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Lecture

FREEDOM IN THE COMMONS: TOWARDS A POLITICAL ECONOMY OF INFORMATION

YOCHAI BENKLER†

I. A MOMENT OF OPPORTUNITY

In 1999, George Lucas released a bloated and much maligned “prequel” to the Star Wars Trilogy, called *The Phantom Menace*. In 2001, a disappointed Star Wars fan made a more tightly cut version, which almost eliminated a main sidekick called Jar-Jar Binks and subtly changed the protagonist—rendering Anakin Skywalker, who was destined to become Darth Vader, a much more somber child than the movie had originally presented. The edited version was named “The Phantom Edit.” Lucas was initially reported amused, but later clamped down on distribution.¹ It was too late. The Phantom Edit had done something that would have been unimaginable a decade earlier. One creative individual took Hollywood’s finished product as raw material and extracted from within it his own film. Some, at least, thought it was a better film. Passed from one person to another, the film became a samizdat cultural object in its own right.

The Phantom Edit epitomizes both the challenge and the promise of what has variously been called “the new economy,” “the information economy,” or, more closely tied to the recent technological perturbation, “the Internet economy.” It tells us of a hugely successful company threatened by one creative individual—a fan, not an enemy. It tells us of the tremendous potential of the Internet to liberate

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† Professor of Law, Yale Law School. The lecture was originally delivered as the Second Annual Meredith and Kip Frey Lecture in Intellectual Property at Duke Law School on March 26, 2002. I am indebted to Jamie Boyle, David Lange, and Jerry Reichman for inviting me to give the lecture and for their thoughtful comments. I am also indebted to Bruce Ackerman, Ed Baker, Jack Balkin, and Owen Fiss for their comments on the written version.

1. Richard Fausset, *A Phantom Menace?*, L.A. TIMES, June 1, 2002, Part 6 (Calendar), at 1; J. Hoberman, *I Oughta Be In Pictures*, N.Y. TIMES, July 15, 2001, § 6 (Magazine), at 13.

individual creativity and enrich social discourse by thoroughly democratizing the way we produce information and culture. And it tells us how powerful proprietors can weigh in to discipline this unruly creativity; to silence the many voices it makes possible.

In this Lecture, I want to outline two fundamental social aspects of the emerging economic-technological condition of the networked information economy: the economic—concerned with the organization of production and consumption in this economy, and the political—concerned with how we pursue autonomy, democracy, and social justice in this new condition. We have seen over the past few years glimpses of this emerging economy and of its emerging political implications. We have seen the surprising growth of free software, an oasis of anarchistic production that is beating some of the world's richest corporations at their own game—making reliable high-quality software.² We have seen a Russian computer programmer jailed for weeks in the United States pending indictment for writing software that lets Americans read books that they are not allowed to read.³ These and many other stories sprinkled throughout the pages of the technology sections of our daily newspapers hint at a deep transformation that is taking place, and at an epic battle over how this transformation shall go and who will come out on top when the dust settles.

Let us, then, talk about this transformation. Let us explore the challenge that the confluence of technological and economic factors has presented for the liberal democratic societies of the world's most advanced market economies. Let us think about how we might understand the stakes of this transformation in terms of freedom and justice.

In a nutshell, in the networked information economy—an economy of information, knowledge, and culture that flow through society over a ubiquitous, decentralized network—productivity and growth can be sustained in a pattern that differs fundamentally from the industrial information economy of the twentieth century in two crucial characteristics. First, nonmarket production—like the Phantom Edit, produced by a fan for the fun of it—can play a much more important

2. For a good general history of the emergence of free software, see generally GLYN MOODY, *REBEL CODE: [THE INSIDE STORY OF LINUX AND THE OPEN SOURCE REVOLUTION]* (2001).

3. Amy Harmon, *New Visibility for 1998 Copyright Protection Law, with Online Enthusiasts Confused and Frustrated*, N.Y. TIMES, Aug. 13, 2001, at C4.

role than it could in the physical economy. Second, radically decentralized production and distribution, whether market-based or not, can similarly play a much more important role. Again, the Phantom Edit is an example of such decentralized production—produced by one person rather than by a corporation with a chain of command and an inventory of property and contract rights to retain labor, capital, finance, and distribution outlets. In both these ways, the networked information economy can be more open and admit of many more diverse possibilities for organizing production and consumption than could the physical economy. As free software has shown us, these modes of production are not a plaything. Most of what we do on the Internet runs on software produced by tens of thousands of volunteers, working together in a way that is fundamentally more closely related to the fan who wrote the Phantom Edit than to the LucasArts Entertainment Company.

None of this is to say that nonmarket and decentralized production will completely displace firms and markets. That is not the point. The point is that the networked information economy makes it possible for nonmarket and decentralized models of production to increase their presence *alongside* the more traditional models, causing some displacement, but increasing the diversity of ways of organizing production rather than replacing one with the other.

This diversity of ways of organizing production and consumption, in turn, opens a range of new opportunities for pursuing core political values of liberal societies—democracy, individual freedom, and social justice. These values provide three vectors of political morality along which the shape and dimensions of any liberal society can be plotted. Because, however, they are often contradictory rather than complementary, the pursuit of each of these values places certain limits on how we conceive of and pursue the others, leading different liberal societies to respect them in different patterns. It would be difficult, for example, to say whether the United States or Germany is more “liberal,” though we could coherently say that Germany respects social justice more than the United States and that the United States respects individual autonomy more than Germany. It would also be fairly simple to say that both are more “liberal” along all three dimensions than, say, Saudi Arabia.

An underlying efficient limit on how we can pursue *any* mix of arrangements to implement our commitments to democracy, autonomy, and equality, however, has been the pursuit of productivity and growth. As the great ideological divides of the nineteenth and twenti-

eth centuries seem to fade, we have come to toil in the fields of political fulfillment under the limitation that we should not give up too much productivity in pursuit of these values. Singapore is perhaps an extreme example of this tradeoff, but all nations with advanced capitalist economies are making some such tradeoff. Predictions of how well we will be able to feed ourselves are a central consideration in thinking about whether, for example, to democratize wheat production or to make it more egalitarian. Much though some may value the political vision of the yeoman farmer, we have not been willing to abandon the economies of scale captured by agribusiness. Efforts to advance workplace democracy have also often foundered on the shoals—real or imagined—of these limits, as have many plans for redistribution in the name of social justice. Market-based production has often seemed simply too productive to tinker with.

The most advanced economies have now made two parallel shifts that attenuate the limitations that market-based production places on the pursuit of core liberal political values. The first move, in the making for over a century, is the move to the information economy—an economy centered on information (financial services, accounting, software, science) and cultural (films, music) production, and the manipulation of symbols (e.g., from making sneakers to branding them and manufacturing the cultural significance of the Swoosh). The second move, of more recent vintage, is the move to a communications environment built on cheap processors with high computation capabilities, interconnected in a pervasively networked environment—the phenomenon we associate with the Internet. This second shift allows nonmarket production to play an increasing role in the information and cultural production sector, organized in a radically more decentralized pattern than was true of this sector in the twentieth century. The first shift means that the surprising patterns of production made possible by the networked environment—both nonmarket and radically decentralized—will emerge, if permitted to emerge, at the core, rather than at the periphery, of the most advanced economies. Permitting these patterns to emerge could therefore have a profound effect on our conceptions of the ultimate limits on how social relations can be organized in productive, growth-oriented economies.

Together these shifts can move the boundaries of liberty along all three vectors of liberal political morality. They enable democratic discourse to flow among constituents, rather than primarily through controlled, concentrated, commercial media designed to sell advertising, rather than to facilitate discourse. They allow individuals to build

their own windows on the world, rather than seeing it largely through blinders designed to keep their eyes on the designer's prize. They allow passive consumers to become active users of their cultural environment, and they allow employees, whose productive life is marked by following orders, to become peers in common productive enterprises. And they can ameliorate some of the inequalities that markets have often generated and amplified.

There is no benevolent historical force, however, that will inexorably lead the technological-economic moment to develop towards an open, diverse, liberal equilibrium. If the transformation occurs, it will lead to substantial redistribution of power and money from the twentieth-century, industrial producers of information, culture, and communications—like Hollywood, the recording industry, and the telecommunications giants—to a widely diffuse population around the globe. None of the industrial giants of yore are going to take this redistribution lying down. Technology will not overcome their resistance through some insurmountable progressive impulse. The reorganization of production, and the advances it can bring in democracy, autonomy, and social justice will emerge, if it emerges, only as a result of social and political action. To make it possible, it is crucial that we develop an understanding of what is at stake and what are the possible avenues for social and political action. But I have no illusions, and offer no reassurances, that any of this will in fact come to pass. I can only say that without an effort to focus our attention on what matters, the smoke and mirrors of flashy toys and more convenient shopping will be as enlightening as Aldous Huxley's soma and feelies, and as socially constructive as his orgy porgy.

Let us think, then, of our being thrust into this moment as a challenge. We are in the midst of a technological, economic, and organizational transformation that allows us to renegotiate the terms of freedom, justice, and productivity in the information society. How we shall live in this new environment will largely depend on policy choices that we will make over the next decade or two. To be able to understand these choices, to be able to make them well, we must understand that they are part of a social and political choice—a choice about how to be free, equal, and productive human beings under a new set of technological and economic conditions. As economic policy, letting yesterday's winners dictate the terms of economic competition tomorrow is disastrous. As social policy, missing an opportunity to enrich democracy, freedom, and equality in our society, while maintaining or even enhancing our productivity, is unforgivable.

II. SOME ECONOMIC PARAMETERS OF THE MOMENT

A. *How We Got Here*

For over 150 years, new communications technologies have tended to concentrate and commercialize the production and exchange of information, while extending the geographic and social reach of information distribution networks. When large-volume mechanical presses and the telegraph were introduced, newspapers changed from small-circulation, local efforts, into mass media—intended to reach ever larger and more dispersed audiences. Of practical necessity, as the size of the audience and its geographic and social dispersion increased, public discourse adapted to an increasingly one-way model. Information and opinion flowed from ever more capital-intensive commercial and professional producers to consumers who, over time, became passive and undifferentiated. This model was easily adopted and amplified by radio, television, and later, cable and satellite communications.

The Internet presents the possibility of a radical reversal of this long trend. It is the first modern communications medium that expands its reach by decentralizing the distribution function. Much of the physical capital that embeds the intelligence in the network is diffused and owned by end users. Network routers and servers are not qualitatively different from the computers that end users use, unlike broadcast stations or cable systems that are vastly different from the televisions to which they transmit. What I hope to persuade you of today is that this basic change in the material conditions of information and cultural production and distribution can have quite substantial effects on how we perceive and pursue core values in modern liberal societies.

In the wake of the hype-economy of the late 1990s, it is all too easy to treat any such claim about an Internet “revolution” as a figment of an overstimulated imagination. The dazed economy makes it seem as though the major leap—if there ever was one—has already happened, and that “normal”—gradual, predictable, nondisruptive—technological progression has set in. But to think so would be a mistake. It would be a mistake not, primarily, in the domain of technological prognostication. It would be a mistake of paying too much attention to e-commerce and stock values, which are reflections of the utility of the new medium to old modes of production and exchange. What we need instead is a focus on the basic characteristics of the

medium around which information and cultural production can now be organized, and on how this medium interacts with an economy that has advanced to the stage where information and cultural production form its core.

For the moment, I will suggest that we call the combination of these two trends—the radical decentralization of intelligence in our communications network and the centrality of information, knowledge, culture, and ideas to advanced economic activity—the *networked information economy*. By “networked information economy,” I mean to describe an emerging *stage* of what in the past has been called more generally “the information economy” or “the information society.” I would use the term in contradistinction to the earlier stage of the information economy, which one could call the “*industrial information economy*.”

The “information economy,” conjuring up the Big Five (accounting firms or recording companies, your choice), began as a response to the dramatic increase in the importance of usable information as a means of controlling our economy. James Beniger’s study of what he called *The Control Revolution* showed how the dramatic increase in physical production and distribution capabilities in the nineteenth century created a series of crises of control over the material world—crises resolved through the introduction of more efficient modes of producing and using information to control physical processes and the human behavior that relates to them.⁴ Ranging from the introduction of telegraph to control the rolling stock of railroads, which, as Chandler has shown,⁵ made Western Union the first nationwide prototype for modern corporate organization, to the invention of double-entry bookkeeping, scientific management, and brand advertising, that economy was largely driven by a concern with control of material flows into, through, and out of the new, unmanageably productive factories. The “cultural” offshoots of that moment—Hollywood, the broadcast networks, and the recording industry—were also built around maintaining control over the use and transmission paths of their products. For the first time, music or performance could be captured in a thing, a thing that could be replicated millions of times, and which therefore had to be made to capture the attention and imagination of millions. This first stage might best be thought of as the “*industrial information economy*.”

4. JAMES R. BENIGER, *THE CONTROL REVOLUTION: TECHNOLOGICAL AND ECONOMIC ORIGINS OF THE INFORMATION SOCIETY* 291–398 (1986).

5. ALFRED D. CHANDLER, *THE VISIBLE HAND* 79–205 (1977).

“The networked information economy” denotes a new stage of the information economy, to succeed this older industrial stage. It is a stage in which we can harness many more of the richly diverse paths and mechanisms for cultural transmission that were muted by the capital structure of communications, a capital structure that had led to the rise of the concentrated, controlled form, whether commercial or state-run. The most important aspect of this new stage is the possibility it opens for reversing the control focus of the information economy. In particular, it permits the reversal of two trends in cultural production, trends central to the project of control: concentration and commercialization. Although the claim that the Internet leads to some form or another of “decentralization” is not new, the fundamental role played in this transformation by the emergence of non-market, nonproprietary production and distribution is often overlooked, if not willfully ignored.

I imagine you sitting there, managing a bemused nod at my utopianism as you contemplate AOL Time Warner, or Microsoft’s share in Comcast’s purchase of AT&T Broadband. Decentralization and nonmarket production indeed! But bear with me. That the dinosaurs are growing bigger in response to ecological changes does not mean that, in the end, it will not be these warm-blooded furry things that will emerge as winners.

What, then, would make one think that sustaining productivity and growth are consistent with a shift towards decentralized and nonmarket-based modes of production? And how would these organizational characteristics affect the economic parameters within which practical political imagination and fulfillment must operate in the digitally networked environment?

Certain characteristics of information and culture lead us to understand them as “public goods” in the technical economic meaning of the term, rather than as pure “private goods” or standard “economic goods.” Economists usually describe “information” as “nonrival.” The analytic content of the term applies to all cultural forms, and it means that the marginal cost of producing information, knowledge, or culture is zero. Once a scientist has established a fact, or once Tolstoy has written *War and Peace*, neither the scientist nor Tolstoy need spend a single second on producing additional *War and Peace* manuscripts or studies for the one-hundredth, one-thousandth, or one-millionth user. Economists call such goods “public,” because a market will never produce them if priced at their marginal cost—zero. Given that welfare economics claims that a market is producing a

good efficiently only when it is pricing the good at its marginal cost, a good that can *never* be sold both at a positive price and at its marginal cost is fundamentally a candidate for substantial nonmarket production.⁶

Information has another quirky characteristic in the framework of mainstream welfare economics—it is both the input and the output of its own production process. This has important implications that make property rights and market-based production even less appealing as the exclusive mechanisms for information and cultural production than they would have been if the sole quirky characteristic of information were the public goods problem. These characteristics form the standard economic justification for the substantial role of government funding, nonprofit research, and other nonproprietary production in our information production system, and have been understood as such at least since Nobel Laureate Kenneth Arrow identified them in this context four decades ago.

The standard problems that economics reveals with purely market-based production of information and culture have now been coupled with a drastic decline in the physical capital costs associated with production and distribution of this public good. As I mentioned, one primary input into information or cultural production is pre-existing information, which is itself a public good. The other inputs are human creativity and the physical capital necessary to generate, fix, and communicate transmissible units of information and culture—like a recording studio or a television network. Ubiquitously available cheap processors have radically reduced the necessary capital input costs. What can be done now with a desktop computer would once have required a professional studio. This leaves individual human beings closer to the economic center of our information production system than they have been for over a century and a half. And what places human beings at the center is not something that is homogeneous and largely fungible among people—like their physical capacity to work or the number of hours they can stay awake. Those fungible attributes of labor were at the center of the industrial model that Fredrick Taylor's scientific management and Henry Ford's assembly line typified. Their centrality to industrial production in the physical economy was an important basis for concentration and the organiza-

6. Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in *THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS* 609 (1962).

tion of production in managed firms. In contrast, human beings are central in the networked information economy because of attributes in which they differ widely—creativity, wisdom, taste, social experience—as well as their effort and attention. And human beings use these personal attributes not only in markets, but also in nonmarket relations. From our homes to our communities, from our friendships to our play, we live life and exchange knowledge and ideas in many more diverse relations than those mediated by the market. In the physical economy, these relationships were largely relegated to spaces outside of our production system. The promise of the networked information economy and the digitally networked environment is to bring this rich diversity of living smack into the middle of our economy and our productive lives.

In the physical economy, we settled more or less on two modes of making production decisions. The first was the market. The second was corporate hierarchy. Markets best coordinated some economic activities, while managers were better at organizing others. The result was that most individuals lived their productive life as part of corporate organizations, with relatively limited control over how, what, or when they produced; and these organizations, in turn, interacted with each other largely through markets. We came to live much of the rest of our lives selecting from menus of goods, heavily advertised to us to try to fit our consumption habits to the decisions that managers had made about investment in product lines.

B. Examples of Change

What is emerging in the networked information economy is a wider scope for two very different phenomena. The first is a much-expanded role for nonmarket enterprises familiar to us from the real world—both professional, like National Public Radio, nonprofit academic research, philharmonic orchestras, or public libraries, and non-professional, like reading groups or fan clubs. The second phenomenon is radical decentralization, which can be seen at the simplest level in the information available on the World Wide Web from an amazing variety of individuals and networks of individuals. The most radically new and unfamiliar element in this category is *commons-based peer production* of information, knowledge, and culture, whose most visible instance has been free software. Here, digital networks seem to be permitting the emergence of radically new relationships between individuals and their information environment, and, more

dramatically, radically new roles that individuals play in the production process.⁷

The role of nonmarket enterprises in information and cultural production has always been great, though appreciation for its centrality has waned over the past two decades. Think, most obviously, of science and news. In science, perhaps more than in any other cultural form, the nonprofit academic enterprise, funded by government grants, philanthropy, and teaching, has been the center of basic science, while market-based research was at the periphery. In most fields, the best scientists make the most fundamental advances in academic settings. Firms then take this science, refine it, and then apply it. They do very valuable and important work, but the core of the scientific enterprise has been people who forgo monetary rewards and work instead for glory, immortality, or the pure pleasure of learning something new. If you think of news, the story is more mixed, with commercial providers like the *New York Times* or CNN playing a tremendously important role. Still, public professional producers—like NPR or PBS in the United States, or the BBC in the United Kingdom—play a crucial role, far beyond what we usually see in, for example, automobile or wheat production.

The difference that the digitally networked environment makes is its capacity to increase the efficacy, and therefore the importance, of many more, and more diverse, nonmarket producers. A Google search⁸ for “presidential debates,” for example, shows CNN as the first commercial site to show up, but it is tenth on the list, while C-SPAN, a nonprofit funded by commercial cable providers shows up fifth. Both are preceded and surrounded by nonmarket organizations, like the Commission on Presidential Debates, a museum, an academic site, and a few political action sites. If you search for “democracy” in Google, PBS is the first media organization to show up, at ninth place, and no commercial entity shows up until a story in *The Atlantic* magazine some ninety-five links into the search. A number of the most highly ranked sites are nonprofit sites devoted to disseminating information about candidates. Consider for example what DemocracyNet, the League of Women Voters website, created for the city-

7. For a more complete description of commons-based peer production, see generally Yochai Benkler, *Coase's Penguin, or, Linux and the Nature of the Firm*, 112 YALE L.J. 369 (2002).

8. The following sentences describe the state of the searches at the time this Lecture was delivered, in March of 2002.

council elections in Raleigh, North Carolina in 2001.⁹ What one sees as compared to, say, the local television news broadcasts—is a facility that allows individuals to post questions in writing to the candidates and that allows the candidates to respond directly. For example, we see each candidate’s response to the question of whether or not there should be a living-wage ordinance. The site does not provide pages on pages of analysis—one might see a line or two, although some candidates may have written more in response to questions that are more central to their agenda. But you actually see the difference between the candidates on this particular question. It is worth going to the site and looking around. The point here is that because of the low capital costs, a nonprofit organization is capable of providing information down to the level of city council elections that is richer than anything we have gotten from the commercial broadcast media. There is, then, both an increase in the number of nonmarket producers and an increase in their effectiveness.

The networked information economy departs more dramatically from the industrial information economy in the possibilities it opens for radically decentralized collaborative production, a phenomenon I call “peer production.” Peer production describes a process by which many individuals, whose actions are coordinated neither by managers nor by price signals in the market, contribute to a joint effort that effectively produces a unit of information or culture. Now this is not completely new. Science is built by many people contributing incrementally—not operating on market signals, not being handed their research marching orders by their dean—but independently deciding what to research, bringing their collaboration together, and creating science. The *Oxford English Dictionary* was created in roughly the same way in the nineteenth century—laboriously and over many years. But what we see in the networked information economy is a dramatic increase in the importance and the centrality of information produced in this way.

Free software has become the quintessential instance of peer production in the past few years. Over 85 percent of emails are routed using the sendmail software that was produced and updated in this way. Over the past six years the Apache web server software has risen from being nonexistent to capturing over 60 percent of the market in server software. Choosing the server software that runs one’s site is

9. DemocracyNet, at <http://www.dnet.org> (last visited Apr. 12, 2003) (on file with the *Duke Law Journal*).

not a situation in which a few hundred or a few thousand dollars will cause a company to adopt a particular application, but superior performance will, and it is in such a market that we see tremendous adoption of software produced by peer production. Similarly, Windows NT and Sun's Solaris are steadily losing ground to the GNU/Linux operating system, which is produced in this way and already runs on some 30 percent of servers connected to the Web.

While free software is the most visible instance of peer production, in fact, peer production is ubiquitous in the digitally networked environment. We see it happening all around. Think of the web itself. Go to Google, and plug in any search request. The particular collection of information you see did not exist before you actually ran the search, and now it exists on your search page. How was it produced? One nonprofit, another person who is a hobbyist, a third company that has as part of its business model to provide certain information for free—all sorts of individuals and groups, small and large, combine on your Google results page to provide you the information you wanted.

But we also see this phenomenon occur less diffusely as well.¹⁰ The Mars “clickworkers” project was an experiment run by NASA that allowed 85,000 people to collaborate on mapping Mars craters.¹¹ People looked at images of Mars's surface online and mapped craters, and after six months, when NASA did an analysis comparing the results from the Internet to the mapping done by the trained Ph.D.s they had used previously, they described the outcomes as “practically indistinguishable.”¹² Massive multiplayer online games, like EverQuest or Ultima Online, are another example. There, thousands or tens of thousands of people play a game whose effect is to tell a story together, instead of going to the movies and receiving the story as a finished good.¹³

Or compare “Wikipedia” (www.wikipedia.com), an online encyclopedia produced by distributed contributors, to encyclopedia.com, produced by Columbia Encyclopedia. Look up the term “copyright” on encyclopedia.com and you see “right granted by statute to the

10. The descriptions in the following paragraphs are capsules of more complete descriptions of these peer production enterprises in Benkler, *supra* note 7, at 381–400. Documentation and references for the descriptions can similarly be found there.

11. *Id.* at 384 (citation omitted).

12. *Id.*

13. *Id.* at 389–90.

author," etc., and there is a bit of analysis, and some discussion of the Berne Convention, for example, and so on. Now we go to Wikipedia, enter the same search term, and we see a similar copyright discussion. One might agree or disagree with it, as one might, as a professional, agree or disagree with any short encyclopedia definition. But it is there, it is plausible, it may even be better than the definition offered in encyclopedia.com, and it is collaboratively produced by about 2000 volunteers.

But how are we supposed to know whether any of this is any good? What creates relevance and accreditation? The Internet also provides instances of relevance and accreditation happening through distributed peer production. Two examples are the Open Directory Project (dmoz.org), a collaboration of about 40,000 people working to create a human-edited directory based on the model of Yahoo, and Slashdot, a technology news site collaboratively produced by about 250,000. Again let me just give you a feel. Let us use the directory to find Internet law journals. Yahoo lists three Internet-related law journals under the relevant category: *Internet Law Journal*, *Journal of Online Law*, and *Pike and Fischer Internet Law and Regulation*. For comparison, there are twenty-nine different Internet law journals under the same category in the Open Directory Project, including all the law school journals. Slashdot is another extremely sophisticated example of how relevance is manufactured by people essentially voting and commenting on one another. Slashdot uses a system of peer review, not among a small group of academics, but among a quarter of a million users.¹⁴

This Friday, for example, there was some discussion on Slashdot of something near and dear to the hearts of some people here, the Security Systems Standards and Certification Act (SSSCA),¹⁵ an extension of the Digital Millennium Copyright Act (DMCA)¹⁶ that would effectively require all hardware to be designed so that it could enforce intellectual property rights or restrictions imposed by intellectual property owners. We see a post early on, listing some sources on effects of the SSSCA, and then over the next two days, 792 comments

14. *Id.* at 393–96 (citing Open Source Dev. Network, Inc., Slashdot: News for Nerds, Stuff That Matters, at <http://slashdot.org>).

15. This was circulated as a staff working draft around the date that the Lecture was given. Copies of the then-circulating draft can be found at <http://cryptome.org/sssc.htm>. A later version of this bill was introduced as Consumer Broadband and Digital Television Promotion Act, S. 2048, 107th Cong. (2002).

16. Pub. L. No. 105-304, 112 Stat. 2860 (1998) (codified in scattered sections of 17 U.S.C.).

were created by different people reading the story. How do we know which of these 792 we might want to read? They are all peer reviewed, and we can organize them in the order in which they were ranked by the peer reviewers—by other users who say whether the comment is high or low quality, relevant or irrelevant, etc. It is not that one person votes it up or down, but ten, fifteen, or maybe more people vote, and the comment moves according to their combined judgments. At the top of the list, for example, we see a list of things you ought to take into consideration in writing your congressperson to tell them to oppose this bill, including strategic considerations: “if your congress-critter is a democrat, do this, and if your congress-critter is a republican, do that”—and then continued discussions about whether the letter should be typed or handwritten, and so on, again organized in terms of how useful the conversation is determined to be by the system of peer review. Managing the flow of comments from a quarter of a million users is an immensely complex task, and one that Slashdot performs, like the Open Directory Project, through radically distributed production.

How do these decentralized relevance- and accreditation-production enterprises compare to market mechanisms for ascertaining relevance? Perhaps most interesting in this regard is the competition between Google and Overture. Google ranks search results based on counting “votes,” as it were, that is, based on how many other websites point to a given site. The more people who think your site is sufficiently valuable to link to it, the higher you are ranked by Google’s algorithm. Again, accreditation occurs on a widely distributed model, in this case produced as a byproduct of people building their own websites and linking to others. Overture is a website that has exactly the opposite approach. It ranks sites based on how much the site pays the search engine. So we have a little experiment, the market vs. distributed voting. How do these compare?

Here is what Google produces when we search for “Barbie”: We see barbie.com, with “Activities and Games for Girls Online!”, and we see barbiebazaar.com, with “Barbie, Barbie dolls, Barbie doll magazine, etc.,” but then very quickly we start seeing sites like adiosbarbie.com, “A Body Image Site for Every Body.” We see more Barbie collectibles, but then we see “Armed and Dangerous, Extra Abrasive: Hacking Barbie with the Barbie Liberation Organization.” Further down we see “The Distorted Barbie,” and all sorts of other sites trying to play with Barbie.

What happens when we run the same search on Overture, the search engine used by Go.com, which is the Internet portal produced by Disney? We get “Barbies, New and Preowned” at Internet-doll.com, BarbieTaker wholesale Barbie store, “Toys for All Ages” at Amazon.com, and so on. The Barbie Liberation Organization is nowhere to be found. Whether Overture is better than Google’s list depends on whether you are shopping for Barbie dolls or interested in understanding Barbie as a cultural phenomenon, but it certainly is not normatively neutral, and it certainly offers a narrower range of information sources. Unsurprisingly, different things emerge when the market determines relevance than when people vote on what is most important to them. For those who find the choices of market actors a persuasive source of insight, it is at least interesting to note that AOL replaced Overture with Google as its search engine in 2002, and uses the Open Directory Project database for its directory.¹⁷

C. *The Impact of the Change*

In all these communities of production, individuals band together, contributing small or large increments of their time and effort to produce things they care about. They do so for a wide range of reasons—from pleasure, through socially and psychologically rewarding experiences, to economic calculation aimed at receiving consulting contracts or similar monetary rewards. At this point, what is important to see is that these efforts mark the emergence of a new mode of production, one that was mostly unavailable to people in either the physical economy (barring barn raising and similar traditional collective efforts in tightly knit communities) or in the industrial information economy. In the physical world, capital costs and physical distance—with its attendant costs of communication and transportation—mean that most people cannot exercise much control over their productive capacities, at least to the extent that to be effective they must collaborate with others. The digitally networked environment enables more people to exercise a greater degree of control over their work and productive relationships. In doing so, they increase the productivity of our information and cultural production system beyond what an information production system based solely on the proprietary industrial model could produce.

17. Benkler, *supra* note 7, at 392.

III. SOME THOUGHTS ON THE POLITICAL MORALITY

Assume, for a moment, that you are willing to accept, even provisionally, my basic economic claim that the information and culture component of our economy will be able to sustain, or even improve, productivity and growth, while at the same time allowing individuals to participate in many more diversely organized productive enterprises, both market-based and nonmarket-based, than was possible in the industrial information economy. How does the possibility of reducing the extent to which information and culture is owned, and increasing the extent to which it is produced outside the commercial, concentrated system, affect the domains of democracy, autonomy, and social justice?

Recall my little mapping of liberal societies relative to each other along vectors of how well they fulfilled the core liberal values of autonomy, democracy, and social justice. You could imagine Saudi Arabia perhaps somewhere close to the origin, and you could imagine the U.S. and Germany placed elsewhere, with the U.S. higher up along the autonomy axis, the two of them roughly equivalent on the dimension of democracy, though in different ways, and Germany farther out on the social-justice axis. In practical political debate, productivity intersects with these three dimensions, creating an efficient limit on the possibility of pragmatic fulfillment of different values. We are not going to move toward democratic wheat production because we want to eat bread. We have severe limits, in the United States in particular, on social justice, which are usually justified in terms of productivity. Productivity sets a limit on the political imagination.

Now, if it is the case, as I suggest, that productivity can be sustained with nonproprietary and nonmarket production, and if it is the case, as I will suggest to you in the remainder of the talk, that (1) proprietary- and market-based production have systematic dampening effects on democracy, autonomy, and social justice, and (2) nonproprietary commons-based production, as well as other nonmarket production, alleviate these dampening effects, then two things follow. First, if the networked information economy is permitted to emerge from the institutional battle, it will enable an outward shift of the limits that productivity places on the political imagination. Second, a society committed to *any positive combination* of the three values needs to adopt robust policies to facilitate these modes of production, because facilitating these modes of production does not represent a choice between productivity and liberal values, but rather an oppor-

tunity actually to relax the efficient limit on the plausible set of political arrangements available given the constraints of productivity.

So let me speak about the relationship between democracy, autonomy, and social justice and the choice between a more concentrated and commercial information and cultural production system and one that is more decentralized and includes more nonmarket production.

A. *Democracy*

The industrial model of mass media communications that dominated the twentieth century suffers from two types of democratic deficits that could be alleviated by a greater role for commons-based production. The first deficit concerns effective political participation, the second deficit concerns cultural politics, or the question of who gets to decide the cultural meaning of social choices and conditions. Both deficits, and the potential role of emerging trends in information production in redressing them, are already present in the examples I gave of the emergence of nonmarket and radically decentralized production. DemocracyNet and Adios Barbie are the most obvious.

The primary thrust of the first deficit is the observation that in the mass-mediated environment only a tiny minority of players gets to participate in political public discourse and to affect decisionmaking directly. As Howard Jonas, chairman of a growing telecommunications company, incautiously described his ambitions, "Sure I want to be the biggest telecom company in the world, but it's just a commodity. . . . I want to be able to form opinion. By controlling the pipe, you can eventually get control of the content."¹⁸ The high cost of mass media communications translates into a high cost of a seat at the table of public political debate, a cost that renders individual participation all but impossible. The digitally networked environment makes it possible for many individuals and groups of similar beliefs to band together, express their views, organize, and gain much wider recognition than they could at a time when gaining recognition required acceptance by the editors of the mass media.

This claim is the most familiar of the political economy claims that I will make here. It largely tracks the fairly well-known critique of mass media and democracy, in particular regarding media concen-

18. Ann Wozencraft, *For IDT, The Bid Flameouts Light Its Fire*, N.Y. TIMES, Jan. 28, 2002, at C4.

tration, that has been part of academic and public discourse over media policy throughout at least the second half of the twentieth century.¹⁹ The primary difference represented in my position is that the solutions that the Internet makes possible are radically different from those that dominated the twentieth-century debate. In the second half of the twentieth century, concerns about the effects of mass media on political discourse resolved into support for government regulation of the mass media. In the United States, solutions took the form of limited regulation of media companies—such as the fairness doctrine in broadcast or various carriage requirements in cable. In Europe, they took the form of more extensive government ownership or control of these media. These regulatory solutions, however, created opportunities for government abuse and political manipulation, while at the end of the day providing a pale reflection of widespread participation in discourse.

The possibility of sustainable, widely accessible and effective communications by individuals or groups, organized on- or offline, makes possible direct democratic discourse. It creates direct means for the acquisition of information and opinion. It offers the tools for its production and dissemination to a degree unattainable in the mass-mediated environment, no matter how well regulated. Now, this widespread, cacophonous constellation of voices is not everyone's idea of an attractive democracy. When the *Los Angeles Times* and the *Washington Post* sued a conservative website called The Free Republic Forum for copyright violations, the judge clearly had in mind the role of "the Press" in the industrial model as central to democratic discourse, while regarding discourse among actual individual constituents as secondary.²⁰ The website enabled conservative participants to post stories they had read in various papers and then comment on these stories—sometimes about the liberal prejudices of the very media outlet they used. The newspapers argued that engaged

19. *E.g.*, C. EDWIN BAKER, *ADVERTISING AND A DEMOCRATIC PRESS* (1994) (arguing that advertising distorts and diminishes the mass media's contribution to a free and democratic society and suggesting solutions); C. EDWIN BAKER, *MEDIA, MARKETS, AND DEMOCRACY* (2002) (discussing what a lack of paternalism and a commitment to democracy means for media policy); NEIL POSTMAN, *AMUSING OURSELVES TO DEATH: PUBLIC DISCOURSE IN THE AGE OF SHOW BUSINESS* (1985) (lamenting the centrality of television as the preeminent American news medium).

20. *See* *Los Angeles Times v. Free Republic*, No. CV-7840 MMM (AJWx), 2000 U.S. Dist. LEXIS 5669, at *38-39 (C.D. Cal. Apr. 5, 2000) (holding that the "[d]efendants have not met their burden of demonstrating that verbatim copying of all or a substantial portion of plaintiffs' articles is necessary to achieve their critical purpose").

discourse may well be fine, but not with *their* materials. The judge agreed, and prohibited the site from posting copies of the newspapers' stories as part of its discussion forum. In the judge's mind, the only serious threat to democracy would arise if the newspapers were prevented from making as much money as possible to fund their journalistic role. The actual political discourse that she was inhibiting took a back seat in her democratic calculus.

The *Free Republic* case crystallizes the democratic stakes in the debate over the relative role of nonproprietary, nonmarket production and the exchange of information. Maintaining a heavily market-based system requires definition and enforcement of property rights. These rights, in turn, usually take the form of burdening individual constituents and groups in their own exchanges, so that they may be made to pay the market-based provider. The core questions from the perspective of democratic theory are these: what are the respective roles of large, commercial media and smaller scale, nonmarket fora in democracy? Which is more valuable to democratic discourse? The strongest arguments in favor of strong media come from Sunstein and Netanel. Sunstein's core claim is that the mass media provide a common language, a common agenda, and a set of images with which to create a common discourse. Without these, he argues, we shall be a nation of political narcissists, incapable of true political discourse.²¹ Netanel's most important claim is that the resources and market-based economic heft that the commercial mass media have is absolutely necessary, in the presence of powerful government and powerful business interests, to preserve the independence and critical force of the Fourth Estate as watchdog of our democratic system of governance.²²

The relationship between democracy and the structure of information production cannot, however, be considered as though we were designing an ideal state. The beginning of the twenty-first century is not typified by a robust public sphere populated by newspaper readers debating the news of the day and commentary in the idealized coffeehouses of London. Today's society is a thoroughly unattractive system for democratic communication, where money talks and everybody who wants to speak must either raise vast sums of money or rely on a large endowment. The commercial mass media that we

21. CASS SUNSTEIN, *REPUBLIC.COM* 99-103 (2001).

22. Neil Weinstock Netanel, *Market Hierarchy and Copyright in Our System of Free Expression*, 53 *VAND. L. REV.* 1879, 1919 (2000).

actually have suffer from two major deficits—the Berlusconi effect (or, more charitably the Bloomberg effect), of powerful media owners using their media to achieve political power, and the Baywatch effect, the depoliticization of public conversation. To ask the creators of “Survivor” and “Who Wants to Marry a Millionaire?” to be the source of our common political discourse is sad. To rely on them to be the Cerberus of a democracy otherwise conceived as lifeless enough to be largely a power struggle among bureaucratic and business elites is tragic. As against *this* backdrop, the shift to a networked information economy is a substantial improvement. The wealth of detailed information made possible through DemocracyNet, the richness of conversation on a site like Kuro5hin²³ perhaps will not change the political world, but they will offer substantial outlets for more attractive democratic practices and information flows than we saw in the twentieth century.

What radical decentralization of information production promises is the correction of some of the main maladies of the electronic mass media—the centralization of power to make meaning, the increased power of corporate interest in influencing the agenda, and the inescapable sound-bite character of the discussion.

The second democratic deficit of the mass-mediated communications environment concerns what some, like Niva Elkin Koren²⁴ and William Fisher,²⁵ have called “semiotic democracy,” a term originally developed by John Fiske to describe the extent to which a medium permits its users to participate in structuring its message.²⁶ In the mass media model, a small group of actors, focused on maintaining and shaping consumer demand, has tremendous sway over the definition of meaning in society—what symbols are used and what they signify. The democracy implicated by this aspect is not political participation in formal governance, but rather the extent to which a society’s constituents participate in making sense of their society and their lives. In the mass media environment, meaning is made centrally. Commercial mass media owners, and other professional makers of meaning who

23. Kuro5hin, Front Page, at <http://www.kuro5hin.org> (last visited Apr. 12, 2003) (on file with the *Duke Law Journal*).

24. Niva Elkin-Koren, *Cyberlaw and Social Change: A Democratic Approach to Copyright Law in Cyberspace*, 14 *CARDOZO ARTS & ENT. L.J.* 215, 233 (1996). Elkin-Koren called it participation in meaning-making processes.

25. William Fisher, *Theories of Intellectual Property*, in *NEW ESSAYS IN THE LEGAL AND POLITICAL THEORY OF PROPERTY* 193 (Stephen R. Munzer ed., 2001).

26. JOHN FISKE, *TELEVISION CULTURE* 95 (1987).

can buy time from them, largely define the terms with which we think about life and develop our values. Television sitcoms, Barbie dolls, and movies define the basic set of symbols with which most of us can work to understand our lives and our society. In the pervasively networked environment, to the contrary, meaning can be produced collaboratively, by anyone, for anyone. Again, as with public political discourse, this will result in a more complicated and variegated, perhaps less coherent, story about how we should live together as constituents of society. But it will be a picture that *we* made, not one largely made for us and given to us finished, prepackaged, and massively advertised as “way cool.”

B. Autonomy

Autonomy, or individual freedom, is the second value that I suggest can be substantially served by increasing the portion of our information environment that is a commons and by facilitating non-market production. Autonomy means many things to many people, and some of these conceptions are quite significantly opposed to others. Nonetheless, from an autonomy perspective the role of the individual in commons-based production is superior to property-based production almost regardless of the conception one has of that value.

First, the mass media model, and its core of an owned and controlled communications infrastructure, provides substantial opportunities for individuals to be manipulated by the owners of the media. That is, for any number of business reasons, media owners can decide to disclose or reveal information to their consumers, or change the efficacy with which certain information is available to certain users. When they do so, they can, if they choose to, shape the options that individuals know about. For example, in a 1999 technical white paper,²⁷ Cisco Systems described a new router that it planned to sell to cable broadband providers. The paper described a variety of advantages that this “policy router” could offer providers. For example, if users decided that they wanted to subscribe to a service that “pushes” information to their computer, the Cisco paper tells the broadband provider:

27. Center for Digital Democracy, *Cisco 1999 White Paper: Controlling Your Network—A Must for Cable Operators*, at <http://www.democraticmedia.org/issues/openaccess/cisco.html> (last visited Apr. 12, 2003) (on file with the *Duke Law Journal*).

You could restrict the incoming push broadcasts as well as subscribers' outgoing access to the push site to discourage its use. At the same time, you could promote your own or a partner's services with full speed features to encourage adoption of your services.²⁸

For example, AOL Time Warner could, as a practical matter, speed up access to CNN.com, while slowing down Fox News. News Corp. would be left to pursue a similar deal with Comcast, and so forth.

Such shaping of the information flow to an individual in order to affect what the individual knows about, and thereby to affect that person's likely behavior, is quite plainly an offense against the individual's substantive capacity to plan and pursue a life plan that is his own, rather than scripted for him by another. When the opportunities to manipulate in this way emerge as a product of laws and public policy—such as an FCC decision not to require cable broadband operators to allow competitors to offer services that, for example, might refrain from using policy routers is a crisp example²⁹—the affront to autonomy should be recognized under more or less any conception of autonomy. Conversely, policies that introduce into the network significant commons-based elements, over which no one exercises control and which are therefore open for any individual to use to build their own window on the world, represent an important mechanism for alleviating the autonomy deficit created by an exclusively proprietary communications system.

Second, decentralization of information production and distribution has the capacity qualitatively to increase both the range and diversity of information individuals can access. In particular, the commercial mass media model has generally presented a relatively narrow range of options about how to live, and these options have been mostly variations on the mainstream. This is so largely because the economies of that model require large audiences to pay attention to anything distributed, constraining the content to that which would fit and attract large audiences. Decentralization of information production, and in particular expansion of the role of nonmarket production, makes information available from sources not similarly constrained by the necessity of capturing economies of scale. This will not

28. *Id.*

29. FCC Appropriate Regulatory Treatment for Broadband Access to the Internet over Cable Facilities, 67 Fed. Reg. 18848 (Apr. 17, 2002); FCC Inquiry Concerning High-Speed Access to the Internet over Cable and Other Facilities; Internet over Cable Declaratory Ruling, 67 Fed. Reg. 18907 (Apr. 17, 2002).

necessarily increase the number of different ways people will actually live, but it will increase the number of different ways of living that each one knows about, and thereby enhance their capacity to choose knowledgeably.

A different type of effect of commons-based nonmarket production, in particular peer production, on autonomy is relevant only within a narrower set of conceptions of autonomy—those usually called “substantive.” These are conceptions of autonomy that recognize that individuals are always significantly constrained—by genes, environment, and social and economic constraints—and consider the institutions of a society in terms of their effect on the relative role that individuals can play in planning and pursuing their own life plan. The networked information economy promises the possibility of an expansion of elements of autonomous choice into domains previously more regimented by the decisions of firm managers in the market. In particular, the shift can alter two central organizational constraints on how our lives are shaped—the organization of production and the organization of consumption. Much of our day-to-day time is occupied with, and much of our well being shaped by, production and consumption, work and play. In the twentieth century, the economics of mass production led to a fairly regimented workday for most people, at the end of which most people went into a fairly regimented pattern of consumption and play at the mall or in front of the television set. Autonomy in these domains was largely limited to consumer sovereignty—that is, the ability to select finished goods from a range of products available in usefully reachable distribution channels.

Peer production and otherwise decentralized nonmarket production can fundamentally alter the producer/consumer relationship with regard to culture, entertainment, and information. We are seeing the emergence of a new category of relationship to information production and exchange—that of “users.” Users are individuals who are sometimes consumers, sometimes producers, and who are substantially more engaged participants, both in defining the terms of their productive activity and in defining what they consume and how they consume it. To the extent that people spend more of their production and consumption time in this ambiguous category of “user,” they can have a greater autonomy in self-defining their productive activity, and in making their own consumption goods. The substantive capacity of individuals to control how their life goes—day to day, week to week—would increase to cover aspects of life previously unavailable

for self-governance by individuals seeking to put together an autonomously conceived and lived life.

C. Justice

Finally, as we think about the relationship between the structure of information and cultural production and liberal society, there is the question of how the transition to more commons-based production will affect social justice, or equality. Here in particular it is important to retain a cautious perspective as to how much can be changed by reorganizing our information production system. Raw poverty and social or racial stratification will not be substantially affected by these changes. Education will do much more than a laptop and a high speed Internet connection in every home, though these might contribute in some measure to avoiding increasing inequality in the advanced economies, where opportunities for both production and consumption may increasingly be known only to those connected.

For some individuals and societies, where access to capital, not education, is a primary barrier to development, however, there is some promise that a substantial commons in the information economy will provide valuable opportunities. Linux, for example, is spreading more quickly in China and Southeast Asia than in North America, and is widely used to train software engineers. I doubt, though, that it will lead to a fundamental change in the structural and historical reasons for the sustained existence of poverty in advanced economies, or for the sustained gap between developed and developing nations. So my consideration of the benefits of the transition to a digitally networked environment, when talking about equality, is less ambitious than it was with regard to democracy and freedom, both of which are more centrally affected by the structure of the information and cultural environment we inhabit as citizens and individuals. I simply hope to identify those improvements in this domain that I see as possible, recognizing that they are likely modest.

There are a number of potential benefits—in terms of social justice—to organizing a substantial component of our communications and information environment as a commons, in which nonmarket production can take on a more important role. These gains fall into categories that might be understood as liberal—or concerned with equality of opportunity in some form or another—and social-democratic, or concerned with the universal provision of relatively substantial elements of welfare.

A central attribute of liberal theories of justice is that they treat differences in wealth as permissible, while providing some justification for redistribution in the form of compensating for undeserved wealth differentials. John Rawls's theory of justice, for example, both requires and limits redistribution to the extent necessary to make the worst-off class as well off as it can be.³⁰ In Bruce Ackerman's theory of social justice, inequality can in principle be justifiable if and when it arises from the different outcomes people reach by following their life plans with equal endowments and under equal constraints, such as those imposed by genetic or educational background or by access to transactional facilities.³¹ As a practical matter, this translates into redistribution plans aimed at alleviating these baseline inequalities—none of which meet his core requirement of being justifiable in neutral terms—in the constraints under which individuals pursue their goals.

Under either of these theories, exclusive rights in ideas or expressions, or for that matter in communications infrastructure, are unjustifiable to the extent that they are not plainly necessary to sustain productivity and growth. In Rawls's framework, we would not justify exclusive rights in information, culture, or communications facilities if doing so would raise the cost of access, unless we knew that doing so would increase productivity so as, given appropriate redistribution, to improve the condition of those worst off in society. But if it appears, as it is beginning to appear, that enabling substantial commons-based production will *enhance*, rather than retard, productivity and growth, then to the extent that this is true, *justice* (as well as growth) would require us to prefer a framework where all are equally privileged to use a set of information and communications resources and outputs to one where all resources and outputs in these domains are subject to a price.

The argument for creating commons wherever sustainable is clearer still in Ackerman's framework. First, commons in infrastructure and information and cultural resources form a baseline equal endowment, available for all to use in pursuit of their goals. They form a resource set that somewhat ameliorates the real-world constraints on the attainment of justice in a liberal society—to wit, the inequality in wealth that meets us when we are born into society. Commons in information and communications facilities are no panacea for inequality in initial endowments, but they do provide a relatively simple and sus-

30. JOHN RAWLS, A THEORY OF JUSTICE 11–17 (1971).

31. BRUCE A. ACKERMAN, SOCIAL JUSTICE IN THE LIBERAL STATE 24–30 (1980).

tainable way of giving everyone equal access to one important set of resources. Second, commons in communications infrastructure provide a transactional setting that ameliorates some of the inequalities in transactional capabilities that Ackerman identifies as a focus for liberal redistribution. Differences in the capacity to acquire information about the world, to transmit one's own preferences or proposals, and to form and reform common enterprises with others can significantly disadvantage an individual's opportunities to go through life on equal footing with others. If AOL Time Warner differentiates between what is easily accessible to users and what is not, and sells that differentiation either to high-end users or to marketers, then one's wealth endowment will be a substantial determinant of the flexibility and quality of the communications and transactional constraints one faces. A ubiquitously available high-speed commons in the network, and open access to resources and outputs of the information production system, mute this effect.

Less clear is the contribution made by policies aimed at realizing the viability of commons-based nonmarket production to equality in the "social-democratic" sense of providing decent access to a substantial level of services to everyone, regardless of wealth. There is, of course, Sen's baseline argument that famines do not occur in democracies,³² and hence the improvement in the quality of democratic discourse may lead to some improvement in the minimal endowments available to everyone. Beyond this derivative from democracy, however, the effects of the emergence of commons-based and nonmarket production have two different transmission media—the market and nonmarket sectors. The expansion in scope and efficacy of the nonmarket sector suggests that in the domain of information, knowledge, and culture, a more substantial level of services and goods will be available from sources insensitive to the wealth of users, which relate instead to more evenly distributed attributes—some intangible, like desires or values shared with providers, others tangible, like time or attention. Insofar as this is true, increasing the role of commons-based nonmarket production will serve the social-democratic conception of equality.

The effect on market providers is more muted, and largely resides in the improvement of the functioning of the market in information and culture that would result from decentralization. Specifically,

32. Amartya Sen, *The Economics of Life and Death*, SCI. AM., May 1993, at 40; Amartya Sen, *Freedoms and Needs*, NEW REPUBLIC, Jan. 10 & 17, 1994, at 31, 34.

intellectual property rights, and rights in traditional wired infrastructure and those emerging in wireless infrastructure, usually function as more or less limited monopoly rights. Universal service policies and fair use rights in copyright have served only partially to counteract the market power these rights have created and sustained. My proposals for a core common infrastructure are likely to lower the capital costs of resources necessary for information and cultural production for market providers as well as for nonmarket actors.

Building such a commons would therefore add a more competitive layer of goods and services from market-based sources, as well as nonmarket sources, thereby providing a wider range of information and cultural goods at lower cost. On the consumption side this has an unusual flavor as an argument within a social-democratic framework. Proposing a mechanism that will increase competition and decrease the role of government-granted and regulated monopolies is not exactly the traditional social-democratic way. But lower prices are a mechanism for increasing the welfare of those at the bottom of the economic ladder, and in particular, competition in the provision of a zero-marginal-cost good, to the extent it eventually drives the direct price of access and use to zero, will have this effect. More importantly, access to such resources, free of the usual capital constraints, will permit easier access to production opportunities for some in populations traditionally outside the core of the global economy—particularly in developing nations. Such access could provide, over the long term, somewhat greater equity in the distribution of wealth globally, as producers in peripheral economies take these opportunities to compete through a globally connected distribution medium, access to which is relatively unaided by wealth endowments.

D. The Battle over the Institutional Ecology

We are in the midst of a pitched political battle over the spoils of the transformation to a digitally networked environment and an economy increasingly centered on the production and exchange of information, knowledge, and culture. Stakeholders from the older industrial information economy are using legislation, litigation, and international treaties to retain the old structure of organizing production so that they can continue to control the empires they built in the old production system. Copyright law and other intellectual property, broadcast law and spectrum management policy, e-commerce law and domain-name management are all being tugged and warped to fit the size of the industrial model organizations of yes-

teryear. In the process, they are stifling the potential evolution of widely distributed and nonmarket-based information production and exchange. The Leviathan that combines ownership over all three layers of the communications environment—AOL Time Warner—offers a glimpse at the logical alternative to an open commons. It exemplifies a fully integrated, proprietary information production and exchange system that, in order to extract the social value of the human communication it makes possible, controls all layers of the information environment in which its consumers operate.

What decentralized and nonmarket information production generally, and peer production in particular, need, is a space free of the laws developed to support market- and hierarchy-based production. In the late eighteenth and early nineteenth centuries, market-based production was replacing artisan and guild-based production, and law developed the framework that that transition needed—modern property and contract law. In the late nineteenth and early twentieth centuries, larger-scale production in corporate hierarchies was necessary to coordinate the complex production decisions that technology had made possible. Law developed to accommodate these properties by developing corporate law, antitrust law, labor law, securities laws, and later, consumer protection law. Some of the newer laws had to conflict with, and partly displace, contract and property law. One example is the power that corporate law gives managers to make decisions independent of the wishes of those traditionally seen as “the owners” of the corporation, its shareholders. Similarly, labor law and consumer protection law partially displaced contract law. National policy too was harnessed to advance railroad construction, electrification, and eventually the highway system that this new, larger-scale system of production and distribution of material goods required.

As we enter the twenty-first century, law and policy must once again develop to accommodate newly emerging modes of production. The primary need is to develop a *core common infrastructure*—a set of resources necessary to the production and exchange of information, which will be available as commons—unowned and free for all to use in pursuit of their productive enterprises, whether or not market-based. Building the core common infrastructure will require a combination of both legal and policy moves to develop a series of sustainable commons in the information environment, stretching from the very physical layer upon which it rests—the radio frequency spectrum—to its logical and content layers. The idea is not to replace the owned infrastructure, but rather to build alongside it an open alterna-

tive. Just as roads do not replace railroads or airport landing slots, the core common infrastructure will be open to be used by all, and biased in favor of none.

At the physical layer, we should focus on two primary policy objectives. The first is to permit the free utilization of radio frequencies, so as to develop a market in end-user-owned equipment that will create an ownerless network. The dramatic emergence of WiFi over the past year or so points in the general direction, but metaphorically, think of this option as one that replaces railroads—owned and managed infrastructure—with sidewalks, roads, and highways—infrastructure that is open for all who have the necessary equipment—a car, bike, or legs. The main difference is that the infrastructure in spectrum will be built by individual and private equipment owners, more like the Internet than like the public highway system, and will have an even more decentralized capital investment structure than the Internet because physical connectivity itself will be provided cooperatively, by individuals.

The second policy in the physical-layer objective is to begin to move towards public investment in open infrastructure, alongside the private infrastructure. A variety of municipalities, frustrated with the slow rate of broadband deployment, in particular in the last mile, have begun to work on deploying fiber to the home networks. Chicago CityNet is probably the most ambitious effort, in terms of scope, hoping to use the city's own purchasing power to drive investment in fiber, which would then be available on a nondiscriminatory basis for all to use.³³

At the logical and content layer, we are confronted with the enclosure movement that James Boyle has so eloquently described and criticized,³⁴ and that David Lange saw many years ago when he first shone a light on the public domain.³⁵ This movement encompasses a series of moves in the DMCA, the SSSCA, and the Uniform Computer Information Transactions Act;³⁶ the struggles over trademark dilution, software and business methods patents, and database protec-

33. City of Chicago, Chicago CivicNet, at <http://www.chicagocivicnet.net> (last visited Apr. 21, 200) (on file with the *Duke Law Journal*).

34. James Boyle, *The Second Enclosure Movement and the Construction of the Public Domain*, 66 LAW & CONTEMP. PROBS. 33, 33–74 (Winter/Spring 2003).

35. David Lange, *Recognizing the Public Domain*, 44 LAW & CONTEMP. PROBS. 147, 147, 150 (Autumn 1981).

36. UCITA Online, at <http://www.ucitaonline.com> (last visited Apr. 21, 2003) (on file with the *Duke Law Journal*).

tion, which no one has discussed more completely and lucidly than Jerry Reichman;³⁷ the move to create all sorts of common-law doctrines regarding linking and trespass to chattels; the question of copyright-term extension; the idea of RAM copies; the emerging “right to read” movement that Jessica Litman diagnosed years ago;³⁸ and the shift toward criminalization in information law (which emerges because when you shift towards a networked information economy, everyone can potentially be a competitor because of radical decentralization of production, and the only way to control an entire population is through criminal law) that she diagnosed more recently.³⁹ All these trends are aspects of the fight over the enclosure movement, which is the main institutional battleground where the conflict between the industrial information giants and the emerging networked information economy is being fought.

In all these fields, we must restrain the ever-onward surge of prohibition and regulation on cultural production that has pervaded the 1990s. At all these places, we must protect and expand the public domain and the right of all human beings to be creative in the cultural environment into which fate has delivered them. At the logical layer in particular, we could also adopt more active policies, similar to those we have for public funding of science. Most promising in this regard are ideas for introducing a National Software Foundation, perhaps within the National Science Foundation, that will fund software development projects on condition that the fruits be licensed as free software, and the adoption of a government procurement policy that would require that software written under government contract be released as free software.

These are all very specific changes—in spectrum and broadband infrastructure deployment policy, and in exclusive rights to information and related regulatory arrangements—changes intended to clear a legal space for a sustainable commons in the information environment. But these are all contingent proposals, good for today, hopefully for tomorrow. My more general point is, I believe, more stable.

37. E.g., J. H. Reichman and Paul Uhler, *Database Protection at the Crossroads: Recent Developments and Their Impact on Science and Technology*, 14 BERKELEY TECH. L.J. 793, 794–838 (1999).

38. Jessica Litman, *The Exclusive Right to Read*, 13 CARDOZO ARTS & ENT. L.J. 29, 32–33 (1994).

39. Jessica Litman, *Electronic Commerce and Free Speech*, 1 J. ETHICS & INFO. TECH. 213, 219 (1999), available at <http://www.law.wayne.edu/litman/papers/freespeech.pdf>.

CONCLUSION

We are at a moment in our history at which the terms of freedom and justice are up for grabs. We have an opportunity to improve the way we govern ourselves—both as members of communities and as autonomous individuals. We have an opportunity to be more just at the very core of our economic system. The practical steps we must take to reshape the boundaries of the possible in political morality and to improve the pattern of liberal society will likely improve productivity and growth through greater innovation and creativity. Instead of seizing these opportunities, however, we are sleepwalking. We shuffle along, taking small steps in the wrong direction, guided by large political contributions, lobbyists, and well-financed legal arguments stretching laws written for a different time, policy arguments fashioned for a different economy. The stakes are too high, however, for us to take our cues from those who are well adapted to be winners in the economic system of the previous century. The patterns of press culture became settled for five hundred years within fifty years of Gutenberg's invention; radio had settled on the broadcast model within twenty-five years of Marconi's invention. Most of the major decisions that put the twentieth century broadcast culture in place were made in the span of six years between 1920 and 1926. The time to wake up and shape the pattern of freedom and justice in the new century is now.