated by Gweneth Whitteridge (Oxford: Blackwell Scientific Publications, 1976), 3–4.
45. William Harvey, *The Works of William Harvey, M. D.*, translated by Robert Willis (London: The Sydenham Society, 1847), 11–12.
46. Sennett, *Flesh and Stone*, 256.
47. Otis, *Networking*, 14.
48. Sennett, *Flesh and Stone*, 256.
49. Ibid., 263
50. Ibid., 271
51. Cited in Otis, *Networking*, 14.
52. Ibid.
53. Cited in ibid., 15.
54. Jacques-René Tenon, Antoine Portal, R.-B. Sabatier, Pinel, and Cuvier, "Report on a Memoir of Drs. Gall and Spurzheim, relative to the Anatomy of the Brain," *The Baltimore Medical and Philosophical Lycaeum* 1, no. 1 (January 1, 1811): 54.
55. Archibald MacLaren, "National Systems of Bodily Exercise," *Macmillian's Magazine*, November 1862, 278.
56. "Matter," *The Atheneum: Or, Spirit of the English Magazines*, November 1, 1824, 128.
57. Ibid.
58. "The Remarkable Fitness of Things," *Christian Secretary*, May 10, 1828, 64.
59. J. R. Park, "An Inquiry into the Varieties of Sensation, resulting from Difference of Texture in the Sentient Organ," *Journal of Science and the Arts* 2 (January 3, 1817): 11.
60. John C. Warren, "Cases of Apoplexy with Dissections," *The New England Journal of Medicine and Surgery, and Collateral Branches of Medical Science* 1, no. 1 (January 1812): 39–40.
61. Baron Larrey, "On the Application of Actual Cautery in the Erysipelas following Wounds," *The Philadelphia Journal of the Medical and Physical Sciences* 12 (April 1, 1826): 379.
62. George J. Romanes, "The Beginning of Nerves in the Animal Kingdom," *Fortnightly Review* 24 (October 1878): 509–26. This is one of the few examples cited in this chapter that occurred after the popularization of the telegraph.
63. MacLaren, "National Systems of Bodily Exercise," 278.
64. M. A. Serres, "New Division of Apoplexies," *The Philadelphia Journal of the Medical and Physical Sciences* 8, no. 16 (April 1, 1824): 300.

65. James Wardrop, "On the Effects of Evacuating the Aqueous Humor in Inflammation of the Eyes, and in some Diseases of the Cornea," *Medico-Chirurgical Transactions* 4 (1813): 180.
66. David Craigie, "On the Pathological Anatomy of the Human Brain and its Membranes," *The Journal of Foreign Medical Science and Literature* 3 (April 1823): 227.
67. Barabási, *Linked*; James R. Beniger, *The Control Revolution: Technological and Economic Origins of the Information Society* (Cambridge, MA: Harvard University Press, 1986); Nicholas A. Christakis and James H. Fowler, *Connected: The Surprising Power of Our Social Networks and How They Shape Our Lives* (New York: Little, Brown and Company, 2009).
68. N. Katherine Hayles, *How We Became Posthuman*; Thacker, *Biomedia*.

Chapter Two

1. Carey, *Communication as Culture*, 201–30; cf. Beniger *The Control Revolution*, 318–30.
2. Agamben, *Homo Sacer*, 119–80; Aamir R. Mufti, *Enlightenment in the Colony: The Jewish Question and the Crisis of Postcolonial Culture* (Princeton: Princeton University Press, 2007), 37–90; Slavoj Žižek, *The Sublime Object of Ideology* (London: Verso, 1989), 114–18.
3. I must stress that this chapter only addresses the *fiction* of "the Jew" in Western modernity, as invented by anti-Semitic discourse. I am in no way inferring anything about the lived experience or reality of the Jewish diaspora. See Daniel Boyarin and Jonathan Boyarin, "Diaspora: Generation and the Ground of Jewish Identity," *Critical Inquiry* 19, no. 4 (1993): 693–725, for a critique of how continental philosophy and critical theory use the figure of "the Jew" in problematic ways.
4. This is primarily with the help of print-on-demand book publishing services and Amazon.com, along with Glenn Beck, who once recommended *The Red Network* on one of his media programs.
5. Elizabeth Dilling, *The Red Network: A "Who's Who" and Handbook of Radicalism for Patriots* (Chicago: Self Published, 1934), 36.
6. Wolfgang Schivelbusch, *The Railway Journey: The Industrialization of Time and Space in the 19th Century* (Berkeley: University of California Press, 1986), xiii.
7. Berland, *North of Empire*, 74.
8. See Harold A. Innis, *The Bias of Communication* (Toronto: University of Toronto Press, 1951) and *Empire and Communications* (Lanham, MD: Rowman & Littlefield, 2007).
9. Laura Otis argues that George Eliot's *Middlemarch* was a celebration of the varied forms of networked connection—biological, technological, social, and financial—that were only beginning to become visible at the time of its writing by way of the railroad. See *Networking*, 81–119.
10. Milton Friedman, *Capitalism and Freedom* (Chicago: University of Chicago Press, 2002), ix.
11. "Uniformity of Gauge: Report of Her Majesty's Commissioners in Favour of National Uniformity of Railway Gauge, with Extracts from the Evidence of the Witnesses," *Spectator*, May 2, 1846, 1.

12. Schivelbusch, *The Railway Journey*, 29.
13. "Uniformity of Gauge," 1.
14. "Working of the Railway System," *Spectator*, July 29, 1843, 708.
15. "The Railway Strike," *Spectator*, August 31, 1850, 830.
16. "Advertisements," *Spectator*, May 16, 1846, 480.
17. W., "Letter to the Editor: Railway Gauge—The Bearing of the Question on the National Defense," *Spectator*, April 1, 1848, 320.
18. Chris Anderson, "The Web Is Dead: Blame Us," *Wired*, September 2010, 126.
19. Doug Henwood, *Wall Street: How it Works and for Whom* (New York: Verso, 1997), 188.
20. Goodbody, "Various Opinions: Extracts from Commission House Letters of Last Night," *Wall Street Journal*, October 26, 1889, 2.
21. "Vanderlip's Views on the Situation are Conservative," *Wall Street Journal*, June 22, 1907, 3.
22. "Unfair and Superficial," *Wall Street Journal*, August 18, 1923, 2.
23. "Railways as the People's Estate," *Wall Street Journal*, June 27, 1907, 1.
24. Carey, *Communication as Culture*, 215.
25. Paul Starr, *The Creation of the Media: Political Origins of Modern Communication* (New York: Basic Books, 2004), 158; Jonathan Sterne, "Transportation and Communication: Together as You've Always Wanted Them," in *Thinking with James Carey: Essays on Communications, Transportation, History*, edited by Jeremy Packer and Craig Robertson (New York: Peter Lang, 2006), 117–35.
26. Carey, *Communication as Culture*, 215.
27. Quoted in Otis, *Networking*, 11.
28. Lenoir, "Helmholtz and the Materialities of Communication," 186.
29. Otis, *Networking*, 120.
30. Quoted in ibid., 49.
31. Harvey, *The Works of William Harvey, M. D.*, 3.
32. As will be discussed in more detail in the Coda to Part One.
33. "Quicker Turnover of Capital," *Wall Street Journal*, November 19, 1906, 1.
34. Castells, *The Rise of the Network Society*, 169–72.
35. "Quicker Turnover of Capital," 1.
36. "Leveling the Barriers of Distance," *Wall Street Journal*, April 16, 1930, 13.
37. "Forty Years of Progress," *Wall Street Journal*, May 3, 1922, 9.
38. See Leo Marx, *The Machine in the Garden: Technology and the Pastoral Ideal in America* (Oxford: Oxford University Press, 1964).
39. "The Things That Are Not Seen," *Wall Street Journal*, May 5, 1925, 5.
40. Sterne, "Transportation and Communication," 117–35.
41. Reprinted as Charles F. Dole, "The Monroe Doctrine: Has it Become a Claim of Preemption," *Wall Street Journal*, April 21, 1905.
42. "Little Sticks and their Kindred," *Harper's New Monthly Magazine*, May 1857, 758.

43. Duncan Aikman, "American Fascism: A Plea for American Liberalism," *Harper's Magazine*, April 1925, 518.
44. Carl Dreher, "Collectivism and Human Nature," *Harper's Magazine*, September 1934, 485.
45. Ibid., 491.
46. Mufti, *Enlightenment in the Colony*, 38.
47. Ibid.
48. See Mufti, *Enlightenment in the Colony*, 1–90; Joel Kovel, *White Racism: A Psychohistory* (New York: Columbia University Press, 1984), xcvii–ci. For an account of the invention of "mass communication" in the United States that addresses the reactionary anti-Semitism of the early media industry, see Peter Simonson, *Refiguring Mass Communications: A History* (Urbana: University of Illinois Press, 2010), 11–16; for a popular account of these fears, see Jon Ronson, *Them: Adventures with Extremists* (New York: Simon & Schuster, 2002).
49. Martha F. Lee, "Nesta Webster: The Voice of Conspiracy," *Journal of Women's History* 17, no. 3 (2005): 81–104. Also see Winston S. Churchill, "Zionism versus Bolshevism: A Struggle for the Soul of the Jewish People," *Illustrated Sunday Herald* (London), February 8, 1920, 5.
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53. Kovel, *White Racism*, xcvii–ci.
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59. Michael Hardt and Antonio Negri, *Empire* (Cambridge, MA: Harvard University Press, 2000), 32.
60. Dilling, *The Red Network*, 5.
61. Ibid., 18–19.
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63. Castells, *The Rise of the Network Society*, 407–59.
64. Žižek, *The Sublime Object of Ideology*, 125.
65. Ibid., 125–6.
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67. Foucault, "*Society Must Be Defended*", 256. Cf. Zygmunt Bauman, *Liquid Love: On the Frailty of Human Bonds* (Malden, MA: Polity Press, 2003); Achille Mbembe, "Necropolitics," translated by Libby Meintjes, *Public Culture* 15 (2003): 11–40.

68. Agamben, *Homo Sacer*, 10.
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70. Manuel Castells, *The Information Age: Economy, Society and Culture, Volume 2: The Power of Identity,* Second Edition (Malden, MA: Blackwell, 2004), and *The Information Age: Economy, Society and Culture, Volume 3: End of Millennium,* Second Edition (Malden, MA: Blackwell, 2000).
71. Galloway and Thacker, *The Exploit*, 25–7.
72. Castells, *The Power of Identity*, 5–70.

Chapter Three

1. Karl Polanyi, *The Great Transformation: The Political and Economic Origins of Our Time* (Boston: Beacon Press, 1944).
2. Berland, *North of Empire*, 75.
3. I'm referring to the classic and contemporary arguments advanced by the following authors: Carmen M. Reinhart and Kenneth S. Rogoff, *This Time is Different: Eight Centuries of Financial Folly* (Princeton, NJ: Princeton University Press, 2009); John Kenneth Galbraith, *The Great Crash, 1929* (Boston: Mariner Books, 1997); Milton Friedman and Anna Jacobson Schwartz, *A Monetary History of the United States, 1867-1960* (Princeton, NJ: Princeton University Press, 1963); and Karl Marx, as presented by David Harvey in *A Companion to Marx's* Capital*, Volume 2* (London: Verso, 2013).
4. "Canadian Banking," *Economist*, October 8, 1932, 10.
5. "Broad Street Gossip," *Wall Street Journal*, March 16, 1918, 2.
6. While this understanding of Canadian banks has pretty much been erased from most mainstream accounts of the Depression's causes, it weirdly reappears in Friedman and Schwartz's *Monetary History* chapter on the "Great Contraction," 352–3.
7. A. J. Beveridge, "Canada's Currency System Unique in Many Respects," *Saturday Evening Post*, reprinted in the *Wall Street Journal*, June 24, 1911, 6.
8. James Powell, *A History of the Canadian Dollar* (Ottawa: Bank of Canada, 2005), 28, 33–40.
9. "Bank Concentrations Going on Outside the United States: Tendency Abroad is to Create Great Banking Institutions to Finance After War Trade," *Wall Street Journal*, December 12, 1918, 10. Also see "Evolution of Credit and Banking Methods in France," *Wall Street Journal*, June 29, 1910, 7, which makes the same argument. Many articles in the *Journal* on the supposed superiority of French, German, or British banks would often attribute their dominance to the networking and interconnection of banks.
10. For some of the more notable explanations, see Galbraith, *The Great Crash*; Friedman and Schwartz, *The Great Contraction*; Reinhart and Rogoff, *This Time is Different*.
11. These changes were neither spontaneous nor inevitable. Some state laws forbade the very existence of branch banking within state lines. Texas and Illinois did not permit branch banking at all until the 1970s and 1980s. Many regulations prohibiting branch banking

still existed until 1994, outlawing banking mergers and operations between different states. Even though the deregulation of branch banking had been discussed since the 1920s, if not earlier, it was not until The Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994 that there were any national standards for interstate branch banking. The Riegle-Neal Act was one of the first in a series of banking deregulations passed during the 1990s. Even though it took decades to realize the desire to network the banks, this move to deregulation had its foundations in beliefs from the early decades of the twentieth century. See Kenneth Spong, *Banking Regulation: Its Purposes, Implementation, and Effects*, fifth edition (Kansas City: Federal Reserve Bank of Kansas City, 2000), 22–33; Stephen A. Rhoades, "Bank Mergers and Banking Structure in the United States, 1980–98," *Board of Governors of the Federal Reserve System Staff Study* 174 (2000): 1–33.

12. "National Contacts," *Wall Street Journal*, September 20, 1927, 12.
13. "National and International Investment Banking Service," *Wall Street Journal*, January 7, 1930, 9.
14. Galbraith, *The Great Crash*, 44.
15. Ibid., 45.
16. Ibid., 45–6.
17. Dilling, *The Red Network*.
18. Webster, *The Socialist Network*.
19. See, among other sources, The Federal Reserve Bank of Philadelphia, *The First Bank of the United States: A Chapter in the History of Central Banking* (Philadelphia: The Federal Reserve Bank of Philadelphia, 2009); Spong, *Banking Regulation*, 18–21.
20. William Hayward, "For Fair Play and a Square Deal," *Wall Street Journal*, October 5, 1907, 6.
21. Will Nassau, "In and Out of Bounds," *Wall Street Journal*, October 31, 1927, 11.
22. "An Ancient Prejudice Has Been Removed," *Wall Street Journal*, September 10, 1929, 5.
23. John Frow, *Time & Commodity Culture: Essays in Cultural Theory and Postmodernity* (Oxford: Oxford University Press, 1997), 104–5.
24. Ibid., 124.
25. Cf. Georg Simmel, *The Philosophy of Money*, edited by David Frisby, translated by Tom Bottomore and David Frisby from a first draft by Kaethe Mengelberg, Second Edition (New York: Routledge, 1990), 175.
26. The rate experienced over a 10 percent increase, from 43.6 percent to 55.0 percent. U.S. Census Bureau, "Historical Census of Housing Tables," last modified December 2, 2004, http://www.census.gov/hhes/www/housing/census/historic/owner.html.
27. LeeAnn Lands, *The Culture of Property: Race, Class, and Housing Landscapes in Atlanta, 1880-1950* (Athens, GA: University of Georgia Press, 2009), 107. Also see Suzanne Mettler, *Soldiers to Citizens: The G. I. Bill and the Making of the Greatest Generation* (New York: Oxford University Press, 2005), 100–3.
28. Lands, *The Culture of Property*, 117.
29. David Graeber, *Debt: The First 5,000 Years* (Brooklyn: Melville House, 2011), 9.
30. Jill Lepore, "I.O.U.: How We used to Treat Debtors," *The New Yorker*, April 13, 2009, 38.
31. Otis, *Networking*.

32. Richard Dienst, *The Bonds of Debt* (London: Verso, 2011), 29.
33. Philip Mirowski, *Never Let a Serious Crisis Go to Waste: How Neoliberalism Survived the Financial Meltdown* (New York: Verso, 2013), 89–155; Mark Hayward, "ATMs, Teleprompters and Photobooths: A Short History of Neoliberal Optics," *New Formations: A Journal of Culture/Theory/Politics* 80–1 (2013): 194–208; Cf. Randy Martin, *Financialization of Daily Life* (Philadelphia: Temple University Press, 2002).
34. Karl Marx, *Capital: A Critique of Political Economy, Volume 2*, translated by David Fernbach (London: Penguin Books, 1978), 114.
35. Ibid., 116.
36. Harvey, *A Companion to Marx's* Capital*, Volume 2*, 53.
37. Gabriel Tarde, "Economic Psychology," translated by Alberto Toscano, *Economy and Society* 36, no. 4 (2007): 614.
38. Simmel, *Philosophy of Money*, 175.
39. On Simmel, see Rainie and Wellman, *Networked*, 44. The resurgence of Tarde is associated with the followers of Bruno Latour and a group of British sociological theorists, extending into "new materialist" theorists of media. See Sampson's *Virality* for a productive discussion of how Tarde can describe contemporary network culture. I hesitate to follow Sampson's reading of Tarde here, though it is in my opinion the best available in its articulation of the similarities between Tarde's model of sociality and contemporary discussions of "viral" media.
40. Bruno Latour and Vincent Antonin Lépinay, *The Science of Passionate Interests: An Introduction to Gabriel Tarde's Economic Anthropology* (Chicago: Prickly Paradigm Press, 2009), 1.
41. This is how Tarde is read by many of his followers today, though this point is debatable. However, in his *Monadology and Sociology*, edited and translated by Theo Lorenc (Melbourne: re.press, 2012), Tarde advances a general metaphysics that does, indeed, seem to remove preconstituted individuals in favor of a "sociology" made up entirely of universalized relational forces.
42. Armand Mattelart, *The Invention of Communication*, translated by Susan Emanuel (Minneapolis: University of Minnesota Press, 1996), 251–9.
43. Georg Simmel, *Conflict* and *The Web of Group-Affiliations*, translated by Kurt H. Wolff and Reinhard Bendix (Glencoe, IL: The Free Press, 1955), 15.
44. Ibid., 128.
45. Ibid., 141.
46. Ibid., 172.
47. Ibid., 173.
48. See Graber, *Debt*, 21–41.
49. Simmel, *Philosophy of Money*, 112.
50. Cf. Peters, *Speaking into the Air*.
51. Simmel, *Philosophy of Money*, 511.
52. Unlike most of what I've discussed in Part One, this turn to Tarde is not because of the use of the word "network" in his writings. There has been a recent resurgence of interest in Tarde's sociological theories because of assumed equivalences between his ontology of society and the networked structures that characterize the internet, social media,

postindustrial economies, and so on. Bruno Latour and his colleagues have even gone so far as to suggest that the technological tools associated with Big Data forms of social network analysis demonstrate the universality of Tarde's original theories. See Bruno Latour, Pablo Jensen, Tommaso Venturini, Sébastian Grauqin, and Dominique Boullier, "'The Whole is Always Smaller than Its Parts'—A Digital Test of Gabriel Tardes' [*sic*] Monads," *The British Journal of Sociology* 63, no. 4 (2012): 590–615.

53. Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, translated by Brian Massumi (Minneapolis: University of Minnesota Press, 1987), 218–19. Deleuze also locates Tarde as an important figure in crafting the philosophy found in *Difference and Repetition*, translated by Paul Patton (New York: Columbia University Press, 1994), 307–8, fn. 15.
54. Ruth Leys, "Mead's Voices: Imitation as Foundation, or, the Struggle against Mimesis," *Critical Inquiry* 19, no. 2 (1993): 278; cf. Mattelart, *The Invention of Communication*, 256–7.
55. Terry N. Clark, "Introduction," in *Gabriel Tarde: On Communication and Social Influence*, edited by Terry N. Clark (Chicago: University of Chicago Press, 1969), 2.
56. Anyone familiar with the bobo dolls of Albert Bandura's *Social Learning Theory* (Englewood Cliffs, NJ: Prentice Hall, 1977) or Everett M. Rogers' *Diffusion of Innovations*, 5th edn (New York: Free Press, 2003), among countless other works in the social scientific traditions of "media effects" research, should see Tarde's influence in these classic studies of the transmission of ideas and social norms.
57. Carey, *Communication as Culture*, 13–36.
58. Mattelart, *The Invention of Communication*, 252.
59. Leys, "Mead's Voices," 279; Lisa Blackman, "Reinventing Psychological Matters: The Importance of the Suggestive Realm of Tarde's Ontology," *Economy and Society* 36, no. 4 (2007): 574–96.
60. Gabriel Tarde, "The Origins and Functions of Elites," in *Gabriel Tarde: On Communication and Social Influence*, edited by Terry N. Clark (Chicago: University of Chicago Press, 1969), 245–51; cf. Mattelart, *The Invention of Communication*, 255.
61. Tarde, "Economic Psychology," 617.
62. Laurent Mucchielli, "Tardomania? Réflexions sur les Usages Contemporains de Tarde," *Revue d'Historie des Sciences Humaines* 3 (2000): 161–84.
63. For a brief biography of Tarde, see Clark, "Introduction," 3–7.
64. Tarde, *Monadology and Sociology*, 28.
65. Gabriel Tarde, *The Laws of Imitation*, translated by Elsie Clews Parsons (Gloucester, MA: Peter Smith, 1903), xvi.
66. Tarde, *Monadology and Sociology*, 54.
67. Ibid., 38.
68. Theo Lorenc, "Afterword: Tarde's Pansocial Ontology," in *Monadology and Sociology*, edited and translated by Theo Lorenc (Melbourne: re.press, 2012), 76.
69. Latour and Lépinay, *Science of Passionate Interests*, 46. Also see Bruno Latour, *On the Modern Cult of the Factish Gods* (Durham, NC: Duke University Press, 2010).
70. As is suggested by Andrew Barry and Nigel Thrift, "Gabriel Tarde: Imitation, Invention and Economy," *Economy and Society* 36, no. 4 (2007): 509–25.
71. Tarde, *Monadology and Sociology*, 47.

72. Tarde, *Laws of Imitation*, 74.
73. Tarde, *Monadology and Sociology*, 37.
74. Tarde, *Laws of Imitation*, 35.
75. Latour and Lépinay, *Science of Passionate Interests*, 48.
76. Tarde, "Economic Psychology," 631.
77. Gabriel Tarde, "Invention," in *Gabriel Tarde: On Communication and Social Influence*, edited by Terry N. Clark (Chicago: University of Chicago Press, 1969), 152.
78. Tarde, "The Origins and Functions of Elites," 248.
79. Tarde, "Economic Psychology," 617.
80. Gabriel Tarde, "Criminal Youth," in *Gabriel Tarde: On Communication and Social Influence*, edited by Terry N. Clark (Chicago: University of Chicago Press, 1969), 261.
81. Raymond Williams, *Culture and Society: 1780-1950* (New York: Columbia University Press, 1983).
82. Matthew Arnold, *Culture and Anarchy* (Oxford: Oxford University Press, 2006).
83. Gabriel Tarde, *Underground Man*, translated by Cloudesley Brereton (London: Duckworth & Company, 1905), 46.
84. Ibid., 69–70.
85. Ibid., 111.
86. Ibid., 116.
87. Ibid., 153–4.
88. Latour and Lépinay, *Science of Passionate Interests*, 69–70, 75.
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90. Mirowski, *Never Let a Serious Crisis Go to Waste*, 54, 78–83.

Part One – Coda

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2. "The Hearst-Jaggers Gold Mining Company," *Wall Street Journal*, May 1, 1905, 6; "United Cobalt Exploration Co." *Wall Street Journal*, November 16, 1906, 7; "Curb Market Notes," *Wall Street Journal*, March 26, 1907, 7.
3. "The Golden Fleece," *Wall Street Journal*, April 9, 1925, 3.
4. J. K. Gibson-Graham, *The End of Capitalism (As We Knew It): A Feminist Critique of Political Economy* (Minneapolis: University of Minnesota Press, 2006), 105.
5. Tim Wu, *The Master Switch: The Rise and Fall of Information Empires* (New York: Alfred A. Knopf, 2010).
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9. Janet Abbate, *Inventing the Internet* (Cambridge, MA: MIT Press, 1999), 17–21.
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14. Ibid., 19.
15. Norbert Wiener, *The Human Use of Human Beings: Cybernetics and Society* (Boston: The Houghton Mifflin Company, 1950), 3.
16. Ibid., 110–11.
17. See Warren Weaver, "Recent Contributions to the Mathematical Theory of Communication," in *The Mathematical Theory of Communication*, 3.
18. Wiener, *Human Use of Human Beings*, 15.
19. Hayles, *How We Became Posthuman*, 2–3. I'm treating Hayles' definition of the posthuman in a somewhat limited way here. There are other ways of understanding posthumanism that have led to a more progressive articulation of how the decentering of "the human" opens up a world in which we can acknowledge animal life and create a more inclusive, relational politics, or reframe biological essentialisms that traditionally discriminate against bodies that are not white, male, and heterosexual. Some of those writing from this perspective have suggested that what I'm critiquing here should best be thought of as "transhumanism" rather than "posthumanism," attempting to rescue the posthuman from regressive cybernetic fantasies of disembodiment, universality, and transcendence. For more on this "positive" version of posthumanism, see Rosi Braidotti, *The Posthuman* (Malden, MA: Polity, 2013), and Cary Wolfe, *What is Posthumanism?* (Minneapolis: University of Minnesota Press, 2010).
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Part Two

1. Morozov, *To Save Everything, Click Here*, 25.
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3. Kittler, *Gramophone, Film, Typewriter*, 16.
4. Hayles, *How We Became Posthuman*; Thacker, *Biomedia*. See also recent works on the legacies of cybernetics such as Franklin's *Control*; Orit Halpern's excellent *Beautiful Data: A History of Vision and Reason Since 1945* (Durham, NC: Duke University Press, 2014); Nick Dyer-Witheford's *Cyber-Proletariat: Global Labour in the Digital Vortex* (London: Pluto Press, 2015).
5. See Amy L. Brandzel, *Against Citizenship: The Violence of the Normative* (Urbana: University of Illinois Press, 2016).
6. Toby Miller, *The Well-Tempered Self: Citizenship, Culture, and the Postmodern Subject* (Baltimore: Johns Hopkins University Press, 1993), 12.
7. Michael Warner, *Publics and Counterpublics* (New York: Zone Books, 2002), 159–86.
8. See Lauren Berlant, *The Queen of America Goes to Washington City: Essays on Sex and Citizenship* (Durham, NC: Duke University Press, 1997).
9. Saskia Sassen, *Territory, Authority, Rights: From Medieval to Global Assemblages* (Princeton, NJ: Princeton University Press, 2006), 328–77.
10. Castells, *The Rise of the Network Society*, 446.
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Chapter Four

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3. Hans Moravec, *Mind Children: The Future of Robot and Human Intelligence* (Cambridge, MA: Harvard University Press, 1988); Ray Kurzweil, *The Singularity is Near: When Humans Transcend Biology* (New York: Viking, 2005).
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Chapter Six

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Part Three

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Chapter Seven

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18. Sander L. Gilman, *Obesity: The Biography* (New York: Oxford University Press, 2010), ix.
19. Paul Campos, *The Obesity Myth: Why America's Obsession with Weight is Hazardous to Your Health* (New York: Gotham Books, 2004).
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24. Sander L. Gilman, *Fat: A Cultural History of Obesity* (Malden, MA: Polity Press, 2008), 4.
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27. Nikhil Dhurandhar, "Infectobesity: Obesity of Infectious Origin," *Journal of Nutrition* 131 (2001): 2794S–2797S.
28. Philip Alcabes, *Dread: How Fear and Fantasy Have Fueled Epidemics from the Black Death to Avian Flu* (New York: PublicAffairs, 2009), 30; cf. Michel Foucault, *History of Madness*, edited by Jean Khalfa, translated by Jonathan Murphy and Jean Khalfa (New York: Routledge, 2006).
29. Alcabes, *Dread*, 47.
30. Ibid., 157–65.
31. Paula A. Treichler, *How to Have Theory in an Epidemic: Cultural Chronicles of AIDS* (Durham, NC: Duke University Press 1999).
32. Wald, *Contagious*, 2.
33. Cf. Agamben, *Homo Sacer*; Esposito, *Bíos*; Cohen, *A Body Worth Defending*.
34. Gilman, *Fat*, 22–3.
35. Victoria Button, "Obesity Linked to Virus," *The Age*, August 5, 2000, 5.
36. Marnie McKimmie, "Contagious Virus Can Make You Fat," *West Australian*, July 20, 2005, 13.
37. Christine White, "Wash Your Hands for A Slimming Effect," *Weekend Australian*, February 4, 2006, 31.
38. Button, "Obesity Linked to Virus." Italics added.
39. John Coles, "You Ain't Fat, It's Just a Tubby Bug: Virus Causes Obesity Says Doc," *The Sun*, January 26, 2009.
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41. Julia Hartley-Brewer, "Editorial," *Express*, August 26, 2007.
42. Pappa Sibley, "Fat Chance of Catching Bug," *The Mirror*, January 8, 2003, 17.
43. Alcabes, *Dread*, 52.
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48. Watts, *Six Degrees*, 164.
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52. Trichler, *How to Have Theory in an Epidemic*, 312–14; Douglas Crimp, "Randy Shilts's Miserable Failure," *Melancholia and Moralism: Essays on AIDS and Queer Politics* (Cambridge, MA: MIT Press, 2004), 117–24.
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70. Nicholas A. Christakis, "Only Connect: Valuing the Well Connected," *British Medical Journal* 337 (2008): 725, italics added.
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contagious obesity without distinguishing between the two. For the interpretation of Lansley's comments, see Melissa Kite, "Politicians Keep Throwing our Weight Around," *Telegraph*, August 31, 2008, 23, and Rosa Prince, "Parents have 'No Excuse' For Allowing Children to Become Overweight, Tories Say," *Telegraph* August 26, 2008, http://www.telegraph.co.uk/news/uknews/2626409/Parents-have-no-excuse-for-allowing-children-to-become-overweight-Tories-say.html. A version of the original speech was reprinted as Andrew Lansley, "Public Health: No Excuses, No Nannying," *Guardian*, August 27, 2008, http://www.guardian.co.uk/commentisfree/2008/aug/27/health.nhs.

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80. William Watson, "My Fat's Not Catching," *National Post*, July 8, 2005, FP19.
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Chapter Eight

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4. Francis Fukuyama, *The End of History and the Last Man* (New York: Avon Books, 1992).
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6. Kurzweil, *The Singularity is Near*.
7. Jodi Dean, "Complexity as Capture—Neoliberalism and the Loop of Drive," *New Formations: A Journal of Culture/Theory/Politics* 80–1 (2013): 138–54; Mirowski, *Never Let a Serious Crisis Go to Waste*, 224–5.
8. See Morozov, *The Net Delusion*, 179–203.

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41. Andrew Pickering, *The Cybernetic Brain: Sketches of Another Future* (Chicago: University of Chicago Press, 2010).
42. Ilya Prigogine and Isabelle Stengers, *Order Out of Chaos: Man's New Dialogue with Nature* (Toronto: Bantam Books, 1984), 30–6.
43. For a clear articulation of this argument, see Moravec, *Robot*, 127–62.
44. Mirowski, *Machine Dreams*.
45. Dean, "Complexity as Capture," 148–9.
46. Beniger, *The Control Revolution*, 10.
47. Norbert Wiener, *Cybernetics: Or Control and Communication in the Animal and the Machine* (Cambridge, MA: MIT Press, 1961).
48. Mitchell, *Complexity*, 40.
49. Kauffman, *At Home in the Universe*, 23–8.
50. Prigogine and Stengers, *Order Out of Chaos*.
51. Henri Atlan, *Selected Writings: On Self-Organization, Philosophy, Bioethics, and Judaism*, edited by Stefanos Geroulanos and Todd Meyers (New York: Fordham University Press, 2011), 95–113.
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53. Gregory Bateson, *Steps to an Ecology of Mind* (New York: Ballentine Books, 1972), 315.
54. Bruce Clarke, "Autopoiesis and the Planet," in *Impasses of the Post-Global: Theory in the Era of Climate Change*, Volume 2, edited by Henry Sussman (Ann Arbor: Open Humanities Press, 2012), 62.
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56. For example, Niklas Luhmann, *Social Systems*, translated by John Bednarz, Jr. with Dirk Baecker (Stanford, CA: Stanford University Press, 1995).
57. Prigogine and Stengers, *Order Out of Chaos*.
58. Atlan, *Selected Writings*; Clarke and Hansen, "Introduction"; Luhmann, *Social Systems*.
59. Mitchell, *Complexity*, 3–12; Johnson, *Emergence*.
60. Clarke, "Autopoiesis and the Planet."
61. Philip Mirowski, *More Heat Than Light: Economics as Social Physics, Physics as Nature's Economics* (Cambridge: Cambridge University Press, 1989).
62. Kelly, *Out of Control*, 12.
63. Ibid., 103.
64. Clarke, "Autopoiesis and the Planet," 73.
65. Kauffman, *At Home in the Universe*, 10.
66. Ibid., 19.
67. Ibid., 17.
68. Ibid., 112.
69. "Reduction" in the scientific sense means that the whole is greater than the parts, and therefore "reducing" an object of study to its parts misses larger, emergent phenomena. "Reduction" in the humanities—or at least how I'm using it here—means that an analysis "reduces" the object to a singular principle rather than a multiplicity of competing, different, irreducible processes that may share little to nothing in common.
70. Dean, "Complexity as Capture," 146.
71. Friedrich A. Hayek, *The Road to Serfdom* (Chicago: University of Chicago Press, 1944).
72. Mirowski, *Never Let a Serious Crisis Go to Waste*, 79.
73. Polanyi, *The Great Transformation*.
74. While it would require more time and space to elaborate this argument than I'm willing to devote here, this demonstrates that contemporary logics of complexity, networks, and self-organization rely on a theology that is roughly analogous to some of the postulates of Calvinism on predestination.
75. Properly speaking, I'm not sure if the works of theory discussed in this section should be identified as "critical theory" as they do not follow the depth model of knowledge often associated with the project of critique. My goal here is not a detailed examination of these authors, however, but a brief charting of some of the themes addressed in these works. I'm not discussing them in the level of detail that their work demands, along with the specific differences between them, though I do not think that I'm misrepresenting the general implications of some of their larger arguments. For an excellent critique of Speculative Realism and Object-Oriented Ontology, with a focus primarily on the work of Graham Harman, see Peter Wolfendale's *Object-Oriented Philosophy: The Noumenon's New Clothes* (Falmouth: Urbanomic, 2014). For a different critique of the genre of "vital materialist" philosophy, see Joseph Barker, "Against 'Vital Materialism': The Passive Creation of Life in Deleuze," *Mosaic: A Journal for the Interdisciplinary Study of Literature* 48, no. 4 (2015): 49–62.
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Weibel (Cambridge, MA: MIT Press, 2005), 4–31; Levi R. Bryant, *The Democracy of Objects* (Ann Arbor: Open Humanities Press, 2011).

77. Morton, *The Ecological Thought*, 7.
78. Quentin Meillassoux, *After Finitude: An Essay on the Necessity of Contingency*, translated by Ray Brassier (London: Continuum, 2008), 5.
79. Ian Bogost, *Alien Phenomenology, or What It's Like to Be a Thing* (Minneapolis: University of Minnesota Press, 2012), 3.
80. Morton, *The Ecological Thought*, 59.
81. Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, NC: Duke University Press, 2010), 34.
82. Ibid., 122.
83. Ibid., 37.
84. Dean, "Complexity as Capture," 148.
85. Morton, *The Ecological Thought*, 131.
86. I'm not the only one who has noted that Morton tends to contradict himself, all while writing in a whimsical style that deflects the ability to criticize his work in any serious depth. See Nathan Brown, "The Nadir of *OOO*: From Graham Harman's *Tool-Being* to Timothy Morton's *Realist Magic: Objects, Ontology, Causality*," *Parrhesia* 17 (2013): 62–71.
87. Mirowski, *Never Let a Serious Crisis Go to Waste*, 337.
88. Ernesto Laclau, *On Populist Reason* (London: Verso, 2007), 200.
89. Morton, *The Ecological Thought*, 8.
90. Robert W. Gehl, "Real (Software) Abstractions: On the Rise of Facebook and the Fall of MySpace," *Social Text* 30, no. 2 (2012): 105.

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Note: page references followed by 'n' refer to notes section