ACCESS TO KNOWLEDGE
IN THE AGE OF INTELLECTUAL PROPERTY

edited by

Gaëlle Krikorian and Amy Kapczynski

ZONE BOOKS · NEW YORK

2010

The publisher wishes to acknowledge the generous support
of the Open Society Institute.

ZONE BOOKS
1226 Prospect Avenue
Brooklyn, NY 11218

Printed in the United States of America.

Distributed by The MIT Press,
Cambridge, Massachusetts, and London, England

Frontispiece: Graeme Arendse, *Chimurenga Library*
(photo Stacy Hardy).

Library of Congress Cataloging-in-Publication Data

Access to knowledge in the age of intellectual property /
edited by Gaëlle Krikorian and Amy Kapczynski.
p. cm.
Includes bibliographical references.
ISBN 978-1-890951-96-2
1. Intellectual property. I. Krikorian, Gaëlle, 1972–
II. Kapczynski, Amy.

K1401.A929 2010
346.04'8—dc22

2009054048

Access to Knowledge: A Conceptual Genealogy

Amy Kapczynski

A decade or two ago, the words "intellectual property" were rarely heard in polite company, much less in street demonstrations or on college campuses. Today, this once technical concept has become a conceptual battlefield. A Google search for the term, for example, first turns up a ferociously contested Wikipedia definition.[1] When I did the search, after two links to the World Intellectual Property Organization (WIPO) Web site, the next most important page according to Google's ranking algorithm was an article called "Did You Say 'Intellectual Property'? It's a Seductive Mirage," by free-software guru Richard Stallman.[2]

Criticisms of the existing state of intellectual property law have gone viral, turning up around the world in domains as diverse as software, agriculture, medicine, and music. Activist efforts to challenge the contours of intellectual property law are increasingly interconnected and gathered (especially globally) under the call for "access to knowledge" or "A2K."[3] A2K is a mobilization very much in process—it hasn't yet been subject to the kind of histories or hagiographies that would render one description or account of it authoritative. Rather than provide such an account, this introductory essay seeks to locate A2K in two ways: as a reaction to structural trends in technologies of information processing and in law, and as an emerging conceptual critique of the narrative that legitimates the dramatic expansion in intellectual property rights that we have witnessed over the past several decades.

As the following pages describe, new information-processing technologies have made certain kinds of knowledge and information increasingly critical to the accumulation and distribution of global wealth, as well as to the terms of our bodily and social existence. Information-processing industries responded to these shifts by pressing for—and achieving—unprecedented extensions of intellectual property rights in order to gain more control over the use and exchange of information across the globe.

This move was not just a naked expression of lobbying power, although it was that, too. Importantly, a conceptual narrative legitimated this shift. As we'll see, this narrative is not a single theory, but an amalgam of theories drawn from different domains and spun together to appear as one coherent account. The A2K movement is challenging the coherence of this account by formulating a series of critical concepts, metaphors, and imaginaries of its own—concepts such as the "public domain" and the "commons" and ideals such as "sharing," "openness," and "access." These concepts are sometimes self-consciously cultivated by activists and at other times can more accurately be said to be immanent in their claims.

One way to map the A2K movement, then, is to explicate the most important of these concepts by analyzing the work that they do to challenge the prevailing justifications for intellectual property law. A conceptual genealogy of this sort can help us not only better understand the political conflicts that are emerging around issues of intellectual property rights, but also determine who is or may become part of the A2K mobilization. Finally, it can also help us map key conceptual tensions in the field of A2K, ideational vectors that pull this new discourse in one direction or another along the spectrum of political vision and action where the A2K movement is being assembled. This introduction thus closes by articulating a series of questions that confront A2K as it looks to the future.

HOW KNOWLEDGE MATTERS

To understand why and how a new politics of intellectual property is arising today, we must first understand something about why and how knowledge matters in the world today—both how it makes a difference in our world and how it is implicated in the materialization, the making into matter, of that world.

Although knowledge has always mattered to the organization of human societies, in recent years, prominent economists and social theorists have sought to demonstrate that knowledge has come to matter in a new way. When the purported shift happened and what it means depends upon how the change is characterized.

In the economic perspective, knowledge matters in its technological capacity, for its effect on productivity and growth. Karl Marx and Joseph Schumpeter early on posited that capitalism relies on technological dynamism,[4] but the role of knowledge was not recognized in the neoclassical paradigm until the work of Robert Solow in the 1950s. Solow posited a connection between knowledge and economic growth, arguing that the vast proportion of gains in productivity in early twentieth-century America could be attributed not to factors related to the use of labor or capital, but to a "residual" that he described as technical change.[5] Solow's residual came to be understood as a range of advances in knowledge—from new

machines (such as tractors) to new management techniques (such as Fordism)—that made processes of production more efficient.[6]

Mainstream economists soon began to contend that knowledge is not only important, but *increasingly* important to economic growth, positing that the world's most developed economies have been becoming more knowledge intensive. Fritz Machlup took note of the way the U.S. economy was changing in the 1960s, a change that was first marked by "an increase in the share of 'knowledge-producing' labor in total employment."[7] At the turn of the twentieth century, for example, one-third of U.S. workers were employed in the service industries. By 1980, close to seven in ten were.[8] The trend that Machlup and his colleagues were identifying in the United States was in fact occurring across so-called developed economies as agricultural and to a lesser extent industrial jobs steadily lost ground to jobs in sectors such as education, finance, information technology, and the culture industry.[9] The most productive component of these economies shifted from industrial sectors to "information-processing" sectors such as financial services, marketing, biotechnology, and software.[10]

Perhaps the most prominent theorist of this shift, Manuel Castells, refers to this as a transition to the "informational" mode of development. Informationalism is not identified by the importance of knowledge to the economy, for knowledge was essential to the industrial mode of development too. Rather, it derives from the fact that "the action of knowledge upon itself [is] the main source of productivity." New information and communications technologies permit accelerating feedback loops of innovation and information processing, making the human mind "the direct productive force, not just a decisive element of the production system."[11] Manufacturing and agriculture of course do not disappear, but information processing—for example, in computing, genetic engineering, or management techniques—decisively determines their productivity.

Can the shift truly be characterized as global, given that it is centered in a few of the world's wealthiest countries? Castells says yes, because the economy today can work "as a unit in real time . . . on a planetary scale" and because local economies everywhere depend "on the performance of their globalized core," which includes "financial markets, international trade, transnational production, and, to some extent, science and technology, and specialty labor."[12] Also, developing countries that have long labored under a trade imbalance with regard to manufactured goods and raw materials and the unequal distributions of wealth generated by these now labor under a "new form of imbalance" regarding "the trade between high-technology and low-technology goods, and between high-knowledge services and low-knowledge services, characterized by a pattern of uneven distribution of knowledge and technology between countries and regions around the world."[13]

The discourse about the rising centrality of knowledge to economic growth seems to imply a claim that human society—and more specifically, certain societies—are becoming more knowledgeable, leaving others behind. (Note how Castells refers to the "uneven distribution of knowledge . . . between countries and regions around the world.") In fact, the claim should be understood to be narrower because of the circumscribed form of "knowledge" implicated here. For Castells, for example, knowledge is defined as "a set of organized statements of facts or ideas, presenting a reasoned judgment or an experimental result, which is transmitted to others through some communication medium in some systematic form."[14] The focus here is thus on those forms of knowledge that are central to economic productivity and efficiency—namely, technical and scientific knowledge. There are, of course, many other kinds of knowledge, such as ethical knowledge or knowledge of a person. As I will describe later, in its broadest sense, knowledge can be described as a competence that only sometimes relates to a technical effect.

The claim that knowledge is increasingly central to the global economy—or that the global economy is today "informational," rather than industrial—thus must be understood as a more specific claim: that advances in the ability of humans to codify, organize, exchange, and test certain kinds of scientific and technical knowledge have created revolutionary changes in modes of economic productivity. These changes can be traced back many centuries, for example, to the advent of the printing press—a technology that made copying much more reliable and written texts much more widely available and that enabled feedback loops that allowed information to be collected and corrected over time.[15] Newer information and communications technologies have intensified this process by increasing the speed of information transfer and processing, earlier through technologies such as the railroad and telegraph and more recently through the pervasive networking of digital technologies that we associate, for example, with the Internet.[16] This increased capacity to codify, store, process, and exchange information has been a precondition for the development of information-intensive sectors from biotechnology to financial engineering. It is also a precondition of the shift toward more flexible, networked, information-intensive business systems such as just-in-time production.[17]

Of course, such shifts have implications far beyond the realm of economics. The same transformations that have made scientific and technical knowledge more central to the global economy, for example, have also made such knowledge more central to human health. Globally, life expectancy has increased by almost twenty years since the 1950s.[18] This can be attributed in substantial part to advances in scientific knowledge about disease and to increased access to such knowledge, for example, as embodied in better sanitation and vaccines.[19] The rise of new forms of knowledge management and the application of sophisticated information-processing

schemes to fields such as health and agriculture means that our relationships to our very bodies—how we eat, whether we live—are more intimately governed by scientific and technical knowledge and information than ever before.

For Castells, as well as for earlier theorists such as Daniel Bell, not just our economies, but our societies thus have become increasingly knowledge intensive or informational. In this sociological conception, changes in our ability to codify, communicate, and process knowledge have inaugurated a new relationship between knowledge and society. This shift is reflected, for example, in a new ordering of occupations, one in which professional and technical classes gain preeminence.[20] It is also reflected in governance, because policy formation is newly focused around knowledge and expertise "for the purpose of social control and the directing of innovation and change."[21]

For example, the rise of statistics and the field of "political arithmetic" led to the development of the modern census, which made possible the use of population data in government for the first time.[22] New fields of social knowledge such as psychoanalysis, penology, and pedagogy also came into being, subjecting the human to new forms of technological production and surveillance.[23] Knowledge thus has become central to the "activities of government and to the very formation of its objects, for government is a domain of cognition, calculation, experimentation and evaluation."[24] From philosophy to medicine, accounting to education, and town planning to social insurance, "know-how" and technology make modern governance possible.[25]

New systems of knowledge and information technologies also inaugurate shifts in the relationship between individuals and these processes of economic production, social control, and governance. The digital network revolution, for example, places the technologies of information production and exchange in the hands of (at least some) "average" citizens in a way that was not true in the era of the industrial assembly line and the printing press. As Yochai Benkler argues, the contemporary processing power of computers ubiquitously linked together creates a platform for new kinds of collaborative human action and production, exemplified by projects such as Wikipedia and free software. This shift creates the potential for "an increasing role for nonmarket production in the information and cultural production sector, organized in a radically more decentralized pattern than was true of this sector in the twentieth century." It also creates the possibility of new forms of political activism and new relationships between those who govern and those who are governed.[26] One new arena where this activism has developed and where the relationship between those who govern and those who are governed has played out is the realm of intellectual property law, which has expanded globally to an unprecedented extent in the past few decades.

In 2006, the "ex-gay" group Exodus International sought to force blogger Justin Watt of justinsomnia.org to remove the parody (bottom) of its billboard (top) from the Internet, accusing the blogger of copyright infringement. See Lia Miller, "Both Sides in Parody Dispute Agree on a Term: Unhappy," *New York Times*, March 27, 2006.

THE RISE OF INTELLECTUAL PROPERTY LAW

Intellectual property rights are legal entitlements that give their holders the ability to prevent others from copying or deploying the covered information in specific ways. Patents, copyrights, and trademarks are the most familiar forms of intellectual property.[27] Each regulates information in a different way. Patents typically cover forms of technological invention—once things such as machines and mousetraps and today things such as new molecules, plant varieties, and software. By describing his invention and showing that it is new, useful, and "nonobvious," an inventor can obtain a patent that gives him the right to prevent others from making, using, or selling the invention for a period of 20 years. Copyrights typically cover expressive or literary works—classically, maps, charts, and books, but today also things such as sound recordings and software. The holder of a copyright can prevent others from copying or performing the protected expression or creating "derivatives" of that expression (for example, creating a screenplay out of a novel) for upward of 100 years.[28] Trademarks protect the use of a distinctive trade name in commerce, permitting the holder of the mark (for example, Rolex™) to restrict its use, most centrally to ensure that consumers are not confused about the origin of a good.[29]

The grouping of these different modes of regulation under the rubric of intellectual property is not uncontroversial.[30] Nonetheless, the rubric usefully helps us to identify a mode of legal regulation that applies to different areas of technology and commerce. In an alchemy that turns immaterial expressions and ideas into tradable commodities, intellectual property rights effectively give creators the ability to market information while also preventing it from being imitated and reproduced by others. These rights can, of course, lead to substantial revenues for those who hold them (and also to substantial economic costs for society, as I'll describe in a moment). Less obviously, but no less importantly, intellectual property doctrines that govern the ownership of creations made in the course of employment structure the distribution of benefits between corporations and employees. The so-called "work for hire" doctrine, for example, regulates whether the inventions or creations that a person makes at work belong to her or to her employer, and over the course of the nineteenth and early twentieth centuries, this doctrine became far more favorable to employers.[31]

But shifts in intellectual property law, like shifts in the way that knowledge and information matter, have effects beyond the domain of the economy. They also directly mediate human experience, well-being, and freedom. The rules of copyright, for example, regulate who can speak and read. Examples of copyright owners seeking to censor speech with which they disagree emerge

with relentless regularity. Copyright also endemically shapes how we learn and think, because, for example, it affects the prices of textbooks and the viability of online archives.

Intellectual property law is perhaps at its most controversial in public debates where it regulates life itself—that is, in the domain of medicine. Because patents limit competition, they tend to raise the price of pharmaceuticals. That can put life-saving treatments out of reach, especially for the world's poor. Patents also shape the priorities of our medical research and development (R&D) system. Our existing system, which relies heavily on patents—and thus on high prices—to incentivize R&D has directed enormous sums into treating the ailments of the very rich and almost nothing into treating those of the very poor.

Because intellectual property law regulates strategies of information production and the appropriation of value from information in the marketplace, it has become a central battleground in the struggles over the structure and spoils of the contemporary economy. Because intellectual property law also regulates much more—from how we are able to learn, think, and create together to how and whether we have access to the medicines and food that we need to live—it has become a central site of political struggle, not just locally, but globally.

Both trends have been accelerated by the explosive expansion of intellectual property rights that has occurred in recent years. In countries such as the United States, for example, intellectual property rights have become broader (covering more kinds of information), deeper (giving rights holders greater powers), and more punitive (imposing greater penalties on infringers).[32] Supplemental measures have also been introduced to increase the technological control of rights holders and to counter the way that digital technologies facilitate copying. Anticircumvention laws have been introduced, for example, that prohibit the cracking of technological locks, such as forms of encryption that a copyright holder might place on a song or DVD to control how it is played.

This shift has been called a "second enclosure movement," a metaphorical move that casts it as a modern-day analogue of the privatization of common lands that occurred in stages in England from the fifteenth through the nineteenth centuries.[33] Metaphors of enclosure and its antipode, the commons, have been central to the attempt to mobilize against the encroachments of exclusive rights in the digital age. But they are also problematic.[34] Drawing as it does on the post-feudal history of England, for example, the concept of enclosure domesticates what is better understood as a global phenomenon. The most dramatic expansions of intellectual property rights in recent years have occurred across, rather than within national borders.

A NEW MODE OF CONQUEST AND IMPERIUM

In many ways the most striking aspect of the expansion of intellectual property law is the shift inaugurated by the TRIPS (Trade-Related Aspects of Intellectual Property Rights) Agreement.[35] Adopted in 1995, TRIPS was the brainchild of key players from the multinational information industries, that is, companies whose primary business is the production and processing of information and informational goods. CEOs from companies such as Pfizer, Merck, Monsanto, DuPont, General Motors, IBM, and Warner Communications, through a high-powered lobbying group known as the Intellectual Property Committee, persuaded the United States, Europe, and Japan that the agreement was needed to protect their national interests in strong intellectual property protection.[36]

The TRIPS Agreement represented a radical shift in at least three ways. Although treaties on intellectual property were not new (and indeed are remarkably old), before TRIPS, such treaties were generally overseen by the WIPO. WIPO had no enforcement capability, and countries could choose to join treaties in "à la carte" fashion. TRIPS was instead to be part of the new World Trade Organization (WTO). Under the WTO's "single undertaking" rule, countries would not be able to join the WTO without also adhering to the TRIPS Agreement. Because the WTO carried with it a new dispute-resolution system, violations of TRIPS would now be punishable with trade sanctions. Finally, the intellectual property standards incorporated into the agreement were far more expansive than those that were in force in many countries at the time, particularly for developing countries. For example, TRIPS required members to offer patent protection for medicines, to create property rights in new varieties of plants, and to impose criminal penalties for those who "pirate" copyrighted movies or trademarked handbags.

The negotiations that produced TRIPS were a terrain of open struggle between countries of the Global North and those of the South. Developing countries generally opposed the suturing of intellectual property laws into the new regime of world trade, arguing that intellectual property law restricts, rather than promotes free trade, that Northern countries had developed under conditions of low intellectual property protection, and that TRIPS is simply a mechanism to transfer wealth from the South (overwhelmingly an importer of informational goods subject to intellectual property rights) to the North (whose corporations own the vast majority of what constitutes intellectual property today).

Northern countries, led by the United States and pushed by multinational companies, were unyielding: Regime change in the area of intellectual property was to be a condition for membership in the WTO. The United States was eventually able to prevail through "a sophisticated process of trade threats and retaliation" that forced key countries to yield.[37] As Peter Drahos analyzes it:

> For the U.S. state there [was] also a payoff. By helping its multinational clientele to achieve *dominium* over the abstract objects of intellectual property, the U.S. goes a long way towards maintaining its *imperium*. . . . A global property regime offers the possibility that abstract objects come to be owned and controlled by a hegemonic state. Algorithms implemented in software, the genetic information of plants and humans, chemical compounds and structures are all examples of abstract objects that form an important kind of capital.[38]

TRIPS was an exceptionally audacious attempt to extract value from and exert control over informational domains in virtually all of the countries of the world. As such, it has less in common with localized enclosure movements than with colonial strategies of conquest.

In the words of the great chronicler of empire Joseph Conrad, "The conquest of the earth . . . is not a pretty thing when you look into it too much. What redeems it is the idea only. An idea at the back of it . . . and an unselfish belief in the idea—something you can set up, and bow down before, and offer a sacrifice to."[39] Here, that idea is one that is not propounded by any particular theorist, but rather that is mobilized in political discourse, occupies the realm of popular political culture, and is used to justify the dramatic expansion of intellectual property that we have seen in recent decades.

LEGITIMATING INTELLECTUAL PROPERTY IN THE INFORMATION AGE

The legitimation narrative of intellectual property today is not a coherent theory, but a thaumatrope—two different images on a card or disk, recto and verso, that when spun on an axis give the appearance of a single, unified image. One image is derived from the field of information economics, but omits the skepticism about intellectual property present in that field. The other screen is derived from the theories of the Chicago School of economics about the superiority of private-property rights in material resources, but suppresses the many significant differences between the economics of land and the economics of information.[40]

We can call the result the "despotic dominion" account of intellectual property law—the notion that the right to intellectual property is, or should be, as William Blackstone described the right to material property, "that sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe."[41] Property here is defined as the right of a single individual to be the gatekeeper with respect to a resource and to act autocratically with respect to decisions about its use. This vision of property is sustained by the notion that only the individual owner, and

not the state, community, or nonowners, may make decisions about the price or terms of transactions around that property.

This account should not be confused with actual existing intellectual property law (or actually existing property law, for that matter).[42] Rather, the despotic dominion account is a narrative that has been used to justify the aggressive expansion of intellectual property rights in recent years, and it is thus this narrative that A2K confronts as it seeks to change the politics of intellectual property law today.

The first image in the despotic dominion account draws selectively on the field of information economics, arguing that intellectual property is needed to promote investment in informational goods. Information, we are told, is typically expensive to produce, but cheap to reproduce. For example, it is relatively expensive to synthesize and test a new pharmaceutical compound or to produce a major motion picture. Under today's technological conditions, it is also relatively cheap to reverse engineer a drug or to copy a DVD. In an unregulated market, second-comers could reproduce the drug or movie, paying only the cost of copying and without paying the full costs of the producing of the drug or movie in the first place. These "free riders" would be able to drive the innovator from the marketplace, because they would be able to sell the drug or movie more cheaply. The result: Rational actors will not develop drugs or make major motion pictures, because they will be unable to turn a profit, and indeed may suffer a loss, being unable to recoup their original investment.

Enter the deus ex machina of intellectual property rights. Patents and copyrights give individuals (or more likely, firms) the right to prevent others from copying their creations for a period of time. This lets them recoup their investments and make a profit. Exclusion rights thus generate markets in information, solving the free-rider problem and aligning individual incentives with social good.

Consider the suppositions of this first image: Creative and scientific works are best generated by rational, self-interested market actors who are motivated by profit. Intellectual property law provides the control needed to "incentivize" this creativity, because it permits individuals to profit through the sale of informational goods. Individual legal entitlements such as these are necessary because rational creators will not create if they cannot profit and/or if others can ride free. When they can profit, creators will create in accordance with social welfare, as expressed by demand for commodities in the marketplace. In this model, if we want creativity and the benefits associated with it, we must pay for it. The best, most efficient way to pay is with a system of private, individual rights.

This account is not to be confused with theories of intellectual property as articulated in the field of information economics. That field tends to be much more ambivalent about the effects of intellectual property rights because of the inefficiencies that accompany them.

In economic terminology, information is a "nonrival" good: One person may "consume" it without limiting the amount available to another. Another way of putting this is that information—inherently—is not consumable. If I have an apple, either you can eat it, or I can eat it. (We can share it, but we can't each have the whole apple.) But if I make up a catchy tune, we can both sing it. I won't have any less of it because you have more of it. All information—from cooking recipes, to scientific formulas, to MP3 files—has this infinitely shareable quality. In economic terms, the marginal cost of production of information is zero.[43] Once a scientist divines a new scientific theory, she can share it freely without spending any more energy or time to produce it again.[44] Because the marginal cost of information is zero, the ideal price of information in a competitive market is also zero. As a result, intellectual property rights create "static" (short-run) inefficiencies. They tend to raise the prices of informational goods above their marginal cost of production, meaning that fewer people have access to these goods than should.[45]

Where there are no adequate substitutes for a good, as may be the case with a patented medicine, intellectual property rights can also generate monopolies. Under conventional economic models, a monopolist will raise prices and reduce output, generating more profits for itself, but also generating deadweight social loss—a further static inefficiency.[46] Intellectual property also has ambiguous effects on dynamic (long-run) efficiency. Because information is both an input and an output of its own production process, intellectual property gives previous creators the power to tax new creators, thus raising the cost of producing the next generation of innovations and pricing out some potential creators.

Other mechanisms to promote investment in new informational goods are widely discussed in the field of information economics. The government can pay, as it often does, for example, with direct grants to scientists or artists or by the creation of financial or reputational prizes that can induce innovation. When innovation and creativity are paid for in this way, the results can be made freely available, as they are, for example, when the U.S. government funds certain basic scientific research or the creation of weather or mapping data. This eliminates the inefficiencies associated with intellectual property rights, leading eminent economists to conclude that government provisioning is superior to intellectual property rights as a strategy to solve the provisioning problem of information.[47]

So why, then, should we conclude that private intellectual property rights are superior to other systems of promoting creativity and innovation, such as direct government funding? Here, the image drawn from information economics is spun together with a narrative drawn from theories of the economics of private

property rights in material resources (such as land) popularized in the 1980s and 1990s. Such theories, often associated with the Chicago School of economics, have their roots in the famous account that Harold Demsetz developed of the ability of private property to solve the "tragedy of the commons."[48] When property is held in common, Demsetz argued, individuals will fail to invest in its maintenance or improvement, because they cannot keep others from reaping the benefits of their efforts. Common pastures will be overgrazed, because each individual farmer has an incentive to graze his livestock beyond the point of sustainability. If his sheep don't eat the grass, another farmer's sheep will. A system of private property rights aligns farmers' incentives with social welfare, because it permits them to "internalize" or capture the benefits of their investment in their land, as well as suffer the harms of their failures to invest.

But why is private property superior, say, to community-negotiated rules limiting the hours that a farmer could graze, or a government tax-and-spend regime that organizes investments in land? Here the antiregulatory theories of the Chicago School come in. Individuals are characterized as generally having information superior to that of the government (or a collective) in making investment decisions, as well as in valuing uses in land. If they are free to transact, on this theory, "private" property is more efficient than communal or state-based regulation of property (or, more accurately, private property is the most efficient form of state-based regulation of property, since of course, a private-property regime itself is a form of regulation). Individual farmers will know best, for example, whether land can most profitably be used for sheep grazing or for peach farming. If a peach farmer is able to offer to buy a sheep farmer's property for more than the sheep farmer could make from farming it himself, the property will change hands and be turned into an orchard. Since the latter use is more profitable, it is associated with higher social welfare. Society is thus benefitted by the mutually selfish behavior of the farmers, if they are given the tools of private property rights. Antiregulatory theorists are also skeptical of government intervention in markets because of the concern that state regulations or programs provide a soft target for lobbyists seeking to capture benefits for themselves.[49]

Even as applied to material property such as property in land, there are many difficulties with this account, some of which I'll discuss below. More importantly for our purposes at this point, the sketch drawn from such Demsetzian theories suppresses many of the important distinctions between information and material goods—distinctions that are treated as essentially important in the construction of the first image. But explaining precisely why this is so should await a discussion of the development of the concept of the "commons" in the access to knowledge movement—for it is that discussion that has made this point clear.

INVENTING A POLITICS FOR THE INFORMATION AGE

Against this backdrop of enclosure and conquest has emerged a field of activism that here goes under the name of the access to knowledge movement. One mark of this new mobilization is the attempt to articulate a common language in which to contest the contours of existing intellectual property rules. That language has become centered on a few key terms such as the "public domain," the "commons," "sharing" or "openness," and "access" that are mobilized both to destabilize the despotic dominion account of intellectual property and to conjure forth an alternative ethic of the conditions of creativity and freedom in the information age.

THE PUBLIC DOMAIN

The concept of the public domain is central to the new politics of A2K, although not, as we will later see, always uncontroversially so. It is drawn from judicial and legal discourse, where it has long been used to refer to informational works that are not covered by intellectual property law, for example, because the copyright or patent term has expired.[50] In the 1980s and 1990s, scholars critical of the expansion of intellectual property rights seized upon the term to carve out a positive identity for the "outside" of intellectual property.[51] As James Boyle put it, "The environmentalists helped us to see the world differently, to see that there was such a thing as 'the environment' rather than just my pond, your forest, his canal. We need to do the same thing in the information environment. We have to 'invent' the public domain before we can save it."[52] Key here was early work of David Lange, who argued that no intellectual property right "should ever have affirmative recognition unless its conceptual opposite is also recognized. Each right ought to be marked off clearly against the public domain."[53]

Lange's early articulation of the term marks the abiding influence of intellectual property law on the concept of the public domain. The public domain here is defined as the "conceptual opposite" of the domain of exclusion rights protected by intellectual property. The same relationship is emphasized in James Boyle's definition of the public domain as "material that is not covered by intellectual property rights" as well as "reserved spaces of freedom inside intellectual property."[54]

In the simplest sense, then, A2K advocates use the term positively, to bring into focus the negative space of intellectual property law and to articulate its importance for innovation and creativity. The public domain thus becomes not just the opposite of intellectual property, but also an essential—and endangered—component of our creative and informational ecology. Included herein are not just older works in the literary or technical arts, but also resources such as language and scientific theories that are free of intellectual property rights and to which we have a common right. Many of these resources were never protected as intellectual

property at all, thus demonstrating that private rights are not necessary to the production of all informational goods. Such goods and the ability to use them freely are also clearly central to our ability to think and create. The emphasis on the public domain thus is used to counter "the romantic idea of creativity that needs no raw material from which to build" that characterizes the despotic dominion theory of intellectual property and to call attention to the need of every creator to have access to the scientific or cultural domain that precedes and surrounds her. Boyle, for example, contends that the "public domain is the place we quarry the building blocks of our culture. It is, in fact, the *majority* of our culture."[55]

The A2K movement calls upon the public domain in this way to make the case that the account offered by the despotic dominion theory of intellectual property is radically incomplete as a description of both the world as it is and the world as it should be. Even now, in the most absolutist period of intellectual property law we have known, our creative world remains largely beyond the reach of intellectual property rights. And intellectual property rights as we know them bear little resemblance to property rights over material resources, with far greater freedoms reserved for nonowners. If so-called "real property" rights worked like copyrights, for example, the home you built would be turned over to the public some fifty to seventy years after your death. In the meantime, if others wanted to use your front porch to criticize you, you would have to permit it.[56] It turns out that ideas are different from material goods and are treated as such by the law. The concept of the public domain calls attention to this fact—a fact that the despotic dominion account papers over.

The concept of the public domain calls the despotic dominion account of intellectual property into question in yet another way, by emphasizing the "public" values that a public domain serves—and that the privatization of intellectual creations threatens. This is the public domain as opposed to the *private* domain—the domain that the despotic dominion conception of intellectual property equates with the public good.

We can begin by asking what is "public" about the public domain. Is it public like a public park? Like public assistance? Like the public good? Like a public figure? A2K narratives about the public domain treat what is public as synonymous with what is "open to all," but in two different dimensions: that of permission and that of price.

Public-domain material is presented as important to our creative ecology, on the one hand, because one need not ask permission to use it—which is to say, no one has the legal privilege to deny another the ability to use it. If you want to rewrite a Jane Austen novel, retaining most of her words, but inserting zombies, no representative of Austen's estate can deny you permission, because the work

is now in the public domain.[57] A2K advocates thus celebrate the public domain as a place free of the political control or personal caprice of others. This is contrasted with the world of intellectual property, where owners of works may stop others from using their creations in ways of which they disapprove.[58] When DJ Danger Mouse became an overnight sensation for an album remixing the Beatles and Jay-Z, for example, he also earned the attention of lawyers for the Beatles's label, who forced him to stop distributing the album. Copyright facilitates consolidated control and disrupts semiotic recoding. The need to obtain permission, A2K advocates argue, is thus in tension with the desire for an open and democratic culture.[59]

The public domain is "public" in another sense. Like a public street, it may be traversed and used by all comers without individualized permission. But also like a public street (if not necessarily a public highway), it may be traversed without payment. (In the phraseology of Richard Stallman of free software fame, it is both "free as in speech" and "free as in beer.") No one pays for what they take from the public domain (there is no licensing fee), so works available in the public domain are available, in theory, at or close to their marginal cost of distribution—the cost of printing and selling a book, for example, without an additional fee for the author who wrote it. And of course, in a world of pervasive digital networks, the cost of distribution indeed moves toward zero, meaning that works out of copyright may be available for no cost at all. The public domain thus has a differential value for those who have limited financial means. In this sense, it is public in the way that public assistance is public—it represents a kind of state subsidy for those who cannot afford the licensing fees and lawyering costs associated with private markets in information.[60]

THE COMMONS

The commons is another concept critical to the attempt by A2K theorists to construct a collective object for their politics. It draws upon the history of property in land and more particularly upon the enclosure of communally managed field and forest resources in Europe. Unlike the public domain, the commons as conceived of by the A2K movement is governed,[61] but unlike private property, the commons is governed collectively.[62] It is not free of the requirement of permission (or, necessarily, of price), but demands permission from a collective, rather than an individual.

Free software is often cited as the paradigmatic example of an informational commons.[63] It is written by legions of volunteers who are not hierarchically organized or governed in the way that employees within a firm are organized and governed. This is not to say that there is no governance of open-source projects—on the contrary, such projects may be highly organized and closely managed. Such

projects are also not entirely without either hierarchy or stratification.[64] But they are more modular, participatory, collaborative, and open than equivalent projects organized in proprietary firms.[65]

Free software depends upon a "copyleft" licensing scheme developed by programmers. The best-known such license, the GNU General Public License or GPL, turns copyright on its head by mandating sharing, rather than exclusivity—it permits users to modify, copy, and share the covered work as long as they pass along to others these same freedoms.[66] This is a commons of enforced cooperation, where those who participate are assured that their efforts will manifest themselves in a collective product that they may all access in the future with the added benefit of one another's contributions. Programmers do not have the ability to determine unilaterally the terms of the licensing of free software, but decisions about free software are subject to community comment and deliberation and to the collective ability of communities of programmers to vote with their labor hours.[67] They also have certain rights that those working in a proprietary context as a rule would not—primary among them, the assurance that they will continue to have access to the software they help produce on equal terms with all others, to exploit for profit or otherwise.

The commons as invoked by A2K advocates works in two ways to undermine the despotic dominion conception of intellectual property. At times, A2K theorists call upon the term to distinguish a material commons (for example, a grazing commons or a collectively managed fishery) from a commons of the mind. The despotic dominion justification for private property, recall, is based on the presumption that individuals will overuse a resource if not disciplined by private property rights.

But as Boyle explains it:

> Unlike the earthy commons, the commons of the mind is generally "non-rival." Many uses of land are mutually exclusive. If I am using the field for grazing, it may interfere with your plan to use it for growing crops. By contrast, a gene sequence, an MP3 file, or an image may be used by multiple parties; my use does not interfere with yours. To simplify a complicated analysis, this means that the threat of overuse of fields and fisheries is generally not a problem with the informational or innovational commons.[68]

In other words, we are more likely to see in the informational domain what property scholar Carol Rose has called a "comedy of the commons" than a tragedy of the commons, because more use tends to produce social gains, rather than social losses.[69]

But A2K advocates also use the concept of the commons to invoke the successful history of common property schemes in material goods and thus to undermine the contention that individual management of resources is superior to

collective management. Elinor Ostrom recently won a Nobel Prize in economics, in part for the work she did to document and analyze prosperous and stable commons regimes governing rival resources such as land and fisheries, demonstrating that communities can organize both investment in and extraction of resources to ensure sustainability.[70] As Roberto Verzola points out in this volume, for example, a herder with a long-term and cooperative viewpoint would see the potential for the collapse predicted by theorists of "the tragedy of the commons" and work with others to avoid that result.[71] With a presumption of cooperation and foresight, the narrative of the tragedy of the commons can thus be inverted, resulting in "a system of insurance or social security, a type of commons that reduces individual risk by pooling resources."[72]

The concept of the commons is thus intended to do important work to delegitimate the despotic dominion conception of intellectual property. On the one hand, it calls upon the differences between the immaterial and the material to demonstrate that tragedy is far less likely in the former case. On the other, it rejects the view that tragedy necessarily follows common management of material resources, insisting instead that collective management can work. It insists upon the viability of an alternative governance regime for intellectual property—one characterized by relatively flat hierarchies and where the rights of individuals to participate in decision making as well as to participate on equal terms as creators and beneficiaries are central. To call upon the image of the commons is to insist that communities, without the imposition of market or governmental ordering systems, have the power and perhaps the right to set the terms of their collective endeavors.

Here the discourse of the commons meets up with that of the public domain, suggesting that more communal strategies of governance do better than a despotic dominion model at facilitating broadly distributed collaboration, soliciting forms of effort and motivation that may be crowded out in a corporate and proprietary (which is to say, profit-motivated, more hierarchical) context, and facilitating participatory decision-making processes.

SHARING AND OPENNESS

Sharing and openness are prominent memes in the A2K movement, deployed, to name just a few examples, for "share and share alike" copyright licenses, "open-source software," "open standards," and "open-access publishing."[73]

Sharing and openness are here posited against the ethic of exclusion embodied in the despotic dominion conception of intellectual property. A "share and share alike" license in the context of copyright, for example, uses the exclusive right permitted by copyright against itself, requiring those who modify or build upon the

work to share their work with others. Copyleft licenses are premised on the same move. In open standards and open-access publishing, "openness" refers to different practices. The former insists that technical standards not be dominated by the rights of certain intellectual property owners and the latter that certain publications (for example, those that are the product of research funded by the government) be made available in databases that are available generally to the public without a fee.[74]

What work does an insistence on sharing and openness do when measured against the despotic dominion account of intellectual property? For one thing, it raises a challenge to the neoclassical model of the rational, self-interested actor upon which that account is based. As Yochai Benkler has noted, the very existence of free software, which is developed largely by unpaid volunteers who participate on the condition that their work will be shared freely with others, demonstrates that a model based on profit-driven self-interest is radically incomplete.[75] There is room for debate over the volunteers' motivations, but as Boyle puts it:

> Assume a random distribution of incentive structures in different people, a global network: transmission, information sharing and copying costs that approach zero, and a modular creation process. With these assumptions, it just does not matter why they do it. In lots of cases, they *will* do it. One person works for love of the species, another in the hope of a better job, a third for the joy of solving puzzles, and so on. . . . Under these conditions . . . we *will* get distributed production without having to rely on the proprietary/exclusion model. The whole enterprise will be much, much, much greater than the sum of the parts.[76]

The notion that the "whole is greater than the sum of its parts" is central to understanding the ideal of sharing and openness. If the whole is greater than the sum of its parts, the parts cannot be adequately described or divided from one another. In other words, we cannot isolate and locate credit, labor, or value for creative endeavors in any individual or set of individuals. The maxim can also be understood as an insistence that the thing being "summed"—here, the creative endeavor—happens not within individuals, but among a group. This is an insistence on the generativity of the crowd, on the notion that there is a creative and productive force that resides *between*, rather than within individuals—or more radically, in the infrastructure of their connection, in the network itself. As free-software theorist Eben Moglen memorably puts it, "if you wrap the Internet around every person on the planet and spin the planet, software flows in the network. It's an emergent property of connected human minds that they create things for one another's pleasure and to conquer their uneasy sense of being too alone." Intellectual property law is then "the resistance in the network," disrupting, rather than generating creativity.[77]

We can detect here a certain commitment to the unknowability and unquantifiability of the creative endeavor. We cannot, A2K advocates suggest, fully catalogue and locate human motivations and capacities, nor can we individualize them, as if they are established prior to and apart from exchanges between people. "Knowledge" and "information" are also cast as highly complex phenomena that inevitably elude strict control or management. (How do you survey the limits of an idea?) The domain of access to knowledge is thus pictured as a domain of unbounded, unboundable exchange. This vision is of course opposed to the despotic dominion notion of private property in ideas and to neoliberal theories that put their faith in "privatization, and the creation and defense of secure property rights as the cure for all ills."[78]

Ideals of openness and sharing, like those of the commons and the public domain, also align the A2K movement with the political values of self-determination and autonomy, as well as those of collective governance. As one open-source proponent puts it:

> Proprietary software increases the dependence of individuals, organizations, and communities on external forces—typically large corporations with poor track records on acting in the public interest. There are dependencies for support, installation and problem fixing, sometimes in critical systems. There are dependencies for upgrades and compatibility. There are dependencies when modification or extended functionality is required. And there are ongoing financial dependencies if licensing is recurrent. Political dependencies can result from the use of proprietary software, too. . . . Nearly exact parallels to this exist in agriculture, where the patenting of seed varieties and genome sequences and the creation of non-seeding varieties are used to impose long-term dependencies on farmers. . . . Proprietary software not only creates new dependencies: it actively hinders self-help, mutual aid, and community development.[79]

Others declare more grandly that "access to software determines who may participate in a digital society" and conclude that "only the Free Software model grants equal rights and freedoms to all Member States, their corporations and citizens."[80] Or as the founder of the Linux operating system, Linus Torvalds, puts it, open-source software is like "democracy in the sense that you don't surrender control."[81]

The demand for sharing and openness is thus also a demand that the ability to access and manipulate knowledge and information be democratized.[82] What is being shared and opened is not just a set of commodities, but also the processes by which we communicate with one another and create together and the processes by which we act as citizens of our increasingly informational societies.

ACCESS

A2K also invests with great significance the concept of "access." First associated with the access-to-medicines campaign, the importance of the term to the broader coalition is perhaps best marked by its presence in the name "access to knowledge" itself.[83] The demand for access is an inherently relational one—a claim from those excluded that they be included, that they be given something that others already enjoy. In this sense, it marks perhaps the only—or at least the most prominent—demand for *distributive* justice emanating from the A2K movement, which otherwise borrows more from discourses of freedom.[84]

How, then, are we to understand this demand? We can begin by considering the development of the campaign for access to medicines. Although the claim might seem to be very simply a demand that medicines available to the rich also be made available to the poor, from its inception, the movement has been intimately bound up with claims about intellectual property. It emerged from the crucible of the global HIV/AIDS pandemic and specifically from the recognition that treatment would never be available to the vast majority of those who needed it unless the prices of medicines could be reduced. At the time that the campaign began, AIDS medicines sold for about $10,000 per patient per year. Activists versed in intellectual property law such as James Love teamed up with groups such as Médicins Sans Frontièrs to demonstrate that this price is not a fact of nature or a reflection of the sophistication of antiretroviral medicines, but rather an artifact of patent law. Generic copies of the medicines cost as little as $350 per year (and even less today), but patents—and the aggressively propatent trade policies of countries such as the United States—stood in the way.

The demand for access to AIDS medicines has thus been, from the beginning, a demand for access to *copies* of AIDS medicines. Or, as the logo of the AIDS activist group Act Up–Paris puts it:

The emblem illustrates two important elements in the demand for access. First, claims to access are framed squarely against the backdrop of intellectual property. Second, they are rooted in claims of right that supersede the claims of right made by owners of intellectual property. The right *to* the copy claimed by activists is written over the right *of* the copy claimed by rights holders.

The demand for access thus appears first as a refusal. It emanates not from

the discourse of intellectual property, but from the language of human rights.[85] It seeks to elevate the latter over the former, as through the demand, commonly seen at access-to-medicines demonstrations, for "patients' rights not patent rights."

At the level of the slogan, the concept of access seems to embody an outright rejection of the logic of intellectual property and of the type of cost-benefit analyses and arguments about innovation upon which it is based. In fact, however, the discourse of access-to-medicines campaigners has become intimately bound up with the logic of intellectual property, because their attempt to contest the legitimacy narrative of intellectual property law has drawn them into the economic discourse that dominates the field.

As activists sought to challenge the existing law of intellectual property, they found themselves up against the despotic dominion account of intellectual property. Calling upon this account, pharmaceutical companies insisted that they, too, are in the "access" business and that patents are the only way to ensure the development of new medicines. The conditions of access are contested, that is, precisely in the terms of the discourse underlying the concept of intellectual property, requiring A2K advocates to do more than simply argue that they are for access because they are opposed to exclusive rights in medicines. The demand for access is by necessity constructed on a deeper theory of what it means to make medicines accessible—one that is built upon the values of freedom and openness that are evolving within the discourse of the A2K movement, but anchored in the demands for distributive justice that motivate the call for access.

Access-to-medicines campaigners argue, for example, not only that patents artificially raise prices and thus hurt patients, but also that they do not provide the innovation benefits that the despotic dominion account claims for them, particularly for the poor. They point out, for example, that patent-based innovation systems link innovation to high prices. Because the poor cannot pay these high prices, patent-based companies ignore the needs of the poor and instead cater to the needs of the rich. Thus, we have a pharmaceutical R&D system that prioritizes drugs for baldness and erectile dysfunction over lifesaving treatments for ailments such as tuberculosis and malaria.

They also point out that patents can create barriers to research and thus interfere with innovation—and argue that they are particularly likely to do so where poor patients are concerned. They point out, for example, that multinational companies that make AIDS drugs were unwilling to undertake the negotiations that would have been needed to combine the multiple drugs needed for the HIV cocktail into a single pill that would be easier for patients to take. The work was first done not by patent-holding firms, but by Indian generic companies that were unconstrained by patents. Like the discourses of the public domain and openness,

the discourse of access here attacks the despotic dominion account's claim that intellectual property invariably promotes innovation. Unlike the other concepts, this one makes central a distributive justice claim—that freedom from intellectual property restrictions is especially important to the poor.

The access-to-medicines campaign also takes aim at the model of private control that is central to the despotic dominion account. Notably, access-to-medicines campaigners have consistently opposed drug company donation programs, staking a claim for a form of access that is defined by nonexclusive sharing of the informational component of drugs, rather than their price per se.[87]

Why? Why would it matter where the drugs come from, as long as they come? For access-to-medicines campaigners, the issue is one of accountability and control. They argue that drug company donation programs are unacceptable because they leave power over life in the hands of private actors, who retain the privilege of charity, the privilege to make good on their promises or not. Overriding patents is cast as a way to insist instead on values of participation and accountability. The demand for access to medicines, like the call for free software, thus places the concept of democracy at the center of the A2K movement and opposes it to the despotic dominion conception of intellectual property.

FOUR QUESTIONS FOR A2K

The concepts that A2K activists are developing and articulating and around which they are mobilizing create a set of political commitments and the contours of a movement through a process of accretion. These concepts often coincide, but they are also at times in tension with one another. The same can be said of some of the values and discourses that A2K activists draw upon when making their arguments. Having mapped the central concepts of the discourse of A2K allows us to pose a series of questions about the conceptual and political commitments being invoked. The answers will help determine the future shape and implications of this new field of politics. What is the nature of the freedom that A2K demands? Is A2K committed more to the model of the public domain or of the commons, and can it be committed to both? Is information really different *enough* from material goods? And finally, can the A2K movement in fact make good on its attempt to create a politics not just of information, but also of knowledge? Or to put it another way, what are the proper limits of the politics of A2K?

WHAT IS THE NATURE OF THE FREEDOM THAT A2K DEMANDS?

Often, A2K thinkers speak of freedom (such as the freedom of the public domain) as a place free of permission. Lawrence Lessig states it most plainly: "The opposite

of a free culture is a 'permission culture.'"[88] But are A2K advocates really committed to a vision that posits freedom as a space where one never needs permission—as a space beyond control? If so, what of the very substantial controls that some groups, from free-software programmers to proponents of traditional knowledge, seek to impose upon certain forms of knowledge? Creative Commons, a high-profile organization that Lessig himself founded, offers individuals a set of copyright licenses that they can use to give others more freedoms than copyright law otherwise would. But some of these licenses—not uncontroversially within A2K circles—preclude others from creating derivative works, making use of precisely the power of permission in the service of authorial control.

In fact, no such simple principle of opposition to control can be derived from the thought of A2K. If it could, it would commit A2K also to a series of what are likely to be untenable positions with respect to nonproperty forms of control that can be described as demands for "permission," such as those related to privacy and network security. Is it in fact possible to assume a simple opposition between freedom and control, or are the two instead intimately interconnected and interdependent in the age of digital networks?[89] A2K advocates must envision a particular *mode* of control or demand for permission that they oppose. How, though, should this be characterized?

The A2K movement's conception of freedom also contains within it a certain fractured relationship to markets. The public domain, for example, is sometimes figured as a space free *from* markets, a space where noncommercially motivated creators have the resources and room to play.[90] At other times—and perhaps more often—it is figured as a space free *for* markets where not only amateurs can forage, but where corporations can compete without monopolies, to the benefit of the public as consumers.[91] Can the same domain be both the space of freedom from commerce and the space of freedom for commerce?

When A2K advocates articulate the public domain as a space that is equally—and properly—open to the exploitation of capital and communities alike, it suggests that this competition is itself a free and equal one. But is the public domain in fact universally "free" in a substantive fashion, when those who create from its resources may enclose the results? Does leaving the public domain free in this sense simply mean that those with resources will be able to make use of this (publicly renewed and subsidized) resource and then enclose the results, to the systematic disadvantage of those who continue to operate outside of the confines of property? Is this freedom a structurally unequal freedom, one that can be remedied only by a positive concept of public property (or of a commons) that cannot be the subject of such extraction?

This question is raised most acutely by groups focused on the Global South, such

as the farmers' rights group GRAIN, which expresses skepticism about "the merits of concepts such as the 'public domain' . . . if putting seeds in the public domain means Monsanto can inject them with Terminator genes to destroy peasant agriculture."[92] The muted (or repressed) debate within the A2K movement over the proper status of traditional knowledge (is it rightfully the property of local communities, or part of the public domain open to all?) also evinces the strains of this tension.[93]

Finally, can the freedom imagined by A2K be produced by merely formal lack of (the wrong kind of) constraint, for example, by the lack of the constraints imposed by intellectual property law? Or does it require something more substantive, an affirmative ability, for example, to access works in the public domain, or the tools of the new "remix culture"?[94] Is the freedom of the public domain or the commons really worthy of the name if the majority of the world has no access to the means needed to participate in it—for example, education, computers, and affordable access to digital networks? At the close of 2007, only one-fifth of the world's population was using the Internet, and this use was highly skewed geographically: Only 4 percent of people in sub-Saharan Africa had such access.[95] Although A2K thinkers invoke a robust conception of freedom that would require the ability in *fact* to access the goods of which they speak, in practice, they devote little attention to the profound inequalities in access to digital networks.[96] Can A2K advocates really claim to have a vision of freedom in the digital age if they do not do more to theorize and demand affirmative access to the tools to create and exchange information and knowledge?

IS A2K COMMITTED MORE TO THE MODEL OF THE PUBLIC DOMAIN OR OF THE COMMONS? CAN IT BE COMMITTED TO BOTH?

The A2K movement valorizes the space of both the public domain and the commons, and yet as we've seen, these two spaces are governed in importantly different ways. The commons is controlled, often through the use of intellectual property law itself. The public domain is instead a space beyond intellectual property law, where no one has the right to extract permission or price.

Can the A2K movement be committed to both? If so, this would require restructuring how the commons and public domain are each understood. A2K rhetoric today arguably pastoralizes the commons, eliding the degree to which communal decision making may be characterized by hierarchy and exclusion, rather than by equality and open participation. To put it differently, why should we view a collective despot as an improvement over an individual despot?

In fact, A2K advocates cannot and most of the time do not envision the commons as just any kind of collectivity. Some systems of collective management are,

after all, fully compatible with expansive conceptions of intellectual property rights, such as the collective rights organizations that enforce the rights of copyright holders in music.[97] Corporations that mobilize intellectual property norms in the service of exclusivity and maximal profit are of course in some sense "collective" entities, governed by groups of corporate officers and answerable to shareholders. The A2K commons thus cannot be understood simply as a preference for collective over individual governance. Some content must be given to the concept of the collective and its terms of engagement. Like the concept of freedom, the concept of the commons (if it is to lay claim to an ethic that differs substantially from that of intellectual property) must be more substantively defined.

As the example of free software discussed above suggests, when A2K advocates invoke the commons, they conjure forth a community that labors *cooperatively* and that labors under *shared* norms. Those norms differ not just in their recognition rule—the metarule that determines what counts as valid law—but also in their substance from the rules of intellectual property.[98] The commons of software in fact has much in common with the public domain, because its rules of engagement are similar to those that characterize the public domain. Still, they are not identical. Individuals can take from the public domain and not replenish it with their creations. Moreover, its contours and rules are not established by a community of creators, but rather by a community of citizens who authorize the law of intellectual property—which in turn defines the limits of the public domain. Which is the appropriate community of lawmakers, and which the appropriate relation to what came before?

IS INFORMATION REALLY DIFFERENT *ENOUGH*?

Within the emerging ideology of the A2K movement is a strand that envisions it as postideology, even, perhaps, postpolitical. This is evident particularly in the self-styled political agnosticism that characterizes the free and open-source software movement and in the writings of A2K thinkers who are most immersed in the discourses of open source and the revolutionary potential of the networked digital age.[99] In this volume, Benkler, for example, argues that the ideas of A2K, and in particular of "the information commons and the rise of networked cooperation" can "subvert the traditional left-right divide . . . and provide the platform on which political and economic interests meet around a common institutional and organizational agenda." A2K can appeal, he argues, to "libertarians, liberals, the postsocialist left, and anarchists," unifying forces on the left and right that usually understand themselves to be at odds with one another.[100]

Such ideological catholicism, even pragmatism, is perhaps one of the most appealing aspects of the A2K movement, particularly at a time when some on the

left are calling for a more serious reckoning with the benefits of well-regulated markets and the dangers of ideological rigidity.[101] But the notion that the A2K movement can exceed the traditional divide between classical free-market liberals and the progressive left, that A2K can embrace both the market and the nonmarket, and that A2K advocates need not decide between frames of freedom, justice, or efficiency is surely contestable.

At its core, the sense that the A2K movement can exceed these divides rests crucially on the claim that information is subject to different dynamics than the world of material goods, particularly in the networked digital age. For Benkler, for example, it is "the rise of the networked information economy [that] has created the material conditions for the confluence of freedom, justice, and efficacy understood as effective learning and innovation." That is because in this new environment, productivity and efficiency can be achieved through increasingly open dynamics of sharing and cooperation, both within and outside of markets. "Freedom and efficacy, then, will be the interface with both liberalisms, market and social. Justice and freedom in the sense of the dissipation of structured, stable hierarchical power will be the interface between liberalism and the left."[102]

But the question is, is information different *enough*? As noted above, some within the A2K movement doubt that the poor can compete in a realm of "free" information if that freedom is granted equally to the powerful and the powerless. To paraphrase Anatole France, is this just a kind of majestic equality that leaves the rich and poor equally free to exploit the potential of biotechnology and software engineering? Will resources determine, ultimately, who is heard in the space of "free and open" networks? Can true democratization emerge from spaces of creation and meaning making that are not themselves first radically democratized?

Or is the point of A2K thinkers instead that in the realm of information, we are *relatively* more free and can do more than ever before—if not everything—to reconcile our commitments to freedom, justice, and efficiency? There is a difference, after all, in a competition between the subsistence fisherman and the commercial fishing fleet and between the unknown garage band and the corporately manufactured pop star. There are only so many fish to go around, but there is no limit, theoretically, to the number of songs that can be written. As importantly, according to A2K advocates, garage bands can increasingly compete with studio-driven stars because of the power of digital networks to give creators access to a public and the power of these same networks to lower dramatically the costs of production of informational goods. In the information realm, in a sense, there are always more fish, because the fish there are subject to the rules of immaterial, rather than material goods. And the advent of ubiquitous digital networks means a less unequal competition in the struggle to create new information and to gain access to new publics.

The claim that the A2K movement can move beyond the traditional ideological battles between formal and substantive conceptions of freedom, between the freedom of the market and freedom from the market, is thus intimately bound up with the idea that we can move beyond scarcity in the information age. As Verzola puts it, material abundance is limited because "it must eventually express itself in terms of biomass," but information abundance "is of the nonmaterial variety. Thus, information goods offer the promise of practically unlimited abundance."[103]

In what sense is it useful to conceptualize information as having a kind of abundance that exceeds the material or that is "practically unlimited"? Verzola allows that the realm of information is in fact constrained, in his view "mainly by the limits of human creativity, the storage capacity of media, and the availability of electricity to power servers on the Internet twenty-four hours a day."[104] But there is a utopian strand in A2K thinking that tends to minimize such constraints of mind and environment, suggesting that they need not stand in the way of our ability to think and compute our way to a more just and equal world.

The most enthusiastic proponents of the biotech and open-source software revolutions imagine an era when biology and informatics merge to move us beyond the limits of the physical. But today, half a million women each year still die in childbirth, almost all in developing countries and more than fifty years after the technologies to avert almost all such deaths were developed.[105] We already have the technologies and resources to feed and care for many more people than we currently do, suggesting that there is a primary and prominent set of problems that are not technological, but political.[106] The dynamics of networked informationalism might help overcome political problems where those problems are rooted in struggles over scarce resources. They could also facilitate more transparency and political participation, addressing failures of political accountability more directly.[107]

But critical to the postscarcity aspirations of the A2K movement are questions of degree, distribution, and velocity: Will the informational component of our world advance rapidly or evenly enough to overwhelm the persistent inequalities in the material? Will such advances be distributed evenly enough to make the promise of living beyond scarcity a reality for any but the world's richest? Can we expect a leveling of the pervasive material inequalities in the world if the poor lack access to the labs, computers, and textbooks that would allow them to do more for themselves and if they also lack access to the kind of political power and voice that would allow them to change the terms on which resources and informational goods are currently distributed? Can A2K advocates build a theory of freedom that is based upon the radical political possibilities of the immaterial while also accounting for the crucial moment when the informational intersects with the material in the places that we create and communicate, that we live and die?

CAN A2K CREATE A POLITICS OF KNOWLEDGE? WHAT ARE THE PROPER LIMITS OF THE POLITICS OF A2K?

The A2K movement was deliberately structured around a demand for access to "knowledge." And yet this introduction and the pages that follow make it clear that A2K actors operate routinely in the idiom of "information," for example, extolling the importance of the information commons or the lessons of information economics. What difference might this difference make? There are at least two ways to approach the question—by asking what A2K activists invest in their own choice of terms and by investigating the etymological implications of the distinction between information and knowledge.

If A2K theorists talk often about information, why isn't the A2K movement instead the A2I movement—a mobilization for "access to information"? Ahmed Abdel Latif, in his account of how the term "A2K" was chosen, explains that "at the conceptual level, knowledge, rather than information, is at the heart of the empowerment of individuals and societies. While information is certainly a prerequisite in the generation of knowledge, acquisition of knowledge remains the ultimate goal. Knowledge processes information to produce ideas, analysis, and skills that ideally should contribute to human progress and civilization."[108]

The decision to articulate the movement's demands in relation to knowledge was in part a response to perceived conceptual differences between knowledge and information. Knowledge is a capacity that is central to empowerment—one that relies upon, but is not reducible to information.

How precisely, though, should we understand the difference between knowledge and information? A2K theorists such as Benkler define the distinction in this way: Information is "raw data, scientific reports of the output of scientific discovery, news, and factual reports," while knowledge is "the set of cultural practices and capacities necessary for processing the information into either new statements into the information exchange, or more important in our context, for practical use of the information in appropriate ways to produce more desirable actions or outcomes from action."[109] Thus, information is objective and external, while knowledge is the capacity to use information to create new information or to use information to generate technical effects in the world (knowledge as "know-how").

This is narrower than the definition of knowledge that we might derive from etymology or contemporary usage. According to the dictionary, we can "know" anything that we understand through "experience or association."[110] The English word "knowledge" corresponds to the German *kennen* and French *connaître*, designating a kind of understanding that comes from the senses. But "knowledge" also incorporates the concepts of *wissen* and *savoir*, designating a kind of understanding that is derived from the mind. It thus designates basic acts of human cognition:

recognition, acquaintance, intimacy, consciousness, or, "the fact, state, or condition of understanding."[111]

In its broadest sense, then, knowledge is more than the ability to process information into more information and more know-how. As Jean-François Lyotard writes, knowledge is

> a competence that goes beyond the simple determination and application of the criterion of truth, extending to the determination and application of criteria of efficiency (technical qualification), of justice and/or happiness (ethical wisdom), of the beauty of a sound or color (auditory or visual sensibility), etc. Understood in this way, knowledge is what makes someone capable of forming "good" denotative utterances, but also "good" prescriptive and "good" evaluative utterances. . . . It is not a competence relative to a particular class of statements (for example, cognitive ones) to the exclusion of all others.[112]

Knowledge is here a capacity more than it is an object or a possession—a power immanent to intellectual, social, cultural, and technological relations between humans.[113] Information, in turn, is the externalized object of this capacity, the part of knowledge that can be systematized and communicated or transmitted to others.[114]

What would it mean for the A2K movement to take the distinction between knowledge and information seriously and to theorize itself as a movement for access not just to information, but to knowledge? At a minimum, using the narrower definition of knowledge proposed by Benkler, it would require a focus not only on extending access to information, but also on extending individual capacities to produce information and to make use of information to produce practical effects in the material world.

As Benkler points out, there is "a genuine limit on the capacity of the networked information economy to improve access to knowledge." Knowledge cannot be fully externalized into information—it is a capacity, rather than an object. As such, it does not partake of the same dynamics of plenty that is said to characterize the informational domain. While better access to learning materials can enhance education, learning by doing requires local practice, and the practice of education generally "does not scale across participants, time, and distance."[115]

The A2K movement might focus on forms of information regulation that affect the development of knowledge, as it has done to date in work on access to learning materials, open courseware, and lowering intellectual property barriers to distance learning. These moves are more efforts to increase access to information than access to knowledge. If the A2K movement is to embrace its initial identification with the concept of access to knowledge, it must recognize that while access to some information is clearly a prerequisite of building knowledge in Benkler's

sense, more ubiquitous access to information is not the same thing as more ubiquitous access to knowledge.

Can the A2K movement—as invested as its logic has become in the model of information technologies and the economics of the copy—build a politics of knowledge as a competence? The dream of perfect (and zero-cost) transmissibility cannot survive an encounter with this concept of knowledge, because a competence that cannot be fully externalized and traded, and thus that is embedded in the material, cannot be nonrival. And if knowledge cannot be accessed through a simple download, then a politics of A2K must reach far beyond a politics of enclosure and intellectual property.

Does this mean broadening the A2K mandate to include work on, for example, the financing of primary schools or the effects of austerity budgets on universities around the world? That is one possible outcome. More modestly, it might instead mean that A2K groups recognize their focus is on improving access to information, acknowledge that knowledge is not an object that can simply be downloaded from North to South, and engage openly with those who worry that more information could in some cases not improve, but rather threaten access to knowledge.

What if the A2K movement were instead to embrace the definition of knowledge that corresponds not just to technical or intellectual knowledge, but also, for example, to artistic or ethical knowledge? This would fit well with its attempt to embrace the literary arts, as well as science and technology, but it would also unmoor the movement from the conception of knowledge present in Benkler's definition. Lyotard's broader definition requires us to recognize that the criteria for successful knowledge are created, rather than given.

For the A2K movement, such a recognition would imply the need for a politics not just of access to knowledge, but of what *counts* as knowledge and of who gets to decide what counts. Would this work a fundamental harm to the universalizing aspirations of the A2K movement? Or would it instead make room for A2K advocates to begin to reckon with existing tensions in the movement, for example, surrounding issues of traditional knowledge and the concept of the commons versus the public domain?

CONCLUSION

A critical genealogy of the concept of access to knowledge allows us to map the sometimes contradictory and often complex interventions that are coming to constitute A2K's theoretical commitments. The first and foremost effect of these interventions is to destabilize the dominant legitimation narrative of intellectual property today, the despotic dominion account that treats the

privatization of information as the necessary condition for its efficient production and exploitation.

But the images and values that this new lexicon draws upon should also be examined critically as a place to think about the dilemmas that the A2K movement faces as it seeks to consolidate its critiques of intellectual property and constitute an affirmative vision of its aims. That is the purpose of the questions raised above: What does A2K mean by "freedom"? How can it mediate between its commitments to the public domain and to the commons? Is information different enough to justify the postpolitical and postscarcity elements of A2K thought? And is A2K a movement about knowledge, or about information?

These questions are offered in the spirit of committed criticism: What are those of us engaged in A2K building? Can it be what we claim for it in our most righteous and universalizing moments? Who, ultimately, will decide? What might it mean for us to win what we seek, and how might some of the paths that we have chosen lead us further away from or closer to realizing that aim? My aim here is to articulate these questions. If they are to be resolved, it will be through the iterative and networked process of debate and action that constitutes the A2K movement itself, to which the volume that follows aims to contribute.

NOTES

The author is grateful to Talha Syed, Cori Hayden, Pam Samuelson, and Molly Van Houweling for their insightful comments.

1 Wikipedia, s.v. "Intellectual Property": http://en.wikipedia.org/wiki/Intellectual_property (last accessed February 24, 2010). You can get a sense of the debate by reading the archived "talk" pages, where editors argue about the problems with the definition. See http://en.wikipedia.org/wiki/Talk:Intellectual_property (last accessed February 24, 2010).

2 The Stallman essay is available at www.gnu.org/philosophy/not-ipr.html (last accessed February 1, 2010). Google's algorithm (itself subject to intellectual property protection) answers search queries recursively, using the link structure of the Web to rate the relevance and popularity of a particular Web site.

3 See Gaëlle Krikorian, "Access to Knowledge as a Field of Activism" in this volume and Amy Kapczynski, "The Access to Knowledge Mobilization and the New Politics of Intellectual Property," *Yale Law Journa*l 117 no. 5 (March 2008), available on-line at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1323525.

4 F. M. Scherer, *New Perspectives on Economic Growth and Technological Innovation* (Washington, D.C.: Brookings Institution Press, 1999), pp. 25–28.

5 *Ibid*., p. 24.

6 Manuel Castells, *The Rise of the Network Society*, 2nd ed. (Oxford: Blackwell, 2000), pp. 169–72.

7 Fritz Machlup, *The Production and Distribution of Knowledge in the United States* (Princeton, NJ: Princeton University Press, 1962), p. 9.

8 Daniel Bell, *The Coming of Post-Industrial Society* (New York: Basic Books, 1973), p. 129.

9 See James R. Beniger, *The Control Revolution: Technological and Economic Origins of the Information Society* (Cambridge, MA: Harvard University Press, 1986), p. 23, fig.1.1; Castells, *The Rise of the Network Society*, pp. 212–31.

10 Castells, *The Rise of the Network Society*, pp. 225–26.

11 *Ibid*., pp. 13–21, 30, 17, 31.

12 *Ibid*., p. 101. The globalization of informationalism has been spectacularly illustrated by the recent global economic crisis. The implosion of one exquisitely informational domain in the United States—that of structured finance—cascaded around the world, generating an unprecedently rapid contraction in global trade and production. The World Bank estimated a global contraction of GNP of 1.7 percent in 2009. World Bank, "Global Economic Prospects 2009, Forecast Update," (World Bank, March 2009), available on-line at http://siteresources.worldbank.org/INTGEP2009/Resources/5530448-1238466339289/GEP-Update-March30.pdf (last accessed February 1, 2010), p. 1. The WTO predicts a concomitant contraction of world trade by 9 percent, the biggest since World War II. WTO Secretariat, "WTO sees 9% Global Trade Decline in 2009 as Recession Strikes," press release, March 23, 2009, available on-line at http://www.wto.org/english/news_e/pres09_e/pr554_e.pdf (last accessed February 1, 2010). This is not to say that all regions have been equally affected by the crisis or that all economies are equally dependent upon informationalism—they demonstrably are not. It is to say, rather, that distance from the centers of world finance did not insulate even the poorest from the effects of the recent crisis. Its effects, mediated by communication technologies and techniques such as just-in-time production, are felt through channels such as decreased remittances and increased volatility in commodity markets. The interconnection of markets—itself dependent upon (though not determined by) advances in information technology—is thus one vector for the globalization of the implications of informationalism.

13 Castells, *The Rise of the Network Society*, pp. 108–109.

14 *Ibid*., p. 17 n.25, citing Daniel Bell. Information, in turn, is defined as "data that have been organized and communicated." *Ibid*., citing Marc Porat.

15 Elisabeth L. Eisenstein, *The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early-Modern Europe* (Cambridge: Cambridge University Press, 1979).

16 Digital systems—think here of the binary language of zeros and ones that computers use—deploy discrete variables and thus allow information to be transmitted more faithfully. This is in contrast to continuous variables, which are used by analog systems. On the impact of digitalization, see Beniger, *The Control Revolution*, pp. 25–26: "Digitalization promises to transform currently diverse forms of information into a generalized medium for processing and exchange by the social system, much as, centuries ago, the institution of common currencies and exchange rates began to transform local markets into a single world economy." See also Eben Moglen, "Anarchism Triumphant: Free Software and the Death of Copyright," *First Monday* 4, no. 6 (August 2, 1999), available on-line at http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/684/594 (last accessed February 1, 2010). Moglen writes, "the movement from analog to digital is more important for the structure of social and legal relations than the more famous if less certain movement from status to

contract." By the same token, nondigitalizable forms of knowledge are lost. See Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge*, trans. Geoff Bennington and Brian Massumi (Minneapolis: University of Minnesota Press, 1984).

17 Castells, *The Rise of the Network Society*, p. 185.

18 World Health Organization, *World Health Report 2003: Shaping the Future* (Geneva: World Health Organization, 2003), p. xii, available on-line at http://www.who.int/whr/2003/en/whr03_en.pdf (last accessed February 1, 2010).

19 World Health Organization, "World Report on Knowledge for Better Health: Strengthening Health Systems," (Geneva: World Health Organization, 2004), p. 1, available on-line at http://www.who.int/rpc/meetings/en/world_report_on_knowledge_for_better_health2.pdf (last accessed February 1, 2010).

20 Bell, *The Coming of Post-Industrial Society*, pp. 15–18.

21 *Ibid*., p. 20.

22 Paul Starr, *The Creation of the Media: Political Origins of Modern Communications* (New York: Basic Books, 2004), pp. 97–98.

23 See Michel Foucault, *Discipline and Punish: The Birth of the Prison*, trans. Alan Sheridan (New York: Vintage Books, 1995); Michel Foucault, *The Birth of the Clinic: An Archaeology of Medical Perception*, trans. A. M. Sheridan Smith (New York: Vintage Books, 1994).

24 Nikolas Rose and Peter Miller, "Political Power beyond the State: Problematics of Government," *British Journal of Sociology* 43, no. 2 (June 1992): pp. 173 and 175. See also Max Weber, "Characteristics of Bureaucracy," in *From Max Weber: Essays in Sociology*, ed. and trans. H. H. Gerth and C. Wright Mills (New York: Oxford University Press, 1946), pp. 196–244.

25 Rose and Miller, "Political Power beyond the State," p. 178.

26 Yochai Benkler, *The Wealth of Networks: How Social Production Transforms Markets and Freedom* (New Haven, CT: Yale University Press, 2007), pp. 3, 212–72. See also Krikorian, "Access to Knowledge as a Field of Activism," in this volume.

27 New and more exotic forms of intellectual property rights have also emerged in recent years, such as the "geographical indications" that reserve the use of terms such as "Champagne" to sparkling wine made in certain geographical regions or the exclusive protections for databases that have been implemented in Europe.

28 Copyright terms are required by the TRIPS Agreement to last at least fifty years plus the life of the author, but many countries have longer terms. For example, the current term in the United States is seventy years plus the life of the author.

29 Today, trademark owners may take advantage of more expansive and controversial rights in countries such as the United States, for example, preventing the "dilution" of the value of a mark, even where the use in question would not confuse consumers about the origin of a product.

30 Stallman, "Did You Say 'Intellectual Property'? It's a Seductive Mirage."

31 Catherine L. Fisk, "Removing the 'Fuel of Interest' from the 'Fire of Genius': Law and the Employee-Inventor, 1830–1930," *University of Chicago Law Review* 65, no, 4 (Fall 1998); Catherine L. Fisk, "Authors at Work: The Origins of the Work-for-Hire Doctrine," *Yale Journal of Law and the Humanities* 15, no. 1 (2003).

32 Kapczynski, "The Access to Knowledge Mobilization," pp. 821–22.

33 James Boyle, *The Public Domain* (New Haven, CT: Yale University Press, 2008), pp. 43–45.

34 See the discussion below for more on the potentially problematic nature of the metaphor of the historical "commons" in land.

35 The TRIPS Agreement is available on-line at http://www.wto.org/english/tratop_e/trips_e/t_agm0_e.htm (last accessed February 3, 2010).

36 The best descriptions of this process are found in Susan K. Sell, *Private Power, Public Law: The Globalization of Intellectual Property Rights* (Cambridge: Cambridge University Press, 2003) and Peter Drahos with John Braithwaite, *Information Feudalism: Who Owns the Knowledge Economy?* (New York: New Press, 2002).

37 Peter Drahos, "Global Property Rights in Information: The Story of the TRIPS at the GATT," *Prometheus* 13, no. 1 (1995): p. 16.

38 *Ibid*. See also Gaëlle Krikorian, "Interview with Yann Moulier Boutang," in this volume.

39 Joseph Conrad, *Heart of Darkness* (London: Penguin 1983), pp. 31–32.

40 We might add a third image (at the risk of disrupting the metaphor), derived from natural rights arguments that creators have an inherent entitlement to control or profit from their creations. This argument is less common than the more economically oriented claims, but turns up not infrequently in debates over copyrightable works. Again, the justification for strong copyright as it appears in these debates suppresses substantial disagreement among theorists about the nature and extent of any such natural rights. See, for example, Jeanne L. Schroeder, "Unnatural Rights: Hegel and Intellectual Property," *University of Miami Law Review* 60, no. 6 (July 2006); Seana Valentine Shiffrin, "Lockean Arguments for Private Intellectual Property," in Stephen R. Munzer (ed.), *New Essays in the Legal and Political Theory of Property* (Cambridge: Cambridge University Press, 2001), pp. 138–67; Jeremy Waldron, "From Authors to Copiers: Individual Rights and Social Values in Intellectual Property," *Chicago-Kent Law Review* 68 (1993): pp. 842–87.

41 William Blackstone, *Commentaries on the Laws of England, Volume 2*, ed. Wayne Morrison (London: Cavendish, 2001), p. 3.

42 Contrary to the despotic dominion account, intellectual property rights are bounded in numerous ways. For example, they typically expire after a period of time (for example, twenty years for a patent), are subject to affirmative rights of users (for example, research rights in patent law and fair use rights in copyright), and may be overridden by governments in certain circumstances (for example, through the mechanism of compulsory licensing). Rights to material property are limited by many different doctrines of property law, for example, the law of eminent domain (which permits the government to take land for public use in exchange for just compensation) and the doctrine of necessity (which permits individuals to trespass on the land of another to prevent something such as a threat to life).

43 The marginal cost of production is the cost required to produce one additional unit of the good. For example, the marginal cost of producing the millionth watch for the next customer is the cost to a watchmaker of producing one additional watch. The concept of marginal cost is important to economists, because competitive-market theory indicates that in a competitive market, price should equal marginal cost. The watchmaker will make and sell another watch if the next customer can pay the marginal cost.

44 It may cost something to distribute the theory to others (the marginal cost of distribution may not be zero), but that is a separate matter.

45 Intellectual property rights may help solve the dynamic (long-run) problem of provisioning, but they do so at this short-run cost—a cost that not all strategies of information production generate.

46 Deadweight loss of this sort can be eliminated with perfect price discrimination, but that

is not expected in practice. The price-discrimination solution also generates distributional effects, transferring wealth from consumers to producers.

47 See, for example, Kenneth J. Arrow, "Economic Welfare and the Allocation of Resources for Invention," in Universities–National Bureau (ed.), *The Rate and Direction of Inventive Activity: Economic and Social Factors, National Bureau of Economic Research*. Special conference series 13 (Princeton, NJ: Princeton University Press, 1962), p. 623, available on-line at http://www.nber.org/chapters/c2144.pdf?new_window=1 (last accessed March 8, 2010).

48 Harold Demsetz, "Toward a Theory of Property Rights," *American Economic Review* 57, no. 2 (May 1967): pp. 347–59. The "tragedy" term comes from Garrett Hardin, "The Tragedy of the Commons," *Science* 162, no. 3859 (December 13, 1968), who famously argued that collective ownership of resources under conditions of scarcity would lead to their destruction.

49 For an early work in this field, see Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge, MA: Harvard University Press, 1971).

50 Pamela Samuelson, "Enriching Discourse on Public Domains," *Duke Law Journal* 55, no. 4 (2006): pp. 783 and 786.

51 Boyle, *The Public Domain*, p. xiv.

52 *Ibid*., p. xv.

53 David Lange, "Recognizing the Public Domain," *Law and Contemporary Problems* 44, no. 4 (1981): pp. 147 and 150–51. For other important early work on the public domain, see the sources cited in Kapczynski, "The Access to Knowledge Mobilization," p. 856 n.232. For a detailed discussion of the ways that scholars have used the term "public domain," see Samuelson, "Enriching Discourse on Public Domains."

54 Boyle, *The Public Domain*, p. 38. In the first definition, Boyle means to include, for example, resources such as language that have never been subject to intellectual property rights, as well as works that have fallen out of protection, for example, because the terms expired. In the second, he means to include domains of freedom that are preserved with respect to protected works, for example, the aspect of a patented invention that may be used because of the "experimental use" exception to patent law.

55 *Ibid*., p. 41.

56 Copyrights, that is, expire after a fixed term and are limited by fair use rights that protect direct appropriations in certain circumstances, such as for the purpose of parody.

57 See Jane Austen and Seth Grahame-Smith, *Pride and Prejudice and Zombies* (Philadelphia: Quirk Books, 2009); Michael Weinberg, "What Do Ebooks, Zombies, and Copyright Terms Have in Common Besides this Headline?" *Public Knowledge*, December 14, 2009, available online at http://www.publicknowledge.org/node/2815 (last accessed February 5, 2010).

58 Fair-use and fair-dealing exceptions place limits on this power, but are widely criticized as too vague and narrow to provide sufficient protection.

59 Lawrence Lessig, *Free Culture: How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity* (New York: Penguin, 2004), pp. 8–11; William W. Fisher III, *Promises to Keep: Technology, Law, and the Future of Entertainment* (Stanford, CA: Stanford University Press, 2004), pp. 28–31.

60 The public domain can be seen as a "subsidy" in the sense that works within the public domain are either funded directly by the state (for example, the collection of weather data or basic scientific research) or facilitated by the intellectual property rules and other rules administered by the state. But the public domain is also unlike a subsidy for the poor,

because it is neither preferentially available to the poor or populated through a process that seeks to provide the poor with the informational goods that they particularly need.

61 Boyle, *The Public Domain*, p. 39. It is worth noting, however, that there is a genealogical (and as far as I know, unnoticed) link between the commons and the public domain. The term "public domain," according to the *Oxford English Dictionary*, was to designate "land belonging to the public; common land." One could thus speak in the eighteenth century of "cattle that fed on the public domain." *Oxford English Dictionary*, s.v. "Public Domain," available on-line at http://www.oed.com (subscription required).

62 The commons is "generally used to denote a resource over which some group has access and use rights." Boyle, *The Public Domain*, p. 39.

63 *Ibid*., p. 184.

64 While small open-source projects may be quite informal in their governance, larger projects tend to have more elaborate decision-making procedures. Steven Weber, *The Success of Open Source* (Cambridge, MA: Harvard University Press, 2004), p. 64. For example, Linux is governed by debates on e-mail lists, procedures for reviewing code, and a "hierarchy of gatekeepers" who decide whether a piece of code is included. *Ibid*., pp. 63–64. Apache is governed by "a formal de facto constitution that is built around a committee with explicit voting rules for approval of new code." *Ibid*.

65 Yochai Benkler, "Coase's Penguin, or, Linux and the Nature of the Firm," *Yale Law Journal* 112, no. 3 (2002), pp. 369–446. See also Steven Weber, *The Success of Open Source*, p. 62: "The key element of the open source process, as an ideal type, is voluntary participation and voluntary selection of tasks" (italics omitted).

66 Free Software Foundation, "The GNU General Public License," available on-line at http://www.gnu.org/copyleft/gpl.html (last accessed February 5, 2010).

67 The latest version of the GPL, for example, was subject to extensive comment and debate, facilitated by the Free Software Foundation among others. See http://gplv3.fsf.org (last accessed February 5, 2010).

68 James Boyle, "The Second Enclosure Movement and the Construction of the Public Domain," *Law and Contemporary Problems* 66, nos. 1–2 (Winter–Spring 2003): p. 41.

69 Carol M. Rose, "The Comedy of the Commons: Commerce, Custom, and Inherently Public Property," in *Property and Persuasion: Essays on the History, Theory, and Rhetoric of Ownership* (Boulder, CO: Westview Press, 1994).

70 Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge: Cambridge University Press, 1990).

71 See Roberto Verzola's essay "Undermining Abundance: Counterproductive Uses of Technology and Law in Nature, Agriculture, and the Information Sector" in this volume.

72 *Ibid*. Ostrom argued that communities can successfully organize the necessary cooperation only under certain conditions, for example, where the community is sufficiently bounded and the members sufficiently proximate. The concept of a digital commons challenges some of these assumptions and raises important questions about the conditions of successful common management in the digital age.

73 See, respectively Creative Commons, "Creative Commons—Attribution—Share Alike 3.0 Unported" license, available on-line at http://creativecommons.org/licenses/by-sa/3.0 (last accessed February 7, 2010) and Philippe Aigrain, "An Uncertain Victory: The 2005 Rejection of Software Patents by the European Parliament," Laura DeNardis, "The Global Politics of

Interoperability," and Manon A. Ress, "Open-Access Publishing: From Principles to Practice," in this volume.

74 See DeNardis, "The Global Politics of Interoperability," and Ress, "Open-Access Publishing."

75 Benkler, "Coase's Penguin," pp. 371–72.

76 Boyle, "The Second Enclosure Movement," p. 46.

77 Moglen, "Anarchism Triumphant."

78 Boyle, "The Second Enclosure Movement," pp. 51 and 41 n.33.

79 Danny Yee, "Development, Ethical Trade and Free Software," *First Monday* 4 (1999), available on-lineathttp://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/709/619 (last accessed February 7, 2010).

80 Georg C. F. Greve, "Statement by Free Software Foundation Europe (FSFE) at the Inter-Sessional, Inter-Governmental Meeting on a Development Agenda for WIPO," (April 2005), available on-line at http://fsfe.org/projects/wipo/statement-20050413.en.html (last accessed February 7, 2010).

81 Linus Torvalds, quoted in Yee, "Development, Ethical Trading and Free Software."

82 See the remarks by Onno Purbo in "Virtual Roundtable on A2K Politics," in this volume.

83 See Ahmed Abdel Latif's essay, "The Emergence of the A2K Movement: Reminiscences and Reflections of a Developing-Country Delegate," in this volume.

84 Yochai Benkler, in "The Idea of Access to Knowledge and the Information Commons: Long-Term Trends and Basic Elements" in this volume, notes that in the campaign for access to medicines, the "language of justice is most easily available and has been dominant."

85 Thus, the manifesto of the first global march for HIV/AIDS treatment access begins not with a discussion of patents or prices, but rather by asserting the "fundamental rights of health-care and access to life-sustaining medicines." "Global Manifesto, Treatment for All . . . Now!" Durban AIDS Conference Reports (July 2000), available on-line at http://www.actupny.org/reports/durban-access.html (last accessed February 7, 2010).

86 See the essay by Spring Gombe and James Love, "New Medicines and Vaccines: Access, Incentives to Investment, and Freedom to Innovate," in this volume.

87 To be sure, activists demand free HIV medicines as well as generic HIV medicines, because most of the people in the world living with HIV/AIDS cannot pay even the cost of generics. But the demand is not that drug companies give the drugs away for free, but that governments buy generic medicines for those in need.

88 Lessig, *Free Culture*, p. xiv.

89 Wendy Hui Kyong Chun, *Control and Freedom: Power and Paranoia in the Age of Fiber Optics* (Cambridge, MA: The MIT Press, 2006).

90 Benkler writes most eloquently of this, aligning the public domain with freedom from "hierarchical relations of production" and "tightly scripted possibilities." Benkler, *The Wealth of Networks*, p. 138.

91 Boyle, "The Second Enclosure Movement and the Construction of the Public Domain," p. 62. Lessig also overtly aligns the freedom of "free culture" with "'free markets,' 'free trade,' [and] 'free enterprise.'" Lessig, *Free Culture*, p. xiv.

92 GRAIN, "Freedom from IPR: Towards a Convergence of Movements," editorial, *Seedling* (October 2004), p. 3, available on-line at http://www.grain.org/seedling/?id=301 (last accessed February 7, 2010).

93 See Carlos M. Correa, "Access to Knowledge: The Case of Indigenous and Traditional

Knowledge" and Jeffrey Atteberry, "Information/Knowledge in the Global Society of Control: A2K Theory and the Postcolonial Commons" in this volume.

94 Lawrence Lessig, *Remix: Making Art and Commerce Thrive in the Hybrid Economy* (New York: Penguin Press, 2008).

95 United Nations, *The Millennium Development Goals Report 2009* (New York, 2009), p. 52, available on-line at http://www.un.org/millenniumgoals/pdf/MDG_Report_2009_ENG.pdf (last accessed February 7, 2010).

96 For the first position, see, for example, Lessig, *Free Culture*, p. 123; Benkler, *The Wealth of Networks*, pp. 139–40 and 240; and Benkler, "The Idea of Access to Knowledge and the Information Commons" in this volume, where he argues that "freedom, justice, and innovation all require *effective* agency, not merely formal permission to act." Benkler does briefly address the digital divide, but refers to it as a "transitional problem." Benkler, *Wealth of Networks*, pp. 236–37.

97 Collection societies like ASCAP, for example, act as clearinghouses to manage and enforce copyright owners' public-performance rights. Collective management here is a strategy to extract value from copyrighted works. Such societies typically engage in blanket licensing schemes, charging fixed royalties in order to save copyright holders the cost of enforcement. For a discussion of the operation and implications of collective rights management organizations, see Robert P. Merges, "Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations," *California Law Review* 84, no. 5 (1996): pp. 1293–1385.

98 See H. L. A. Hart, *The Concept of Law* (Oxford: Clarendon Press, 1961). In the commons, the recognition rule would be the rule that determines the validity of governing norms.

99 On the former, see Gabriella Coleman, "The Political Agnosticism of Free and Open Source Software and the Inadvertent Politics of Contrast," *Anthropological Quarterly* 77, no. 3 (2004): pp. 507–19.

100 Benkler, "The Idea of Access to Knowledge and the Information Commons." Boyle adopts the same spirit when he calls the politics of open source a "curious mix of Kropotkin and Adam Smith." Boyle, "The Second Enclosure Movement," p. 46.

101 Roberto Unger, *What Should the Left Propose?* (London: Verso, 2005).

102 Benkler, "The Idea of Access to Knowledge and the Information Commons."

103 Verzola, "Undermining Abundance: Counterproductive Uses of Technology and Law in Nature, Agriculture, and the Information Sector."

104 *Ibid*.

105 Lynn P. Freedman et al., "Who's Got the Power: Transforming Health Systems for Women and Children, Summary Version," United Nations Millennium Project, 2005, pp. 1–2, available online at http://www.unmillenniumproject.org/documents/TF4Childandmaternalhealth.pdf (last accessed February 7, 2010).

106 On the political nature of famines, see, for example, Amartya Sen, *Poverty and Famines: An Essay on Entitlement and Deprivation* (Oxford: Clarendon Press, 1982) and Alex de Waal, *Famine Crimes: Politics and the Disaster Relief Industry in Africa* (London: African Rights and the International African Institute, 1997).

107 Benkler, in particular, contends that the networked information economy can facilitate greater political freedom. See *The Wealth of Networks*, pp. 176–272.

108 Latif, "The Emergence of the A2K Movement: Reminiscences and Reflections of a Developing-Country Delegate."

109 Benkler, *The Wealth of Networks*, p. 313.

110 *Merriam-Webster Online Dictionary* (2009), s.v. "Knowledge," http://www.merriam-webster.com/dictionary/knowledge (last accessed February 7, 2010), defining knowledge as gained "experience or association."

111 *Oxford English Dictionary* (2009), s.v. "Knowledge," available on-line at http://www.oed.com (subscription required).

112 Lyotard, *The Postmodern Condition*, p. 18.

113 This definition of knowledge differs substantially from the one offered by theorists such as Castells, who mean by it a "set of organized statements of fact." Castells, *The Rise of the Network Society*, p. 17 n.25.

114 *Ibid*., defining information as "data that have been organized and communicated."

115 Benkler, *The Wealth of Networks*, pp. 314–15.