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# The Place of Cyberlaw

*Lawrence Lessig*

We find the world as it is, even if the world we find is one we made. Our experience is one of discovery, and our reaction is to change that which we discover. We notice, and then we respond with the tools at hand. We take what we can to remake what we find, to better fit our picture of how the world is, or should be. It is in this sense that we say the world is real and yet constructed: however it seems, it has been built; even if built, it feels found.

If any world is constructed, cyberspace is. Yet in cyberspace more than anywhere, the constructed seems found. As people come to know how cyberspace is, they forget that however it is found, it was made. They act as if it couldn't be different. They naturalize cyberspace more completely than any natural place, forgetting that of all the places we know now, this place is the least natural.

This forgetting first manifested itself in the belief that cyberspace could not be regulated. Those who first knew this space—indeed, many who built this space—came to believe that of all the places that human society knows, cyberspace would be beyond the control of governments.<sup>1</sup> But soon into the life of cyberspace, or into the life of cyberspace affecting real space life, this view (and for some, this hope) disappeared. It is now so obvious that governments can change what cyberspace is that it would be hard to imagine how any different thought could have prevailed.

In learning how governments change this place, we are learning something important and general about regulation itself. In this brief essay, I sketch this learning. I begin with a model of regulation in real space, and then apply that model to cyberspace. In both contexts, this analysis makes clear the law's place within the domain of regulation—

how and where it functions, and how its functioning can depend upon the character of space. This is an understanding of how regulation functions that is remote from ordinary understandings of the law. But understanding cyberspace will make this remote understanding much more local.

The world we find is filled with constraints. Some of these constraints are made. Some of these “made” constraints act to limit—and, hence, regulate—the liberty that we otherwise would have. These constraints are of different kinds; they operate upon us in different ways. Consider four of these constraints, and how they function together.<sup>2</sup>

The first of these four constraints—for the lawyer, at least—is law. We are not permitted to travel in a car at speeds above sixty-five miles per hour; the law imposes this constraint, not the car. In most states, we are not allowed to marry people of the same sex; the law imposes this constraint, not the nature of love. The law’s constraints are constructed through the self-conscious acts of courts, legislatures, and constitutional conventions. They are statements that bind: Rules imposed through words, that institutions then carry into effect.

But laws are not the only rules that regulate. Social norms—the second of four constraints discussed here—regulate as well. Regardless of the law, I would be punished by my neighbors if I drove through a school zone at sixty-five miles per hour. In most of America, the most significant constraint on single-sex relationships has nothing to do with courts or legislators. These rules are not crafted by the self-conscious actions of legislatures or courts; they live in the expectations and judgments of the members of a community. And unlike laws, these rules operate only with the complicity of the members of a community. We might blame the church for restrictions placed on the erotic, but it’s not quite—or perhaps not just—the church that would scorn the reckless endangerment of children at school.

Rules thus characterize two kinds of constraints: Laws and social norms. Such rules-based constraints differ from a third type of constraints—those of the market. The market sets the terms under which resources get traded. Its constraint says what must be given for what, subject to the rules (both law and norms) within which the market functions. The market’s constraint is thus distinct from the barrier imposed by law (for example, a felony conviction that might make it impossible to be admitted to the bar), or by norms (that for most of our history,

scorned women from the legal profession). But the nature of the barrier that the market might impose is a function of law and norms. The law permits a student to wait tables to pay for law school; it doesn't permit her to sell sex as a way to raise tuition. Norms support this law: the same constraint on cash for sex is supported by a thick set of norms; a different, but equally thick, set of norms would make it hard for a male student to earn money by painting nails in a beauty shop.

The constraints of the market are conceptually different from the constraints of the law and norms. Laws and norms punish deviation *ex post*—one through an institution, the other through a community. The market demands compliance, in a formal sense, simultaneously. You trade cash for Coke, or an obligation to pay for a car. The constraint is realized immediately, and perpetually, for example, as the hungry man is continually aware that with the passing of each moment, he can't buy food.

These three constraints are distinct from a fourth that will be the focus of the argument to follow. This is the constraint of place, or what I will call *architecture*. By architecture I mean the complement of physical constraints that set the terms on which we experience real space. That a wall is opaque means I can't see what's going on in the other room. That's a constraint imposed by architecture. That a building has no access ramp means the wheelchair cannot get in. That too is a constraint imposed by architecture. These constraints of architecture are distinct again from law and norms and the market. Like the market, they operate in real time. We don't live life like the Coyote in *Road Runner*, racing off a cliff, only then to be reminded of the law of gravity. Constraints of architecture are both formally, and effectively, simultaneous.<sup>3</sup>

Unlike law, norms, and the market, however, the constraints of architecture require no human agency to be real. I may be able to slip a bottle of perfume into my pocket and walk out of the store undetected, and thereby escape the constraints of the market (which demand that I pay for the perfume I have taken), and the constraints of social norms (which say perfume is not for me), and the constraints of the law (which say I can't take it without paying). It is a feature of these human-built constraints that they must at some point be imposed by an agent to be effective. The constraints of architecture cannot be escaped simply by failing to be noticed. I can overcome some of them—I can blast a hole in a wall to see what's going on in the other room, or I might be able to pick a lock to get inside. But overcoming a constraint is different from

the constraint's not being enforced. Constraints of architecture are not conditional in the way constraints of law, norms, and the market are.<sup>4</sup>

These four constraints are therefore different. Yet at any time, they operate together. They interact. Sometimes they support each other: the norm against students selling sex supports the law against students selling sex. Sometimes they undercut each other: that there is a price for sex undermines the norms and rules against it being for sale. Thus, to understand the effectiveness of any particular regulation, we must survey how the modalities operate together. And this survey requires a certain practice. We must become aware of constraints that are often invisible; we must practice drawing their constraint into focus.

This need is especially true for policymakers. Because constraints work together, and sometimes crosswise, anyone promoting a policy should strive to understand how these four modalities interact. And depending upon the interaction of these modalities, the policymaker might have to alter or modify these different constraints. These constraints—if properly surveyed—can become tools in the hand of the regulator; they get deployed or modified to whatever end the regulator might have.

This is a point lawyers, and governments, tend to forget, and hence the point remains obscure. But the insight that I want to move to the foreground is that the law is just one of these four possible constraints, and often not the most significant or important. Yet it is, among the four, the constraint most relevant to changing the other three.

Take smoking as a simple example. In the United States (fortunately), we live in the culture of the smoking prohibitionists. There are laws against the sale of cigarettes to minors, as well as laws that zone where smokers can smoke.<sup>5</sup> So too do norms constrain the smoker—in some places more than others, for some people more than others. California is different from Detroit; the young executive is different from the disaffected undergraduate. So too does the market constrain smoking: Cigarettes cost money; money is a constraint. So too with architecture: Smoking is hard to hide. And so too do these four constraints sometime function together: In this society, we line up smokers at the entrance of buildings so that they can be shamed by others entering and leaving work.

Again, these different constraints operate together, and the policymaker can manipulate these different constraints to change how they operate together. The policymaker can change the law, so it prohibits

more, or prohibits differently. Or the policymaker can fund television commercials to change norms surrounding smoking—adding to the stigma associated with smoking, or stigmatizing the producers of cigarettes to reduce the demand to smoke. Or the policymaker can use the market to increase the constraint on smoking—taxing cigarettes, for examples. (We of course tax cigarettes heavily, while simultaneously subsidizing tobacco production.)<sup>6</sup> Or the policymaker could use architecture to regulate the consumption of cigarettes—for example, by regulating the amount of nicotine in a cigarette to reduce the addictiveness of the habit.

Modern regulation—modern law—is the choice among these different modalities of constraint. Modern regulation is the pragmatic discipline of selecting the tool, or mix of tools, that best brings about the desired social end.

This same mix of modalities exists in cyberspace, though the significance of each is different. In the pages that follow, I want to argue that in cyberspace, architecture will become the most significant regulator. My point is not that cyberspace is the first place where architecture mattered. The history of governments is littered with examples of architecture as a tool of social policy. David Hackett Fischer describes the founders of New England meticulously laying out the towns they would found so that the relationship of the buildings to each other, and to the town square, would assure that behavior within the town would be properly regulated.<sup>7</sup> Jeremy Bentham famously described the design of a prison so that all cells would be viewable from one central position, so that prisoners would never know whether they were being watched, but that they always could be watched, and so they would be properly regulated by the uncertainty about whether they were being monitored or not.<sup>8</sup> Napoleon III had Paris rebuilt so that the boulevards would be broad, making it hard for revolutionaries to blockade the city, so that Parisians would be properly regulated.<sup>9</sup> Robert Moses built highway bridges along the roads to the beaches in Long Island so that buses could not pass under the bridges, thereby assuring that only those with cars (largely white people) would use certain public beaches, and that those without cars (largely African Americans) would be driven to use other beaches, so that social relations would be accordingly regulated.<sup>10</sup>

In each of these cases, architecture was a tool for regulating behavior. But in cyberspace, architecture will become even more significant.

Relatively small changes in the character of the space will have profound effects on the nature of the constraints experienced there. Understanding these changes, and their source, is the first step to understanding the place of law in cyberspace.

The problem of privacy in cyberspace will make the point more concretely.

The Net was exposed to public view with the emergence of the World Wide Web—a set of protocols for writing hyperlinked documents, and facilitating their interlinking across a network. The public didn't see these protocols—HTML and HTTP—but they were layered onto a more basic set of protocols that constituted the Internet—the protocols of TCP/IP, which establish the basic architecture of Internet communication.<sup>11</sup>

None of these early Internet protocols made the identity of the user a fact that the system needed to know in order to function. Each machine on the Net needs an address (called an *IP address*) to communicate with other machines on the Net; but those IP addresses have no necessary connection with a geographic location or a particular person. Every time the user connects, in principle he could receive a different IP address. The web thus doesn't know *through the IP address alone* who I am.

This early architecture thus had the effect of protecting individual privacy. The user could surf the Web without there being any automatic way to figure out who or where he was. This is not because the Web revealed nothing about the user. When the user connects to a Web server using a browser, lots of data is exchanged between the server and the browser: which operating system is being used, which address you just came from, which type of browser is being run.<sup>12</sup> But while all these bits of data are communicated to the server, nothing about the identity of the user is, necessarily, divulged.

For those who liked the world where surfing was anonymous, this architecture was ideal. But for those who wanted to know their customers—or at least their customers' customs—this world was not ideal. Given the original architecture of the Web, it was difficult to know who a user was, or what he wanted, and hence difficult to know how to sell him what he wanted.

Early in the Net's history, the first major provider of a browser—Netscape—took steps to service those who wanted the Net to be less

anonymous. Netscape released a new protocol for Web servers—the cookie technology.<sup>13</sup> With cookies, a server could deposit a bit of data on a user's machine, and when the user came back to the server, the server would know with whom it was dealing. This made it easy to monitor and track users, at least those users who tolerated cookies. And this in turn meant that the protections for privacy had been changed. Privacy was lessened on the World Wide Web, and the key is to focus on why. Not because laws were changed or because norms had evolved. Privacy was lessened because a simple feature of the architecture of the Web had been altered. Changing the architecture to enable cookies meant that less privacy was automatically assured.

This change was effected not by governments, but by a commercial browser vendor trying to satiate the appetites of those commercial enterprises keen to mine data for commerce from the Internet. Today, as there is increased concern about privacy, different companies are responding differently. Microsoft, for example, has built into its browser a technology that enables users to block cookie deposits originating from sites that fail to make their privacy policies available in machine readable form. The effect of this change has been to increase the transparency of sites that use cookies to advertise to customers. This increases the protection of a certain kind of data for users. Just as the Netscape-initiated change to cyberspace architecture—cookies—affected users' privacy on the Net, here too it was a change in cyberspace architecture—Microsoft's cookie-blocking technology—that similarly (yet inversely) affected users' privacy on the Net.<sup>14</sup>

There are scores of examples just like this: The architecture of cyberspace was one way; because it was one way, it protected a certain set of values. The architecture was then changed, and the original values in turn were lost or reshuffled. In each of these examples, we might imagine the law playing a role in that change—by assuring a place stays as it was, or in some cases, inducing a place to become something different. In either case, the role of the law would be to alter a particular architecture to better protect values chosen by the law.

In general, however, the law has not yet played that role in cyberspace—even with a value as important as privacy that is recognized both within cyberspace and without. And this is particularly true with respect to values that are less in the fore than privacy, yet—or perhaps



because—they are so close to the architecture of the original space as to be invisible outside it. Among these, there is one that will prove to be the most significant to the character of innovation and creativity. This is the value of “end-to-end.”

The “end-to-end argument” by Jerome Saltzer, David Clark, and David P. Reed, directs designers about how intelligence in a network is to be ordered.<sup>15</sup> An end-to-end network places intelligence in the network at the ends, or edge, of the network. Keep the network simple, or, as David Isenberg calls it, stupid.<sup>16</sup> Stupid networks, smart applications. This was the character of the original Internet.

The early architects of the Net adopted this principle because—though they were among the best and the brightest network designers of their time—they knew that they didn’t know how the network would be used. They had no idea how the network would mature, and so they designed it so that it could mature in any way users wanted. The network was not optimized to any particular use because no particular use was assured.<sup>17</sup>

A kind of humility (and good pragmatic sense) thus guided these first network designers, and this humility had a consequence. The network was simple. It specified a simple protocol for exchanging packets of data. This simplicity meant that the network didn’t have within it the power to discriminate among applications or content. Because the network could not discriminate, innovators knew that their application or their content could be served across the Internet regardless of the wishes of the network owner. The network was a neutral platform; it invited all comers.

For a brief span of time, this is just what the network did.<sup>18</sup> Previously unimagined applications were built for the Net. New ways of doing business, both in real space and in cyberspace, were born—as were new ways of creating, new ways of sharing the fruits of that creativity with others, new ways of being artists, new ways of *innovating*.

This architecture, in turn, disabled certain structures of social and commercial control. Laws were less effectively enforced as behavior moved outside of traditional institutions. Control over content and distribution was less effectively achieved as channels of distribution could no longer be controlled by content providers.

The law’s attitude to this change has been curiously ambivalent. Where the interests affected by this architectural principle have been

solely state—or governmental—interests, the law—usually the first line of defense for the state in protecting its interests—has been slow to respond. The Internet has made it hard to collect and control taxes; the government has decided to wait before responding.<sup>19</sup> The Internet has made it extremely hard to keep kids from material deemed harmful to minors; the Supreme Court has made it practically impossible for the government to respond.<sup>20</sup> Where it is the state that has lost because of this loss of a power to discriminate, the response of the state has been to wait and see. The governmental attitude seems to be along the lines of: Let the place mature a bit, let's see how it shakes out before we launch regulation to alter it in a way that preserves state values.

But where the interests affected by this architectural principle have been private, a similar ambivalence has not been the practice. Instead, the urgent response of both private and state actors has been to move quickly to change the design of cyberspace to better protect or further the affected interests.

Cable companies, for example, are building the next generation of the Internet to be fundamentally different from the Net of the past. The difference pertains to the value afforded the end-to-end argument. Contrary to the end-to-end principle, cable companies are architecting this new Internet to return control to the network owner.<sup>21</sup> On the Internet served by cable, content and applications can be discriminated among. Some content will flow quickly; other content will flow slowly; some applications will be permitted; other applications will not. This new network is being built to return control to the network owner, and this change will affect fundamentally what innovation is allowed.<sup>22</sup>

The same is true with the interests affecting the control of content in our culture—that cultural institution referred to by a place, Hollywood. As to content, too, the Net was initially a threat to the existing order: A handful of companies controlled 80 percent of media in the world; five companies control 90 percent of distributed music.<sup>23</sup> These companies recognized that the Net was a threat to their way of doing business. They have responded with lawsuit after lawsuit aimed at stopping any manner of distributing content that they can't control.<sup>24</sup> Their efforts have largely been a success. As Michael Robertson, former CEO of mp3.com, told me, "I think the realities are that this litigation is as much about straddling the competition as anything else."<sup>25</sup>

What they've done very successfully is dried up the capital markets for any digital music company. . . . [W]e went public a little over a year ago—when you [could] raise 400 million dollars from going public. Today, if you took a digital music company business plan, you couldn't get a buck and a half from a venture capital company.<sup>26</sup>

If we think about the Internet as divided into three layers—at the bottom, a physical layer of wires and computers; in the middle, a code layer setting the network protocols that make the Internet run; at the top, a content layer that feeds the stuff that gets served by these protocols across the wires and computers that constitute the Internet—then the changes that I am describing are changes in the code (middle) layer, induced by changes in the physical (bottom) and content (top) layers. In the case of Hollywood, they are changes induced by pressure at the content layer. In the case of cable, they are changed induced by pressure at the physical layer. In both cases, the pressure induces changes to the architecture that defines the Internet. The Net is moving from an architecture that couldn't discriminate—that served content and applications as individuals wanted—to an architecture that discriminates—that serves content and applications as the influential commercial entities may control. In both cases, these changes transform the Internet into something very different from what it was in its end-to-end manifestation, with the consequence that the Internet these changes create increasingly protects traditional interests.<sup>27</sup>

The aim of both the network owners and the content owners is to use their power to alter the basic architecture of the Net, so that that architecture—in particular, end-to-end—does not undermine their power. It is the old protecting themselves against the new. It is the new being forced to relinquish the potential that the Internet promised, in the face of pressure from the old.

This is nothing new. In *The Prince*, Machiavelli described the same pattern:

Innovation makes enemies of all those who prospered under the old regime, and only lukewarm support is forthcoming from those who would prosper under the new. Their support is indifferent partly from fear and partly because they are generally

incredulous, never really trusting new things unless they have tested them by experience.<sup>28</sup>

So what is the law's place in this struggle? What should it be?

The freedom that the Internet created did not come from any law; it came from an architecture that disabled concentrations of power over speech and communication. That architecture threatens those who have most prospered in the world before the Internet. They, smartly, have responded by challenging the very essence of this architecture. They have responded by building and forcing to be built an architecture that again gives controllers the power to control.

And to great effect. Network architects built a network that—in its end-to-end form—many enthusiastically embraced. It got codified into our lives, and every aspect of our life became increasingly affected by it. It has become a second nervous system, rich with content and enabling extraordinary communication. But then, using the tools of code and law, interests of yesterday have rearchitected the place, to vest back in themselves the power to control how this potential emerges. They *code* it to build within its place the power to enforce private control over public life. They have commandeered that which has become our splendid second nervous system, and they are controlling it to their ends.

The law could have a place in this transformation. It could defend the values of decentralized, diverse innovation that the original architecture established. Or vice versa. But this has not been the law's role. And as the law stands aside, these other modalities remake the space that the Internet was.

The consequences of this need not be imagined; they are practically upon us. The place of innovation and unrestrained creativity; the location of an explosion of something new; the home to creators without connection; the territory where no one gets to control which innovations are allowed: This place is passing. In its place is a familiar space of relatively concentrated, relatively normal, effectively managed "cultural" production. The consequences of a potentially radicalizing architecture have been averted, in part through the help (inaction) of law.

This is the consequence of a change in the architecture of cyberspace, induced by actors within the market, aided by the force of rights protected through law. Yet it occurs practically unnoticed, because we are

not trained to see values built into architecture. We are therefore insensitive to the changes brought about by the changes in that architecture. Even here, where the changes affect the most profound features of the early Internet, the changes are invisible.

Invisible is thus the place of law in this change to the Internet. In the mix of modalities that effect this change, the most important is not seen, and yet this part unseen has the most profound effect. Altering the basic neutrality of the network's platform alters fundamentally the incentives, and freedom, to create and innovate on the network. This new architecture becomes the Net's new law. Were the law aware of the place this architecture had in its regulation, it might well respond to the changes this change in architecture effects. So far it has not.

## NOTES

I am grateful to Elisa Garza Kammeyer and John Neukom for excellent research help.

1. Lawrence Lessig, *Code and Other Laws of Cyberspace* (New York: Basic Books, 1999), 3–8 (“The claim now was that government *could not* regulate cyberspace, that cyberspace was essentially, and unavoidably, free. Governments could threaten, but behavior could not be controlled; laws could be passed, but they would be meaningless”).

2. I describe these more extensively in “The New Chicago School,” *Journal of Legal Studies* 27 (1998): 661, and in chapter 2 of *Code and Other Laws of Cyberspace*. Other authors have discussed the interaction of these modalities with varying emphases. For a discussion primarily focused on the interaction between the law and norms, see, e.g., Robert C. Ellickson, *Order without Law: How Neighbors Settle Disputes* (Cambridge: Harvard University Press, 1991), 131–32 (“Different controllers can combine their efforts in countless ways to produce hybrid systems of social control”); Robert C. Ellickson, “A Critique of Economic and Sociological Theories of Social Control,” *Journal of Legal Studies* 26 (1987): 76. For discussions of the interaction between the law and architecture in regulation, see, e.g., Erving Goffman, *Frame Analysis: An Essay on the Organization of Experience* (Boston: Northeastern University Press, 1986); Jeremy Bentham, *The Panopticon Writings*, ed. Miran Bozovic (New York: Verso, 1995). For examples of analyses of the law and the market interacting in a regulatory scheme, see Gary Minda, “Antitrust at Century’s End,” *Southern Methodist University Law Review* 48 (1995) 1749; and Herbert Hovenkamp, “Antitrust Law after Chicago,” *Michigan Law Review* 84 (1985) 213 (both discussing the interaction between the law and market forces in antitrust regulation); Frank H. Easterbrook and Daniel R. Fischel, *The Economic Structure of Corporate Law* (Cambridge: Harvard University Press, 1991), chap. 5 (discussing the interaction between the law and market forces in securities regulation).

3. See, e.g., Neal Kumar Katyal, "Architecture as Crime Control," *Yale Law Journal* 111 (2002): 1039 (discussing the potential of architecture—literally the physical architecture of buildings and spaces—to prevent and control criminal activities in a manner more effective than traditional law enforcement); Neal Kumar Katyal, "Criminal Law in Cyberspace," *University of Pennsylvania Law Review* 149 (2001): 1003–14.

4. There are other differences among these constraints that we might note as well. First, we can't say in the abstract which of these four constraints is strongest. Norm-wimps like me, for example, could commit twelve felonies before breakfast; but I could never imagine showing up to a talk in a dress. This is not, as the economist might think, because of differences in the expected value of these two actions. The expected value of a felony is always negative, regardless of whether I would be caught; but the expected value of showing up to a lecture in a dress—among academics, at least, and given your view of lawyers—might well be positive. You might, e.g., think, "not quite as boring as I expected."

Instead, the relative effectiveness of each of these modalities of constraint must be determined empirically. It depends upon the people and the context. Thus whether a constraint is effective is something we must explore rather than posit. And how we make a certain constraint effective is something we must listen for, rather than pronounce.

This last point suggests a quibble with my claim that the constraints of law and norms can be escaped, while the constraints of architecture cannot. A well-socialized sort, one might argue, doesn't "escape" the constraint of law or norms just because he succeeds in evading the detection of his deviance—slipping the perfume, for example, into his pocket and leaving the store. The well-socialized, one might well argue, have those constraints architected into their souls. The theft would bear upon his or her soul, regardless of detection.

This objection is correct, though it shows how psychology might function as a kind of architecture in social life, not how norms are indistinct from architecture. Whether or not the well-socialized can escape social norms, there are some persons who, to some degree, do. And this continuum of escape is all we need to note for the purposes of the argument I want to make here.

Second, although I am speaking about constraints, obviously, these modalities do more than constrain. Without the law enforcing contracts, this would be an extremely poor world. Contract law enables as much as it constrains. It is the same with norms of civility, or markets that feed the poor, or airplanes that carry me from sunny California to the chills of central Massachusetts. These are expressions of law, norms, markets, and architectures; but they are not expressions of constraint.

But for the purposes that I am sketching this picture of the world we know, focusing narrowly on the constraints that these modalities impose, and not on their empowerments, won't matter to the conclusion. The point is the same whether or not you count the other half.

5. Robert L. Rabin and Stephen D. Sugarman, eds., *Smoking Policy: Law, Politics, and Culture* (Oxford: Oxford University Press, 1993); Lawrence Lessig,

"The Regulation of Social Meaning," *University of Chicago Law Review* 62 (1995): 943, 1025–34; Cass R. Sunstein, "Social Norms and Social Roles," *Columbia Law Review* 96 (1996): 903. See also California Labor Code, sec. 6404.5 (2001) (codifying the California legislation banning smoking indoors for any places of work).

6. Jasper Womach, "Tobacco Price Support: An Overview of the Program," Report for Congress, available at <http://www.cnie.org/nle/ag-61.html> (visited July 18, 2001).

7. David Hackett Fischer, *Albion's Seed: Four British Folkways in America* (Oxford: Oxford University Press, 1989).

8. Jeremy Bentham, *Panopticon* (London: T. Payne and Son, 1791); Janet Semple, *Bentham's Prison: A Study of the Panopticon Penitentiary* (Oxford: Oxford University Press, 1993).

9. Alain Plessis, *The Rise and Fall of the Second Empire, 1852–1871*, trans. Jonathan Mandelbaum (Cambridge: Cambridge University Press, 1985), 121.

10. Robert A. Caro, *The Power Broker: Robert Moses and the Fall of New York* (New York: Alfred A. Knopf, 1974), 318.

11. For a more in-depth discussion of the protocols, and layering thereof, that constitute the World Wide Web, see Lawrence Lessig, *The Future of Ideas: The Fate of the Commons in a Connected World* (New York: Random House, 2001), chap. 3.

12. *Ibid.*, chap. 8.

13. "Internet Cookies: Cookie Basics," *Web Street Studios*, available at <http://www.webstreetstudios.com/school/cookies.htm> (visited July 19, 2001); Neil Randall, "How Cookies Work," *PC Magazine Online*, available at <http://www.zdnet.com/pcmag/features/cookie/cks1.htm> (visited July 19, 2001).

14. See Microsoft Internet Explorer 6: Web Privacy (August 27, 2001), at <http://www.microsoft.com/windows/ie/evaluation/overview/privacy.asp> (explaining the technology in the Microsoft browser that protects the user from cookie deposits according to the expressed user-preferences).

15. See Jerome H. Saltzer, David P. Reed, and David D. Clark, "End-to-End Arguments in System Design," available at <http://Web.mit.edu/Saltzer/www/publications/endtoend/endtoend.pdf>; David P. Reed, Jerome H. Saltzer, and David D. Clark, "Active Networking and End-to-End Arguments," available at <http://Web.mit.edu/Saltzer/www/publications/endtoend/ANE2ecomment.html>.

16. As background, see Peter Cukor and Lee McKnight, "Knowledge Networks, the Internet, and Development," *Fletcher Forum of World Affairs* 25, no. 1 (2001): 46; George Gilder, *Telecosm: How Infinite Bandwidth Will Revolutionize Our World* (New York: Free Press, 2000), 70–71.

17. Lessig, *The Future of Ideas*, 34–39.

18. "When I came to Silicon Valley, everybody said . . . there's no way in hell that you could ever fund another desktop software company. That's just over. And then in 1995, 1996, 1997, and 1998, all those developers who previously worked on desktop software said, Ah-hah, we're upgrading to a brand-new

platform not controlled . . . by anybody—the Internet. [A]ll of a sudden there was an explosion of innovation, a huge number of applications, and [a] huge number [of] companies.” Telephone interview with Marc Andreessen, December 15, 2000.

19. Internet Tax Freedom Law, P.L. 105–277, Title XI–XII, October 21, 1998; summary available at <http://www.house.gov/chriscox/nettax/lawsums.html>.

20. See 47 U.S.C., sec. 223 (Supp. 1996); *Reno v. ACLU*, 521 U.S. 844 (1997). But see 47 U.S.C., sec. 230 (2002); *Ashcroft v. ACLU*, 122 S.Ct. 1700 (2002).

21. Mark A. Lemley and Lawrence Lessig, “The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era,” *UCLA Law Review* 48 (2001): 925.

22. I describe these changes in depth in Lessig, *The Future of Ideas*.

23. According to the National Cable Association, the top seven “multiple system operators” or MSOs controlled 90 percent of the national cable television market at the end of 2000; figures available at [http://www.ncta.com/industry\\_overview/top50mso.cfm](http://www.ncta.com/industry_overview/top50mso.cfm); Robert W. McChesney, *Rich Media, Poor Democracy: Communication Politics in Dubious Times* (Urbana: University of Illinois Press, 1999), 17–18; Eric Boehlert, “Pay for Play,” *Salon*, March 14, 2001, available at <http://www.salon.com/ent/feature/2001/03/14/payola/print.html>; Allyson Lieberman, “Sagging Warner Music out of Tune with AOL TW,” *New York Post*, April 19, 2001, 34 (as of April 2001). See also Charles Mann, “The Heavenly Jukebox,” *Atlantic Monthly*, September 2000, 53.

24. See, e.g., *UMG Recordings, Inc. v. MP3.com*, 92 F. Supp. 2d 349 (S.D.N.Y. 2000); *A&M Records, Inc. v. Napster, Inc.*, 239 F.3d 1004 (9th Cir. 2001); *MGM v. Grokster*, CV 01–08541 SVW (PJMx) (C.D. Ca. 2002, and pending); *S3 Inc. v. nVIDIA Corp.*, 259 F.3d 1364 (Fed. Cir. 2001).

25. Telephone interview with Michael Robertson (Nov. 16, 2000).

26. *Ibid.*

27. See Lawrence Lessig, “The Internet under Siege,” *Foreign Policy*, November–December 2001, [http://www.foreignpolicy.com/issue\\_novdec\\_2001/lessig.html](http://www.foreignpolicy.com/issue_novdec_2001/lessig.html).

28. Niccolò Machiavelli, *The Prince*, trans. Robert M. Adams, 2d ed. (New York: Norton, 1992), 17.



