

Notes

CHAPTER 1. Introduction: A Moment of Opportunity and Challenge

1. Barry Wellman et al., "The Social Affordances of the Internet for Networked Individualism," *JCMC* 8, no. 3 (April 2003).
2. Langdon Winner, ed., "Do Artifacts Have Politics?" in *The Whale and The Reactor: A Search for Limits in an Age of High Technology* (Chicago: University of Chicago Press, 1986), 19-39.
3. Harold Innis, *The Bias of Communication* (Toronto: University of Toronto Press, 1951). Innis too is often lumped with McLuhan and Walter Ong as a technological determinist. His work was, however, one of a political economist, and he emphasized the relationship between technology and economic and social organization, much more than the deterministic operation of technology on human cognition and capability.
4. Lawrence Lessig, *Code and Other Laws of Cyberspace* (New York: Basic Books, 1999).
5. Manuel Castells, *The Rise of Networked Society* (Cambridge, MA, and Oxford: Blackwell Publishers, 1996).

PART I. The Networked Information Economy

1. Elizabeth Eisenstein, *Printing Press as an Agent of Change* (Cambridge: Cambridge University Press, 1979).

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CHAPTER 2. Some Basic Economics of Information Production and Innovation

1. The full statement was: “[A]ny information obtained, say a new method of production, should, from the welfare point of view, be available free of charge (apart from the costs of transmitting information). This insures optimal utilization of the information but of course provides no incentive for investment in research. In a free enterprise economy, inventive activity is supported by using the invention to create property rights; precisely to the extent that it is successful, there is an underutilization of information.” Kenneth Arrow, “Economic Welfare and the Allocation of Resources for Invention,” in *Rate and Direction of Inventive Activity: Economic and Social Factors*, ed. Richard R. Nelson (Princeton, NJ: Princeton University Press, 1962), 616–617.
2. Suzanne Scotchmer, “Standing on the Shoulders of Giants: Cumulative Research and the Patent Law,” *Journal of Economic Perspectives* 5 (1991): 29–41.
3. *Eldred v. Ashcroft*, 537 U.S. 186 (2003).
4. Adam Jaffe, “The U.S. Patent System in Transition: Policy Innovation and the Innovation Process,” *Research Policy* 29 (2000): 531.
5. Josh Lerner, “Patent Protection and Innovation Over 150 Years” (working paper no. 8977, National Bureau of Economic Research, Cambridge, MA, 2002).
6. At most, a “hot news” exception on the model of *International News Service v. Associated Press*, 248 U.S. 215 (1918), might be required. Even that, however, would only be applicable to online editions that are for pay. In paper, habits of reading, accreditation of the original paper, and first-to-market advantages of even a few hours would be enough. Online, where the first-to-market advantage could shrink to seconds, “hot news” protection may be worthwhile. However, almost all papers are available for free and rely solely on advertising. The benefits of reading a copied version are, at that point, practically insignificant to the reader.
7. Wesley Cohen, R. Nelson, and J. Walsh, “Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not)” (working paper no. 7552, National Bureau Economic Research, Cambridge, MA, 2000); Richard Levin et al., “Appropriating the Returns from Industrial Research and Development” *Brookings Papers on Economic Activity* 3 (1987): 783; Mansfield et al., “Imitation Costs and Patents: An Empirical Study,” *The Economic Journal* 91 (1981): 907.
8. In the 2002 Economic Census, compare NAICS categories 5415 (computer systems and related services) to NAICS 5112 (software publishing). Between the 1997 Economic Census and the 2002 census, this ratio remained stable, at about 36 percent in 1997 and 37 percent in 2002. See 2002 Economic Census, “Industry Series, Information, Software Publishers, and Computer Systems, Design and Related Services” (Washington, DC: U.S. Census Bureau, 2004).
9. Levin et al., “Appropriating the Returns,” 794–796 (secrecy, lead time, and learning-curve advantages regarded as more effective than patents by most firms). See also F. M. Scherer, “Learning by Doing and International Trade in Semiconductors” (faculty research working paper series R94-13, John F. Kennedy School of Government, Harvard University, Cambridge, MA, 1994), an empirical study of semiconductor industry suggesting that for industries with steep learning curves, investment in information production is driven by advantages of being first down the learning curve

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rather than the expectation of legal rights of exclusion. The absorption effect is described in Wesley M. Cohen and Daniel A. Leventhal, “Innovation and Learning: The Two Faces of R&D,” *The Economic Journal* 99 (1989): 569–596. The collaboration effect was initially described in Richard R. Nelson, “The Simple Economics of Basic Scientific Research,” *Journal of Political Economy* 67 (June 1959): 297–306. The most extensive work over the past fifteen years, and the source of the term of learning networks, has been from Woody Powell on knowledge and learning networks. Identifying the role of markets made concentrated by the limited ability to use information, rather than through exclusive rights, was made in F. M. Scherer, “Nordhaus’s Theory of Optimal Patent Life: A Geometric Reinterpretation,” *American Economic Review* 62 (1972): 422–427.

10. Eric von Hippel, *Democratizing Innovation* (Cambridge, MA: MIT Press, 2005).
11. Eben Moglen, “Anarchism Triumphant: Free Software and the Death of Copyright,” *First Monday* (1999), http://www.firstmonday.dk/issues/issue4_8/moglen/.

CHAPTER 3. Peer Production and Sharing

1. For an excellent history of the free software movement and of open-source development, see Glyn Moody, *Rebel Code: Inside Linux and the Open Source Revolution* (New York: Perseus Publishing, 2001).
2. Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge: Cambridge University Press, 1990).
3. Josh Lerner and Jean Tirole, “The Scope of Open Source Licensing” (Harvard NOM working paper no. 02–42, table 1, Cambridge, MA, 2002). The figure is computed out of the data reported in this paper for the number of free software development projects that Lerner and Tirole identify as having “restrictive” or “very restrictive” licenses.
4. Netcraft, April 2004 Web Server Survey, http://news.netcraft.com/archives/web_server_survey.html.
5. Clickworkers Results: Crater Marking Activity, July 3, 2001, <http://clickworkers.arc.nasa.gov/documents/crater-marking.pdf>.
6. B. Kanefsky, N. G. Barlow, and V. C. Gulick, *Can Distributed Volunteers Accomplish Massive Data Analysis Tasks?* <http://www.clickworkers.arc.nasa.gov/documents/abstract.pdf>.
7. J. Giles, “Special Report: Internet Encyclopedias Go Head to Head,” *Nature*, December 14, 2005, available at <http://www.nature.com/news/2005/051212/full/438900a.html>.
8. <http://www.techcentralstation.com/111504A.html>.
9. Yochai Benkler, “Coase’s Penguin, or Linux and the Nature of the Firm,” *Yale Law Journal* 112 (2001): 369.
10. IBM Collaborative User Experience Research Group, History Flows: Results (2003), <http://www.research.ibm.com/history/results.htm>.
11. For the full argument, see Yochai Benkler, “Some Economics of Wireless Communications,” *Harvard Journal of Law and Technology* 16 (2002): 25; and Yochai Benkler, “Overcoming Agoraphobia: Building the Commons of the Digitally Networked Environment,” *Harvard Journal of Law and Technology* 11 (1998): 287. For an excellent

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overview of the intellectual history of this debate and a contribution to the institutional design necessary to make space for this change, see Kevin Werbach, “Supercommons: Towards a Unified Theory of Wireless Communication,” *Texas Law Review* 82 (2004): 863. The policy implications of computationally intensive radios using wide bands were first raised by George Gilder in “The New Rule of the Wireless,” *Forbes ASAP*, March 29, 1993, and Paul Baran, “Visions of the 21st Century Communications: Is the Shortage of Radio Spectrum for Broadband Networks of the Future a Self Made Problem?” (keynote talk transcript, 8th Annual Conference on Next Generation Networks, Washington, DC, November 9, 1994). Both statements focused on the potential abundance of spectrum, and how it renders “spectrum management” obsolete. Eli Noam was the first to point out that, even if one did not buy the idea that computationally intensive radios eliminated scarcity, they still rendered spectrum property rights obsolete, and enabled instead a fluid, dynamic, real-time market in spectrum clearance rights. See Eli Noam, “Taking the Next Step Beyond Spectrum Auctions: Open Spectrum Access,” *Institute of Electrical and Electronics Engineers Communications Magazine* 33, no. 12 (1995): 66–73; later elaborated in Eli Noam, “Spectrum Auction: Yesterday’s Heresy, Today’s Orthodoxy, Tomorrow’s Anachronism. Taking the Next Step to Open Spectrum Access,” *Journal of Law and Economics* 41 (1998): 765, 778–780. The argument that equipment markets based on a spectrum commons, or free access to frequencies, could replace the role planned for markets in spectrum property rights with computationally intensive equipment and sophisticated network sharing protocols, and would likely be more efficient even assuming that scarcity persists, was made in Benkler, “Overcoming Agoraphobia.” Lawrence Lessig, *Code and Other Laws of Cyberspace* (New York: Basic Books, 1999) and Lawrence Lessig, *The Future of Ideas: The Fate of the Commons in a Connected World* (New York: Random House, 2001) developed a rationale based on the innovation dynamic in support of the economic value of open wireless networks. David Reed, “Comments for FCC Spectrum Task Force on Spectrum Policy,” filed with the Federal Communications Commission July 10, 2002, crystallized the technical underpinnings and limitations of the idea that spectrum can be regarded as property.

11. See Benkler, “Some Economics,” 44–47. The term “cooperation gain” was developed by Reed to describe a somewhat broader concept than “diversity gain” is in multiuser information theory.
12. *Spectrum Policy Task Force Report to the Commission* (Federal Communications Commission, Washington, DC, 2002); Michael K. Powell, “Broadband Migration III: New Directions in Wireless Policy” (Remarks at the Silicon Flatiron Telecommunications Program, University of Colorado at Boulder, October 30, 2002).

CHAPTER 4. The Economics of Social Production

1. Richard M. Titmuss, *The Gift Relationship: From Human Blood to Social Policy* (New York: Vintage Books, 1971), 94.
2. Kenneth J. Arrow, “Gifts and Exchanges,” *Philosophy & Public Affairs* 1 (1972): 343.

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3. Bruno S. Frey, *Not Just for Money: An Economic Theory of Personal Motivation* (Brookfield, VT: Edward Elgar, 1997); Bruno S. Frey, *Inspiring Economics: Human Motivation in Political Economy* (Northampton, MA: Edward Elgar, 2001), 52–72. An excellent survey of this literature is Bruno S. Frey and Reto Jegen, “Motivation Crowding Theory,” *Journal of Economic Surveys* 15, no. 5 (2001): 589. For a crystallization of the underlying psychological theory, see Edward L. Deci and Richard M. Ryan, *Intrinsic Motivation and Self-Determination in Human Behavior* (New York: Plenum, 1985).
4. Roland Bénabou and Jean Tirole, “Self-Confidence and Social Interactions” (working paper no. 7585, National Bureau of Economic Research, Cambridge, MA, March 2000).
5. Truman F. Bewley, “A Depressed Labor Market as Explained by Participants,” *American Economic Review (Papers and Proceedings)* 85 (1995): 250, provides survey data about managers’ beliefs about the effects of incentive contracts; Margit Osterloh and Bruno S. Frey, “Motivation, Knowledge Transfer, and Organizational Form,” *Organization Science* 11 (2000): 538, provides evidence that employees with tacit knowledge communicate it to coworkers more efficiently without extrinsic motivations, with the appropriate social motivations, than when money is offered for “teaching” their knowledge; Bruno S. Frey and Felix Oberholzer-Gee, “The Cost of Price Incentives: An Empirical Analysis of Motivation Crowding-Out,” *American Economic Review* 87 (1997): 746; and Howard Kunreuther and Douglas Easterling, “Are Risk-Benefit Tradeoffs Possible in Siting Hazardous Facilities?” *American Economic Review (Papers and Proceedings)* 80 (1990): 252–286, describe empirical studies where communities became less willing to accept undesirable public facilities (Not in My Back Yard or NIMBY) when offered compensation, relative to when the arguments made were policy based on the common weal; Uri Gneezy and Aldo Rustichini, “A Fine Is a Price,” *Journal of Legal Studies* 29 (2000): 1, found that introducing a fine for tardy pickup of kindergarten kids increased, rather than decreased, the tardiness of parents, and once the sense of social obligation was lost to the sense that it was “merely” a transaction, the parents continued to be late at pickup, even after the fine was removed.
6. James S. Coleman, “Social Capital in the Creation of Human Capital,” *American Journal of Sociology* 94, supplement (1988): S95, S108. For important early contributions to this literature, see Mark Granovetter, “The Strength of Weak Ties,” *American Journal of Sociology* 78 (1973): 1360; Mark Granovetter, *Getting a Job: A Study of Contacts and Careers* (Cambridge, MA: Harvard University Press, 1974); Yoram Ben-Porath, “The F-Connection: Families, Friends and Firms and the Organization of Exchange,” *Population and Development Review* 6 (1980): 1.
7. Nan Lin, *Social Capital: A Theory of Social Structure and Action* (New York: Cambridge University Press, 2001), 150–151.
8. Steve Weber, *The Success of Open Source* (Cambridge, MA: Harvard University Press, 2004).
9. Maurice Godelier, *The Enigma of the Gift*, trans. Nora Scott (Chicago: University of Chicago Press, 1999), 5.
10. Godelier, *The Enigma*, 106.

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11. In the legal literature, Robert Ellickson, *Order Without Law: How Neighbors Settle Disputes* (Cambridge, MA: Harvard University Press, 1991), is the locus classicus for showing how social norms can substitute for law. For a bibliography of the social norms literature outside of law, see Richard H. McAdams, “The Origin, Development, and Regulation of Norms,” *Michigan Law Review* 96 (1997): 338n1, 339n2. Early contributions were: Edna Ullman-Margalit, *The Emergence of Norms* (Oxford: Clarendon Press, 1977); James Coleman, “Norms as Social Capital,” in *Economic Imperialism: The Economic Approach Applied Outside the Field of Economics*, ed. Peter Bernholz and Gerard Radnitsky (New York: Paragon House Publishers, 1987), 133–155; Sally E. Merry, “Rethinking Gossip and Scandal,” in *Toward a Theory of Social Control, Fundamentals*, ed. Donald Black (New York: Academic Press, 1984).
12. On policing, see Robert C. Ellickson, “Controlling Chronic Misconduct in City Spaces: Of Panhandlers, Skid Rows, and Public-Space Zoning,” *Yale Law Journal* 105 (1996): 1165, 1194–1202; and Dan M. Kahan, “Between Economics and Sociology: The New Path of Deterrence,” *Michigan Law Review* 95 (1997): 2477.
13. An early and broad claim in the name of commons in resources for communication and transportation, as well as human community building—like roads, canals, or social-gathering places—is Carol Rose, “The Comedy of the Commons: Custom, Commerce, and Inherently Public Property,” *University Chicago Law Review* 53 (1986): 711. Condensing around the work of Elinor Ostrom, a more narrowly defined literature developed over the course of the 1990s: Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (New York: Cambridge University Press, 1990). Another seminal study was James M. Acheson, *The Lobster Gangs of Maine* (New Hampshire: University Press of New England, 1988). A brief intellectual history of the study of common resource pools and common property regimes can be found in Charlotte Hess and Elinor Ostrom, “Ideas, Artifacts, Facilities, and Content: Information as a Common-Pool Resource,” *Law & Contemporary Problems* 66 (2003): 111.

CHAPTER 5. Individual Freedom: Autonomy, Information, and Law

1. Robert Post, “Meiklejohn’s Mistake: Individual Autonomy and the Reform of Public Discourse,” *University of Colorado Law Review* 64 (1993): 1109, 1130–1132.
2. This conception of property was first introduced and developed systematically by Robert Lee Hale in the 1920s and 1930s, and was more recently integrated with contemporary postmodern critiques of power by Duncan Kennedy, *Sexy Dressing Etc.: Essays on the Power and Politics of Cultural Identity* (Cambridge, MA: Harvard University Press, 1993).
3. White Paper, “Controlling Your Network, A Must for Cable Operators” (1999), <http://www.cptech.org/ecom/openaccess/ciscor.html>.
4. Data are all based on FCC Report on High Speed Services, Appendix to Fourth 706 Report NOI (Washington, DC: Federal Communications Commission, December 2003).

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CHAPTER 6. Political Freedom Part 1: The Trouble with Mass Media

1. Jurgen Habermas, *Between Facts and Norms, Contributions to Discourse Theory of Law and Democracy* (Cambridge, MA: MIT Press, 1996).
2. Elizabeth Eisenstein, *The Printing Press as an Agent of Change* (New York: Cambridge University Press, 1979); Jeremy Popkin, *News and Politics in the Age of Revolution: Jean Luzac's Gazette de Leyde* (Ithaca, NY: Cornell University Press, 1989).
3. Paul Starr, *The Creation of the Media: Political Origins of Modern Communications* (New York: Basic Books, 2004), 33–46.
4. Starr, *Creation of the Media*, 48–62, 86–87.
5. Starr, *Creation of the Media*, 131–133.
6. Starr, *Creation of the Media*, 135.
7. The following discussion of the birth of radio is adapted from Yochai Benkler, “Overcoming Agoraphobia: Building the Commons of the Digitally Networked Environment,” *Harvard Journal of Law and Technology* 11 (Winter 1997–1998): 287. That article provides the detailed support for the description. The major secondary works relied on are Erik Barnouw, *A History of Broadcasting in the United States* (New York: Oxford University Press, 1966–1970); Gleason Archer, *History of Radio to 1926* (New York: Arno Press, 1971); and Philip T. Rosen, *Modern Stentors: Radio Broadcasters and the Federal Government, 1920–1934* (Westport, CT: Greenwood Press, 1980).
8. Robert Waterman McChesney, *Telecommunications, Mass Media, and Democracy: The Battle for the Control of U.S. Broadcasting, 1928–1935* (New York: Oxford University Press, 1993).
9. “Names of U.S. Dead Read on *Nightline*,” Associated Press Report, May 1, 2004, <http://www.msnbc.msn.com/id/4864247/>.
10. The numbers given here are taken from The Center for Responsive Politics, <http://www.opensecrets.org/>, and are based on information released by the Federal Elections Commission.
11. A careful catalog of these makes up the first part of C. Edwin Baker, *Media, Markets, and Democracy* (New York: Cambridge University Press, 2002).
12. Ben H. Bagdikian, *The Media Monopoly*, 5th ed. (Boston: Beacon Press, 1997), 118.
13. Peter O. Steiner, “Program Patterns and Preferences, and the Workability of Competition in Radio Broadcasting,” *The Quarterly Journal of Economics* 66 (1952): 194. The major other contribution in this literature is Jack H. Beebe, “Institutional Structure and Program Choices in Television Markets,” *The Quarterly Journal of Economics* 91 (1977): 15. A parallel line of analysis of the relationship between programming and the market structure of broadcasting began with Michael Spence and Bruce Owen, “Television Programming, Monopolistic Competition, and Welfare,” *The Quarterly Journal of Economics* 91 (1977): 103. For an excellent review of this literature, see Matthew L. Spitzer, “Justifying Minority Preferences in Broadcasting,” *South California Law Review* 64 (1991): 293, 304–319.

CHAPTER 7. Political Freedom Part 2: Emergence of the Networked Public Sphere

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3. Jensen, “Sinclair Fires Journalist”; Sheridan Lyons, “Fired Reporter Tells Why He Spoke Out,” *Baltimore Sun*, October 29, 2004.
4. The various posts are archived and can be read, chronologically, at http://www.talkingpointsmemo.com/archives/week_2004_10_10.php.
5. Duane D. Stanford, *Atlanta Journal-Constitution*, October 31, 2002, 1A.
6. Katherine Q. Seelye, “The 2002 Campaign: The States; Georgia About to Plunge into Touch-Screen Voting,” *New York Times*, October 30, 2002, A22.
7. Edward Walsh, “Election Day to Be Test of Voting Process,” *Washington Post*, November 4, 2002, A1.
8. *Washington Post*, December 12, 2002.
9. *Online Policy Group v. Diebold, Inc.*, 337 F. Supp. 2d 1195 (2004).
10. California Secretary of State Voting Systems Panel, Meeting Minutes, November 3, 2003, http://www.ss.ca.gov/elections/vsp_min_110303.pdf.
11. Eli Noam, “Will the Internet Be Bad for Democracy?” (November 2001), http://www.citi.columbia.edu/elinoam/articles/int_bad_dem.htm.
12. Eli Noam, “The Internet Still Wide, Open, and Competitive?” Paper presented at The Telecommunications Policy Research Conference, September 2003, http://www.tprc.org/papers/2003/200/noam_TPRC2003.pdf.
13. Federal Communications Commission, Report on High Speed Services, December 2003.
14. See Eszter Hargittai, “The Changing Online Landscape: From Free-For-All to Commercial Gatekeeping,” <http://www.eszter.com/research/pubs/hargittai-onlinelandscape.pdf>.
15. Derek de Solla Price, “Networks of Scientific Papers,” *Science* 149 (1965): 510; Herbert Simon, “On a Class of Skew Distribution Function,” *Biometrika* 42 (1955): 425–440, reprinted in Herbert Simon, *Models of Man Social and Rational: Mathematical Essays on Rational Human Behavior in a Social Setting* (New York: Garland, 1957).
16. Albert-László Barabási and Reka Albert, “Emergence of Scaling in Random Networks,” *Science* 286 (1999): 509.
17. Bernardo Huberman and Lada Adamic, “Growth Dynamics of the World Wide Web,” *Nature* 401 (1999): 131.
18. Albert-László Barabási, *Linked, How Everything Is Connected to Everything Else and What It Means for Business, Science, and Everyday Life* (New York: Penguin, 2003), 56–57. One unpublished quantitative study showed specifically that the skewness holds for political Web sites related to various hot-button political issues in the United States—like abortion, gun control, or the death penalty. A small fraction of the Web sites discussing these issues account for the large majority of links into them. Matthew Hindman, Kostas Tsioutsoulouklis, and Judy Johnson, “‘Googelarchy’: How a Few Heavily Linked Sites Dominate Politics on the Web,” July 28, 2003, <http://>

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 21. Gary W. Flake et al., “Self-Organization and Identification of Web Communities,” *IEEE Computer* 35, no. 3 (2002): 66–71. Another paper that showed significant internal citations within topics was Soumen Chakrabati et al., “The Structure of Broad Topics on the Web,” *WWW2002*, Honolulu, HI, May 7–11, 2002.
 22. Lada Adamic and Natalie Glance, “The Political Blogosphere and the 2004 Election: Divided They Blog,” March 1, 2005, <http://www.blogpulse.com/papers/2005/AdamicGlanceBlogWWW.pdf>.
 23. M.E.J. Newman, “The Structure and Function of Complex Networks,” *Society for Industrial and Applied Mathematics Review* 45, section 4.2.2 (2003): 167–256; S. N. Dorogovstev and J.F.F. Mendes, *Evolution of Networks: From Biological Nets to the Internet and WWW* (Oxford: Oxford University Press, 2003).
 24. This structure was first described by Andrei Broder et al., “Graph Structure of the Web,” paper presented at *www9* conference (1999), <http://www.almaden.ibm.com/webfountain/resources/GraphStructureintheWeb.pdf>. It has since been further studied, refined, and substantiated in various studies.
 25. Dill et al., “Self-Similarity in the Web” (San Jose, CA: IBM Almaden Research Center, 2001); S. N. Dorogovstev and J.F.F. Mendes, *Evolution of Networks*.
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 28. D. J. Watts and S. H. Strogatz, “Collective Dynamics of ‘Small World’ Networks,” *Nature* 393 (1998): 440–442; D. J. Watts, *Small Worlds: The Dynamics of Networks Between Order and Randomness* (Princeton, NJ: Princeton University Press, 1999).
 29. Clay Shirky, “Power Law, Weblogs, and Inequality” (February 8, 2003), http://www.shirky.com/writings/powerlaw_weblog.htm; Jason Kottke, “Weblogs and Power Laws” (February 9, 2003), <http://www.kottke.org/03/02/weblogs-and-power-laws>.
 30. Ravi Kumar et al., “On the Bursty Evolution of Blogspace,” *Proceedings of WWW2003*, May 20–24, 2003, <http://www2003.org/cdrom/papers/refereed/p477/p477-kumar/p477-kumar.htm>.
 31. Both of these findings are consistent with even more recent work by Hargittai, E., J. Gallo and S. Zehnder, “Mapping the Political Blogosphere: An Analysis of Large-Scale Online Political Discussions,” 2005. Poster presented at the International Communication Association meetings, New York.
 32. Harvard Kennedy School of Government, Case Program: “‘Big Media’ Meets ‘Bloggers’: Coverage of Trent Lott’s Remarks at Strom Thurmond’s Birthday Party,” http://www.ksg.harvard.edu/presspol/Research_Publications/Case_Studies/1731_o.pdf.

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34. Data taken from *CIA World Fact Book* (Washington, DC: Central Intelligence Agency, 2004).
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36. Amnesty International, People’s Republic of China, State Control of the Internet in China (2002).
37. A synthesis of news-based accounts is Babak Rahimi, “Cyberdissent: The Internet in Revolutionary Iran,” *Middle East Review of International Affairs* 7, no. 3 (2003).

CHAPTER 8. Cultural Freedom: A Culture Both Plastic and Critical

1. Karl Marx, “Introduction to a Contribution to the Critique of Hegel’s Philosophy of Right,” *Deutsch-Französischer Jahrbucher* (1844).
2. Bruce A. Ackerman, *Social Justice and the Liberal State* (New Haven, CT, and London: Yale University Press, 1980), 333–335, 141–146.
3. Michael Walzer, *Spheres of Justice: A Defense of Pluralism and Equality* (New York: Basic Books, 1983), 29.
4. Will Kymlicka, *Multicultural Citizenship: A Liberal Theory of Minority Rights* (Oxford: Clarendon Press, 1995), 76, 83.
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6. Encyclopedia.com is a part of Highbeam Research, Inc., which combines free and pay research services. Bartleby provides searching and access to many reference and high-culture works at no charge, combining it with advertising, a book store, and many links to Amazon.com or to the publishers for purchasing the printed versions of the materials.
7. Jack Balkin, “Digital Speech and Democratic Culture: A Theory of Freedom of Expression for the Information Society,” *New York University Law Review* 79 (2004): 1.

CHAPTER 9. Justice and Development

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2. Numbers are all taken from the *2004 Human Development Report* (New York: UN Development Programme, 2004).
3. Amartya Sen, *Development as Freedom* (New York: Knopf, 1999), 46–47.
4. Carol Tenopir and Donald W. King, *Towards Electronic Journals: Realities for Scientists, Librarians, and Publishers* (Washington, DC: Special Libraries Association, 2000), 273.

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5. Harold Varmus, *E-Biomed: A Proposal for Electronic Publications in the Biomedical Sciences* (Bethesda, MD: National Institutes of Health, 1999).
6. C. K. Prahald, *The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits* (Upper Saddle River, NJ: Wharton School of Publishing, 2005), 319–357, Section 4, “The ITC e-Choupal Story.”
7. For the sources of numbers for the software industry, see chapter 2 in this volume. IBM numbers, in particular, are identified in figure 2.1.
8. These arguments were set out most clearly and early in a public exchange of letters between Representative Villanueva Nunez in Peru and Microsoft’s representatives in that country. The exchange can be found on the Web site of the Open Source Initiative, http://www.opensource.org/docs/peru_and_ms.php.
9. A good regional study of the extent and details of educational deprivation is Mahbub ul Haq and Khadija ul Haq, *Human Development in South Asia 1998: The Education Challenge* (Islamabad, Pakistan: Human Development Center).
10. Robert Evenson and D. Gollin, eds., *Crop Variety Improvement and Its Effect on Productivity: The Impact of International Agricultural Research* (New York: CABI Pub., 2002); results summarized in Robert Evenson and D. Gollin, “Assessing the Impact of the Green Revolution, 1960–2000,” *Science* 300 (May 2003): 758–762.
11. Jack R. Kloppenburg, Jr., *First the Seed: The Political Economy of Plant Biotechnology 1492–2000* (Cambridge and New York: Cambridge University Press, 1988), table 2.2.
12. USDA National Agriculture Statistics Survey (2004), <http://www.usda.gov/nass/aggraphs/fncht3.htm>.
13. First Report of the GM Science Review Panel, *An Open Review of the Science Relevant to GM Crops and Food Based on the Interests and Concerns of the Public*, United Kingdom, July 2003.
14. Robert E. Evenson, “GMOs: Prospects for Productivity Increases in Developing Countries,” *Journal of Agricultural and Food Industrial Organization* 2 (2004): article 2.
15. Elliot Marshall, “A Deal for the Rice Genome,” *Science* 296 (April 2002): 34.
16. Jikun Huang et al., “Plant Biotechnology in China,” *Science* 295 (2002): 674.
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CHAPTER 10. Social Ties: Networking Together

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5. *Ibid.*, 42–43, tables CH-WFAM, CH-WFRN.
6. See John Markoff and A. Newer, “Lonelier Crowd Emerges in Internet Study,” *New York Times*, February 16, 2000, section A, page 1, column 1.
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9. Manuel Castells, *The Rise of Networked Society* 2d ed. (Malden, MA: Blackwell Publishers, Inc., 2000).
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11. Robert Kraut et al., “Internet Paradox Revisited,” *Journal of Social Issues* 58, no. 1 (2002): 49.
12. Keith Hampton and Barry Wellman, “Neighboring in Netville: How the Internet Supports Community and Social Capital in a Wired Suburb,” *City & Community* 2, no. 4 (December 2003): 277.
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14. Useful surveys include: Paul DiMaggio et al., “Social Implications of the Internet,” *Annual Review of Sociology* 27 (2001): 307–336; Robyn B. Driskell and Larry Lyon, “Are Virtual Communities True Communities? Examining the Environments and Elements of Community,” *City & Community* 1, no. 4 (December 2002): 349; James E. Katz and Ronald E. Rice, *Social Consequences of Internet Use: Access, Involvement, Interaction* (Cambridge, MA: MIT Press, 2002).
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 16. Jeffery I. Cole et al., “The UCLA Internet Report: Surveying the Digital Future, Year Three” (UCLA Center for Communication Policy, January 2003), 33, 55, 62, <http://www.ccp.ucla.edu/pdf/UCLA-Internet-Report-Year-Three.pdf>.
 17. Pew Internet and Daily Life Project (August 11, 2004), report available at http://www.pewinternet.org/PPF/r/131/report_display.asp.
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 19. Barry Wellman, “The Social Affordances of the Internet.”
 20. A review of Ito’s own work and that of other scholars of Japanese techno-youth culture is Mizuko Ito, “Mobile Phones, Japanese Youth, and the Re-Placement of Social Contact,” forthcoming in *Mobile Communications: Re-negotiation of the Social Sphere*, ed., Rich Ling and P. Pedersen (New York: Springer, 2005).
 21. Dana M. Boyd, “Friendster and Publicly Articulated Social Networking,” *Conference on Human Factors and Computing Systems (CHI 2004)* (Vienna: ACM, April 24–29, 2004).
 22. James W. Carrey, *Communication as Culture: Essays on Media and Society* (Boston: Unwin Hyman, 1989).
 23. Clay Shirky, “A Group Is Its Own Worst Enemy,” published first in *Networks, Economics and Culture* mailing list July 1, 2003.

PART III. Policies of Freedom at a Moment of Transformation

1. For a review of the literature and a substantial contribution to it, see James Boyle, “The Second Enclosure Movement and the Construction of the Public Domain,” *Law and Contemporary Problems* 66 (Winter-Spring 2003): 33–74.
2. Early versions in the legal literature of the skepticism regarding the growth of exclusive rights were Ralph Brown’s work on trademarks, Benjamin Kaplan’s caution over the gathering storm that would become the Copyright Act of 1976, and Stephen Breyer’s work questioning the economic necessity of copyright in many industries. Until, and including the 1980s, these remained, for the most part, rare voices—joined in the 1980s by David Lange’s poetic exhortation for the public domain; Pamela

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Samuelson's systematic critique of the application of copyright to computer programs, long before anyone was paying attention; Jessica Litman's early work on the political economy of copyright legislation and the systematic refusal to recognize the public domain as such; and William Fisher's theoretical exploration of fair use. The 1990s saw a significant growth of academic questioning of enclosure: Samuelson continued to press the question of copyright in software and digital materials; Litman added a steady stream of prescient observations as to where the digital copyright was going and how it was going wrong; Peter Jaszi attacked the notion of the romantic author; Ray Patterson developed a user-centric view of copyright; Diane Zimmerman revitalized the debate over the conflict between copyright and the first amendment; James Boyle introduced erudite criticism of the theoretical coherence of the relentless drive to propertization; Niva Elkin Koren explored copyright and democracy; Keith Aoki questioned trademark, patents, and global trade systems; Julie Cohen early explored technical protection systems and privacy; and Eben Moglen began mercilessly to apply the insights of free software to hack at the foundations of intellectual property apologia. Rebecca Eisenberg, and more recently, Arti Rai, questioned the wisdom of patents on research tools to biomedical innovation. In this decade, William Fisher, Larry Lessig, Litman, and Siva Vaidhyanathan have each described the various forms that the enclosure movement has taken and exposed its many limitations. Lessig and Vaidhyanathan, in particular, have begun to explore the relations between the institutional battles and the freedom in the networked environment.

CHAPTER 11. The Battle Over the Institutional Ecology of the Digital Environment

1. Paul Starr, *The Creation of the Media: Political Origins of Modern Communications* (New York: Basic Books, 2004).
2. Ithiel de Sola-Pool, *Technologies of Freedom* (Cambridge, MA: Belknap Press, 1983), 91–100.
3. *Bridgeport Music, Inc. v. Dimension Films*, 2004 U.S. App. LEXIS 26877.
4. Other layer-based abstractions have been proposed, most effectively by Lawrence Solum and Minn Chung, *The Layers Principle: Internet Architecture and the Law*, University of San Diego Public Law Research Paper No. 55. Their model more closely hews to the OSI layers, and is tailored to being more specifically usable for a particular legal principle—never regulate at a level lower than you need to. I seek a higher-level abstraction whose role is not to serve as a tool to constrain specific rules, but as a map for understanding the relationships between diverse institutional elements as they relate to the basic problem of how information is produced and exchanged in society.
5. The first major treatment of this phenomenon was Michael Froomkin, “The Internet as a Source of Regulatory Arbitrage” (1996), <http://www.law.miami.edu/froomkin/articles/arbitr.htm>.
6. Jonathan Krim, “AOL Blocks Spammers’ Web Sites,” *Washington Post*, March 20,

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- 2004, p. A01; also available at <http://www.washingtonpost.com/ac2/wp-dyn?page=article&contentId=A9449-2004Mar19¬Found=true>.
7. FCC Report on High Speed Services, December 2003 (Appendix to Fourth 706 Report NOI).
 8. 216 F.3d 871 (9th Cir. 2000).
 9. *National Cable and Telecommunications Association v. Brand X Internet Services* (decided June 27, 2005).
 10. *Turner Broad. Sys. v. FCC*, 512 U.S. 622 (1994) and *Turner Broad. Sys. v. FCC*, 520 U.S. 180 (1997).
 11. *Chesapeake & Potomac Tel. Co. v. United States*, 42 F.3d 181 (4th Cir. 1994); *Comcast Cablevision of Broward County, Inc. v. Broward County*, 124 F. Supp. 2d 685, 698 (D. Fla., 2000).
 12. The locus classicus of the economists' critique was Ronald Coase, "The Federal Communications Commission," *Journal of Law and Economics* 2 (1959): 1. The best worked-out version of how these property rights would look remains Arthur S. De Vany et al., "A Property System for Market Allocation of the Electromagnetic Spectrum: A Legal-Economic-Engineering Study," *Stanford Law Review* 21 (1969): 1499.
 13. *City of Abilene, Texas v. Federal Communications Commission*, 164 F.3d 49 (1999).
 14. *Nixon v. Missouri Municipal League*, 541 U.S. 125 (2004).
 15. Bill Number S. 2048, 107th Congress, 2nd Session.
 16. *Felten v. Recording Indust. Assoc. of America Inc.*, No. CV- 01-2669 (D.N.J. June 26, 2001).
 17. *Metro-Goldwyn-Mayer v. Grokster, Ltd.* (decided June 27, 2005).
 18. See Felix Oberholzer and Koleman Strumpf, "The Effect of File Sharing on Record Sales" (working paper), http://www.unc.edu/cigar/papers/FileSharing_March2004.pdf.
 19. Mary Madden and Amanda Lenhart, "Music Downloading, File-Sharing, and Copyright" (Pew, July 2003), http://www.pewinternet.org/pdfs/PIP_Copyright_Memo.pdf.
 20. Lee Rainie and Mary Madden, "The State of Music Downloading and File-Sharing Online" (Pew, April 2004), http://www.pewinternet.org/pdfs/PIP_Filesharing_April_04.pdf.
 21. See 111 F.Supp.2d at 310, fns. 69–70; *PBS Frontline* report, <http://www.pbs.org/wgbh/pages/frontline/shows/hollywood/business/windows.html>.
 22. A. M. Froomkin, "Semi-Private International Rulemaking: Lessons Learned from the WIPO Domain Name Process," <http://www.personal.law.miami.edu/froomkin/articles/TPRC99.pdf>.
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 24. *MAI Systems Corp. v. Peak Computer, Inc.*, 991 F.2d 511 (9th Cir. 1993).
 25. Lawrence Lessig, *Free Culture: How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity* (New York: Penguin Press, 2004).
 26. Jessica Litman, "Electronic Commerce and Free Speech," *Journal of Ethics and Information Technology* 1 (1999): 213.

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28. *Eldred v. Ashcroft*, 537 U.S. 186 (2003).
29. *Bridgeport Music, Inc. v. Dimension Films*, 383 F.3d 390 (6th Cir.2004).
30. 383 F.3d 390, 400.
31. Mark A. Lemley, "Intellectual Property and Shrinkwrap Licenses," *Southern California Law Review* 68 (1995): 1239, 1248–1253.
32. 86 F.3d 1447 (7th Cir. 1996).
33. For a more complete technical explanation, see Yochai Benkler, "An Unhurried View of Private Ordering in Information Transactions," *Vanderbilt Law Review* 53 (2000): 2063.
34. James Boyle, "Cruel, Mean or Lavish? Economic Analysis, Price Discrimination and Digital Intellectual Property," *Vanderbilt Law Review* 53 (2000); Julie E. Cohen, "Copyright and the Jurisprudence of Self-Help," *Berkeley Technology Law Journal* 13 (1998): 1089; Niva Elkin-Koren, "Copyright Policy and the Limits of Freedom of Contract," *Berkeley Technology Law Journal* 12 (1997): 93.
35. *Feist Publications, Inc. v. Rural Telephone Service Co., Inc.*, 499 U.S. 340, 349–350 (1991).
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