

# **A Politics of Intellectual Property: Environmentalism For the Net?**

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Introduction: This Article argues that we need a politics, or perhaps a political economy, of intellectual property. Using the controversy over copyright on the Net as a case-study and the history of the environmental movement as a comparison, it offers a couple of modest proposals about what such a politics might look like – what theoretical ideas it might draw upon and what constituencies it might unite.

I

## **"Code is Code" - The Logic of the Information Relation**

Everyone says that we are moving to an information age. Everyone says that the ownership and control of information is one of the most important forms of power in contemporary society. These ideas are so well-accepted, such cliches, that I can get away with saying them in a law review article without footnote support. (For those blessedly unfamiliar with law reviews, this is a status given to only the most staggeringly obvious claims; the theory of evolution,(2) and the orbit of the earth around the sun,(3) probably would not qualify.)

Beyond the claim that the information society exists, however, there is surprisingly little theoretical work. Sadly for academics, the best social theorists of the information age are still science fiction writers and, in particular, cyberpunks – the originators of the phrase "cyberspace" and the premier fantasists of the Net. If one wants to understand the information age, this is a good place to start.

Cyberpunk science fiction succeeded as a genre largely because it combined a particular plot aesthetic with a particular conceptual insight. The plot aesthetic was simple; the bad boy/film noir world of the romantic lowlife. When juxtaposed to the 2-dimensional priggishness of the normal science fiction hero, the cigarette smoking, drugged-out petty outlaws and mirror-shaded ninja-chicks of cyberpunk seemed rebellious, cynical and just, well, cool. The character-type is a familiar one; James Dean could easily have played the hero of Neuromancer.(4) The conceptual

insight is not so familiar. Cyberpunk is built on the extrapolation of two principal technologies, computers and the Web on the one hand, and genetic engineering on the other. The theme of cyberpunk is that the information age means the homologisation of all forms of information – whether genetic, electronic, or demographic. I grew up believing that genes had to do with biology, petri dishes and cells and that computers had to do with punch cards and magnetic disks. It would be hard to imagine two more disparate fields. In contrast cyberpunk sees only one issue ~ code ~ expressed in binary digits or the C's,G's, A's and T's on a gene map.

## II

### **Intellectual Property is the Legal Form of the Information Age**

The cyberpunk writers also offer us a legal insight. The more one moves to a world in which the message, rather than the medium, is the focus of conceptual, and economic interest, the more central does intellectual property become. Intellectual property is the legal form of the information age. Like most property regimes, our intellectual property regime will be contentious, in distributional, ideological and efficiency terms. It will have effects on market power, economic concentration and social structure. Yet, right now, we have no politics of intellectual property – in the way that we have a politics of the environment or of tax reform. We lack a conceptual map of issues, a rough working model of costs and benefits and a functioning coalition-politics of groups unified by common interest perceived in apparently diverse situations.

Why don't we have such a politics? One reason is that with a few exceptions, the mass media coverage of the information age has been focused firmly on "cyberporn" and its potential censorship. This is rather like thinking that the most important feature of the industrial revolution was that it allowed the mass-production – and then the regulation – of pornographic magazines. Given the magnitude of the changes occurring, and the relatively small differences between pornography on-line and pornography anywhere else, a more trivial emblematic concern would have been hard to find. It is intellectual property, not the regulation of cyber-smut, that provides the key to the distribution of wealth, power and access in the information society. The intellectual property regime could make – or break – the educational, political, scientific and cultural promise of the Net. Indeed, even if our only concern were censorship, it would be perverse to concentrate exclusively on the direct criminalisation of content by governments. The digital world gives new salience to private censorship – the control by intellectual property holders of distribution of and access to information. The recent Scientology cases are only the most obvious manifestation of this tendency.(5)

The media were not the only ones to miss the boat. Lawyers and legal academics largely followed suit. With a few exceptions, lawyers have assumed that intellectual property was an esoteric and arcane field, something that was only interesting (and comprehensible) to practitioners in the field.(6) There is some question whether this attitude was ever defensible; it certainly is not now. In terms of ideology and rhetorical structure, no less than practical economic effect, intellectual property is the legal form of the information age. It is the locus of the

most important decisions in information policy. It profoundly affects the distribution of political and economic power in the digital environment. It has impacts on issues ranging from education to free speech. The "value" protected(7) by intellectual property in the world economy is in the hundreds of billions of dollars and growing all the time.

There are structural reasons why these tendencies will continue. The first crucial aspect of the current information economy is the increasing homologisation of forms of information. Think of the many ways in which it now does not make sense to distinguish between electronic and genetic information – any more than between red books or green books. Precisely because we conceive of them as (and have the capability to treat them as) information, both present the same issues of regulation – privacy, access, public goods problems, and so on. As a result, they have literally begun to overlap – think of the storing (and then the sale?) of the human genome on computer disk, or of the private gene databases which add value to information developed through publicly funded research and then demand patent options as the prerequisite for access by outsiders.(8) Read about the mathematical-biological/computer-science discipline of bio-informatics, a discipline which is premised on the belief that information is information, whether the medium is a double helix or an optical disk.(9)

We are now used to the idea that Microsoft retains rights over the lines of code sitting on computer hard drives around the world. We can even produce a utilitarian justification to explain why. It is a lot stranger to think that women all over the country may carry in their bodies a string of genetic information – brca1, the so-called breast cancer gene – that has been patented by Myriad Genetics or that the Commerce Department tried to patent the genes of a Guyami Indian woman who possessed an abnormal resistance to leukemia.(10) From the point of view of the information economy, though, the two cases are very similar; in each case, strings of code are subject to intellectual property rights granted in the belief that they will inspire further innovation and discovery. The fact that this can be done in the face of the profound shock most people feel at the ownership of human genes is a testament to the universalizing logic of the information relation. (Whether it is also a good thing is a different question.)

The process is not simply a legal one and the overlaps go in both directions. Scan the science pages and see articles about the possibility of using DNA sequences as incredibly powerful parallel processing "computers."(11) Think of the software designers who create electronic ecologies and then use those strings of computer code which have proved themselves as survivors – harnessing a form of "natural" selection that Darwin would have recognised but could never have imagined.(12) Put it all together and then compare this "reality" to the way that we thought about computers on the one hand and biology on the other, just twenty years ago. In the international information economy, the medium is not the message. The medium is irrelevant.

The second crucial aspect of the information economy is a corollary of the homologisation of forms of information; the decreasing proportion of product cost and intellectual attention devoted to medium (diskettes, cell-lines) rather than message (software, decoded DNA sequences). A moment's thought will show that both of these aspects will give increased importance to intellectual property.

Reconceiving new areas of science, commerce and research as "information issues" simply gives us more fields in which it is likely we will spy the public goods problems that intellectual property is supposed to solve. And the diminishing portion of product cost devoted to medium rather than message means that, within any given area, the public goods problems grow all the more salient; (The price of the program rises, at least relative to the falling price of the diskette onto which it can be copied.)

When I say that we lack a politics of intellectual property, I don't mean to imply that this is the only type of "information politics" – more like the most neglected. Look at the recent past. From the net roots campaign against the Communications Decency Act to the titanic industry lobbying over the Telecommunication Bill in which the CDA was embedded, there have been many moments of political struggle and agitation over digital commerce and communications regulation.(13) There have been conferences, both Pollyannish and despairing, over the use of the Net by non profit groups, and thoughtful warnings of the dangers posed by disparate access to information technologies. These are serious points; the issue of access in particular. But in most cases, they are isolated applications to a new technology of a familiar political worldview or calculation of self-interest. Libertarians don't want newspapers censored; their attitude to the Net is the same (though the interactive quality of the technology, and the proprietary feeling that novelty gives first adopters have certainly given more people a stake in the protection of the system.) Non-profit groups have to adjust to changes in communications technology, just like changes in tax law, or the regulation of lobbying. Communications conglomerates have an attitude towards bandwidth that seems indistinguishable from most commercial entities' attitude towards publicly held real estate; rationally enough, they want more, they want it free (ideally, they want it subsidised) and they want to be able to exploit it without strings. The left sees a resource with new importance – access to information technology – and makes about it the points that it makes about access to health care or education.(14) I don't mean to minimise these concerns, and certainly don't want to make the claim that they are somehow less fundamental than the ones I describe here. But I do think that, precisely because of their comfortable familiarity, they miss some of the differences in the politics of the information age, the ideas we have not thought about so often or so well.

### III

#### **The Conceptual Structure of an Intellectual Land-Grab**

Elsewhere, I have argued at unseemly length that there are structural tendencies in our patterns of thinking and discourse about intellectual property that lead us generally to "over" rather than "under-protect".(15) I will summarise, rather than attempt to justify those claims here. (A chart that might be helpful is provided in the table on page 13.)

One of the roots of the problem is a conceptual one. The economic analysis of information is beset by internal contradiction and uncertainty; information is both a component of the perfect market and a good that must be produced within that

market. Under the former characterisation, information is supposed to move towards perfection – a state in which it is costless, instantly available and so on. Under the latter characterisation, information must be commodified so as to give its producers an incentive to produce. But each property right handed out to ensure the production of information is a transaction cost when seen from the perspective of market efficiency.(16)

The most succinct encapsulation of the problem comes from an article co-written by the current head of the President's Council of Economic Advisors, who in a former life was one of the most distinguished scholars of information economics. "There is a fundamental conflict between the efficiency with which markets spread information and the incentives to acquire information."(17) This problem is often, though not always "solved" by ignoring it. A pre-theoretical classification is made, conventionally ascribing a certain problem to one or other realm and the discussion then continues on that basis. Thus for example, we tend to look at the field of intellectual property with a finely honed sensitivity to "public goods" problems that might lead to under production, while underestimating or failing to mention the efficiency costs and other losses generated by the very rights we are granting. Some conventional ascriptions visibly switch over time. The contemporary proponents of legalising insider trading use the idea of the efficient capital market to minimise or defend the practice. The first generation of analyses saw the insider trade as the entrepreneur's incentive and reward for Faustian recombinations of the factors of production. An alternative method for smoothing over the tensions in the policy analysis is for the analyst to acknowledge the tension between efficiency and incentives, point out that there are some limitations imposed on intellectual property rights, to conclude that there are both efficiency-promoting and incentive promoting aspects to intellectual property law, and then to imply that an optimal balance has been struck.(18) (This is rather like saying that because fishermen throw some fish back, we can assume over-fishing is not occurring.)

In general, then, I would claim there is a tendency to think that intellectual property is a place to apply our "public goods/incentives theory" rather than our "anti-monopoly/free-flow of information" theory.(19) All by itself, this might push rhetoric and analysis towards more expansive property rights. The tendency is compounded, however, by two others.

First, courts are traditionally much less sensitive to First Amendment, free speech and other "free flow of information arguments" when the context is seen as private rather than public, property rather than censorship. Thus, for example, the Supreme Court will refuse to allow the state to ban flag burning, but is quite happy to create a property right in a general word such as "Olympic," convey it to a private party and then allow the private party selectively to refuse public usage of the word. Backed by this state-sponsored "homestead law for the language,"(20) the US Olympic Committee has decreed that the handicapped may have their "Special Olympics," but that gay activists may not hold a "Gay Olympics."(21) This, it seems, is not state censorship but private property. (Emboldened, Justice Rehnquist advocated privatizing the flag.)(22)

Second, intellectual property rights are given only for "original" creation. But the idea of the original author or inventor implicitly devalues the importance of the raw

materials with which any creator works – the rhetorical focus on originality leads to a tendency to undervalue the public domain. After all, the novelist who, as Paul Goldstein puts it, "craft[s] out of thin air" does not need a rich and fertile public domain on which to draw. The ironic result is that a regime which lauds and proposes to encourage the great creator, may in that process actually function to take away the raw materials which future creators need to produce their little piece of innovation. One interesting thought experiment is to wonder whether Bill Gates could have developed the highly derivative program of MS-DOS if, at the time that he developed it, the current set of expansive copyright and patent protections for software had been in place. My book provides a lengthy discussion of this tendency so I will not dwell on it here.

Tensions In an Intellectual Property System I have arranged these tensions in two vertical sets. Each set is not a list of corollaries, indeed they are sometimes internally contradictory. Thinking of the subject of intellectual property as "information" rather than "invention," does not commit oneself to Northrop Frye's views about the nature of artistic creation. It certainly does not entail the idea that intellectual property should protect investment and labour – in fact, the "efficiency" perspective tends to eschew intellectual property rights altogether. Let me also acknowledge that any particular portion of information regime is likely to mix and match the columns, like a restaurant patron picking four from column B and one from column A. Nevertheless, the members of each column are most likely to be found in popular and scholarly discourse when linked to their vertical neighbours. Under the guise of resolving these problems – the effect of the author vision is to make the items in the middle column either disappear or recede in importance.

### Tensions in an Intellectual Property System

|                                     |   |   |
|-------------------------------------|---|---|
| Subject Matter                      | Information   | Innovation  |
| Economic Perspective                | Efficiency  | Incentives  |
| Paradigmatic Conception of Problems | Transaction Cost Problems. Barriers to the free flow of information lead to the inhibition of innovation/ inadequate circulation of information | Public Goods Problems. Inadequate incentives for future production leads to the inhibition of innovation/ inadequate circulation of information |
| Reward (if any) for..               | Effort/Investment/Risk  | Originality/Transformation  |
| View of the Public Domain           | Finite Resources for future creators  | Infinite Resources for future creators  |
| Vision of the productive process    | Development based on existing material."Poetry can only be made out of  | Creation ex nihilo. "Copyright is about sustaining the conditions of creativity that enable an  |

|                          |  |   |
|--------------------------|--|---|
|                          | other poems; novels out of other novels. All of this was much clearer before the assimilation of literature to private enterprise." (23) | individual to craft out of thin air an Appalachian Spring, a Sun Also Rises, a Citizen Kane."(24)               |
| Normative Starting Point | Free speech/Free circulation of ideas and information.   | Property rights -- the creator's "natural" right, the reward for past creation, the incentive to produce again. |

So much for the background. Now a brief case study. The difficulty is not in finding an example of intellectual property expansion, but in knowing which one to pick. The last few years have seen the expansion of first copyright and then patent to cover software, the patenting of life-forms and human genes, the extension of copyright term limits. Speaking not to the level of protection, but to the current conception of intellectual property law, it is interesting to note that current legislation proposes that the Copyright Office and the Patent Office should cease to be part of the government – being converted instead to government corporations or "performance based organisations" which would thus be forced to pay greater attention to their "users" and might even be funded through user fees.(25) The idea that the rights-holders are the true "users" or "clients" of the office is a striking one. On the international level we have seen the use of the GATT to turn intellectual property violations into trade violations, thus codifying a particular vision of intellectual property and sanctifying it with the label of "The Market."(26) The example I will pick, however, is the Clinton Administration's proposal for copyright on the Net, which is now hanging somewhere in legislative limbo.

#### IV

##### **A Brief Case-Study: Copyright on The Net**

If the information society has an iconic form (one could hardly say an embodiment) it is the Internet. The Net is the anarchic, decentralised network of computers that provides the main locus of digital interchange. While Vice-President Gore, the Commerce Department and the National Telecommunications and Information Administration were planning the "information superhighway" the Net was becoming it.

Accordingly, if the government produced a proposal that laid down the ground rules for the information economy, that profoundly altered the distribution of property rights over this extremely important resource and that threatened to "lock in" the power of current market leaders, one would expect a great deal of attention to be paid by lawyers, scholars and the media. Nothing could be further from the truth. The appearance of the Clinton Administration "White Paper"(27) on intellectual property on the National Information Infrastructure produced almost no press reaction. The same was true of the introduction and eventual

stalling of the White Paper's legislative proposals in both the House and the Senate.(28) Given the potential ramifications of the legislation, this alone, it seems to me, would be strong evidence for the proposition that greater scrutiny of our intellectual policy making is needed. But the problem lies deeper.

Elsewhere I, and many others, have written about the problems with the White Paper's account of current law, its distressing tendency to misstate, minimise or simply ignore contrary cases, policy and legislative history, its habit of presenting as settled, that which is in fact a matter of profound dispute.(29) There have also been thoughtful analyses some of the potential negative effects of the White Paper and its implementing legislation, particularly focusing on the consequences for libraries, for software innovation and for privacy.(30) Defenders of the White Paper have argued that its proposals are necessary to protect content on, and encourage fuller use and faster growth of, the Net.(31)

>From my point of view, however, the really depressing thing about the report is that it fails to accomplish its stated goal; to examine what level of intellectual property rights would be necessary in cyberspace. It fails in a way that is both revealing and disturbing. The problem isn't simply the tendency to give a pro-author account of the existing law. Even if the White Paper's summary of intellectual property law were accurate, there might well be reasons why a different level of protection might be appropriate in the digital environment. For example, the global reach and ease of access that the Net offers clearly facilitate illegitimate copying. But they also cut down enormously on advertising and on the costs of distribution, potentially yielding a higher percentage return for a lower level of investment. Thus, with some products more intellectual property protection might be required while with others a lower level of protection would still produce an adequate return to encourage future production.

Some "digital products" require enormous investments of time and energy, are of lasting value, require no "tied" subsidiary services to make them work and can be copied for pennies. Others require little investment precisely because of their digital nature, do not require extensive research and development or can be protected by denial of access (databases and search engines), by preemptive release of "demo" or partially disabled shareware versions (DOOM), by being first to market, by "tying arrangements" such as help lines, technical assistance or paid advertising (Netscape) and so on. The point is that the digital environment is complicated; the same technical factors that make copying easier also yield other ways for producers to recover their investments, or to encourage further innovation. Rather than take these complexities seriously, the White Paper simply assumes that, on the Net, a right-holder needs all the rights available outside the Net, plus some new ones as well. To the point that there are multiple ways for producers to secure an adequate return on their investment of time and ingenuity, the White Paper opines weakly that not everyone will choose to enforce to the full, the rights the report proposes to give them. This is rather like responding to the argument that a capital gains tax cut is not necessary to stimulate investment, with the rejoinder that some investors may decide to give the extra money to charity. Yes, it may happen, but that doesn't go to the question of whether the change was necessary in the first place.

More important than the individual positions taken, however, are the logical fallacies and baseline errors with which the White Paper is loaded. Intellectual property rights are limited monopolies conferred in order to produce present and future public benefit – for the purposes of achieving those goals, the "limitations" on the right are just as important as the grant of the right itself. To put it more accurately, since there is no "natural" absolute intellectual property right, the doctrines which favor consumers and other users, such as fair use, are just as much a part of the basic right, as the entitlement of the author to prevent certain kinds of copying. Even the source of the Congress's authority in intellectual property matters --Article 1, Section 8, clause 8 of the Constitution – mentions two limitations on intellectual property rights; one is functional "To promote the Progress of Science and useful Arts" and the other is temporal "by securing for limited times to authors and inventors." Thus, intellectual property is a particularly inappropriate area to talk about property rights as if they were both natural and absolute. Yet this the White Paper does with a dogged consistency and an unlikely passion. Observe in the following quotation how the White Paper first sets up its own inflated idea of intellectual property as the baseline, then implies that right-holders actually have an absolute property right in the continuation of that level of protection. Amazingly, the "limitations" that define intellectual property rights instead become a "tax" on right-holders.

Some participants have suggested that the United States is being divided into a nation of information "haves" and "have nots" and that this could be ameliorated by ensuring that the fair use defense is broadly generous [sic] in the NII context. The Working Group rejects the notion that copyright owners should be taxed – apart from all others – to facilitate the legitimate goal of universal access.(32)

Of course, given the goals of copyright law, it would have made just as much sense if the argument had been reversed, taking the fair use rights of users and consumers as the baseline. The White Paper wants to give expansive intellectual property rights because it believes, wrongly in my view, that this is the best way to encourage private companies to fund the construction of the information superhighway. In response, a more skeptical Working Group might have said;

Some reports have suggested that the difficulties of encouraging companies to develop the National Information Infrastructure could be ameliorated by ensuring that intellectual property rights are broadly generous and fair use rights curtailed in the NII context. The Working Group rejects the notion that consumers, future creators and other holders of fair use rights should be taxed – apart from all others – to facilitate the legitimate goal of encouraging investment in the information superhighway.

But the White Paper not only illustrates the pervasive power of baseline fallacies in information economics, it also shows how the "original author" vision downplays the importance of fair use and thus encourages an absolutist rather than a functional idea of intellectual property. In a footnote to the passage quoted above, the Working Group explains further. The laws of economics and physics protect producers of equipment and tangible supplies to a greater extent than copyright owners. A university, for example, has little choice but to pay to acquire photocopy equipment, computer paper and diskettes... It may, however, seek

subsidization from copyright owners by arguing that its copying and distribution of their works should, as a fair use, not be compensated."(33)

This completes the picture given above. Fair use rights are a "subsidy" sought by universities. But wait a minute. Even if the only goal of intellectual property law were to encourage future innovation and information production, this argument would be fallacious. Future creators need some raw material to work with, after all. Fair use is one important method of providing that raw material. It can also be seen as part of the implicit quid pro quo of intellectual property; we will give you this extremely valuable legal monopoly, backed with state power and enforced through the courts (and by the FBI.) In return, we will design the contours of your right so as to encourage a variety of socially valuable uses. The White Paper wants to give copyright holders the "quid" while claiming that the "quo" is a tax, or a forced subsidy.

Only the unfamiliarity of intellectual property conceals the ludicrousness of the argument. Its as if a developer had negotiated a fat package of cash grants and tax breaks as the price of building a new stadium in Washington D.C., but then wanted to claim the benefits of the deal while insisting that to making him fulfil his side of the bargain would be to confer a "subsidy" on the city.(34)

The press reaction to the White paper was respectful (and a little foggy around the edges.) Obviously at a loss to know whom to contact, the reporters got reactions from the Business Software Alliance, the recording industry and the publishers' lobbyists. Surprisingly enough, all these groups felt this was a fine document, the result of meticulous analysis and a good basis for the future. Only later did the press begin to contact those who would be negatively affected by the proposed changes: libraries, on-line service providers, teachers and so on. The coverage in the media demonstrated two vital things about the future of intellectual property.

First, it is still possible to get away with arguments which if made about any other area of regulation would arouse howls of derision – or at least well-informed skepticism. Compare press reactions to proposals for a flat-tax or arguments that property owners should be compensated for the costs of complying with environmental regulation. Second, the press and the public simply have no idea of the likely "sides" or "interests" involved in such a decision. If a labour law is passed, the Washington Post doesn't only call the Chamber of Commerce, on environmental issues they don't only call the Sierra club. Yet on intellectual property issues, they call only the largest property holders. The idea that startup software developers, academics, librarians, civil libertarians and so on might have a distinct perspective on these issues, simply hasn't emerged into popular consciousness.

## **V**

### **The Analogy to Environmentalism**

Assume for a moment the need for a politics of intellectual property. Go further for a moment, and accept the idea that there might be a special need for a politics to protect the public domain. What might such a politics look like? Right now, it seems to me that, in a number of respects, we are at the stage that the American environmental movement was at in the 1950's. There are people who care about issues we would now identify as "environmental" – supporters of the park system, hunters, birdwatchers and so on. (In the world of intellectual property we have start-up software engineers, libraries, appropriationist artists, parodists, biographers, biotech researchers etc.) There are flurries of outrage over particular crises – burning rivers, oil spills. (In the world of intellectual property, we have disconnected stories about Microsoft's allegedly anti-competitive practices, the problematic morals of patenting human genes, the propriety of using copyright to shut down certain critics of the Church of Scientology.) Lacking, however, is a general framework, a set of analytical tools with which issues should – as a first cut – be analysed, and as a result a perception of common interest in apparently disparate situations – cutting across traditional oppositions. (Hunter vs. Birdwatcher, for example.)(35) What kinds of tools are we talking about?

Crudely speaking, the environmental movement was deeply influenced by two basic analytical frameworks. The first was the idea of ecology; the fragile, complex and unpredictable interconnections between living systems. The second was the idea of welfare economics – the ways in which markets can fail to make activities internalise their full costs. The combination of the 2 ideas yielded a powerful and disturbing conclusion. Markets would routinely fail to make activities internalise their own costs, particularly their own environmental costs. This failure would, routinely, disrupt or destroy fragile ecological systems, with unpredictable, ugly, dangerous and possible irreparable consequences. These two types of analysis pointed to a general interest in environmental protection and thus helped to build a large constituency which supported governmental efforts to that end. The duck-hunter's preservation of wetlands as a species habitat turns out to have wider functions in the prevention of erosion and the maintenance of water quality. The decision to burn coal rather than gas for power generation may have impacts on everything from forests to fisheries.

Of course, it would be silly to think that environmental policy was fuelled only by ideas rather by more immediate desires. As William Ruckelshaus put it, "With air pollution there was, for example, a desire of the people living in Denver to see the mountains again. Similarly, the people living in Los Angeles had a desire to see one another."(36) (Funnily enough, as with intellectual property, changes in communications technology also played a role. "In our living rooms in the middle sixties, black and white television went out and color television came in. We have only begun to understand some of the impacts of television on our lives, but certainly for the environmental movement it was a bonanza. A yellow outfall flowing into a blue river does not have anywhere near the impact on black and white television that it has on color television; neither does brown smog against a blue sky."(37))

Nevertheless, the ideas I mentioned, ecology and welfare economics, were extremely important for the environmental movement. They helped to provide its agenda, its rhetoric and the perception of common interest underneath its coalition politics. Even more interestingly, for my purposes, those ideas – which began as

inaccessible, scientific or economic concepts, far from popular discourse – were brought into the mainstream of American politics. This did not happen easily or automatically. Popularising complicated ideas is hard work. There were brilliant books like *Silent Spring* and *A Sand County Almanac*, television discussions, documentaries on Love Canal or the California kelp beds, op-ed pieces in newspapers and pontificating experts on TV. Environmental groups both shocking and staid played their part, through the dramatic theatre of a Greenpeace protest, or the tweety respectability of the Audubon society. Where once the idea of "The Environment" (as opposed to 'my lake', say) was seen as a mere abstraction, something that couldn't stand against the concrete benefits brought by a particular piece of development, it came to be an abstraction with both the force of law and of popular interest behind it.

To me, this suggests a strategy for the future of the politics of intellectual property. In both areas, we seem to have the same recipe for failure in the structure of the decision-making process. Decisions in a democracy are made badly when they are primarily made by and for the benefit of a few stake-holders (land-owners or content providers). It is a matter of rudimentary political science analysis or public choice theory to say that democracy works badly when the gains of a particular action can be captured by a relatively small and well-identified group while the losses – even if larger in aggregate – are low-level effects spread over a larger, more inchoate group.(38) (This effect is only intensified when the transaction costs of identifying and resisting the change are high.) Think of the costs and benefits of acid rain producing power-generation or – less serious, but surely similar in form – the costs and benefits of retrospectively increasing copyright term limits on works for which the copyright had already expired, pulling them back out of the public domain. There are obvious benefits to the heirs and assigns of authors whose copyright has expired, in having the Congress put the fence back up around this portion of the intellectual commons.(39) There are obviously some costs – for example, to education and public debate – in not having multiple, competing low cost editions of these works. But these costs are individually small and have few obvious stake-holders to represent them.

Beyond the failures in the decision-making process, lie failures in the way that we think about the issues. The environmental movement gained much of its persuasive power by pointing out that there were structural reasons that we were likely to make bad environmental decisions; a legal system based on a particular notion of what "private property" entailed, and an engineering or scientific system that treated the world as a simple, linearly related set of causes and effects. In both of these conceptual systems, the environment actually disappeared; there was no place for it in the analysis. Small surprise then, that we did not preserve it very well. I have argued that the same is true about the public domain. The fundamental aporia in economic analysis of information issues, the source-blindness of an "original author" centered model of property rights, and the political blindness to the importance of the public domain as a whole (not "my lake," but "The Environment") all come together to make the public domain disappear, first in concept and then, increasingly, as a reality.

I have said all of this in an attempt to show that there is something larger going on under the realpolitik of land grabs by Disney and campaign contributions by the Recording Industry of America. But it would be an equal and opposite mistake to

think that this is just about a dysfunctional discourse of intellectual property. In this part of the analysis, too, the environmental movement offers some useful practical reminders. The ideas of ecology and environmental welfare economics were important, but one cannot merely write a *Silent Spring* or a *Sand County Almanac* and hope that the world will change. Environmentalists piggy-backed on existing sources of conservationist sentiment – love of nature, the national parks movement, hikers, campers, birdwatchers. They built coalitions between those who might be affected by environmental changes. They even discovered, though very slowly, the reality of environmental racism.

Some of these aspects, at least, could be replicated in the politics of intellectual property. The coalitions developed to combat the White Paper and its implementing legislation, offers some nice examples of the possibilities and pitfalls. Other strategies also come to mind. For environmental problems, some of the transaction costs of investigation and political action are overcome through expert agents, both public and private. I pay my taxes to support the EPA or my charity dollars to Greenpeace, and hope they do a good job of tracking environmental problems. (In the latter case, I know at least that the makers of Zodiac rubber boats will be given a boost.) Right now there is not a single public or private organisation whose main task is to protect and preserve the public domain. This should change.

## **Conclusion**

I have argued that the idea of an information age is indeed a useful and productive concept, that there is a homologizing tendency for all "information issues" to collapse into each other as information technology and the idea of "information" move forward in reciprocal relationship. The range of information issues expands and the value of the "message" increases, at least in comparison to the diminishing marginal cost of the medium. This, in turn, gives greater and greater importance to intellectual property. Yet despite its astounding economic importance and its impact on everything from public education to the ownership of one's own genetic information, intellectual property has no corresponding place in popular debate or political understanding; The belief seems to be that information age politics means fighting censorship on the Web too.

Apart from the normal presumption in favour of informed democratic participation in the formation of entire property regimes, I argued that there are particular reasons why this comparative political vacuum is particularly unfortunate. Drawing on some prior work, I claimed that our intellectual property discourse has structural tendencies towards over-protection, rather than under protection. To combat that tendency, as well as to prevent the formation and rigidification of a set of rules crafted by and for the largest stakeholders, I argued that we need a politics of intellectual property. Using the environmental movement as an analogy, I pointed out that a successful political movement needed both a set of (popularisable) analytical tools and coalition built around the more general interests those tools revealed. Welfare economics and the idea of ecology showed that "the environment" literally disappeared as a concept in the analytical structure of private property claims, simplistic "cause and effect"

science, and markets that do not force the internalisation of negative externalities. Similarly, I claimed the "public domain" is disappearing, both conceptually and literally, in an IP system built around the interests of the current stakeholders and the notion of the original author, around an over-deterministic practice of economic analysis and around a "free speech" community that is under-sensitized to the dangers of private censorship. In one very real sense, the environmental movement invented the environment so that farmers, consumers, hunters and birdwatchers could all discover themselves as environmentalists. Perhaps we need to invent the public domain in order to call into being the coalition that might protect it.(40)

Is the environmental analogy of only rhetorical or strategic value, then? For my part, though I would be happy to acknowledge its imperfections, I would say that it also shows us some of the dangers inherent in the kind of strategies I have described. Right now, even under a purely instrumental economic analysis it is hard to argue that intellectual property is set at the appropriate level. Just as the idea of "activities internalising their full costs" galvanised and then began to dominate environmental discourse, the economic inadequacy of current intellectual property discourse has been emphasised by skeptics.(41) But the attraction of the economic analysis conceals a danger. The problems of efficiency, of market oligopoly and of future innovation are certainly important ones, but they are not the only problems we face. Aldo Leopold expressed the point powerfully and presciently nearly fifty years ago in a passage entitled "Substitutes for a Land Ethic."

One basic weakness in a conservation system based wholly on economic motives is that most members of the land community have no economic value... When one of these non-economic categories is threatened, and if we happen to love it, we invent subterfuges to give it economic importance... It is painful to read those circumlocutions today.(42)

I believe that there are powerful arguments why a Pay-as-you-read architecture on the Net would be economically inefficient even with minimal transaction costs. I can make arguments that point out the economic problems with our current treatments of "sources" of genetic information, or what have you. I can even say with complete truthfulness that I believe my arguments to be better than those on the "other side." But under Leopold's gentle chiding I am reminded of the dangers of embracing too closely a language that can express only some of the things that you care about.

Let me conclude by dealing with two particular objections to my thesis here. First, that my whole premise is simply wrong; intellectual property is not out of balance, the public domain is not systematically threatened, economic analysis is both determinate and clear in supporting the current regime, the general tendency both internationally and domestically has not been towards the kind of intellectual land-grab I describe, or – if it has – the tendency exists for some very good reasons. Elsewhere I have tried to refute those claims but to some extent the point is moot. Even if I was wrong, the basic idea of democratic accountability over public disposal of extremely valuable rights would seem to demand a vastly more

informed politics of intellectual property in the information age. If such accountability is to exist, the public domain should be more systematically discussed and defended than has heretofore been the case.

The second objection is more fundamental. How can I compare the politics of intellectual property to the politics of the environment? For some, the difference in seriousness of the two problems robs the analogy of its force. After all, environmental problems could actually destroy the biosphere and this is just... well, intellectual property. My response to this is partly that this is an analogy. I am comparing the form of the problems rather than their seriousness. Still, I have to say I believe that part of this reaction has to do with a failure to adjust to the importance that intellectual property has and is going to have in an information society. Again and again, one meets a belief that this is a technical issue with no serious human, political or distributional consequences. Yet a "bad" intellectual property regime of the kind that I am talking about could:

- \* Lead to extraordinary monopoly and concentration in the software industry, as copyright and patent trump antitrust policy. Right now the effects are mainly those that would concern the actual drafters of the antitrust laws, who worried about the effects that concentration of wealth and economic power had on the republic, rather than their more modern "consumer-welfare" oriented exegetes. There is some reason, however, to believe that there could be costs even a Chicago-school antitrust analysis would find distasteful.

- \* Extend intellectual property rights even further over living organisms, including the human genome, transgenic species and the like. This clearly has some ethical, medical and religious ramifications, while the spectre of a First world-dominated land grab over the human genome would surely be enough to shock those who believed that the deep sea bed was the common heritage of mankind.

- \* "Privatise" words, or aspects of images or texts that are currently in the public domain, to the detriment of public debate, education, equal access to information and the like.

- \* Impose a pay-as-you-read architecture on the Net without considering some of the costs resulting from that decision.

And so on, and so on. The list could be extended. Some of these things have not yet come to pass, and not all of them will. There are court and regulatory decisions that cut against the protectionist tendency I have described. Recent organising efforts around Net, cultural property, pharmaceutical and fair use issues have improved the discourse markedly. Nevertheless, I think that the current situation is enough to warrant what one might call precautionary alarmism. It would be a shame for the fundamental property regime of the information economy to be constructed behind our backs. We need a politics – a political economy – of intellectual property and we need it now.

## Endnotes

1. (c) James Boyle 1997. This article draws on ideas first developed in my book, *Shamans, Software and Spleens: Law and The Construction of the Information Society* (1996). Those who study intellectual property will realize how extensive a debt this article owes to David Lange's classic piece "Recognizing the Public Domain," 44 *Law and Contemporary Problems* 147 (1981) Thanks are also due to Keith Aoki, John Perry Barlow, Robert Gordon, Jessica Litman, Peter Jaszi, Bruce Sterling and to the Yale and Columbia Legal Theory Workshop Series. Please don't quote or cite 'til I get the bugs out.

2. See Charles Darwin, *On the Origin of Species by Means of Natural Selection* (1859) but see *Genesis* 1:1-29 contra.

3. See Nicolaus Copernicus, *Concerning the Revolutions of the Celestial Spheres* (1543) but see Claudius Ptolemaeus, *Almagest* (c. 170 A.D) contra.

4. See generally William Gibson, *Neuromancer* (1984).

5. *Church of Scientology Int'l v. Fishman*, 35 F.3d 570 (9th Cir. 1994); *Religious Technology Center v. Netcom On-Line Communications Servs.*, 907 F. Supp. 1361, 1377-1378 (D.Cal. 1995). *Religious Technology Center v. Arnaldo Pagliarina Lerma*, 908 F. Supp. 1362, 1368 (E.D. Va. 1995) ("Although the RTC brought the complaint under traditional secular concepts of copyright and trade secret law, it has become clear that a much broader motivation prevailed--the stifling of criticism and dissent of the religious practices of Scientology and the destruction of its opponents"). The documents filed in the case have excited considerable comment on the Web. Declan McCullagh, *Scientology, critics collide in Internet copyright case FOCUS*, vol. 25, no. 1, October 1995, page 4.

6. This attitude is in marked contrast to lawyers' assumptions about, say, the jurisprudence of the First Amendment, or the Education Department's rulings on race-conscious scholarships. Though these are also complicated areas of law or regulation, many lawyers and laypeople feel that a basic understanding of them is a sine qua non of political consciousness. In many cases, in fact, the language of liberal legalism defines the central issues of public debate – a fact that presents its own problems.

7. And, in an important sense, created.

8. See, e.g., Karen Riley, "Rockville Biotech Firm takes Next Step in Genetics Journey", *Wash. Times*, June 9, 1995, at B7.

9. For an introduction to the biological applications of information theory, see *Biological Information Theory and Chowder Society FAQ*, and the archives of the Usenet newsgroup [bionet.info-theory](mailto:bionet.info-theory).

10. "In the forests of Panama lives a Guyami Indian woman who is unusually resistant to a virus that causes leukaemia. She was discovered by scientific "gene hunters", engaged in seeking out native peoples whose lives and cultures are threatened with extinction. Though they provided basic medical care, the hunters did not set out to preserve the people, only their genes - which can be kept in cultures of "immortalised" cells grown in the laboratory. In 1993, the US

Department of Commerce tried to patent the Guyami woman's genes - and only abandoned the attempt in the face of furious protest from representatives of indigenous peoples." Tom Wilkie, "Whose gene is it anyway?", *Indep.*, Nov. 19, 1995, at 75.

11. See, e.g., Frank Guarnieri et al., "Making DNA Add", *Science*, July 12, 1996, at 220.

12. See, e.g., Julian Dibbell, "The Race to Build Intelligent Machines", *Time*, Mar.25, 1996, at 56.

13. See *Communications Decency Act of 1996*, Pub. L. No. 104-104, 110 Stat. 133 (codified at various sections of 47 U.S.C and 18 U.S.C); see also generally ALA-led Coalition Challenges CDA, Am. Libr., Apr. 1996, at 13.

14. Given the fate of these arguments in the contemporary political arena, maybe I should reiterate them; Distribution of this good (education, health care, wired-ness) through a market system is going to have a lot of serious negative effects on those who cannot pay, effects that will track and actually intensify existing inequalities of class, race and gender. Given the importance of the resource in question, its relevance to the citizens' status qua citizen, and the corrosive effects of such inequalities on the well-being of the polity, something should be done to mitigate or eliminate the problem of access. All of this seems profoundly true, but it is hardly a new argument. In fact, subject matter aside, it would have been completely familiar to the authors of the Federalist Papers.

15. For the arguments behind this claim, see James Boyle, *Shamans, Software and Spleens: Law and the Construction of the Information Society* (1996). There are specific areas in which the situation might be reversed, such as "unoriginal" databases. These, however, are the exception rather than the rule

16. In the book, I explore the reasons that this problem is not "solved" when one moves to the reality of imperfect markets. The abstract idea of "trade-offs" also proves insufficient to generate the determinacy of result which most analysts claim for their work.

17. Sanford J. Grossman & Joseph E. Stiglitz, "On the Impossibility of Informationally Efficient Markets", *70 Am. Econ. Rev.* 393, 405 (1980). I cannot here go into the full joys of this debate, but those who talk confidently about the economic efficiency of the fine details of intellectual property doctrine would do well to look at the absolutely basic disputes between information economists. For example, Kenneth Arrow argues that, without intellectual property rights, too little information will be produced because producers of information will not be able to capture its true value. (Even with intellectual property rights he believes that certain kind of information generation may need direct government subsidy on a 'cost-plus' basis.) Kenneth Arrow, "Economic Welfare and the Allocation of Resources for Invention", in *Rate and Direction of Inventive Activity: Economic and Social Factors*, 609, 617 (National Bureau of Economic Research ed., 1962). Fama and Laffer, on the other hand, argue that, without intellectual property rights, too much information will be generated, because some information will be produced only in order to gain some temporary advantage in trading, thus redistributing

wealth but not achieving greater allocative efficiency. Eugene F. Fama & Arthur B. Laffer, "Information and Capital Markets", 44 *J. Bus.* 289 (1971). In other words, in the absence of information property rights, there may be an inefficiently high investment of social resources in information-gathering activities, activities that merely slice the pie up differently, rather than making it bigger. Hirshleifer gives a similar analysis of patent law, ending up with the conclusion that patent law may be either a necessary incentive for the production of inventions or an unnecessary legal monopoly in information that overcompensates an inventor who has already had the opportunity to trade on the information implied by his or her discovery. Jack Hirshleifer, "The Private and Social Value of Information and the Reward to Inventive Activity", 61 *Am. Econ. Rev.* 561 (1971). The difficulty of yielding definite results is compounded by the fact that some professional economists seem to have a naive, pre-realist understanding of law. They often talk as though there was a natural suite of property rights which automatically accompanied a free market. They make strong and unexplained assumptions that certain types of activities (for example, trading on a superior information-position) would "naturally" be allowed and involve no "harm" to others, but that certain others (for example, trading on coercion through superior physical strength) will not be. There is a fascinating study to be done on these remnants of classical economics still present in a supposedly neo-classical analysis. The same kind of error also creeps into the work of some lawyer-economists. See, e.g., Saul Levmore, "Securities and Secrets: Insider Trading and the Law of Contracts", 68 *Va. L. Rev.* 117 (1982).

18. Some are more sophisticated. "In principle, there is a level of copyright protection that balances these two competing interests optimally...We shall see...that various doctrines of copyright law, such as the distinction between idea and expression and the fair use doctrine, can be understood as attempts to promote economic efficiency..." William M. Landes & Richard A. Posner, "An Economic Analysis of Copyright Law", 18 *J. Legal Stud.* 325, 333 (1989) (emphasis added). Despite the qualifying phrases one leaves the article with the sense that the copyright law has hit the appropriate balance between efficiency and incentives. This level of comfort with the current regime is to be compared with the open skepticism displayed by an economist such as Hirshleifer. See Jack Hirshleifer, "The Private and Social Value of Information and the Reward to Inventive Activity", 61 *Am. Econ. Rev.* 561, 572 (1971) (because of the possibility of speculation on prior knowledge of invention and the uncertainties of "irrelevant" risks, patent protection may or may not be necessary in order to produce an appropriate incentive to invention). It will be interesting to watch the Supreme Court's attitude towards these issues over the next few years, given the identity of one of the original skeptics. See Stephen Breyer, "The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs", 84 *Harv. Law Rev.* 281 (1970).

19. In one sense, the current configuration of Federal bureaucracies mirrors the tensions I have been describing in this article; the FTC and the Justice Department tend to view information issues from within an efficiency perspective, accepting the need for economic incentives but more skeptical of the monopoly effects of extensive intellectual property rights. The Commerce Department – and the administration, on the other hand – take a strong incentive-focused approach to most issues. As a result, the battle to regulate the information economy is a

fascinating fusion of organizational persona, economic theory and political turf war. See, e.g., Federal Trade Commissioner Christine A. Varney, "Antitrust in the Information Age, Remarks before the Charles River Associates Conference on Economics", in *Legal & Reg. Proc.*, May 4, 1995.

20. Felix Cohen's phrase. "Transcendental Nonsense and the Functional Approach", 25 *Colum. L. Rev.* 809 (1935), reprinted in *The Legal Conscience: Selected Papers of Felix S. Cohen* (Lucy K. Cohen ed., 1970), at 33, 42.

21. *San Francisco Arts & Athletics, Inc., et al. v. United States Olympic Committee*, 483 U.S. 522.

22. "Only two terms ago in *San Francisco Arts and Athletics, Inc. v. United States Olympic Committee*, the Court held that Congress could grant exclusive use of the word "Olympic" to the United States Olympic Committee... As the Court stated 'when a word [or symbol] acquires 'value as the result of organization and the expenditure of labor, skill and money' by an entity, that entity constitutionally may obtain a limited property right in the word [or symbol].' Surely Congress or the States may recognize a similar interest in the flag." *Texas v. Johnson*, 491 U.S. 397, 429-30 (1989).

23. Northrop Frye, *Anatomy Of Criticism: Four Essays*, 96-97 (1957).

24. Paul Goldstein, "Copyright", 38 *J. Copyright Soc'y of the U.S.A.* 109, 110 (1991) (emphasis added.)

25. *Omnibus Patent Act of 1996*, S. 1961, 104th Cong.; Morehead-Schroeder "Patent Reform Act", H.R. 3460, 104th Cong. (1996).

26. Employing child labour or violating environmental regulations will give a nation's industry what might seem to be an unfair competitive advantage, but will not trigger trade sanctions. See, e.g., Robert Howse and Michael J. Trebilcock, "The Fair Trade-Free Trade Debate: Trade, Labor, and the Environment", 16 *Int'l Rev. L. & Econ.* 61 (discussing the absence from the GATT/World Trade Organization framework of provisions for sanctions in response to other nations' environmental and labor practices); but see *North American Agreement on Labor Cooperation*, Sept. 13, 1993, Can.-Mex.-U.S., ann. 1, 32 *I.L.M.* 1499 (1993). Refusing to accept and enforce our vision of intellectual property law, however, is cause for international action. See generally J. H. Reichman, "Compliance with the TRIPS Agreement: Introduction to a Scholarly Debate", 29 *Vand. J. Transnat'l L.* 363 (1996).

27. Information Infrastructure Task Force, Intellectual Property and the National Information Infrastructure: *The Report of the Working Group on Intellectual Property Rights* (1995) [hereinafter White Paper]. See also James Boyle, "Sold Out", *N.Y. Times*, Mar. 31, 1996; "Is Congress Turning the Internet into an Information Toll Road?", *Insight*, Jan. 15, 1996, at 24. This section of the Article is a revised version of the analysis provided in *Shamans* and in those articles.

28. The relevant Bills are HR 2441 and S. 1284. Work on them will resume in January.

29. This tendency is to be contrasted unfavourably with the most thoughtful defense of the White Paper – which argued that its protections would be necessary to put "cars on the Information superhighway" but was careful to acknowledge that some of the White Paper's legal theories were controversial, and then to defend them on their own terms rather than to offer them as propositions so obvious they needed no defense. Jane C. Ginsburg, "Putting Cars on the 'Information Superhighway': Authors, Exploiters and Copyright in Cyberspace", 95 *Colum. L. Rev.* 1466, 1476 (1995) [e.g. defending White Paper's embrace of the RAM copy theory but pointing that this approach has been "questioned or even strongly criticized"]; See also Jessica Litman, "The Exclusive Right to Read", 13 *Cardozo Arts & Ent. L. J.* 29 (1994).

30. See David Post, "New Wine, Old Bottles: The Case of the Evanescent Copy", *Am. Lawyer*, May 1995; Niva Elkin-Koren, "Copyright Law and Social Dialogue on the Information Superhighway: Pamela Samuelson, Legally Speaking: The NII Intellectual Property Report", *Communications of the ACM*, December 1994, at 21. "The Case Against Copyright Liability of Bulletin Board Operators", 13 *Cardozo Arts & Ent. L.J.* 345 (1995). Evan St. Lifer and Michael Rogers, "NII White Paper Has Librarians Concerned About Copyright", *Library Journal News*, Oct. 1, 1995. Vic Sussman, "Copyright Wrong", *U.S. News & World Report*, Sept. 18, 1995; Andrea Lunsford & Susan West Schantz, "Who Should Own Cyberspace", *Columbus Dispatch*, Mar. 26, 1996; Many of these points were also made in testimony. Intellectual Property and the National Information Infrastructure: Public Hearing Before the White House Information Infrastructure Task Force, Sept. 22, 1994 (testimony of Jessica Litman, Professor of Law, Wayne State Univ.). Comments of Professor Mary Brandt Jensen, August 26th 1994. Comments of Professor Neil Netanel and Professor Mark Lemley, University of Texas School of Law, September 2, 1994.

31. Jane C. Ginsburg, "Putting Cars on the 'Information Superhighway': Authors, Exploiters and Copyright in Cyberspace", 95 *Colum. L. Rev.* 1466 (1995).

32. White Paper at 84.

33. *Id.* at n. 266.

34. Generally such arguments turns on disagreements over the current law baseline from which "subsidies" or "taxes" are calculated. The remarkable thing about occasional passages such as this in the White Paper is that they suggest that any fair use rights would be a subsidy to users. Not all of the White Paper's discussion is this extreme, however. Some of the debate still turns on differences of opinion about the meaning of fair use jurisprudence. Elsewhere I have given my account of the deficiencies in the White Paper's account of current law. See *The Debate on the White Paper*

35. Although this may be an oversimplification, it does not seem to be a controversial oversimplification. "First, the basic analytical approach and policy values underlying environmental law came from a fundamental paradigm shift

born of Rachel Carson in 1961, perhaps assisted unwittingly by Ronald Coase, redefining the scope of how societal governance decisions should be made. What we might call the Rachel Carson Paradigm declared that, although humans naturally try to maximize their own accumulation of benefits and ignore negative effects of their actions, a society that wishes to survive and prosper must identify and take comprehensive account of the real interacting consequences of individual decisions, negative as well as positive, whether the marketplace accounts for them or not. Attempts to achieve such expanded accountings, as much as anything, have been the common thread linking the remarkable range of issues that we call environmental law." Zygmunt J.B. Plater, "From the Beginning, a Fundamental Shift of Paradigms: a Theory and Short History Of Environmental Law" 27 *Loy. L.A. L. Rev.* 981-2 (1994). See also Rachel Carson, *Silent Spring* (1961) I would replace Coase by Pigou, and mention Leopold as well as Carson, but otherwise agree. Focusing on Leopold also has another beneficial effect. It emphasises the extent to which environmentalism was driven in addition by a belief that the economic valuation, and "commodification," of environmental resources was not only incomplete but actually wrong. See A. Leopold, *A Sand County Almanac* (1949).

36. William D. Ruckelshaus, "Environmental Protection: A Brief History of the Environmental Movement in America and the Implications Abroad", 15 *Envtl. L. J.* 455, 456 (1985).

37. *Id.*

38. There are other, more context-specific, problems. Both environmental disputes and intellectual property issues are seen as "technical," which tends to inhibit popular participation. In both areas, opposition to expansionist versions of stake-holders' rights can be off-puttingly portrayed as a stand "against private property." This is a frequent claim in intellectual property disputes, where defenders of the public domain are portrayed as "info-commies" or enemies of "the free market." (The latter is a nicely ironic argument to make in favour of a state licensed monopoly.) Indeed, the resurgence of a non-positivist, property owners takings jurisprudence in the Supreme Court seems to indicate that this idea still has great force even in the environmental area.

39. Although it is beyond me how retrospective, and even post-mortem, copyright term extension is to be squared with the idea that intellectual property rights should be given only when they will stimulate the production of new work; barring the idea of sooth-saying or other worldly communication, the incentive effects would seem to be small.

40. For a path-breaking formulation see David Lange, "Recognizing the Public Domain", 44 *Law and Contemp. Probs.* 147 (1981). I have also been influenced by Jessica Litman's work on the subject.

41. This economic skepticism links works otherwise very different in tone. Compare Stephen Breyer, "The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs", 84 *Harv. L. Rev.* 281 (1970); Pamela Samuelson, *The Copyright Grab WIRED 4.01* (1996); Boyle, Shamans *supra*.

42. Aldo Leopold, *A Sand County Almanac* 210-211 (1949).

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