

## *Fencing off ideas: enclosure & the disappearance of the public domain*

*The law locks up the man or woman  
Who steals the goose from off the common  
But leaves the greater villain loose  
Who steals the common from off the goose.*

*The law demands that we atone  
When we take things we do not own  
But leaves the lords and ladies fine  
Who take things that are yours and mine.*

*The poor and wretched don't escape  
If they conspire the law to break;  
This must be so but they endure  
Those who conspire to make the law.*

*The law locks up the man or woman  
Who steals the goose from off the common  
And geese will still a common lack  
Till they go and steal it back.*

This poem is one of the pithiest condemnations of the English enclosure movement, the process of fencing off common land and turning it into private

property. (Although we refer to it as “the enclosure movement,” it was actually a series of enclosures that started in the fifteenth century and went on, with differing means, ends, and varieties of state involvement, until the nineteenth.) The poem manages in a few lines to criticize double standards, expose the artificial and controversial nature of property rights, and take a slap at the legitimacy of state power. And it does it all with humor, without jargon, and in rhyming couplets.

Sir Thomas More went further, though he used sheep rather than geese to make his point. He argued that enclosure was not merely unjust in itself, but harmful in its consequences. It was a *cause* of economic inequality, crime, and social dislocation.

Your sheep that were wont to be so meek and tame, and so small eaters, now, as I hear say, be become so great devourers and so wild, that they eat up, and swallow down the very men themselves. They consume, destroy, and devour whole fields, houses, and cities. For look in what parts of the realm doth grow the finest and therefore dearest wool, there noblemen and gentlemen . . . leave no ground for tillage, they enclose all into pastures; they throw down houses; they pluck down towns, and leave nothing standing, but

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only the church to be made a sheep-house. ... Therefore that one covetous and insatiable cormorant and very plague of his native country may compass about and enclose many thousand acres of ground together within one pale or hedge, the husbandmen be thrust out of their own.

The enclosure movement continues to draw our attention. It offers irresistible ironies about the two-edged sword of "respect for property" and lessons about the role of the state in making controversial, policy-laden decisions to define property rights in ways that subsequently come to seem both natural and neutral.

Following in the footsteps of Thomas More, critics have long argued that the enclosure movement imposed devastating costs on one segment of society. Some of these costs were brutally and relentlessly "material" – for example, the conversion of crofters and freeholders into peons, seasonal wage-laborers, or simply, as More argued in *Utopia*, beggars and thieves. But other harms were harder to classify: the loss of a form of life, and the relentless power of market logic to migrate to new areas, disrupting traditional social relationships, views of the self, and even the relationship of human beings to the environment.

A great many economic historians have begged to differ. As they see the matter, the critics of enclosure have fallen prey to the worst kind of sentimentality, romanticizing a form of life that was neither comfortable nor noble, and certainly not very egalitarian.

From an economist's point of view, the key fact about the enclosure movement is that it *worked*: this new property regime allowed an unparalleled expansion of productive possibilities. By transferring inefficiently managed common land into the hands of a single owner, enclosure averted one aptly named

"tragedy" of the commons: overuse. It also created incentives for large-scale investment, allowed control over exploitation, and in general ensured that the resource would be used efficiently. Unless the feudal lord knew that the fruits of his labor would be his alone, he would not have invested in drainage schemes, the purchase of sheep, or the rotation of crops in order to increase the yield of his acreage.

Strong private-property rights helped to avoid the tragedies of both overuse and underinvestment. As a result of the enclosure movement, fewer Englishmen starved: more grain was grown, and more sheep were raised. If the price of this social gain was a greater concentration of economic power in fewer hands and despoliation of the environment, so be it. Those who weep about the terrible effects of private property should realize that it literally *saved lives*. Or so say the economic historians.

This is a debate of more than antiquarian interest, for we are in the midst of a new kind of enclosure movement, this one aimed at exploiting a new and intangible kind of commons – call it a "commons of the mind."<sup>1</sup> Once again, things that were formerly thought to be uncommodifiable, essentially common, or outside the market altogether are being turned into private possessions under a new kind of property regime. But this

1 The analogy to the enclosure movement has been too succulent to resist. To my knowledge, Ben Kaplan, Pamela Samuleson, Yochai Benkler, David Lange, Christopher May, and Keith Aoki have all employed the trope, as I have myself on previous occasions. For a particularly thoughtful and careful development of the parallelism see Hannibal Travis, "Pirates of the Information Infrastructure: Blackstonian Copyright and the First Amendment," *Berkeley Tech. Law Journal* 15 (2) (Spring 2000): 777.

time the property in question is intangible, existing in databases, business methods, and gene sequences.

Take the human genome as an example. The opponents of "enclosure" have claimed that the genome "belongs to everyone," that it is literally "the common heritage of humankind." They say that the code of life ought not and perhaps in some sense *cannot* be owned by an individual or a corporation. When patents have been granted for stem cells and gene sequences, critics have mused darkly about the way in which the state is simply handing over monopoly power to private parties, potentially thwarting future research and innovation. The new monopolists have names like Geron, Celera, and Human Genome Sciences, and their holdings are in the form of patent portfolios rather than oil wells or steel plants.

Alongside these reports about the *beneficiaries* of the new property scheme run news stories about those who were not so fortunate, the commoners of the genetic enclosure. Law students across America now read *Moore v. Regents*, a California Supreme Court case deciding that poor Mr. Moore had no property right to a cell line derived from his spleen. In this case, the court decided that giving property rights to "sources" would make it more difficult for scientists to share cell lines with fellow researchers – reading the decision, one can almost picture the Styrofoam coolers criss-crossing the country by Federal Express in an orgy of altruistic flesh swapping. Yet this fear of the pernicious effects of property rights did not last for long. In another portion of the opinion the court speaks approvingly of the patent granted to the doctors whose inventive genius created a billion-dollar cell line from Mr. Moore's "naturally occurring raw material." Like the com-

moner, Mr. Moore finds that his naturalistic and traditional property claims are portrayed as impediments to innovation. Like the beneficiaries of enclosure, the doctors are granted a property right to encourage efficient development of a wasted resource.

Of course, like the first enclosure movement, this new one has its defenders. To the question "should there be patents over human genes?" the answer will be "private property saves lives." Only by extending the reach of property rights can the state guarantee the investment of time, ingenuity, and capital necessary to produce new drugs and gene therapies. Private-property rights are a necessary incentive to research; economists need only worry about how to allocate these rights most efficiently. Or so say the advocates of private-property rights.

The genome is not the only area to have been partially "enclosed" in the past decade. In recent years, intellectual property rights have been dramatically expanded in many different fields of human endeavor – from business-method patents to the Digital Millennium Copyright Act, from trademark antidilution rulings to the European Database Protection Directive.

In 1918, the American jurist Louis Brandeis confidently claimed that "[t]he general rule of law is, that the noblest of human productions – knowledge, truths ascertained, conceptions, and ideas – become, after voluntary communication to others, free as the air to common use." At the time that Brandeis made that remark, intellectual property rights were the exception rather than the rule; it was widely agreed that ideas and facts must always remain in the public domain. But that old consensus is now under attack. Long-standing limits on the reach of intellectual property – the

antierosion walls around the public domain – are being eaten away each year.

The annual process of updating my syllabus for a basic intellectual property course provides a nice snapshot of what is going on. I can wax nostalgic looking back to a five-year-old text, with its confident list of the subject matter that intellectual property rights *couldn't* cover, the privileges that circumscribed the rights that did exist, the length of time before a work fell into the public domain. In each case, the old limits have recently been changed or challenged.

Patents are increasingly stretched out to cover “ideas” that twenty years ago all scholars would have agreed were unpatentable: the so-called business method patents, which cover such “inventions” as auctions or accounting methods, are an obvious example. Most troubling of all are the attempts to introduce intellectual property rights over mere compilations of facts. If Anglo-American intellectual property law had an article of faith, it was that unoriginal compilations of facts would remain in the public domain. This was “no mere accident of a statutory scheme,” as the Supreme Court once put it: protecting the raw material of science and speech is as important to the next generation of innovation as the intellectual property rights themselves. The system would offer a limited monopoly for an invention or an original expression of ideas, but the monopoly was to be tightly confined to the layer of invention or expression. The facts below, or the ideas above, would remain free for all to build upon. Even the stuff that could be protected by intellectual property – the drug or the poem, say – was supposed to pass into the public domain after a certain number of years. As Jefferson and Macaulay both observed, intellectual property rights were necessary evils. They should

be strictly limited in both time and extent.

Today, these traditional assumptions about intellectual property law are under attack. Some of the challenges are subtle. In patent law, stretched interpretations of novelty and nonobviousness allow intellectual property rights to move closer and closer to the underlying datalayer; gene sequence patents come very close to being rights over a particular discovered arrangement of data – C's, G's, A's, and T's. Other challenges are overt; the European Database Directive does (and the various proposed database bills in the United States would) create proprietary rights over compilations of facts, often without even the carefully framed exceptions of the copyright scheme, such as the usefully protean category of “fair use.”

The older strategy of intellectual property law was a “braided” one: thread a thin layer of intellectual property rights around a commons of material from which future creators would draw. Even that thin layer of intellectual property rights was limited so as to allow access to the material when the private-property owner might charge too much, or just refuse; fair use allows for parody, commentary, and criticism, and also for “decompilation” of computer programs so that Microsoft Word's competitors can reverse-engineer its features in order to make sure that their program can convert Word files. (Those who prefer topographical metaphors might imagine a quilted pattern of public and private land, with legal rules specifying that certain areas – beaches, say – can never be privately owned, and accompanying rules giving public right of way through private land if there is a danger that access to the commons might otherwise be blocked.)

From the inception of intellectual

property law in the eighteenth century until quite recently, protection of the public domain – the intangible commons – was one fundamental goal of the law in most nations. In the new vision of intellectual property, however, property rights should be established everywhere; more is better. Expanding patentable and copyrightable subject matter, lengthening the copyright term, giving legal protection to “digital barbed wire,” even if it is used in part to prevent fair use: each of these can be understood as a vote of no confidence in the productive powers of the commons. We seem to be shifting from Brandeis’s assumption that the “noblest of human productions are free as the air to common use” to the assumption that any human production left open to free use is inefficient, if not tragic.

So far I have argued that there are profound similarities between the first enclosure movement and our contemporary expansion of intellectual property. Today, as in the fifteenth century, proponents and opponents of enclosure are locked in battle, hurling at each other incommensurable claims about innovation, efficiency, traditional values, the boundaries of the market, the saving of lives, the loss of familiar liberties. Once again, opposition to enclosure is portrayed as economically illiterate; the beneficiaries of enclosure tell us that an expansion of property rights is needed in order to fuel progress. Indeed, the post-Cold War “Washington Consensus” is invoked to claim that the lesson of history itself is that the only way one gets growth and efficiency is through markets; property rights, surely, are the *sine qua non* of markets.

But if there are similarities between the two enclosure movements, there are also crucial differences. The digitized

and networked “commons of the mind,” circa 2002, differs greatly from the grassy and isolated common plots of land that dotted England circa 1400.<sup>2</sup> Some of the key differences should lead us to question whether stronger intellectual property rights are really either necessary or desirable.

For example, consider the well-known fact that a digital text, unlike a plot of land, can be used by countless people simultaneously without mutual interference or destruction of the shared resource. Unlike an earthly commons, the commons of the mind is generally what economists call “nonrival.” Many uses of land are mutually exclusive. If I am using the field for grazing, it may

2 The differences are particularly strong in the arguments over “desert” – are these property rights deserved, or are they simply violations of the public trust, privatizations of the commons? For example, some would say that we never had the same *traditional* claims over the genetic commons that the victims of the first enclosure movement had over theirs; this is more like newly discovered frontier land, or perhaps even privately drained marshland, than it is like well-known common land that all have traditionally used. In this case, the enclosers can claim (though their claims are disputed) that they discovered or perhaps simply made usable the territory they seek to own. The opponents of gene patenting, on the other hand, turn more frequently than the farmers of the eighteenth century to religious and ethical arguments about the sanctity of life and the incompatibility of property with living systems. These arguments, or the appeals to free speech that dominate debates over digital intellectual property, have no precise analogue in debates over hunting or pasturage, although, again, there are common themes. For example, we are already seeing nostalgic laments of the loss of the immemorial rights of Internet users. At the same time, the old language of property law is turned to this more evanescent subject matter; a favorite article title is “The Ancient Doctrine of Trespass to Websites” (I. Trotter Hardy, “The Ancient Doctrine of Trespass to Web Sites,” *Journal of Online Law* [Oct. 1996]: art. 7).

interfere with your plans 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 depredations through overuse that affect fields and fisheries are generally not a problem with intellectual property. (The exceptions to this statement turn out to be fascinating; in the interest of brevity I will ignore them entirely.)

Thus, one cause of tragedy on the earthly commons generally does not arise on the commons of the mind. Overuse is normally not a problem. But what about incentives to create the intellectual resources in the first place?

Here intellectual property, especially in our digitized age, seems at first glance to pose a unique problem. It has long been relatively easy for pirates to produce unauthorized copies of poems, novels, treatises, and musical compositions. In the language of the economists, it has long been difficult, and in some cases virtually impossible, to stop one unit of an intellectual good from satisfying an infinite number of users at zero marginal cost. A familiar conclusion seems irresistible: without an ability to protect their creations against theft, creators will be unable to earn an adequate living. There will be inadequate incentives to create. Thus the law must step in and create a monopoly called an intellectual property right.

This is the standard argument in favor of intellectual property rights, but it has recently acquired a historical dimension, a teleology of expansion over time. After all, in our digitized age, it is easier than ever before for pirates to copy not just a book, but a film, a photograph, a recorded piece of music, a drug formula, a computer program – the list goes on. Surely the historical lowering of copying

and transmission costs implies a corresponding need to *increase* the strength of intellectual property rights.

Imagine a line. At one end sits a monk, painstakingly transcribing Aristotle's *Poetics*. In the middle lies the Gutenberg printing press. Three-quarters of the way along the line is a photocopying machine. At the end lies the Internet. At each stage, copying costs are lowered: Aristotle's text becomes ever more freely and widely accessible; indeed, the complete text is currently available in both Greek and English to anyone with access to the Internet (at <[www.perseus.tufts.edu](http://www.perseus.tufts.edu)>).

Among some analysts, the assumption seems to be that the strength of intellectual property rights must correspond inversely to the cost of copying. The argument goes something like this: To deal with the monk-copyist, we need no intellectual property right; physical control of the manuscript is enough. To deal with the Gutenberg press, we need the Statute of Anne. But to deal with the Internet, we need the Digital Millennium Copyright Act, the No Electronic Theft Act, the Sonny Bono Copyright Term Extension Act, and perhaps even the Collections of Information Anti-Piracy Act. Why? As copying costs approach zero, intellectual property rights must approach perfect control. And if a greater proportion of product value and GNP is now in the form of information, then obviously we have an independent reason to need strengthened protection. A five-dollar padlock would do for a garden shed, but not for a vault.

Like any attractive but misleading argument, this one has some truth. The Internet does lower the cost of copying and facilitates illicit copying. The same technology also lowers the costs of production, distribution, and advertising –

and dramatically increases the size of the potential market.

Is the “net” result, then, a loss to rights-holders such that we need to increase protection in order to maintain a constant level of incentives? The answer is not self-evident.

A large, leaky market may actually produce *more* revenue than a small, tightly controlled market. What’s more, the same technologies that allow for cheap copying also allow for swift and encyclopedic search engines – the best detection device for illicit copying ever invented. It would be impossible to say, on the basis of the evidence we have, that owners of protected content are better or worse off as a result of the Internet.

My intuition – as well as our historical experience with prior “dangerous” technologies such as the VCR – points strongly to the possibility that copyright holders are better off. In any case, there simply isn’t enough evidence, either to support my intuition or to support the conclusion that as copy costs decline intellectual property rights must be strengthened. Furthermore, given the known static and dynamic costs of monopolies, and the constitutional injunction to encourage the progress of science and useful arts, the burden should be on those requesting expanded intellectual property rights to prove their value.

Another argument commonly offered in defense of granting new intellectual property rights stresses the increasing importance of products that use, embody, or process information in today’s global economy. Perhaps the commons of the mind requires enclosure because it is now such a vital sector of economic activity. The importance of agriculture to the economy was certainly

one of the arguments for the first enclosure movement. (Lovers of Patrick O’Brian’s novels may remember Maturin’s stolid silence in the face of an admiral’s increasingly vehement insistence that enclosure was essential to produce the corn necessary to fight the Napoleonic war.)

Here we come to another big difference between the commons of the mind and the earthly commons. As has frequently been pointed out (by Jessica Litman, Pamela Samuelson, and Richard A. Posner, among others), information products are frequently made out of fragments of other information products; one person’s information output is someone else’s information input. These inputs may be snippets of code, discoveries, prior research, images, genres of work, cultural references, databases of single nucleotide polymorphisms – all can function as raw material for future innovation. And every potential increase of protection over such products also raises the costs of, or reduces access to, the raw material to create new products.

The right balance is difficult to strike. One Nobel Prize-winning economist has claimed that it is actually impossible to produce an “informationally efficient” market.<sup>3</sup> Whether or not it is impossible in theory, it is surely a difficult problem in practice. In other words, even if enclosure of the arable commons always produced gains (itself a subject of debate), enclosure of the information commons clearly has some potential to *harm* intellectual innovation. More property rights, even though they supposedly offer greater incentives, do not necessarily ensure greater intellectual

<sup>3</sup> Sanford J. Grossman and Joseph E. Stiglitz, “On the Impossibility of Informationally Efficient Markets,” *American Economic Review* 70 (1980): 393.

productivity. Sometimes just the opposite may be true.<sup>4</sup>

My arguments so far have taken as a given the various problems to which modern intellectual property laws have been a response. I have discussed the extent to which the logic of enclosure works for the commons of the mind as well as it did for the arable commons, taking into account the effects of an information society and a global Internet. Remember that when I speak of enclosure, I am talking about *increases* in the level of rights: protecting new subject matter for longer periods of time, criminalizing certain technologies, making it illegal to cut through digital fences even if they have the effect of foreclosing previously lawful uses, and so on.

What I have *not* yet done is ask whether the brute fact of the Internet actually unsettles old assumptions and forces us to reconsider the need for incentives – at least in certain areas. But this is a question that cannot be evaded.

For anyone interested in the way that computer networks may embody a new mode of collaborative production, an exemplary case to study is the open-source software movement.<sup>5</sup> This soft-

ware is released under a series of licenses, the most important being the General Public License, or GPL. The GPL specifies that anyone may copy the software, provided the license remains attached and the “source code” for the software always remains available.<sup>6</sup>

Users may add to or modify the code, may build on it and incorporate it into their own work, but if they do so then the new program created is also covered by the GPL. Some people refer to this as the “viral” nature of the license; others find the term offensive. The point, however, is that the open quality of the creative enterprise spreads; it is not simply a donation of a program or a work to the public domain, but a continual accretion in which all gain the benefits of the program on pain of agreeing to give their own additions and innovations back to the communal project.

The open-source software movement has produced software that either rivals or exceeds the productive capacities of conventional proprietary software. Its adoption on the enterprise level is impressive, as are the various technical encomia to its strengths.

But the most remarkable aspect of the open-source software movement is harder to see. It functions as a new kind of social system: many of those who contribute to the movement by writing a part of the software do so as volunteers,

4 For a more technical account, see James Boyle, “Cruel, Mean, or Lavish? Economic Analysis, Price Discrimination and Digital Intellectual Property,” *Vanderbilt Law Review* 536 (2000): 2007, <<http://www.vanderbilt.edu/Law/lawreview/vol536/boyle.pdf>>.

5 Glyn Moody, *The Rebel Code: The Inside Story of Linux and the Open Source Revolution* (Cambridge, Mass.: Perseus Pub., 2001); Peter Wayner, *Free for All: How Linux and the Free Software Movement Undercut the High-tech Titans* (New York: HarperBusiness, 2000). See also Eben Moglen, “Anarchism Triumphant: Free Software and the Death of Copyright,” in the online journal *First Monday* (1999), <<http://emoglen.law.columbia.edu/publications/anarchism.html>>.

6 Proprietary, or “binary only,” software is generally released only once the source code has been compiled into machine-readable object code format, a form that is impenetrable to the user. Even if you were a master programmer, and if the provisions of the Copyright Act, the appropriate licenses, and the DMCA did not forbid you from doing so, you would be unable to modify commercial proprietary software so as to customize it for your needs, remove a bug, or add a feature. Open-source programmers say disdainfully that it is like buying a car with “the hood welded shut.”

without direct remuneration. Here, it seems, we have a classic public good – code that can be copied freely, and sold or redistributed without paying the creator or creators.

Skeptics, of course, wonder if this mode of production can be sustained. There seem to be inadequate incentives to ensure continued productivity and innovation. *E pur si muove*, as Galileo is reputed to have said in the face of Cardinal Bellarmine's certainties – “And yet it moves.”

Still, there is no consensus about *why* the system works. Perhaps the open-source software movement is actually a contemporary form of potlatch, in which one gains prestige by the extravagance of the resources one “wastes.” Perhaps it is simply a smart way for a young programmer to build a résumé that will eventually pay off in a conventional job. Or perhaps the movement is driven by what Karl Marx considered an innate aspect of our “species-being”: namely, the urge to create, which drives human beings to labor out of love rather than material need.

Like Yochai Benkler and Eben Moglen, I believe that such speculation is interesting but irrelevant.<sup>7</sup> My own

7 See Yochai Benkler, “Coase's Penguin, or, Linux and the Nature of the Firm,” October 2001, unpublished draft, <[http://www.law.duke.edu/pd/papers/Coase%27s\\_Penguin.pdf](http://www.law.duke.edu/pd/papers/Coase%27s_Penguin.pdf)>. For a seminal statement relying on the innate human love of creativity as the motivation, see Moglen, “Anarchism Triumphant.” “[I]ncentives” is merely a metaphor, and as a metaphor to describe human creative activity it's pretty crummy. I have said this before, but the better metaphor arose on the day Michael Faraday first noticed what happened when he wrapped a coil of wire around a magnet and spun the magnet. Current flows in such a wire, but we don't ask what the incentive is for the electrons to leave home. We say that the current results from an emergent property of the system, which we call induction. The question

explanation for why the system works is this:

Assume a random distribution of incentive structures in different people, a global network. Assume also that the costs of transmission, information sharing, and copying approach zero. Assume finally a modular creation process. With these assumptions, it just doesn't matter why unpaid code writers do what they do; what matters is that a certain number of people *will* do what the unpaid code writers do. One may do it for love of the species, another in the hope of a better job, a third for the joy of solving puzzles, and so on. Each person also has his or her own “reserve price,” the point at which he or she says “now I will turn off *Survivor* and go and create something.” But on a global network, there are a *lot* of people, and with numbers that big, and information-overhead that small, even relatively hard projects will attract a sufficient number of motivated and skilled people to sustain the creative process. For the whole structure to work without large-scale centralized coordination, the creation process has to be modular, with “units” of different size and complexity, each requiring slightly different expertise, all of which can be added together to make a grand whole. I

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we ask is ‘what's the resistance of the wire?’ So Moglen's Metaphorical Corollary to Faraday's Law says that 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. The only question to ask is, what's the resistance of the network? Moglen's Metaphorical Corollary to Ohm's Law states that the resistance of the network is directly proportional to the field strength of the ‘intellectual property’ system. So the right answer to the econodwarf is, resist the resistance.”

can work on the sendmail program, you on the search algorithms. More likely, lots of people try to solve the sendmail and search algorithm problems, and their products are judged by the community and the best ones adopted. Under these conditions – an ad hoc mode of production that curiously combines anarchism and entrepreneurialism, Kropotkin and Adam Smith – we *will* get innovation and productivity, without having to rely on the proprietary model.

What's more (and this is a truly fascinating twist), when the production process does need more centralized coordination, some governance that guides how the modular bits are most productively associated, it is at least theoretically possible that we can come up with the control system *in exactly the same way*; distributed production is potentially recursive. Governance processes, too, can be assembled through distributed methods on a global network, by people with widely varying motivations, skills, and reserve prices.

Again, skeptics will have their doubts. One organization theorist I know dismisses the possibility of anarchic coordination as "governance by food fight." Anyone who has ever been on an organizational listserv, or been part of a global production process run by people who are long on brains and short on social skills, knows how accurate that description is. *E pur si muove*.

But, in the language of computer programmers, does the open-source software movement "scale"? Can we generalize anything from this limited example? How many types of production, innovation, and research fit into the model I have just described? After all, for lots of types of innovation and invention one needs hardware, capital investment, large-scale real-world data collection, *stuff* – in all its facticity and infinite

recalcitrance. Maybe the open-source model has solved the individual incentives problem, but that's not the *only* problem. And how many types of innovation or cultural production are as modular as software?

My own guess is that this method of production is far more common than we realize. "Even before the Internet," as some of my students have taken to saying portentously, science, law, education, and musical genres all developed in ways that are markedly similar to the model I have described. "The marketplace of ideas," the continuous roiling development in thought and norm that our political culture spawns, is itself an idea that owes much more to the distributed, nonproprietary model than it does to the special case of commodified innovation that we regulate through intellectual property law. It's not that copyright and patent haven't helped power the rise of modern civilization; it's just that it would be wrong to see them as the *only* engine of innovation. Indeed, the mottoes of free software development have their counterparts in the theory of democracy and the open society. The open-source movement describes its advantage over closed and secretive systems concisely: "given enough eyeballs, all bugs are shallow." Karl Popper would have cheered.

Furthermore, I suspect that the increasing migration of the sciences toward data-rich, processing-rich models will make it likely that a greater amount of innovation and discovery could follow the distributed, nonproprietary model of intellectual production. Bioinformatics and computational biology, the open-source genomics project at [www.ensembl.org](http://www.ensembl.org), the possibility of distributed data scrutiny by lay volunteers that NASA used on the Mars landing data – all of these offer intriguing

glances of a possible future. And finally, of course, the Internet is one big experiment in distributed cultural production.

My own utopia would include modes of nonproprietary intellectual production flourishing alongside a scaled-down but still powerful intellectual property regime. Of course, my utopia hinges on a hunch about the future. Still, there is some possibility (I might say hope) that we *could* have a world in which much more intellectual production is free – “free” meaning that it is not subject to centralized control, *and* “free” meaning that its products are available without payment. Insofar as this is at least a *possible* future, then surely we should think twice before foreclosing it.

Yet foreclosing this possibility is precisely what lawmakers and government regulators in America are now doing. The point about the dramatic recent expansion of intellectual property rights – in database protection bills and directives that extend intellectual property rights to the layer of facts, in the efflorescence of software patents, in the validation of shrink-wrap licenses that bind third parties, in the Digital Millennium Copyright Act’s anticircumvention provisions – is not merely that they hamper the nonproprietary mode of intellectual production unfairly and without justification. The point is rather that they run the risk of ruling it out altogether.<sup>8</sup>

We have come full circle. As I have shown, we are in many ways in the midst of a second enclosure movement. The opponents and proponents of

enclosure are currently locked in battle, each appealing to conflicting and sometimes incommensurable claims about efficiency, innovation, justice, and the limits of the market.

But *should there be a second enclosure movement?* Do we know that property rights in this sphere will yield the same surge of productive energy that they did when applied to arable land?

I think the answer is a resounding No. We are rushing to fence in ever-larger stretches of the commons of the mind without convincing economic evidence that enclosure will help either productivity or innovation – and with very good reason to believe it may actually hurt them.<sup>9</sup>

As I have argued elsewhere, this process should bother people across the ideological spectrum, from civil libertarians to free marketeers. Researchers and scientists should be particularly worried by what is happening. Up to now, the American system of science, for all its flaws, has worked astoundingly well; changing some of its fundamental premises, such as by moving property rights into the data layer, is not something to be done lightly.

The dangers are particularly acute at the moment for three reasons. First, under the conditions that currently obtain in our digitized commons of the mind, the creation of new intellectual property rights tends, in a vicious circle, to create still further demands for new intellectual property rights. The argument is a little too complicated to lay out

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impediments now being erected to distributed, nonproprietary solutions. See also Boyle, “Cruel, Mean, or Lavish?”

8 This point has been ably made by, *inter alia*, Pamela Samuelson, Jessica Litman, Jerry Reichman, Larry Lessig, and Yochai Benkler. Each has a slightly different focus and emphasis on the problem, but each has pointed out the

9 Some of the legislation involved is also constitutionally dubious, under the First Amendment and Art 1 sec. 8 cl. 8 of the Constitution, but that is a point for another paper.

here.<sup>10</sup> But in essence the position is this: once a new intellectual property right has been created over some informational good, the only way to ensure efficient allocation of that good is to give the rights holder the ability to charge every user the exact maximum each consumer is willing to pay, so that the market can be perfectly segregated by price. In order to protect their ability to set prices for digital intellectual property goods, whose marginal cost to produce and distribute in fact approaches zero, the rights holders will inevitably argue that they need even *more* changes of the rules in their favor: relaxed privacy standards, so they can know more about consumers' price points; enforceable shrink-wrap or click-wrap contracts, so that consumers can be held to the term of a particular license, no matter how restrictive; and changes in antitrust rules, to allow for a variety of practices that are currently illegal, such as resale price maintenance and various forms of "tying." Rights holders will also claim that they need technical changes with legal backing: for example, the creation of personalized digital objects surrounded by state-sanctioned digital fences, objects that are tied to particular users and particular computers, so that reading my e-book on your machine is either technically impossible, a crime, or a tort – or possibly all three. My conclusion: extending ever-stronger intellectual property rights is a very slippery slope.

Second, the broader the scope of intellectual property rights, the more the characteristics of the Internet that have made it so attractive to civil libertarians – its distributed, anonymous character, its resistance to control or filtering by public or private entities, its global

nature – start to seem like vices rather than virtues. The process of trying to make the Net safe for price discrimination has already begun. Yet as Lawrence Lessig has argued, this is a fundamental political choice that ought to be made deliberately and publicly, not as a side effect of an economically dubious digital enclosure movement. Because of some threats, such as terrorism, we might choose to live in a pervasively monitored electronic environment in which identity and geography, and thus regulability, have been reintroduced. (In my own view, the price is not worth paying.) But to do so on the basis of some bad microeconomic arguments about the needs of the entertainment industry and in the absence of good empirical evidence, and to foreclose some of the most interesting new productive possibilities in the process – well, that would be really sad.

Third, the arguments in favor of the new enclosure movement depend heavily on the intellectually complacent, analytically unsound assumptions of "neoliberal orthodoxy," the "Washington consensus." Convinced that property is good, and that creating more property rights is better, neoliberals are primed to hand out patents on gene sequences and stem cell lines and copyrights on compilations of facts. It would be ironic, to say the least, to let such neoliberal convictions determine the fate of the information commons, the one area where the pros and cons of a property regime need to be most delicately balanced, and also an area where the possible consequences for the public good ought to be vigorously and openly debated.

What is to be done, then? I cannot lay out a full answer here, but I would suggest two broad strategies. First, we ought to insist on considerably better empirical and economic evidence before signing on to the proposals of the second

<sup>10</sup> The full version is given in Boyle, "Cruel, Mean, or Lavish?"

enclosure movement. There are a few serious comparative and historical studies of the economics of innovation, but we need a lot more. Indeed, there should be an annual audit of our intellectual property system, perhaps by the General Accounting Office. What are the costs – static and dynamic – and the benefits of our current intellectual property regime? After all, this is one of the largest industry subsidies given by government (through its granting of patents and copyrights); it deserves the same searching scrutiny that we apply to the recipients of other state subsidies. I am a firm believer in intellectual property rights; properly balanced and judiciously applied, such rights promise us a wonderfully decentralized system for the promotion of innovation. But this is a rational belief in particular rules based on empirical evidence, not an unquestioning faith that any increase in intellectual property rights is automatically good.

Second, we need to make clear the current dangers to the public domain, in the same way that environmental activists in the 1950s and 1960s made visible not only particular environmental threats but the very existence of “the environment” itself. The environmental movement gained much of its political power by pointing out that there were structural reasons why lawmakers were likely to make bad environmental decisions: a legal system based on a particular notion of what “private property” entailed, and a technological tendency to treat the world as a simple, linear set of causes and effects, ignoring the com-

plex interrelationship among natural systems. In both of these conceptual systems, the environment actually disappeared; there was no place for it in the analysis. Small surprise, then, that lawmakers were not able to protect it properly.

We should press a similar argument – as I have done here – in the case of the public domain.<sup>11</sup> We should exploit the power of a concept like the public domain both to clarify and to reshape perceptions of self-interest. The idea that there is a public domain – a “commons of the mind” – can help a coalition to be built around a reframed conception of common interest. In the narrowest sense, that common interest might be the realization, spurred by greater attention to intellectual interrelationships, that the freest possible circulation of ideas and facts is important to anyone whose well-being significantly depends on intellectual innovation and productivity – that is to say, every citizen of the world.

The poem with which I began this essay contained some advice: *And geese will still a common lack / Till they go and steal it back.*

I can't match the terseness or the rhyme. But if we blithely assume that the second enclosure movement will have the same benign effects as the first, we may look like very silly geese indeed.

11 An expanded version of this argument can be found in “A Politics of Intellectual Property: Environmentalism for the Net,” *Duke Law Journal* 47 (1) (1997): 87, <<http://www.law.duke.edu/boylesite/intprop.htm>>.