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2

From the Virtual to the Ordinary: Networked Space, Networked Bodies, and the Play of Everyday Practice

Before exploring the questions about creativity, subjectivity, and socio-technical ordering raised in Chapter 1, it is useful to establish a general framework for those inquiries. I have promised an account of the “networked self,” related in some way to something called the “play of everyday practice.” Those terms are not usual in legal scholarship about information policy. For most legal scholars, the most salient aspect of the networked information society is the network itself and the new patterns of cultural participation that it enables. As we have seen, legal scholars have used theoretical frameworks derived from liberal political theory—most notably, frameworks organized around expressive liberty and market exchange—to impute overarching structure and purpose to those patterns. For the most part, they have conceptualized the activities of network users as occurring in an abstract, disembodied plane, detached from material and geographic contexts.

The vision of the networked information society and its citizens as transcending bodies and spaces, and as moving inexorably within patterns dictated by the overarching values of speech and market exchange, is terribly incomplete. Without question, digital information networks have radically altered the horizons for human communication and collaboration. But cultural resources are not only digital, and creativity does not occur only online. Digital information networks are perceived as creating privacy problems precisely because of the ways in which information may be aggregated and brought to bear on people living in the real world. Architectures of control shape patterns of social ordering both online and offline. Networked information technologies change some of the problems with which law must grapple, but still a book about information policy in the networked information society cannot be only a book about the Internet. And the autonomous, rational, disembodied liberal self is as much a fiction as it ever was. To understand the architectural and regulatory challenges that confront our emerging information society, we must consider all of the ways that situated, embodied selves encounter information in a real world that is increasingly networked.

This chapter offers two sets of organizing concepts to structure that inquiry. The first set of concepts relates to the way that people and communities experience networked information technologies. Real, embodied people do not

experience “information” in the abstract; rather, the world both off- and online is apprehended through the lens of *embodied perception*. The primacy of embodied perception has two important consequences. First, networked information technologies do not call into being a new, virtual space that is separate from real space. Instead, they have catalyzed the emergence of a new kind of social space, which I will call *networked space*. Flows of information through networked space alter social patterns of interaction and resource allocation in important ways. Even so, networked space remains real space inhabited by real people. Second, the people who inhabit networked space have not disappeared into a virtual world, but their embodied experience of the real world is not the same as it was before. Networked information technologies *mediate* our interactions and our perceptions, affecting the ways in which we understand our own capabilities, our relative boundedness, and the properties of the surrounding world.

The second set of concepts relates to the way that networked, embodied selves and communities use networked information technologies. To understand the behaviors and motivations of networked, embodied selves, legal scholarship on the networked information society should largely abandon simplified theoretical constructs like “freedom of expression” and “freedom of choice,” and instead examine the experiences of network users through the lens supplied by literatures that focus on the ordinary routines and rhythms of *everyday practice*. In particular, scholars concerned with the domains of creativity and subject formation should pay careful attention to the connections between everyday practice and *play*, including both the patterns of play by situated subjects and the ways in which culture and subjectivity emerge from the interactions between the ordinary and the unexpected.

Myths of Digital Transcendence

Within U.S. legal and policy discourse about information rights, the terms “information society” and “cyberspace” function as powerful imaginaries. They connote a world increasingly liberated from the mundane considerations of space and time, and peopled by citizens who are increasingly liberated from the constraints of location, materiality, and physical embodiment. Information policy documents often acknowledge a “digital divide” that separates the technological haves from the have-nots and propose measures to bring the have-nots into the digital age. That formulation tends to suggest that the most important thing about the digital divide is the ability to cross it, thereby “becoming” digital. Meanwhile, Fortune 500 companies, technology start-ups, experts in “human-computer interaction,” and others who cater to the desires of the technological haves pour increasing effort into designing network interfaces so seamless that one barely need stop to register their existence.

For historians, all this likely has a familiar ring. Placed in historical context, scholarly and popular fascination with the Internet is but the latest instance of what David Nye calls the “American technological sublime”—a belief in the power of technology to subdue nature and usher in an age of transcendent reason. Since the nineteenth century, new communications and media technologies have been portrayed as forerunners of utopia. Earlier thinkers expected electric communication technologies to annihilate space and time; today, we

call upon networked digital technologies to finish that task, accomplishing what mere electricity could not. The Internet, in particular, represents the “digital sublime”: a plateau on which physical limitations cease to exist.¹

Closely intertwined with myths of digital transcendence is a vision of networked information technologies as enabling freedom from bodily constraints. The official story of the transition to the information economy is the story of a slow but inexorable shift to the virtual that continues a process of commodification tracing back to the industrial revolution. In the transition to the information economy, property, labor, and money become not only commodified but also dematerialized. Intangible property, intellectual labor, and human capital flow effortlessly around the world, constrained here and there by regulatory “speed bumps,” but largely unmoored from physical constraints.²

To the extent that the embodied self appears within this narrative, it is as a placeholder for more abstract values: a site of autonomous choice, democratic deliberation, or deconstructionist liberation. Indeed, for many thinkers about cyberspace and information policy, the advent of the Internet seems to seal the body’s ultimate irrelevance to questions of social theory and social ordering, although different groups read that irrelevance differently. Thus, libertarian social critics see in cyberspace the eventual apotheosis of enlightened social and economic individualism, while liberal theorists of a more communitarian bent envision processes of reasoned, collective deliberation. For cultural critics of a deconstructionist bent, who see the world as a collection of texts, cyberspace—the space of the pseudonymous avatar, the writerly reader, and readerly writer—confirms the primacy of signs and exposes their infinite pliability.

As Katherine Hayles has shown, the understanding of the digital body as fundamentally immaterial traces its intellectual roots to the field of cybernetics, which began as an interdisciplinary effort to understand the properties of information and came to understand information as possessing constant properties regardless of the medium in which it is contained. The cybernetic worldview powerfully shapes the contemporary understanding of materiality as a mere substrate for meaning. Some philosophers of information posit that in the networked information age, all meaningful attributes of bodies and selves can be expressed as flows of information. That approach, however, forecloses precisely the inquiry that we need to make; it brings the body into theory only to dispose of it at the first convenient opportunity.³

Popular and artistic imaginings of networked space, meanwhile, assert the continuing importance of the body in networked digital culture. Within science fiction, William Gibson’s and Neal Stephenson’s protagonists rely on digital doppelgangers to negotiate provisional, improvised survival strategies within the interstices of real-world structures of power. To escape rigidly deterministic social control, Ethan Hawke’s character in the film *Gattaca* and Tom Cruise’s in the film *Minority Report* effectively rewrite portions of their own biological code so that their real, embodied selves can avoid detection, while the disaffected rebels of the *Matrix* series seek refuge in a gritty analog underworld. On television, joyful, consumerist visions of the networked body jostle for elbow room with their more dystopian cousins, iPod ads sandwiched between pitches for spam-filtering services and identity-theft protection.

Who is right about the network and the body, our philosophers or our artists? The lessons of experience suggest that the truth is more complicated: technology does not erase embodiment; it alters aspects of embodied experience. This dynamic is not unique to networked information technologies. Consider the passenger automobile, which radically transformed the ways that ordinary people live, work, shop, and play. A world with cars and roads is experienced differently than a world without them: it is smaller and more easily configured to individual preferences. Similarly, the emergence of networked space catalyzes perceptions of and relations to the body's immediate surroundings in "real" space that are hard to pigeonhole within preexisting theoretical frames. For example, mobile personal communication devices enable the sensation of continuous contact, but also intensify a phenomenon that social theorists of communication describe variously as "absent presence" or "present absence": a distanced and distancing relation to people physically present and events currently unfolding in real space. Embodied experience remains important even in contexts that seem to be entirely virtual. Although popular and academic literatures on virtual worlds celebrate escape from bodies, participants in virtual worlds continually supply reminders of how important they consider bodies and body images to be.⁴

Legal scholarship about the networked information society needs tools for thinking and talking about the relationships between the experiences of network users and the bodies and spaces that those users inhabit. This chapter seeks to begin that conversation by identifying a set of factors to consider.

The Primacy of Embodied Perception

To understand the continuing centrality of bodies and spaces in the emerging networked information society, it is useful to begin by reconsidering some core assumptions that have dominated legal thought about the body and its relation to experience and knowledge. Recall, once again, that legal theorists' commitment to disembodiment stands in a long intellectual tradition. The mainstream of Western philosophical thought is founded on presumed dichotomies between mind and body, self and container, transcendent truth and immanent, contingent matter. These foundational dualisms in turn have structured theories about the relations between self and society and the mechanisms of social ordering. Within philosophy more generally, however, the possibility of a more direct and fundamental relation between embodiment and knowledge has long been a recurring theme. Today that theme has become a steady drumbeat. The foundational dualisms of rationalist thought are increasingly questioned by scholars in fields ranging from philosophy to cognitive science, who offer a robust vision of embodied perception and cognition. Within these theories, the self does not merely *have* a body; the self *is* a body, and that body is embedded in social and material environments that mediate experience and perception.

In sociology, connections between embodiment and social ordering have long been apparent. Pioneering studies by Erving Goffman and Clifford Geertz highlighted the role of performance in the development and negotiation of social conventions. Pierre Bourdieu argued that the faculty of distinction, or critical judgment, emerges out of a matrix of embodied, socially situated behav-

iors that vary with class and social domain. Each of these approaches recognizes that individuals and communities are not “cultural dopes” but rather “practical sociologists,” expertly negotiating matters of social ordering via thousands of clues embedded in the everyday actions of others.⁵ Critically, the everyday processes of practical sociology proceed using the only clues available: embodied, observable behaviors situated in real contexts.

Embodiment has also figured importantly in critical theory. Foucault’s historical analyses of the ways that the body has functioned as a site of social discipline have inspired a diverse array of work on what we might call the flip side of practical sociology: the social construction of conformity, hierarchy, and difference. In particular, critical theorists of race and gender have used Foucauldian theory to inform arguments about the ways that race and gender differences are produced by the gaze of others. Melding poststructuralism with theories about the performative and deconstructive powers of speech and language, scholars such as Judith Butler argue that embodied, purportedly “natural” attributes such as gender and race are to an overwhelming degree products of social construction. Yet other gender theorists, such as Susan Bordo, Iris Young, and Kenji Yoshino, challenge this erasure of bodily difference, arguing that bodies are important sources of knowledge in their own right.⁶

Within the past two decades, each of these intellectual approaches has intersected productively with a third that focuses on the phenomenology of knowledge. Phenomenological thinkers, including most prominently Maurice Merleau-Ponty, reject the distinction between absolute truth and ephemeral experience that underlies so much of Western philosophical thought. Instead, they argue that our only route to apprehending reality is the physical means that we all possess: our bodies, which mediate our perceptions of the world around us.⁷ Phenomenological theorists have been criticized for offering an essentialized and romanticized vision of human perception that leaves no room for the sorts of constructed differences that have preoccupied sociologists and critical theorists. However, in recent years phenomenology has experienced a makeover of sorts.

Work by a diverse group of contemporary scholars harnesses these seemingly disparate intellectual traditions, seeking to reposition bodies and embodiment as central to perception of both the self and the surrounding world while avoiding the trap of naturalism. The visions of embodied perception advanced by these scholars differ in many respects, but for my purposes the similarities are more important: within these new theories of the body, embodiment is central to the development of both individual perception and social consciousness, or intersubjectivity. The philosopher and critical theorist Elizabeth Grosz likens the body to a Möbius strip, a continually twisting interface along which perceptions of the internal and natural are constantly in flux. In Grosz’s vision of embodiedness, bodies emerge as both vehicles for social shaping and tools for the rejection of social shaping and the assertion of critical knowledge. Standing in counterpoint to Grosz’s work are works by sociologists Nick Crossley and Chris Shilling that place relatively greater emphasis on the role of embodied perception in mediating productive relations among social groups. All these scholars agree that the body has been too long neglected (or rejected) in social thought, that knowledge cannot be disentangled from embodied perception, and that embodied perception and performance belong at the center of

the self-society relation. On a more abstract level, they agree that a hybrid theoretical stance is essential to grasping the elusive connections between and among embodiment, perception, and knowledge.⁸

The turn to embodiment in contemporary critical theory finds support in the emerging science of human cognition. Thus, for example, George Lakoff and Mark Johnson's work on the use of concrete referents as metaphors for more abstract concepts—ideas as containers, thinking as seeing, and so on—suggests that the physical structures the conceptual powerfully and inevitably. Their understanding of embodied cognition as the product of a continuous interplay between concrete and abstract conceptual schema aligns nicely with Grosz's metaphor of the Möbius strip. It suggests a model of the relation between the physical and the conceptual—and so between body and mind—as dynamically intertwined. Notably, Lakoff and Johnson identify Merleau-Ponty and John Dewey, who stressed the connection between knowledge and experience, as the two philosophers whose perspectives align most closely with their project of developing a “philosophy in the flesh.”⁹

Critically, the cognitive-theoretic understanding of metaphor is distinct from the term's use in literary criticism and its offshoots. Within literary disciplines, metaphor is understood as consciously chosen ornamentation, even as it is analyzed for the unintended messages it might convey. Similarly, legal scholarship about the networked information society, like the long tradition of legal rationalism within which it is situated, often relies heavily on an understanding of metaphor as fundamentally superfluous to reason. But the metaphoric structuring with which cognitive theory is concerned operates at a deeper and often unnoticed level. When I say that someone's argument “rests on quicksand,” I am consciously deploying metaphor as rhetoric; when I describe the same argument as being “grounded in solid fact,” neither I nor my intended audience may recognize that I am speaking metaphorically. The two sorts of metaphor are related—both use one concept to describe another that is more abstract, in the process appropriating a complex web of associative meaning—but they are distinct. The latter mediates language and reason alike and cannot so easily be cast aside. Embodied perception supplies the ready-to-hand models of concreteness that render abstractions intelligible to people seeking to communicate with one another.

Within cognitive theory, the primacy of embodied perception in turn has important implications for our understanding of spaces. It suggests that space as experienced differs radically from space as conventionally theorized within the Western philosophical tradition. Within that tradition, space is understood as an inert, neutral container for human activity, an emptiness to be “filled up” by people and things. That understanding is formalized by modeling empty space as a grid defined by x , y , and z coordinates: an absolute (non)entity structured by abstract mathematical laws. But one does not and cannot apprehend abstract, mathematical space experientially. Space is experienced, instead, in terms of situatedness and orientation, and the vehicle for apprehending space in this way is embodied perception. The human cognitive apparatus is structured to apprehend the immediate environment as three-dimensional and to organize object perception and depth perception accordingly. The process of cognition is “egocentric rather than geocentric”; we orient objects with respect to ourselves, not the reverse.¹⁰ Space in this sense is relative and mutable; it is si-

multaneously apprehended through embodied perception and produced by our own actions.

That insight too converges substantially with those produced by critical theory. Critical theorists of space have rejected the “empty container” model of space and have asserted that space does not exist in any such absolute, a priori form; it is not something that human activity fills up, but rather something that human activity produces. In particular, they seek to draw attention to the ways in which the social production of space is structured by power, experience, desire, and representation, and to illuminate the complex relation between the social production of space and the social production of knowledge. They argue that particular features of constructed space (including both singularities, such as the Champs-Élysées or the twin towers of New York’s World Trade Center, and more general categories, such as the mental institution, the marketplace, and the home) take on powerful metaphoric, and ultimately metonymic, significance, coming over time to stand for the societies that produced them.¹¹

The convergence between critical theory and cognitive science tells us something extraordinarily important about the way we both experience and produce the world around us. The primacy of embodied perception requires rejection of both the conventional distinction between absolute truth and ephemeral experience, on one hand, and deconstructionist claims about the arbitrariness of purportedly natural categories, on the other. Fixed reality exists, but it isn’t external and a priori; instead, it is internal and dependent on innate cognitive structures. For all intents and purposes, only the phenomenal world exists. Just as critical theorists point to a simultaneous disconnect and interconnect between the perceived (or real) and the conceived (or imagined), so cognitive theorists argue that even the conceived is structured by the perceived in deeply determined ways. Yet the structurings themselves are not fixed; for example, Lakoff and Johnson show that different cultures interpret and express spatial orientations differently.¹² Both the metaphoric mappings and the abstract, conceptual structures that they support are contingent and subject to change. Similarly, the social spaces produced by embodied beings are both real (in the only sense that matters) and contingent.

The lessons for information theory and policy are striking. Bodies are not simply inert matter that we all happen to possess; rather, the world that we experience is an inevitable perceptual byproduct of the human cognitive apparatus. And spaces are not arbitrary fictions that can be jettisoned or assumed away. If bodies and embodied spatiality mediate cognition and social ordering in complex and interdependent ways, then we cannot simply leave bodies and spaces behind as we enter the networked information age. The transition to the virtual is always partial, equivocal, and unstable. To understand the emerging networked information society, we must take bodies and embodiment seriously and inquire how networked information technologies reshape our embodied perceptions and experiences.

Networks and Bodies, Part 1: Networked Space

The primacy of embodied perception points the way toward a very different approach to understanding the spatiality of the networked information society. We do not need to decide what kind of (separate) space “cyberspace” is or should be, but rather to investigate the ways that networked information technologies change experienced space. Networked information technologies catalyze the emergence of networked space: the real geography produced by the extension of networked information technologies throughout preexisting geographies. Networked space is not a unitary phenomenon or place; it can and does include a multiplicity of places and experiences, which in turn are connected to experienced, “egocentric” space in many different ways.

From a social perspective, space is produced by the elaboration and path-dependent cumulation of networks for the movement of goods, communication, and people. Each network changes the character of existing space; for example, once an interstate highway is built or air travel developed, some places are more accessible and others less so. In 1950, Houston, Texas, was closer to Paris, Texas, than to Paris, France; today, the reverse is true for many people. In Henri Lefebvre’s evocative metaphor, the social space that results from the gradual accretion of networks is “reminiscent of flaky *mille-feuille* pastry”:

Considered in isolation, [social] spaces are mere abstractions. As concrete abstractions, however, they attain “real” existence by virtue of networks and pathways, by virtue of bunches or clusters of relationships. Instances of this are the worldwide networks of communication, exchange and information. It is important to note that such newly developed networks do not eradicate from their social context those earlier ones, superimposed upon one another over the years, which constitute the various markets: local, regional, national and international markets; the market in commodities, the money or capital market, the labour market, and the market in works, symbols, and signs. . . . Each market, over the centuries, has been consolidated and has attained concrete form by means of a network: a network of buying- and selling-points in the case of the exchange of commodities, of banks and stock exchanges in the case of the circulation of capital, of labour exchanges in the case of the labour market, and so on. . . . Thus social space . . . emerged in all its diversity.¹³

Networked information technologies contribute to the production of social space by enabling new markets, relationships, and practices, which are layered over the markets, relationships, and practices that previously existed. One way to understand this process is by exploring the products of efforts to map cyberspace. Historians who study practices of mapping understand that maps do not simply depict fixed reality. Mapping is an exercise in both representation and conceptualization. Maps and mapping practices change over time in response to changed understandings of geography and sovereignty, and understandings of geography and sovereignty are produced, in part, by prevailing

practices of mapping.¹⁴ It is thus not surprising that efforts to map cyberspace have emerged as a site of contestation among scholars.

Some efforts to map cyberspace have subscribed to the assumption of experiential separateness that has dogged legal theorists of cyberspace. Perhaps the most influential of these was the conceptual mapping performed in William Mitchell's *City of Bits*, which focused on identifying places and functions "within" cyberspace. At the same time, however, Mitchell's choice of the city metaphor and his careful insistence on describing cyberplaces functionally relative to parallel places in real space undermined the notion of separateness. Mitchell's treatment suggested powerfully that cyberspace is not a place, but a conglomeration of places, many with quite prosaic functions connected directly to the activities of real people in real spaces.

Other mapmakers have sought to map "the Internet" as a network of communication infrastructure within real space. These efforts have produced overlay maps showing the real-world geographic distribution of quantifiable network components such as backbone cables and routers, major nodes, and numbers of Web sites organized by hosting domain. To a degree that should not have been surprising to anyone, the early overlay maps revealed that Internet activity corresponded substantially to the real-world organization of geopolitical and economic activity, thereby further undermining the metaphoric construct of cyberspace as separate space. Over time, however, the network overlay maps have suggested shifts in relations among existing sites of real-space activity and have traced the growth of new high-tech enterprise zones in developing countries, suggesting a dynamic relationship between the network and the production of social space.¹⁵

Taken cumulatively, these mappings highlight the importance of conceptualizing a networked space that is both real and emergent. This approach finds broad support in the work of social scientists who study the emergence of the "information society." As many scholars have recognized, social and economic activities are shaped by the uses of information and communication technologies to control flows of information. Those technologies in turn presuppose and require concrete, material infrastructures and organizational logics that are tightly linked to real-space geographies. The sociologist Manuel Castells argues that the space of the twenty-first century is a "space of flows": networked space that includes and is produced by activities both real and virtual, and by the interconnections between the virtual and the real.¹⁶

Concurrently, the seductive image of cyberspace as empty space filled up with virtual activity has come under challenge from scientists who study the ontology of complex networks. This work identifies the Internet as one example of a "scale-free" network: a network in which the distribution and connectivity of nodes follow a power-law distribution—"a continuous hierarchy of nodes spanning from rare hubs to the numerous tiny nodes"—rather than a bell curve.¹⁷ Although scale-free networks can appear infinitely plastic to their users, they are not so in practice. The patterns of flow between nodes and to and from hubs follow predictable mathematical laws and so inscribe path-dependencies that affect the direction and volume of later flows. Traffic to prominent nodes follows a "rich get richer" pattern, and their dominance within the network—think, for example, of eBay or YouTube—is relatively durable and difficult to displace.

Together, the insights from geography, sociology, and network science point the way toward a theory of networked space as itself produced by and producing flows of information, interaction, and development. Moreover, the convergence between the sociology of networked society and the science of complex networks suggests powerfully that perceived differences between cyberspace and real space are differences in degree rather than differences in kind. Both the sociological theory of a space of flows and the mathematics of scale-free networks apply to any complex human activity structured by interconnection, from the development of markets to the spread of infectious diseases to the propagation of fashions and cultural memes. We might say then that the emergence of networked space makes these latent characteristics of real space manifest, forcing an appreciation of the extent to which social space is constituted by flows of information, by the material infrastructures and organizational logics constructed to support the flows, and by the path-dependence of flows, infrastructures, and organizational logics.

If we return to the topics of expressive and market liberty, which have preoccupied legal theorists of “cyberspace,” we can see that the legal literature on these topics described both new patterns of flow and new patterns of the production of experienced space. Turning first to freedom of expression, an essential insight of legal scholarship has been that flows of speech in networked space are different from flows in real space. There is substantially less agreement on the precise nature of the difference. For some scholars, networked space is a space of expanded communicative opportunity, defined by the distributed peer production of cultural goods ranging from software to wikis and blogs to fan fiction. For others, the more salient feature of networked space is the enhanced control over communication exerted by intellectual-property owners and online intermediaries, or self-imposed by individuals. Taken together, those arguments support a more moderate (and much more interesting) position: networked space’s difference is neither fixed nor unidirectional, but manifests as an ongoing tension between communicative expansion and communicative closure.

Turning next to markets, we see that changes in connectivity are pervasively remaking national and global transaction patterns. In manufacturing, networked communication technologies compress time and collapse linear distance. Reshaped by global connectivity and just-in-time delivery, commodity markets increasingly mirror the efficiencies of capital markets. At the same time, however, these shifts render supply chains more vulnerable to short-term disruptions, and capital markets more vulnerable to dramatic price swings. Both types of markets also manifest a “dynamic of simultaneous geographic dispersal and concentration” in emerging “global cities.”¹⁸ On a more personal scale, global connectivity promotes personalized trade within virtual marketplaces such as eBay and Craigslist.org, but simultaneously fosters increasing alienation as both personal information and cultural goods become more thoroughly commodified. Here again, then, networked space’s difference manifests as an ongoing dialectic between increased opportunity and enhanced risk, and between personalization and standardization.¹⁹

Some critical theorists who study the rise of the networked society have questioned whether the shift to networked space is a conceit of the global elites. But when we expand our focus from the experience of being “in” cyberspace to

the effects produced by the emergence of networked space, it becomes easier to see that the consequences extend much more broadly. This is most evident in the linked realms of marketing and surveillance. Radio-frequency identification (RFID) tags in smart cards and consumer goods can be activated and linked to information networks, as can geolocation devices in mobile phones and cars. This dimension of the “always on” experience affects everyone who transacts and travels, not just those who deliberately connect to cyberspace. Other consequences flow from the behavior of network users. People who do not have, and do not want, a Facebook page can be “tagged” in posted photographs and identified for the benefit of strangers living thousands of miles away. In each of these examples, the shift to networked space changes the character of existing space as experienced by ordinary people.

Changes in the structure of networked space also have other social consequences. There is reason to think that the rise of networked space may broadly affect the distribution of social resources. A digital divide is never only digital; its consequences play out wherever political and economic decisions are made and wherever their results are felt. Legal scholars have long worried about the structure of speech markets for exactly this reason, but most legal discourse about the structure of speech markets is highly abstract. Changes in speech markets are experienced locally, in the spatial distribution of bookstores, libraries, newsstands, broadcast franchises, protests, collaborations, and innumerable other activities. It is important to consider how a digital divide might alter those markets and also other resource distributions that inhere in social space. If the haves increasingly shop online while the have-nots shop in real space, the real-space distribution of goods, services, and employment patterns likely will change, and with it the real-space distribution of all the activities that make up the commerce of daily life. At the same time, the shift to networked space produces new juxtapositions between different groups of haves and have-nots. As one example, the practice of outsourcing customer service operations to developing countries creates new patterns of communication that over time may alter the way that developing-world employees and developed-world customers understand both one another and themselves.²⁰

The essential point is that all the changes catalyzed by networked information technologies do not simply make cyberspace a different place. Changes in the ways that information is experienced and the ways that economic, political, and personal interactions are structured alter the character of experienced space. The emerging networked space is both new and old, both real and virtual, both the same and different. As we will see next, the same is true of the networked selves/bodies who inhabit it.

Networks and Bodies, Part 2: Mediated Perception

So far, I have argued that networked information and communication technologies are experienced by subjects who remain fundamentally embodied and located within real geographies. Here I want to broaden and extend that claim: networked information and communication technologies play an increasingly significant role in constructing embodied experience. The relationship between the embodied self and networked digital technologies is not a one-way street, in which “technology” is an object of “experience.” Rather, the relation-

ship between the embodied self and technology is a mutually constituting one. Technologies and artifacts are incorporated into everyday life by situated, embodied beings and are experienced as altering, extending, or limiting capabilities that we already possess. At the same time, technologies and artifacts mediate our embodied perception of reality; over time, we come to experience them as constituting and defining the world around us. Reality is in part a function of what our technologies and artifacts do. Networked information technologies do not simply empower the networked self; they configure it.

Consider, first, the ways that the Internet and its information resources reshape the experienced geography of the networked information society. The long list of spatial metaphors—“Web site,” “navigate,” “go to,” “go back,” “download,” “upload”—formulated to describe the experience of Internet use suggests a process experienced in terms of distances, landmarks, and juxtapositions, exactly as the theory of embodied cognition would predict. Cyberspace distances are measured differently, in clicks or retrieval times rather than in walking or driving times, but they are distances nonetheless. Many educated Internet users resist this characterization, but this is chiefly because they have been trained to conceive of distance in Cartesian terms; experientially, distance is time. (How far from your office do you live?) To the extent that the online distance to a particular resource makes its real-space location seem closer or farther away, perceptions of networked space shift accordingly. Internet use does not make geography irrelevant; it reconfigures our understanding of it.

Networked information technologies do not alter only our perceptions of spatial proximity, however. Their mediating effects are far more intimate. The networked information age is increasingly experienced via the pervasive interpolation of networked information technologies into the spaces of the body. Data flows have escaped the obvious bounds of the networked computer and cross into and out of homes, cars, personal accessories, and public spaces by many avenues. To an increasing extent, the production of networked space is characterized not by disembodiment, but by the dissolution and reconfiguration of personal boundaries that we have long regarded as fixed and natural. Networked space is neither empty nor abstract, and is certainly not separate; it is a network of connections wrapped around every artifact and human being.

Work in STS provides important resources for theorizing this process of dissolution and reconfiguration. Once again, there are important differences among the various approaches, but for my purposes what is more important is the way in which they converge: together, they suggest a networked self that is both irreducibly embodied and constituted partly by and through the technologies and artifacts that surround it. Networked information technologies define the processes by which bodily boundaries and flows of information across those boundaries are formed, re-formed, and naturalized.

Donna Haraway frames the relationship between embodied self and networked society in terms of a constantly threatened disintegration of boundaries between network and self. In Haraway’s evocative term, networked space is the space of the cyborg, who is placed in circuits of information but not simply reduced to information.²¹ For some purposes—the use of heat sensors to modulate lighting and climate controls in an office building, or the deployment of vaccination to control disease—the cyborg is simply a node in the network. For others—the maintenance of population-wide biometric databases accessible

to law enforcement, or the deployment of vaccination to control fertility—it is a discrete entity with (at least for now) a legal right to maintain and defend its own boundedness. At many points—for example, the use of RFID transmissions to verify identity or detect location—the nature and existence of boundaries between cyborg and network is hotly contested. As distinct from the cybernetic subject, the cyborg body is both flesh and information, both particle and wave. Such an entity must continually negotiate both the conditions of connectedness and the consequences of disconnection.

Importantly, Haraway refuses to posit an ontological or experiential separation between the body and technology. She cautions that cyborg space cannot be avoided or evaded by retreat to an imaginary and finally mythological naturalism. Instead, the self and the networked world must come to some rapprochement, the terms of which will continually be opened for renegotiation. The important questions do not concern the boundaries of the unitary self, but rather the relation between networked space and embodied space, and the patterns of flow between them. Relevant patterns include flows of information to, from, and about the self and flows of information that link the self to and enable the constitution of groups and communities. As critics have noted, however, this is where Haraway’s account of the cyborg body stops short. Haraway urges the development of new languages with which to talk about self and network, but does not talk directly about what roles might remain for the cyborg as body.²²

A different strand of STS scholarship, which adopts a phenomenological perspective, usefully complements Haraway’s approach. Like Haraway, these scholars reject the idea of an essential, pretechnical self. Instead, they argue that technology and embodied cognition have always been mutually constituting. Don Ihde characterizes this approach as “postphenomenology”—a critical phenomenology focused on probing existing human-technology relations rather than on drawing absolute conclusions about the essence of embodied experience. In Peter-Paul Verbeek’s terminology, artifacts mediate both our experience of the world and our perception of it: embodied perception works to naturalize the technological landscape, even as changing technologies and artifacts reshape embodied perception and embodied capability.²³

Importantly within this account of mediated perception, the shaping relation between artifacts and perception runs both ways. Consider, for example, changes in techniques of mapping and geolocation. Twenty years ago, if you wanted to drive to visit a friend in another town, you needed a map. To get from point A to point B, you studied the map, figured out the lay of the land, and plotted a route along major or minor roads and through or around intervening cities and towns. Internet mapping technologies changed that process, making it possible to get from point A to point B without needing to plot a route or to take the lay of the land at all. Because a printout from MapQuest or Google shows a complete route, however, you might still glean a general sense of the surrounding geography. Sometimes, you might be offered a choice of routes, along with contextual details such as whether travel will maximize or minimize the use of highways. Portable GPS technologies change the process of getting from point A to point B yet again. Now, you can simply follow directions as they are given, one at a time. Armed with GPS capability, you can go anywhere without getting lost, but also without needing to figure out where you are. By

altering both the representation of real geographies and the manner of our habitual interaction with them, geolocation techniques enable a deeper reshaping of both our geographic agency and our geographic understanding.

Equally important, the shaping relation between artifacts and perception is experienced via the only route possible, the body and its perceptual organs and capabilities. Consider again the emergence of mobile communication technologies and the phenomenon of “present absence”/“absent presence” that they create. We have become accustomed to speaking about our growing reliance on mobile devices in the language of addiction. That metaphor, which invokes a physiological process, acknowledges a truth that we have been reluctant to confront more directly. But perhaps a more appropriate comparison is to the phenomenon of proprioception. Mobile devices augment the senses, connecting us to remote family, friends, and cultural resources. To one accustomed to this extended spatial and temporal reach, the lost Blackberry is experienced in a way more akin to temporary loss of sight or hearing than to the withdrawal effects of a withheld narcotic. Without our communications prosthetics, we are all disabled.

As the mapping example suggests, networked information technologies differ from other technologies in the extent to which the technological mediation of embodied perception is not simply functional, but also representational. The effects extend to our own self-perception. Juxtaposing postphenomenological theory with the culture of the digital image, Mark Hansen argues that “body schema”—which correspond more or less to what Verbeek would call the hermeneutic dimension of embodied perception—are informed by perceptions of body appearance that are themselves technologically mediated. This process does not originate with digital technologies—think, for example, of the understandings of bodies and embodiment brought about by the emergence and standardization of ready-to-wear clothing sizes or by the development of film-based photography. But networked information technologies and the various forms of virtuality that they allow enable continually changing representations of the body and its capabilities and limitations.²⁴

Last but not least, technologies and artifacts are used in contexts and communities, and so they mediate embodied perception in ways that are irreducibly social. Studies of online environments ranging from gaming to open-source programming to the blogosphere have shown that those environments produce some effects that align with critical theorists’ account of the body as a site of social shaping. For example, the Geek Feminism Wiki maintains an eye-opening archive of incidents of sexism and harassment in technical communities, many of which involve body schema of the sort that Hansen describes.²⁵ At the same time, however, technologies and artifacts empower users and user communities to further shared goals. Social shaping and empowerment are not mutually exclusive conditions, but rather overlap and coexist in a variety of combinations. As Hayles puts it, digital technologies are simultaneously inscribed upon the body and incorporated into embodied practice.²⁶ As we will see next, the resulting agency exercised by embodied users and user communities is very different than the reigning liberal models of free speech and market choice.

The Play of Everyday Practice

Mediated perception notwithstanding, the networked self is not simply the passive product of technological shaping. Embodied, situated users interact with networked information technologies on a day-to-day basis, often turning those technologies to new purposes and adapting them in unexpected ways. Similarly, embodied beings both experience and produce networked space in the course of going about their daily lives. Many of these behaviors do not fit neatly into the overarching paradigms of expressive and market liberty that predominate in the legal literature. Understanding them requires a conceptual framework that treats them as ordinary rather than anomalous. The term “everyday practice” is both broader and less definite than the models of user behavior conventionally employed by legal theorists, but both its breadth and its openness are crucial to understanding the legal and regulatory challenges that networked information technologies present. As distinct from the sort of agency commonly attributed to the rational, disembodied self of liberal theory, the social and political agency that manifests in everyday practice is constrained and contingent in myriad ways. It is also, however, enormously powerful for precisely the same reason that it is resistant to theory: its connection to play.

As we will see throughout the book, legal theorists have had difficulty constructing a believable account of the ordinary, everyday ways that people use information, participate in culture, and experience networked technologies. The preferred modes of analysis within liberal legal theory tend to support idealized accounts of human activity organized around the exercise of liberty in different domains, most notably market exchange and self-expression. Theorists of technology sometimes have seemed equally wedded to idealized models of human conduct. Some, like William Mitchell, describe the construction of a permission-based cyborg space that is largely benign, full of freely flowing information and structured by voluntary participation. Donna Haraway, meanwhile, envisions an unceasing struggle between an “informatics of domination” and an informatics of resistance.²⁷ Dichotomies between commerce and speech, or between utopian bliss and revolutionary struggle, are useful for expository purposes, but they can become crutches. The two-dimensional models that they offer are too stark to capture the full range of human motivations, choices, behaviors, and experiences, or the protean way in which one set of motivations and behaviors can flow into another.

Scholars who study everydayness, in contrast, emphasize its elusive, improvisational quality. In what has become the leading theoretical treatment of the everyday, Michel de Certeau argues that theory can have pernicious consequences for the study of everyday life because it privileges one set of behaviors and explanations while requiring us to ignore all others. Nonhuman actors such as large market or government institutions may be expected to conform their actions more closely to prevailing theoretical models (though this is far from universally true). The resulting patterns of conduct, which de Certeau characterizes as “strategies,” are relatively easy to systematize. People, however, do not so readily conform their behavior to theoretical models and the strategies that they suggest; instead, individual behavior comprises an ad hoc, diverse mix of practices that Certeau calls “tactics.” Tactical behavior is reactive but not al-

ways predictable; like water around boulders in a streambed, everyday practice flows around the structures established by institutional frameworks, producing unpredicted and unpredictable results. Understanding the patterns of everyday practice requires less structure and more storytelling, or what Anglophone cultural theorists like Clifford Geertz would call “thick description.” In particular, both Certeau and Geertz urged more careful attention to the spatial practices employed by ordinary people and to their uses of language.²⁸

As an example of how attention to the tactical, reactive quality of everyday practice might change our understanding of information-policy problems, consider the problem of privacy and autonomy introduced in Chapter 1: how should we understand the evolution of subjectivity under surveillance? As we will see in Part III, many scholars argue that frameworks based on simple dichotomies between public and private, or between domination and resistance, are inadequate to describe many of the voluntary behaviors of individuals in public places, or to describe how the same individuals react when placed under video surveillance. Attention to everyday practice allows us to explore some of the reasons that this might be so. Public spaces function as sites for cultural exploration and participation, but also for experiencing the anonymity of crowds or for signaling membership in subcultures by performing behaviors recognizable to other members. These practices, which evolved within undifferentiated, un surveilled public space, create a kind of partial privacy out in the open.

When confronted with surveillance, these everyday practices change in complicated ways. Some individuals try to avoid the cameras, while others carry on as though nothing had changed. Some resolve to move straight from point A to point B while blending in unremarkably, while others engage in more transgressive performances, “acting out” for the cameras. Video surveillance may also inspire more coordinated responses. The NYC Surveillance Camera Project documents camera locations and maintains Web-based maps that help people plot circuitous routes around them. Still other individuals have appropriated surveillance tactics for their own purposes. Users of mobile communication devices in New York City created a Web forum, *Hollabacknyc*, on which to post photos of men sexually harassing women passersby. By representing male bodies and a particular set of male behaviors as diminished and ridiculous, the photos implicitly position female bodies as more powerful and public spaces as more safe.²⁹

As these examples suggest, everyday practice is more than just a gap filler; tactical behavior can also be creative and may lead to productive innovation. As users react to the constraints imposed by new technologies, they also adapt those technologies to their own ends. This realization has already reshaped the study of human-computer interaction, as scholars and technologists have come to recognize that patterns of work flow are shaped by contextually determined needs rather than by grand plans.³⁰ It is also beginning to reshape the philosophy of technology. Here the postphenomenological approach to human-technology relations resonates with a strand of philosophical thought that critical theory has tended to overlook. The American pragmatist philosopher John Dewey developed a theory of experience as central both to understanding the world and to the exercise of social and political agency. Several contemporary pragmatist philosophers have explicitly extended Dewey’s theories about experience to the realm of technologies and artifacts. They characterize human-

technology interactions as manifesting a situated creativity that is local, contingent, and democratic.³¹ The processes of situated creativity are not always technologically sophisticated. When they succeed, however, they produce systems far better adapted to the everyday needs of those who use them.

Within the last decade, legal scholars have come to recognize the importance of user-directed innovation but have stumbled when seeking to theorize its essence in political or economic terms. Yochai Benkler identifies numerous examples of user-directed innovation spanning every conceivable domain, from software to genetic information to reference works to cultural mash-ups. Benkler refers to these practices as examples of “commons-based peer production,” a term intended to denote both a nonhierarchical production structure and a lack of proprietary control over the results.³² The media studies scholar Axel Bruns has coined the term “produsage,” which melds “production” and “usage,” to signal the erasure of the dichotomy between industrial production and passive consumption, which has long defined the mass-culture industries, and the emergence of a hybrid model combining active, engaged usage with collective, iterative improvement.³³ I do not want to deny the value of economic modeling of collective production; Benkler in particular has powerfully demonstrated that without such a model, the existing economic understanding of information production is incomplete. For my purposes, however, both terms remain too narrow. Attempts to identify the essence of the new relations of production have produced useful insights, but they also risk obscuring what is most fundamental about everyday practice: its connection to play.

What distinguishes everyday practice from the predicted behaviors generated by top-down theoretical constructs is not an economic relation or a governance relation, but rather the element of play. Within our culture, play is a term most often associated with frivolity or childhood innocence, or both. So framed, play contrasts with the seriousness of purpose that liberal political theory imputes to mature adults. Alternatively, play is sometimes invoked in the legal literature in ways that align it with internal, unknowable creativity, and that refer back to the liberal ideal of the autonomous subject. Play is both more serious and less purposive than those framings suggest, and it is far more fundamental to human activity.

Social scientists who study play have concluded that its developmental functions extend into adulthood and remain centrally implicated in the processes by which individuals orient themselves in relation to the world. Particularly relevant to the domains with which this book is concerned are play with objects and narratives, which locates the individual in relation to material and intellectual culture, and play with conceptions of empathy and morality, which enables individuals to form and pursue conceptions of the good. Play is both the keystone of individual moral and intellectual development and a mode of world making, the pathway by which transformative innovation and synthetic understanding emerge. It is neither inherently frivolous nor essentially single-minded, but rather a process of open-ended encounter. Play also has other attributes that run orthogonally to the dichotomy between frivolity and seriousness of purpose, including desire, pleasure, and release.³⁴

Social science perspectives on play have tended to connect individual play to social structures in ways that emphasize the linkages between performance and conformity. Johan Huizinga considered the “play-element” so funda-

mental to cultural development more generally that he believed the human species ought to be called *homo ludens*—man who does not merely think, but plays. Building on Huizinga’s initial work on the role of mimesis in reproducing cultural structures, scholars from a number of disciplines have advanced a variety of theories about the social function of play—developing identity within the parameters established by community roles and norms, cultivating social and workplace skills or entrepreneurial instincts, constituting social narratives and mythologies, rehearsing social power. Brian Sutton-Smith’s important synthetic study of literatures that investigate the various roles of play within society concludes that the principal function of deliberate play is the adaptive one of fitting us to live in an unpredictable world.³⁵ In the shorter term, however, play’s goals are often rather more specific, tied to the production and reproduction of specific cultural forms.

Critical theorists remind us that play is also an important modality for challenging dominant cultural forms. The core insight here is the deconstructionist one that language conceals ambiguity, which play uncovers and exploits. Play involves transgression of the boundaries that language and cultural practice establish, and transgressive play may ripen into a more conscious challenge to cultural and political forms. On this understanding, the domain of play is not coextensive with that of games, which involve both play and the observance of boundaries. So, for example, Jean-François Lyotard argues that in the information age, politics becomes a game that consists of the appropriation and organization of language to justify and conceal the distribution of power, and that can be challenged only by other, incommensurable language games. But play represents a different kind of disruptive power, which can occur within the framework of the dominant game or outside and around it, and which does not require the conscious formulation of a political purpose.³⁶

Yet to debate whether play is more fundamentally hegemonic or transgressive and transformative is to miss the central point about play: play is in-between in two distinct and equally important senses. The first of these senses is political. Play defies easy characterization precisely because it arises and operates in the space between (re)production and resistance. Play originates in the everyday practice of situated individuals and communities—in ad hoc, tactical responses to institutional structures and cultural patterns. It is neither wholly circumscribed by culturally determined rules nor the same thing as the negative liberty or freedom that the autonomous, rational, disembodied self is presumed to enjoy. Andrew Pickering characterizes scientific practice as a “mangle” shaped by a “dialectic of resistance and accommodation”: as materials and technologies resist user efforts, user efforts shift direction to accommodate the resistance.³⁷ The play of everyday practice follows a similar pattern. In the ongoing dialectic between ad hoc, reactive tactics and situated creativity, the most salient aspect is not one or the other, but the continual interplay between them. Play’s ambiguous status—shaped by cultural constraints, but not wholly dictated by them—is the source of its potentially transformative power.

Emerging networked communities of practice illustrate this quality of political in-betweenness, developing and articulating a relationship to overarching social institutions that partakes of both resistance and cultural reproduction. The open-source programmer who participates in online discussions about technology policy is helping build a community organized, in part, around re-

jection of the ownership regime established by copyright law, but he is also performing classically liberal commitments to rational deliberation as a mode of politics. The person who contributes to a mass media fandom participates in a community organized around resistance to the copyright rules that give copyright owners control of most adaptations, but also around appreciation for the mass commercial culture that copyright plays a central role in enabling. The Hollabacknyc project described above seeks to alter the ways that gender is performed and understood, but it does so by deploying the discipline of surveillance. Traditions originating in these communities of practice in turn can provoke reexamination of the law: many practices of attribution within online fanfiction communities respond directly to pressures originating in the world of copyrighted culture in that they are explicitly designed to forestall litigation by authors and copyright owners. Over time, however, the prevalence of norms of attribution within fandoms and other communities of practice has spurred debate about whether the copyright system itself should incorporate attribution rules.³⁸

Play also refers to a phenomenological in-betweenness that is not studied by most play theorists at all (although it is implicit in Sutton-Smith's evolutionary account). This is play in the sense that Gadamer described as "to and fro" and that I will call the play-of-circumstances: a pattern of events that is neither entirely random nor wholly ordered, and that generates continual change.³⁹ The play-of-circumstances is an (anti-)hermeneutic conception: it describes a particular sort of relationship between situated subjects and contexts, within which predictability and explanation are continually subject to disruption. As a result of the play-of-circumstances, individual conduct is simultaneously under- and overdetermined—overdetermined because many environmental variables could explain the particular behavior pattern that actually occurs, but underdetermined because that explanation is not, and cannot be, available to us in predictive form.

From the perspective of the autonomous liberal subject, constant vulnerability to environmental disruption is most readily understood as disempowering; from the standpoint of everyday practice, it is a potent source of cultural and political power. Recall, again, that everyday practice originates in a tactical posture; it is shaped from the outset by institutional and material constraints. From that perspective, environmental disruption may pose a threat, but it is just as likely to present an opportunity. Everyday practice takes what it can get, and so it responds to the play-of-circumstances in ways that are robustly opportunistic. Situated subjects and communities are quick to appropriate unexpected juxtapositions of spaces and resources and deploy those unlooked-for gifts toward their own particular ends. As they do so, they alter both the geography of networked space and the technical mediation of embodied perception. The Web sites, wikis, and blogrolls of emergent communities organized around open-source programming or fan fiction or resisting harassment join the private clubs, coffeehouses, book groups, and other semiprivate gathering places scattered throughout physical space; they become both means by which the geography of networked space is differentiated and sources of experienced power.

Throughout the rest of the book, I will refer to the play of everyday practice to signal play's twofold in-betweenness—in between reproduction and resistance, and in between predictability and contingency. As we are about to

see, the play of everyday practice is the critical ingredient in each of the processes that Chapter 1 identified as requiring exploration. It is the motivating force behind creative practice, subject formation, and material practice. More generally, and linking back to the larger inquiry about information policy and human flourishing with which this book began, the play of everyday practice is the means by which human beings flourish. It is the modality through which situated subjects advance their own contingent goals, constitute their communities, and imagine their possible futures. It therefore must be a central consideration in evaluating the constellations of legal, institutional, and technical developments with which this book is concerned.

Cyberlaw's Project Reconceived

Equipped with a provisional understanding of embodied perception, a heightened sensitivity to the ways that networked information technologies are reshaping social and personal geographies, and a renewed appreciation for the play of everyday practice, we can set aside utopian theorizing about networked information technologies as instrumentalities of transcendence and approach problems of information law and policy with a set of more mundane and far more important questions in mind: How do processes of creativity play out in the networked spaces inhabited by real, embodied individuals and communities, and how do expansive copyright laws affect the scope for the play of everyday creative practice? How are processes of evolving subjectivity affected by the emergence of networked space, and by surveillance practices that reconfigure personal boundaries? How do emerging governance regimes organized around architectures of control affect the play of everyday material practice, and how should legal theorists evaluate the disputes about openness and unauthorized access that have arisen within those regimes? Finally, how might the rules that govern information flow in the networked information society, and that establish the structure of networked space, preserve breathing room for the play of everyday practice? The remainder of the book addresses these questions.

Notes

¹ The term “digital sublime” is Vincent Mosco’s. See generally Mosco, *The Digital Sublime*; Nye, *American Technological Sublime*. On the nineteenth-century response to electric communication technologies, see Marvin, *When Old Technologies Were New*.

² On the commodification of land, labor, and money during the industrial revolution, see Polanyi, *The Great Transformation*, 72-75.

³ For Hayles’s recounting of the intellectual history of cybernetics, see Hayles, *How We Became Posthuman*. On the self as flows of information, see, for example, Floridi, “The Ontological Interpretation of Information Privacy,” 189-90.

⁴ On mobile personal communication, see Fortunati, “The Mobile Phone”; Gergen, “The Challenge of Absent Presence.” For accounts of virtuality as an escape from the particularities of embodiment, see Kang, “Cyber-Race”; Stone, *The War of Desire and Technology*. For challenges to that understanding of virtuality, see Nakamura, *Cybertypes*; White, *The Body and the Screen*.

⁵ Garfinkel, *Studies in Ethnomethodology*, 10-34, 68-73. See Bourdieu, *Distinction*; Geertz, *The Interpretation of Cultures*; Goffman, *The Presentation of Self in Everyday Life*.

⁶ See, for example, Butler, *Bodies That Matter*; Bordo, "Bringing the Body to Theory"; Yoshino, "Covering"; Young, "Throwing Like a Girl."

⁷ Contemporary interest in phenomenology generally traces its roots to Heidegger's early elaboration of "being in the world" as the basis for knowledge, but the most systematic effort to develop a phenomenological theory of knowledge is Merleau-Ponty's *Phenomenology of Perception*.

⁸ See Crossley, *The Social Body*; Grosz, *Volatile Bodies*; Shilling, *The Body in Social Theory*.

⁹ Lakoff and Johnson, *Philosophy in the Flesh*, 97.

¹⁰ Wang & Spelke, "Human Spatial Representation," 376; see also Spelke, "Origins of Visual Knowledge." On the Western philosophical tradition's understanding and misunderstanding of space, see Curry, "Discursive Displacement."

¹¹ See, for example, Foucault, "Of Other Spaces"; Lefebvre, *The Production of Space*; Soja, *Postmodern Geographies*.

¹² Lakoff & Johnson, *Metaphors We Live By*, 139-46.

¹³ Lefebvre, *The Production of Space*, 86.

¹⁴ See generally Jeremy Black, *Maps and Politics*; Harley, *The New Nature of Maps*; Pickles, *A History of Spaces*.

¹⁵ For a comprehensive study of approaches to mapping the Internet, see Dodge & Kitchin, *Mapping Cyberspace*.

¹⁶ Castells, *The Rise of the Network Society*, 378-428. On the linkages between information technologies and material infrastructures, see Sassen, ed., *Global Networks, Linked Cities*.

¹⁷ Barabási, *Linked*, 69-72.

¹⁸ Sassen, "Locating Cities on Global Networks," 2-4.

¹⁹ A provocative effort to theorize this process within legal theory is Radin, "Online Standardization and the Integration of Text and Machine."

²⁰ Mirchandani, "Practices of Global Capital," 370. On globalization and flows of culture, see generally Appadurai, *Modernity at Large*.

²¹ Haraway, *Simians, Cyborgs, and Women*, 149-81.

²² See, for example, Sheets-Johnstone, "Corporeal Archetypes and Power," 152-53.

²³ Verbeek, *What Things Do*, 123-38, 195-99. See also Ihde, *Bodies in Technology*; Ihde, *Postphenomenology*.

²⁴ Hansen, *Bodies in Code*, 20-22.

²⁵ See <http://geekfeminism.wikia.com/wiki/Category:Incidents>.

²⁶ Hayles, *How We Became Posthuman*, 192-207.

²⁷ Haraway, *Simians, Cyborgs, and Women*, 161-72. For William Mitchell's more optimistic vision, see *Me++*.

²⁸ See Certeau, *The Practice of Everyday Life*; Geertz, *The Interpretation of Cultures*.

²⁹ See “NYC Surveillance Camera Project,” <http://www.mediaeater.com/cameras/>; HollabackNYC, <http://hollabacknyc.blogspot.com/>.

³⁰ See Dourish, “What We Talk About When We Talk About Context”; Suchman, *Plans and Situated Actions*.

³¹ Hickman, *Philosophical Tools for Technological Culture*; McCarthy & Wright, *Technology as Experience*.

³² Benkler, *The Wealth of Networks*, 60-63.

³³ Bruns, *Blogs, Wikipedia, Second Life, and Beyond*, 9-30.

³⁴ See generally Stuart Brown, *Play*; Gardner, *Developmental Psychology*, 228-47; Pellegrini, *The Oxford Handbook of the Development of Play*; Wenner, “The Serious Need for Play.”

³⁵ Sutton-Smith, *The Ambiguity of Play*, 221-31.

³⁶ Lyotard explicates his theory of games in *The Postmodern Condition*. For some useful discussions of transgressive play in a variety of contexts, see Butler, *Gender Trouble*; Coombe, *The Cultural Life of Intellectual Properties*; McGrath, *Loving Big Brother*. A thought-provoking exploration of boundary play divorced from explicitly political ideas of transgression is Nippert-Eng, “Boundary Play.”

³⁷ Pickering, *The Mangle of Practice*, 21-24.

³⁸ On liberal commitments in open-source communities, see Coleman & Golub, “Hacker Practice,” 259-63; Kelty, *Two Bits*, 36-94. On media fandoms, see Tushnet, “Payment in Credit.” On communities of practice generally, see Wenger, *Communities of Practice*.

³⁹ Gadamer, *Truth and Method*, 102-10.