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The Tragedy of (Ignoring) the Information Semicommons: A Cultural Environmental Perspective

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THE TRAGEDY OF (IGNORING) THE INFORMATION SEMICOMMONS: A CULTURAL ENVIRONMENTAL PERSPECTIVE

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ABSTRACT

The second enclosure movement critique is familiar theoretical territory for scholars concerned with the creeping maximalist impulse of Intellectual Property Rights (IPRs). Just as the first enclosure movement relating to real property created controversies concerning social contract and the advertised efficiencies of private real property, so too these concerns are echoed within the context of IPRs. This paper employs the emergent discourse of cultural environmentalism so as to diagnose and resolve IPR issues evident within the information environment. Cultural environmentalism borrows, begs, and steals analytical frameworks from environmentalism, such as those relating to the commons, public choice theory, welfare economics, and ecology. After proffering a brief overview of the second enclosure movement critique and cultural environmentalism, this paper settles on the analytical framework of the commons. Specifically, it is the commons-related tragedies such as the tragedy of the commons, the tragedy of the anticommons, and the tragedy of (ignoring) the information semicommons, that provide insight into critical efficiency concerns that lie dormant within the information environment. Ultimately, the paper argues that to ignore the benefits accruing from the dynamic interaction between private and commons

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uses of information is a tragedy—the tragedy of (ignoring) the information semicommons.

I. INTRODUCTION

Within the information environment, there is no past or pending singular grand disaster. The issues are many and cumulative. For some, concern about the information environment stems from United States Patent number 6,004,596 for a "Sealed Crustless Sandwich," which is effectively a patent for a peanut butter and jelly sandwich; for others, the concern stems from patents relating to Australian smokebush or Indian Turmeric or human genomes or perhaps algorithms.[2] Yet for others still, it is the general erosion of copyright exceptions or trademark expansion. Many are affected. Concerns raised by librarians, biotechnologists, software engineers, and parodists exemplify the broad range of issues at stake within the information environment.[3]

Cultural environmentalism is an emergent discourse that seeks to borrow, beg, and steal analytical frameworks from contemporary environmentalism—such as those relating to the commons, public choice theory, welfare economics, and ecology—so as to diagnose and resolve issues within the information environment.[4] After a brief overview of the second enclosure movement critique and the emergent

2. JAMES BOYLE, THE PUBLIC DOMAIN: ENCLOSING THE COMMONS OF THE MIND, at ix (2008) [hereinafter BOYLE, PUBLIC DOMAIN] (discussing peanut butter and jelly sandwich patent in the United States); Stephen Gray, *Vampires Round the Campfire: Indigenous Intellectual Property Rights in Australia*, 22 ALTERNATIVE L. J. 60, 60-61 (1997) (discussing the Australian Smokebush); VANDANA SHIVA, PROTECT OR PLUNDER?: UNDERSTANDING INTELLECTUAL PROPERTY RIGHTS 62-63 (2001) (discussing Indian Turmeric).

3. BOYLE, PUBLIC DOMAIN, *supra* note 2, at 239.

4. *Infra* Part III.

discourse of cultural environmentalism, this paper focuses on the analytical framework of the commons and related tragedy discourse; namely, it focuses on the tragedy of the commons, the tragedy of the anticommons, and the tragedy of (ignoring) the information semicommons. In so doing, the paper advocates the importance of recognizing the dynamic efficiencies of private and commons uses of information as per semicommons theory so as to move beyond the false dichotomy of the public/private information ownership debate. In the context of contemporary information ownership and regulation, the paper submits that private and commons uses must be thought of, at least in some instances, as symbiotic rather than mutually exclusive.

II. PART ONE: THE SECOND ENCLOSURE MOVEMENT

In the fifteenth century, the structure of land ownership in England began a rapid transformation.[5] Drawing upon a variety of methods, the aristocracy appropriated for private ownership land that had been traditionally held in common.[6] This was referred to as the "enclosure movement," whereby the right to exclude was utilized to convert the default form of land tenure from commons property to private property.[7] Enclosure has continued up until this day, albeit contemporary limited-commons and semicommons analysis suggests a more complex picture.[8]

Boyle eloquently describes the first enclosure movement in "The Second Enclosure Movement and the Construction of the Public Domain" by depicting the controversial nature of real property rights.[9] He begins his critique by drawing upon a well-known poem that begins:

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5. Dan Hunter, *Cyberspace as Place and the Tragedy of the Digital Anticommons*, 91 CAL. L. REV. 439, 500 (2003).

6. JAMES YELLING, COMMON FIELD AND ENCLOSURE IN ENGLAND 1450-1850, at 7-9 (1977).

7. *See* Kaiser Aetna v. United States, 444 U.S. 164, 176 (1979) (characterizing "the right to exclude others" as "one of the most essential sticks in the bundle of rights that are commons characterized as property").

8. *See generally* ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION (1990); ROBERT C. ELLICKSON ET AL., PERSPECTIVES ON PROPERTY LAW, at xviii (2d ed. 1995) (citing a shared dormitory room as common property); Hunter, *supra* note 5, at 500 n.419 (citing Robert Ellickson, *Property in Land*, 102 YALE L.J. 1315, 1394-95 (1993) (noting that the majority of Americans live in limited-commons property environments within multiperson households)); Henry Smith, *Semicommon Property Rights and Scattering in the Open Fields*, 29 J. LEGAL STUD. 131, 160 (2000) [hereinafter Smith, *Semicommon Property Rights*] (drawing attention to the fact that open fields and enclosed fields coexisted for centuries).

9. James Boyle, *The Second Enclosure Movement and the Construction of the Public Domain*, 66 L. & CONTEMP. PROBS. 33, 34-35 (2003) [hereinafter Boyle, *The Second Enclosure Movement*].

> [T]he 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.[10]

Boyle's depiction of real property rights within the context of the first enclosure movement examines social contract questions regarding the legitimacy of state power and the creation of incentives that are seemingly inherent within those rights.[11] "Seemingly," as empirical evidence does not always support a direct correlation between property rights and increasing production.[12] The classic "tragedy of the commons" (discussed below) does not always eventuate in practice.

Property rights concerning both real property and intellectual property remain at center stage in contemporary theoretical discussion relating to economic efficiency and justice. Property definitions and descriptions abound from Hobbes to Locke to Blackstone to Hume to Proudhon.[13] Although the definition of property differs depending on the context, at its simplest, Benkler describes property as a "cluster of background rules" that determine what resources each of us has when

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10. *Id.* at 33.

11. *Id.* at 34-35.

12. Most of the empirical evidence relates to agricultural production. *See, e.g.*, Robert Allen, *The Efficiency and Distributional Consequences of Eighteenth Century Enclosures*, 92 ECON. J. 937, 950-51 (1982); ROBERT ALLEN, ENCLOSURE AND THE YEOMAN (1992); *cf.* Michael Turner, *English Open Fields and Enclosures: Retardation or Productivity Improvements*, 46 J. ECON. HIST. 669, 687-88 (1986).

13. THOMAS HOBBES, LEVIATHAN 18 (Richard Tuck ed., Cambridge Univ. Press 1996) (1651) (explaining that property rights are the subject of sovereign discretion, but that the sovereign is bound to offer the citizens certain protections relating to property ownership such as providing a judicial system of resolution in matters concerning property conflict); JOHN LOCKE, SECOND TREATISE OF GOVERNMENT §§ 47-51 (C. B. Macpherson ed., Hackett Publishing Co. Inc. 1980) (1690) (casting property within the social contract context whereby freedom is traded in for certain securities stemming from impartial sovereign protection of property); WILLIAM BLACKSTONE, COMMENTARIES ON THE LAWS OF ENGLAND 3 (Chicago University Press 1979) (1765) (defining property as the "sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe"); DAVID HUME, MORAL PHILOSOPHY 99-101 (Geoffrey Sayre-McCord ed. 2006) (advocating a pragmatic view of property whereby property ownership is adopted as a means of dividing limited resources but rejecting the social contract perspective of property); PIERRE-JOSEPH PROUDHON, WHAT IS PROPERTY?: AN INQUIRY INTO THE PRINCIPLE OF RIGHT AND GOVERNMENT 44 (George Woodcock ed., Dover Publications 1970) (1840) (making the important distinction between possession and property). For a critical, Indigenous perspective, see Jane Anderson & Kathy Bowrey, *The Imaginary Politics of Access to Knowledge: Whose Cultural Agendas are Being Advanced?*, AUSTRALIAN INTELL. PROP. L. RES. 13 (2006), *available at* http://www.austlii.edu.au/au/other/AIPLRes/2006/13.html.

we come into relations with others and, no less important, what "having" or "lacking" a resource entails in our relations with these others.[14]

From the early days of intellectual property rights (IPRs), critics have voiced concerns about the broad-ranging nature of the said rights.[15] In the United States, the founding generation of intellectuals had been nurtured on the philosophy of the Scottish Enlightenment and the history of the struggle against royal monopolies.[16] They were not against IPRs per se, but they repeatedly referred to the necessity to restrict both its term and its scope so as to avoid low quality, high prices, and artificial scarcity.[17] Specifically, they questioned whether individuals should have a right to carve out their own incremental innovations and protect them through IPRs in light of the fact that innovation occurs cumulatively.[18] Furthermore, they were concerned, as are many contemporary scholars, that IPRs with lengthy term and scope might give too much control to a single individual or corporation over some vital aspect of culture and science, which may in turn affect the future of innovation.[19] The overarching theme, however, was the promotion of free trade and a corresponding opposition to monopolies.[20] Nineteenth century documentation, such as Thomas Jefferson's letter to Isaac McPherson and Lord Macaulay's speeches within the British Parliament, oft-quoted within the digerati, reflect these general sentiments.[21]

In the contemporary context, the nineteenth century criticisms relating to monopolies and the centralization of power stemming from

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14. YOCHAI BENKLER, THE WEALTH OF NETWORKS 143-44 (2006) [hereinafter BENKLER, WEALTH OF NETWORKS].

15. *See, e.g.*, JARED SPARKS, THE LIFE OF BENJAMIN FRANKLIN: CONTAINING THE AUTOBIOGRAPHY WITH NOTES AND A CONTINUATION (1845), at 156-57 (2008).

16. Boyle, *The Second Enclosure Movement*, *supra* note 9, at 57; *see also* BOYLE, THE PUBLIC DOMAIN, *supra* note 2, at 36-37.

17. *See* BOYLE, THE PUBLIC DOMAIN, *supra* note 2, at 36-37.

18. *See, e.g.*, SPARKS, *supra* note 15, at 156-57.

19. BOYLE, THE PUBLIC DOMAIN, *supra* note 2, at 37.

20. *See id.*

21. *See, e.g.*, Boyle, *The Second Enclosure Movement*, *supra* note 9, at 53-57; LAWRENCE LESSIG, THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD 207 n.78 (2001) (quoting Letter from Thomas Jefferson to James Madison (July 31, 1788), *in* 13 THE PAPERS OF THOMAS JEFFERSON 440, 442-43 (Julian P. Boyd ed., 1956)). Note that criticism of IPRs was certainly not confined to the United Kingdom or the United States during the nineteenth century. The Congress of German Economists, for instance, resolved in 1863 that "patents hinder rather than further the progress of invention." Fritz Machlup & Edith Penrose, *The Patent Controversy in the Nineteenth Century*, 10 J. ECON. HIST. 1, 4 n.8 (1950). Additionally, the Netherlands abolished its patent system in 1869 as a corollary of the same criticisms. Boyle, *The Second Enclosure Movement*, *supra* note 9, at 56-57. Indeed in the said countries various proposals were made to replace patents, with state-provided prizes or bounties to particularly useful inventions being the most popular.

IPRs have manifested in the second enclosure movement critique.[22] This critique encompasses the theme that information, knowledge, and culture have become increasingly privatized through the intellectual property system so as to secure the economic returns demanded by the manufacturers of the industrial information economy.[23] Within the academy, the second enclosure critique is exemplified by Lange's thought-provoking examination of the public domain, Samuelson's perceptive account of the application of copyright to computer programs and digital materials, and Litman's work on digital copyright and the public domain.[24] Boyle has enriched this theoretical landscape through his exploration of the basic romantic assumptions underlying intellectual property constructs, his description of the second enclosure movement, and, most importantly within the context of this paper, his visionary plea to adopt an environmentalist framework so as to preserve the public domain.[25]

In diagnosing the harmful effects of the present enclosure movement, scholars such as Boyle, Lessig, and Benkler have all turned to empirical evidence, or the lack thereof, concerning the benefits and detriments of IPRs.[26] Traditionally, theorists have acknowledged both economic and moral justifications for IPRs.[27] That is, economically

22. *See generally* Boyle, *The Second Enclosure Movement*, *supra* note 9; *see also* James Boyle, *Cruel, Mean, or Lavish?: Economic Analysis, Price Discrimination and Digital Intellectual Property*, 53 VAND. L. REV. 2007, 2010 (2000); Peter Drahos, *A Defence of the Intellectual Commons*, CONSUMER POL'Y REV., May 2006, at 2.

23. *See, e.g.*, Boyle, *The Second Enclosure Movement*, *supra* note 9; Peter K. Yu, *Intellectual Property and the Information Ecosystem*, 2005 MICH. ST. L. REV. 1, 11-12 (2005).

24. David Lange, *Recognizing the Public Domain*, 44 L. & CONTEMP. PROBS. 147 (1981); Pamela Samuelson et al., *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308 (1994); JESSICA LITMAN, DIGITAL COPYRIGHT: PROTECTING INTELLECTUAL PROPERTY ON THE NET (2001); *see also* Jessica Litman, *The Public Domain*, 39 EMORY L.J. 965, 1010-11 (1990).

25. JAMES BOYLE, SHAMANS, SOFTWARE AND SPLEENS (1996) [hereinafter BOYLE, SHAMANS]; James Boyle, *A Politics of Intellectual Property: Environmentalism for the Net?*, 47 DUKE L.J. 87 (1997) [hereinafter Boyle, *A Politics*]; James Boyle, *The Second Enclosure Movement*, *supra* note 9. Note that Lessig's perspective relating to the importance of free exchange of ideas and information concerning creative endeavours, and his diagnoses of the destructive effects of the present enclosure movement, are also significant within this context. LESSIG, *supra* note 21, at 4-15. Benkler's work concerning the role of peer production in transforming markets and freedom is also significant. BENKLER, WEALTH OF NETWORKS, *supra* note 14, at 62-63.

26. Boyle, *The Second Enclosure Movement*, *supra* note 9, at 51; LESSIG, *supra* note 21, at 22; BENKLER, WEALTH OF NETWORKS, *supra* note 14, at 38.

27. *See, e.g.*, SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF S. COMM. ON THE JUDICIARY, 85TH CONG., AN ECONOMIC REVIEW OF THE PATENT SYSTEM 21 (Comm. Print 1958) (Fritz Machlup); Stephen Breyer, *The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies and Computer Programs*, 84 HARV. L. REV. 281, 284 (1970).

society is obliged to reward persons to the extent that they have produced something useful in accordance with the dictum "as one sows, so should one reap"; and morally, it is said that, at least within the context of liberal philosophy, that a person has a natural right to the product of her brain.[28] With respect to patents, the theory states, if an inventor cannot get a patent then she will have less incentive to invent because others will be able to benefit from her invention without the cost of creating it.[29] This is the classic provisioning problem that stems from (so-called) free-riding.[30] As the theory goes, if people are allowed to free-ride, there will be fewer inventors and, as a consequence, less progress in "science and useful arts."[31]

While the theory of incentivization and IPRs is compelling, most of the evidence that supports IPRs is indeed theoretical rather than empirical in nature.[32] It is true that, in theory at least, some types of innovation patents are very likely to induce more innovation, particularly where innovation is independent or noncumulative, which is to say that one invention is essentially separate from another.[33] Moreover, even where innovation is cumulative, if the use of the patent is obvious then the original patent holder will be compelled to license a patent to follow-on innovators.[34] However, when the direction of an improvement to an invention is ambiguous, then licensing may not occur and patents may in

28. SAM RICKETSON & MEGAN RICHARDSON, INTELLECTUAL PROPERTY: CASES, MATERIALS AND COMMENTARY 11 (2d ed. 1998).

29. LESSIG, *supra* note 21, at 205.

30. "So-called" because free-riding analysis sometimes ignores positive externalities, spillovers or network effects. *See, e.g.*, Samuelson et al., *supra* note 24, at 2375; Joseph Farrell, *Standardization and Intellectual Property*, 30 JURIMETRICS J. 35, 36-38, 45-46 (1989) (discussing network effects); LESSIG, *supra* note 21, at 205; Brett Frischmann & Mark Lemley, *Spillovers*, 107 COLUM. L. REV. 257, 281 (2007) ("Innovation is cumulative and is generally spurred by decentralized competition. This is particularly likely to be true of an innovation subject to productive reuse, since no one owner can capture the full value of that innovation anyway."); Brett Frischmann, *Cultural Environment and The Wealth of Networks*, 74 U. CHI. L. REV. 1083, 1106-07 (2007) [hereinafter Frischmann, *Cultural Environment*].

31. LESSIG, *supra* note 21, at 205.

32. This was a problem related in Robert Hurt & Robert Schuchman, *The Economic Rationale for Copyright*, 56 AM. ECON. REV. 421 (1966), *quoted in* BENEDICT ATKINSON, THE TRUE HISTORY OF COPYRIGHT: THE AUSTRALIAN EXPERIENCE 1905-2005, at 9-10 (2007). *See also* Samuel Oddi, *The International Patent System and Third World Development: Myth or Reality?*, 63 DUKE L.J. 831, 837-42 (1987) (surmising that "[d]espite the 500-year history of the patent system, it is still extremely difficult to ascertain whether a patent system actually results in a net social benefit to a developed country").

33. LESSIG, *supra* note 21, at 205 n.65 (citing Adam Jaffe, *The U.S. Patent System in Transition: Policy Innovation and the Innovation Process* 24-26 (Nat'l Bureau of Econ. Research, Working Paper No. 7280, 1999)).

34. LESSIG, *supra* note 21, at 205.

fact impede innovation.[35] Hence, it can be reasoned that there are situations where innovation will be assisted by the provision of patents as well as situations where it will be harmed.[36] Semicommons theory, espoused below, provides a theoretical foundation for this reasoning.

Within the incentivization context, Lerner's study concerning the economics of innovation is thought-provoking. He considered amendments in intellectual property law in sixty countries over a time frame of 150 years, examining nearly 200 intellectual property policy changes.[37] His study found that investment in research and development decreases slightly when patent law is strengthened.[38] The inference is that when a country strengthens its patent protection, it marginally reduces the level of investment in innovation by local firms.[39]

To be sure, empirical and theoretical scepticism concerning IPRs is not new. It has existed since the early days of the patent system.[40] Ben Franklin pronounced patents immoral in his autobiographical account in 1793, and Mertonian norms (although subject to contestation) have lingered in science since time immemorial.[41] Even within the contemporary context, avid supporters of the IPR system have expressed

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35. *Id.*; *see also* THOMAS MANDEVILLE, UNDERSTANDING NOVELTY: INFORMATION, TECHNOLOGICAL CHANGE AND THE PATENT SYSTEM 69-70 (1996).

36. Network externalities or spillovers provide one explicit example whereby IPRs may indeed cause harm. *See, e.g.*, Samuelson et al., *supra* note 24, at 2375; Farrell, *supra* note 30, at 36-38, 45-46 (discussing network effects).

37. BENKLER, WEALTH OF NETWORKS, *supra* note 14, at 38-39 (citing Josh Lerner, *Patent Protection and Innovation over 150 Years* 30 (Nat'l Bureau of Econ. Research, Working Paper No. 8977, 2002)).

38. BENKLER, WEALTH OF NETWORKS, *supra* note 14, at 38-39.

39. *Id.* The difficulty of proving the correlation between IPRs and Research & Development is partly because of the difficulty of separating cause and effect. That is, IPRs may stimulate more investment, but countries that invest more in R&D may demand more protection. *See, e.g.*, AGRICULTURE AND THE WTO: CREATING A TRADING SYSTEM FOR DEVELOPMENT 254-56 (Merlinda Ingco & John Nash eds., 2004). The experience of the United States and China specifically in relation to agriculture is also thought-provoking. The Chinese are one of the most advanced rice breeders in the world even though historically they have not had any form of protection on new plant varieties. ROBERT DE LA PERRIERE & FRANCK SEURET, BRAVE NEW SEEDS: THE THREAT OF TRANSGENIC CROPS TO FARMERS 94 (2000). On the other hand, in the United States, protection led to an increase in improvement programmes for only two plant species. The rare studies that have been conducted in countries where the protection of vegetal breeding has existed for decades, like the United States, show that this type of legal system had several consequences such as reduced information and genetic material exchange between the public sector and the private sector, a low stimulus impact on plant improvement, an increase in the price of seeds sold to farmers, and a diminished role of the public sector in plant improvement. *See id.* at 95.

40. LESSIG, *supra* note 21, at 206.

41. *Id.* (citing BENJAMIN FRANKLIN, THE AUTOBIOGRAPHY OF BENJAMIN FRANKLIN 215-16 (Frank W. Pine ed., 1916); LESSIG, *supra* note 21, at 206 (citing Robert K. Merton, *A Note on Science and Democracy*, 1 J. LEGAL & POL. SOC'Y 115, 123 (1942)).

latent scepticism. Bill Gates, for instance, wrote the following memo to Microsoft executives in 1991: "If people had understood how patents would be granted when most of today's ideas were invented and had taken out patents, the industry would be at a complete standstill today."[42]

This empirical, theoretical, and pragmatic skepticism concerning IPRs has become an important pillar of "cultural environmentalism"—a notion coined by James Boyle in his seminal work "A Politics of Intellectual Property: Environmentalism for the Net?"[43]

III. PART TWO: CULTURAL ENVIRONMENTALISM

Cultural environmentalism is an emergent field of inquiry that, *inter alia*, seeks to apply analytical frameworks of environmentalism to IPR issues.[44] It has stemmed from Boyle's submission that those who seek to protect the public domain and the intellectual commons are working toward a similar end as environmentalists.[45] Like many socio-political movements and discourses, cultural environmentalism is simultaneously reactive and proactive. It has "reacted" by exposing the harms caused by a relentlessly maximalist program of IPR expansion (as alluded to above).[46] It has "proacted" through the creation and maintenance of open source initiatives, creative commons projects, and distributed creativity (as alluded to below).[47]

Attempting to define cultural environmentalism is fraught with difficulty. From a literal perspective, decoupling "culture" from "environment" is a challenging task.[48] Despite culture being a fundamental theoretical sociological term, the 150 formal definitions

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42. FRED WARSHOFSKY, THE PATENT WARS: THE BATTLE TO OWN THE WORLD'S TECHNOLOGY 170 (1994).

43. Boyle, *A Politics*, *supra* note 25, at 108-10.

44. *Id.*

45. *Id.* Although cultural environmentalism only entered the digerati lexicon in the past decade, *see* Symposium, *Cultural Environmentalism @ 10*, 70 LAW & CONTEMP. PROBS. 1 (2007), *available at* http://www.law.duke.edu/journals/lcp/lcptoc70spring2007, the intellectual foundation of cultural environmentalism draws upon a rich tapestry of historical thought and action: Jefferson, Franklin, Madison, and Macaulay have all proved inspirational figures within the cultural environment. BOYLE, PUBLIC DOMAIN, *supra* note 2 (providing a good overview of cultural environmental inspirational figures). Moreover, the first copyright can be traced to the Duke of Milan in 1481, and the *Statute of Anne* was enacted three centuries ago in 1709. RAY AUGUST ET AL., INTERNATIONAL BUSINESS LAW: TEXT, CASES AND READINGS 453 (5th ed. 2008).

46. *See* Boyle, *A Politics*, *supra* note 25, at 110.

47. *See* Robert A. Heverly, *The Information Semicommons*, 18 BERKELEY TECH. L.J. 1127, 1143 (2003).

48. *See* David W. Opderbeck, *Deconstructing Jefferson's Candle: Toward a Critical Realist Approach to Cultural Environmentalism and Information Policy*, 49 JURIMETRICS J. 203, 217 (2008).

suggest a lack of consensus among sociologists.[49] Benkler's musings on culture, however, are a useful starting point:

> [Culture] is a frame of meaning from within which we must inevitably function and speak to each other, and whose terms, constraints, and affordances we always negotiate. There is no point outside of culture from which to do otherwise. [50]

As we all "speak to each other" within the context of an "environment" of one sort or another, culture and the environment are inextricably linked.[51] The "environment" can be described as a system of interconnected and/or interdependent resources that comprise the "surrounding," "setting," or "context" that we inherit, live within, use, interact with, change, and pass on to future generations.[52] Moving beyond the literal, however, cultural environmentalism is much more than the compilation of two distinct terms. Just as the natural physical environment is inherited and passed on to future generations, so too the cultural environment is inherited and passed on.[53] The natural environment and the cultural environment both evolve.[54] If the metaphor is to be extended, there are numerous methods of constructing and deconstructing the ecosystems of the cultural environment.[55] Frischmann, for example, suggests that the ecosystems of the cultural environment can be distinguished using the parameters of broad categories such as culture and science, via intellectual property such as copyrights and patents or via the denomination of industry such as computer, biotechnology, and medicine.[56]

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49. Ilhyung Lee, *Culturally-Based Copyright Systems?: The U.S. and Korea in Conflict*, 79 WASH. U. L. Q. 1103, 1109 (2001); Julie E. Cohen, *Creativity and Culture in Copyright Theory*, 40 U.C. DAVIS L. REV. 1151, 1165-67 (2007); Frischmann, *Cultural Environment*, *supra* note 30, at 1094 & n.39.

50. BENKLER, WEALTH OF NETWORKS, *supra* note 14, at 282.

51. Indeed Frischmann suggests that culture might be perceived as an environmental concept. Frischmann, *Cultural Environment*, *supra* note 30, at 1094.

52. *See* Brett Frischmann et al., *Constructing Commons in the Cultural Environment* 18 (Univ. of Pittsburgh Legal Studies Research Paper Series, Working Paper No. 2008-26, 2008) [hereinafter Frischmann, *Constructing Commons*].

53. *See id.*

54. In his book *The Selfish Gene*, Richard Dawkins argues that genes are not the only things that replicate and evolve. RICHARD DAWKINS, THE SELFISH GENE 189-201 (2d ed. 1989). Culture also evolves through the transfer of memes. Dawkins' meme, a unit of information, is a measurement of convenience, a "pience" of information that can stand alone for an idea or cultural phenomenon. According to Dawkins, "[e]xamples of memes are tunes, ideas, catch-phrases, clothes fashions, ways of making pots or of building arches." *Id.* at 192. Although Dawkins is referring to genes, the concept is just as relevant to nature generally. *Id.*

55. *See* Frischmann, *Constructing Commons*, *supra* note 52, at 18-19.

56. *See* Frischmann, *Cultural Environment*, *supra* note 30, at 1093.

Cultural environmentalism is perhaps best understood through description rather than definition. At its core, it is concerned with reconciling economics and information regulation in a manner that promotes efficiency and justice.[57] It engages with this reconciliatory process by concerning itself with the manner in which the public domain and the commons can preserve the health and diversity of the information ecology. As Boyle states:

> 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 1950s or 1960s. At that time, there were people—supporters of the park system, hunters, birdwatchers and so on—who cared about what we would now identify as "environmental" issues. In the world of intellectual property we now have start-up software engineers, libraries, appropriationist artists, parodists, biographers, biotech researchers, and others.[58]

As implied, the idea that "an environment" exists has allowed for the establishment of a coalition around a reframed conception of common interest.[59] This reframed conception of the common interest allows the duck-hunter and the bird-watcher to recognize their commonality in the sense that they both rely on the functioning of the wetlands and the accompanying ecosystem services.[60] Boyle explains:

> The invention of the concept of "the environment" pulls together a string of otherwise disconnected issues, offers analytical insight into the blindness implicit in prior ways of thinking, and leads to perception of common interest where none was seen before. Like the environment, the public domain must be "invented" before it is saved. Like the environment, like "nature," the public domain turns out to be a concept that is considerably more slippery than many of us realize. And, like the environment, the public domain nevertheless turns out to be useful, perhaps even necessary.[61]

Boyle's contention is that, whereas the environmental movement illuminated the effects that social decisions can have upon ecology, cultural environmentalists seek to illuminate the effects that intellectual property laws can have upon culture and the information environment.[62]

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57. BOYLE, SHAMANS, *supra* note 25, at x.
58. Boyle, *A Politics*, *supra* note 25, at 108.
59. *See id.*
60. Boyle, *The Second Enclosure Movement*, *supra* note 9, at 72-73.
61. *Id.* at 52.
62. *See id.*

It is in this context that Boyle advocates for a set of analytical tools that advance the importance of the public domain:

> [A] successful political movement needs a set of (popularizable) analytical tools which reveal common interests around which political coalitions can be built. Just as "the environment" literally disappeared as a concept in the analytical structure of private property claims, simplistic "cause and effect" science, and markets characterized by negative externalities, so too the "public domain" is disappearing, both conceptually and literally, in an intellectual property system built around the interests of the current stakeholders and the notion of the original author. 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.[63]

One of the first points of call concerning contemporary environmentalism is "Silent Spring" published by Rachel Carson in 1962.[64] The work of Carson, coupled with the unwitting assistance of Leopold and perhaps Pigou, led to some unique insights that consequently shifted normative thought concerning societal governance decisions.[65] What might be coined 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.[66] Attempts to achieve such expanded accountings, as much as

63. Boyle, *A Politics*, *supra* note 25, at 113.

64. Of course, *Silent Spring* was a seminal work that made a significant contribution to a contemporary movement. *See* RACHEL CARSON, SILENT SPRING (1962). However, to postulate that the environmental movement has an explicit start date is to of course oversimplify history and undermine the "standing on the shoulders of giants" affect so common in the realm of cultural creation and production. Evidence of environmentalism, and the consequential placement value on the *oikos*, is scattered throughout history. Contemporary environmentalists have drawn inspiration from the collective wisdom of Indigenous Peoples, St Francis of Assi, Goethe (1749-1832), Thoreau (1817-1862), Leopold (1887-1942) and Carson (1907-1964) to name but a few. Likewise, cultural environmentalism also has its fair share of historical inspirational figures, albeit the time frame is more condensed. Inspirational sources within cultural environmentalism, all of whom were discussed above, include Jefferson, Madison, Macaulay, Stallman and Boyle.

65. ALDO LEOPOLD, A SAND COUNTY ALMANAC, AND SKETCHES HERE AND THERE (1949); ARTHUR C. PIGOU, WEALTH AND WELFARE (1912); *see also* 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, 981-82 (1994).

66. *Id.*

anything, have been the common strand connecting the wide range of issues falling under the environmental law banner.[67]

Many of the justifications for environmental law and regulation relate to the cultural environment, at least at the level of basic economic analysis of market failures.[68] Thus, in addition to being politically attractive, at the outset cultural environmentalism has some theoretical commonalities with environmentalism that are worth exploring.[69] As Boyle states:

> In both environmental protection and intellectual property, the very structure of the decisionmaking process tends to produce a socially undesirable outcome. Decisions in a democracy are made badly when they are primarily made by and for the benefit of a few stakeholders, be they landowners or content providers.[70]

Frischmann suggests that this reference to the decisionmaking process speaks to the core problems of complexity and path dependence in interlinked ecologies.[71] Contemporary environmentalism gained much of its persuasive power by pointing out that, for structural reasons, 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.[72] In both of these conceptual systems, the environment actually disappeared due to the fact that it simply did not chronicle in the analysis.[73] It is therefore of no surprise that the environment was not conserved.[74] The same might be said in relation to the public domain.[75]

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67. *Id.*

68. Frischmann, *Cultural Environment*, *supra* note 30, at 1089.

69. Like environmentalism, cultural environmentalism is not a passing fad. It is true that cultural environmentalism as a *phrase* only recently celebrated its tenth birthday by way of a "Cultural Environmentalism @ 10" symposium hosted by Stanford Law's School Center for Internet and Society, but the intellectual foundation of cultural environmentalism draws upon a rich tapestry of historical thought. *See* Symposium, *supra* note 45. Of course intellectual property is not a new concept. The first copyright can be traced to the Duke of Milan in 1461, and the *Statute of Anne* was enacted in 1709. Hence, although the maximalist tendencies of IPRs did not begin in earnest until the second half of the twentieth century, it would not be overly ambitious to suggest that the heritage of cultural environmentalism is found in the passing of centuries rather than the passing of decades.

70. Boyle, *A Politics*, *supra* note 25, at 110.

71. Frischmann, *Cultural Environment*, *supra* note 30, at 1090-91.

72. BOYLE, PUBLIC DOMAIN, *supra* note 2, at 241.

73. *Id.*

74. *Id.*

75. *Id.*

The invention of the "environment," however, has been no slight task for contemporary environmentalism.[76] Despite the rich philosophical history of environmentalist thought, contemporary environmentalists have found it necessary to rely upon several distinct analytical frameworks to advance environmental claims.[77] In no specific order, the first exemplary analytical framework is that of the commons and how it is used, regulated, and controlled.[78] The second is public choice theory, which speaks of the power of incumbents to shape law in their favor.[79] The third is welfare economics, which reveals the ways in which markets can fail to take into account negative (and positive) externalities associated with economic actors.[80] The fourth exemplary analytical framework is that of ecology, the comprehensive study concerning the connection of the variable, fragile, and complex interrelationships between living systems.[81]

This paper focuses specifically on the analytical framework of the commons within the context of the cultural environment so as to develop the theoretical foundation concerning the critical need to appreciate the dynamic interaction between common uses and private uses within the information environment.

IV. PART THREE: THE COMMONS AND RELATED TRAGEDIES

The nature of the commons has been a source of contention within both environmentalism and cultural environmentalism. On the one hand, environmentalism has struggled with the tragedy of the commons with respect to nature: oceans, rivers, forests, and air.[82] On the other hand, cultural environmentalism has struggled with the tragedy of the anticommons, particularly in relation to innovations such as computer

76. Boyle, *A Politics*, *supra* note 25, at 110.

77. *Id.* at 108-09 (referring to two analytical frameworks—ecology and welfare economics). While this is a useful starting point, this paper expands the set of environmental frameworks to include "the commons" and "public choice theory." Forthcoming work will expand on "public choice theory" and "welfare economics" within the IPR context.

78. *See* BOYLE, PUBLIC DOMAIN, *supra* note 2, at 45.

79. Tyler T. Ochoa, *Copyright Duration: Theories and Practice*, *in* 1 INTELLECTUAL PROPERTY AND INFORMATION WEALTH 138 (Peter K. Yu ed. 2007).

80. BOYLE, PUBLIC DOMAIN, *supra* note 2, at 239.

81. *Id.* The term ecology or oekologie was coined by Ernst Haeckel, the German biologist, in 1866, and further developed by Eugenius Warming when he wrote the first textbook on the matter. DAVID G. FRODIN, GUIDE TO STANDARD FLORAS OF THE WORLD 72 (2d ed. 2001). *See also* Boyle, *A Politics*, *supra* note 25, at 108-09.

82. *See generally* CARSON, *supra* note 64.

software, agriculture, and medicine.[83] To appreciate and juxtapose the commons-related tragedies, the commons itself must be understood.

The Australian Oxford Pocket Dictionary defines the commons as "for joint use, shared; land belonging to the community."[84] The shared attributes of a common resource mean that the resource is free (libre) to the community in the sense that the resource is subject to usage without the permission of anyone else, or, if permission is granted, that it is done so neutrally.[85] A key attribute of the commons is that no single person or organization has exclusive control over the use or disposition of a particular resource.[86] Rather, resources governed by commons may be used or disposed of by anyone (within a relevant community) in accordance with rules that may range from "anything goes" to quite crisply articulated formal rules that are effectively enforced.[87]

The most evident (regulated) commons in contemporary landscapes are the footpaths, roads, and highways that facilitate our ability to move from one place to the other.[88] More subtle but just as important, without which contemporary society could not function, is virtually all pre-twentieth century knowledge and culture, a majority of scientific knowledge from the first half of the twentieth century, and the lion's share of contemporary science and academic learning.[89] From the commons perspective, Einstein's theory of relativity sits with the local beach or park or the nearest footpath since the (relevant) community can access these resources without the permission of anyone else.[90] As Reichman puts it, common resources are protected by a liability rule rather than a property rule.[91] It is not that no control exists, but rather

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83. *See* Part III.

84. THE AUSTRALIAN OXFORD POCKET DICTIONARY (1976). *See also* LESSIG, *supra* note 21, at 19-20; Frank Pasquale, *Toward an Ecology of Intellectual Property: Lessons from Environmental Economics for Valuing Copyright's Commons*, 8 YALE J.L. & TECH 78, 80-81 (2006); *cf.* Carol Rose, *The Comedy of the Commons*, *in* PROPERTY AND PERSUASION: ESSAYS ON THE HISTORY, THEORY, AND RHETORIC OF OWNERSHIP 105, 106 (1994) (noting that U.S. legal doctrine has strongly suggested that some kinds of properties should not be held exclusively in private hands but instead should be open to the public or at least subject to public right of use).

85. LESSIG, *supra* note 21, at 19-20 & n.3.

86. *Id.* at 20.

87. Yochai Benkler, *The Political Economy of the Commons*, UPGRADE, June 2003, at 6 [hereinafter Benkler, *The Political Economy*], *available at* http://www.benkler.org/Upgrade-Novatica%20Commons.pdf.

88. BENKLER, WEALTH OF NETWORKS, *supra* note 14, at 61-62.

89. Benkler, *The Political Economy*, *supra* note 87, at 7.

90. Boyle, *The Second Enclosure Movement*, *supra* note 9, at 62-63.

91. Jerome Reichman & Tracy Lewis, *Using Liability Rules to Stimulate Local Innovation in Developing Countries: Application to Traditional Knowledge*, *in* INTERNATIONAL PUBLIC GOODS AND TRANSFER OF TECHNOLOGY UNDER A GLOBALIZED INTELLECTUAL PROPERTY REGIME (Keith

the type of control is different from the control granted by property law.[92]

It is doubtful that the commons can be described as obscure, as Lessig claims in "The Future of Ideas," but neither is the term exceptionally fashionable, as claimed by Gorman, who argues that the rhetoric of information commons diverts attention from the enduring value of libraries.[93] Both Lessig and Benkler employ the commons notion for normative and practical purposes, to promote freedom and individual liberty in seeking to halt the march of IPR maximalism, and to harvest the creative and economic bounty of social production.[94] Questioning the presumptive link between commons and scarcity is an important dimension of this discourse, particularly as such discourse relates to the information ecology.

A. Information Ecology

Just as one speaks of ecology as it relates to natural physical systems, the notion of information ecology is also palatable.[95] An important dimension of information ecology is an appreciation of the role of rivalry and exclusion, particularly within commons discourse.[96] This is because rivalry and exclusion represent the axes of parameters and opportunities within the information commons. In this sense, both rivalry and exclusion are matters of degree, and together they provide insights into the ecology of information.[97]

E. Maskus & Jerome H. Reichman eds., 2005). For an interesting discussion of the "liability rule" and its application to the contemporary commons, see Boyle, *The Second Enclosure Movement*, *supra* note 9, at 68 & n.145.

92. *See* Lawrence Lessig, *The Architecture of Innovation*, 51 DUKE L.J. 1783, 1788 (2002).

93. LESSIG, *supra* note 21, at 19; Ian McShane, Sustaining the Local Commons, the CCI International Conference: Creating Value: Between Commerce and Commons 3 (June 25, 2008) (citing MICHAEL GORMAN, THE ENDURING LIBRARY: TECHNOLOGY, TRADITION AND THE QUEST FOR BALANCE (2003)).

94. McShane, *supra* note 93, at 3.

95. *See, e.g.*, Symposium, *The Conference on Intellectual Property, Sustainable Development, and Endangered Species: Understanding the Dynamics of the Information Ecosystem*, 2005 MICH. ST. L. REV. 1 (2005).

96. Brett M. Frischmann, *An Economic Theory of Infrastructure and Commons Management*, 89 MINN. L. REV. 917, 942 (2005) [hereinafter Frischmann, *An Economic Theory*].

97. *Id.* at 942 n.93; RICHARD CORNES & TODD SANDLER, THE THEORY OF EXTERNALITIES, PUBLIC GOODS, AND CLUB GOODS 8-10 (2d ed. 1996); Shubha Ghosh, *Deprivatizing Copyright*, 54 CASE W. RES. L. REV. 387, 402-06 (2003); OSTROM, *supra* note 8, at 8-15; *cf.* Charlotte Hess & Elinor Ostrom, *Ideas, Artifacts and Facilities: Information as a Common-Pool Resource*, 66 L. & CONTEMP. PROBS. 111, 118-21 (2003) (suggesting that scholars sometimes conflate resource classification with property right issues). For useful tables concerning rivalrousness of

1. Rivalry and Exclusion

In theory, any resource may be held in common, but pragmatically the question a society is confronted with is which resources should be, and for those resources, how.[98] If a resource is nonrivalrous, then the challenge relates to provision rather than depletion in the sense that the difficulty lies in providing enough incentive to produce the resource (i.e. provisioning problem) rather than ensuring that the resource is not overburdened by demand (i.e. depletion problem).[99] A rivalrous resource presents more challenges than nonrivalrous resources because when the resource is rivalrous the issues of provisions and depletion are simultaneously relevant.[100]

Both the depletion and provisioning problems give rise to an excludability requirement. Despite the dichotomy between pure public goods and pure private goods, the public or private nature of a resource is not necessarily a direct function of excludability (see Table 1 below).[101] Even within what might be loosely referred to as "the commons," the parameter of exclusion differs intensely.[102] Open commons, for instance, can be distinguished from limited-access commons.[103] Examples of open commons include the oceans, the air and highway systems, whereas limited-access commons are exemplified by irrigation regions in Spain or Swiss villages, where access is limited only to members of the village or association that collectively "owns" some defined irrigation system or pastureland.[104] As Carol Rose notes, these later examples are better labeled as limited common property regimes, rather than commons, because they behave as property vis-à-vis the entire world except members of the group who together hold them in common.[105] The following table exemplifies various classifications of resources based on rivalry and exclusion.

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consumption, see Frischmann, *An Economic Theory*, *supra* note 96, and Hess & Ostrom, *supra*, at 120.

98. LESSIG, *supra* note 21, at 11-12.

99. Frischmann, *An Economic Theory*, *supra* note 96, at 946-47; LESSIG, *supra* note 21, at 21.

100. This in turn gives rise to a welfare economic consideration in the sense that consumption by some agents may occur at the expense of other agents who do not obtain the opportunity to consume. *See, e.g.*, LESSIG, *supra* note 21, at 21.

101. CORNES & SANDLER, *supra* note 97, at 39; *cf.* Harold Demsetz, *Towards a Theory of Property Rights*, 57 AM. ECON. REV. 347, 348 (1967). *See also* Frischmann, *An Economic Theory*, *supra* note 96, at 942-56, 963-64.

102. *See* OSTROM, *supra* note 8, at 23.

103. *Id.*

104. BENKLER, WEALTH OF NETWORKS, *supra* note 14, at 61 (citing OSTROM, *supra* note 8).

105. Benkler, *The Political Economy*, *supra* note 87, at 6-7; BENKLER, WEALTH OF NETWORKS, *supra* note 14, at 61-62.

Table 1: A Classification of Goods Based on Concepts of Rivalry and Exclusion[106]

		EXCLUDABILITY		
		Nonexclusive	**Exclusive**	**Hyperexclusive**
RIVALROUSNESS OF CONSUMPTION	**Nonrival**	Pure Public Good (e.g. idea, fact, language, air, oceans)	Roll or Club Goods (e.g. country club)	Public Good (e.g. snow ski field)
	Congestible	Non-pure Public Good (e.g. road, beach or national park)	Non-pure Public Good (e.g. golf club or day care centre)	Non-pure Public Good (e.g. Rottnest Island)
	Rival	Limited Commons Property Regimes (e.g. irrigation systems, libraries, lakes, rivers, forests, grazing areas, Internet)	Pure Private Good (e.g. apple)	Pure Private Good (e.g. Rolls Royce)

2. Information Goods

The unique attributes of information mean that rivalry and exclusion especially come to the fore in relation to information goods. As Stiglitz and Grossman remind us, the economic analysis of information is riddled with internal paradox: Information is both a component of the perfect market and a good that must be produced within that market.[107] In the context of the former, information access

106. Frischmann, *An Economic Theory*, *supra* note 96, at 942-43; Hess & Ostrom, *supra* note 97, at 120.

107. Sanford J. Grossman & Joseph E. Stiglitz, *On the Impossibility of Informationally Efficient Markets*, 70 AM. ECON. REV. 393, 405 (1980); Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, *in* THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS 618 (1962) (arguing that without IPRs too little information will be produced because producers of information will not be able to capture its true value); Eugene F. Fama & Arthur B. Laffer, *Information and Capital Markets*, 44 J. BUS. 289, 295-97 (1971) (arguing that without property rights or some other way of protecting against public goods problems, too much information will be generated because some information will be produced solely to gain a temporary advantage in trading, thus redistributing wealth but not achieving greater allocative efficiency); Jack Hirshleifer, *The Private and Social Value of Information and the Reward to*

and provision has long been a critical component of the perfect market.[108] As to the latter, information is to be commodified so as to overcome the provisioning problem discussed above. Herein lies the contradiction. Each property right that is granted to ensure the production of information is a transaction cost when seen from the perspective of market efficiency.[109] In this sense, "[t]here is a fundamental conflict between the efficiency with which markets spread information and the incentives to acquire information."[110] This fundamental conflict has often been subject to an illusory reconciliation process whereby problems are classified as either incentive- or efficiency-based problems.[111] A corollary of this illusory reconciliation is that many of the provisioning problems have become overstated, while the efficiency costs and other losses generated by the granted rights have generally been understated.[112]

The efficiency costs are encompassed within the second enclosure critique (discussed above) as a consequence of the artificial exclusion established by the legal protection of IPRs. The risk associated here is that the artificial exclusion established by the legal protection of IPRs is too strong, amounting to a "tragedy of the anticommons."[113] With regard to the depletion problem, the unique nature of information means that there is no need to allocate its use since there is no danger of a "tragedy of the commons" as the information commons simply cannot be overgrazed. IPRs are not only unnecessary to preserve the information commons, but may in fact amount to an artificial barrier to

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Inventive Activity, 61 AM. ECON. REV. 561, 570-72 (1971) (arguing that patent law may be either a necessary incentive for the production of inventions or an unnecessarily legal monopoly in information that overcompensates an inventor who has already had the opportunity to trade on the information implied by her discovery).

108. ADAM SMITH, THE WEALTH OF NATIONS (1776) (espousing generally five principles of liberal economics (1) pursuit of self-interest (2) the division labor (3) free trade (4) free and accessible access to information (5) avoidance of large monopolistic players). For a contemporary perspective, see Alex McDonald, *The Body Shop: The Triple Bottom Line*, 94 CANBERRA BULL. PUB. ADMIN. 43, 44 (1999).

109. Boyle, *A Politics*, *supra* note 25, at 96 n.21 (citing BOYLE, SHAMANS, *supra* note 25, at 35-42). *See also* Grossman & Stiglitz, *supra* note 107, at 393-408; BOYLE, PUBLIC DOMAIN, *supra* note 2, at 40.

110. Boyle, *A Politics*, *supra* note 25, at 96 (citing Grossman & Stiglitz, *supra* note 107, at 405).

111. *See, e.g.*, Boyle, *A Politics*, *supra* note 25, at 96-97.

112. Boyle, *A Politics*, *supra* note 25, at 97 n.23 (citing BOYLE, SHAMANS, *supra* note 25, at 35-36).

113. *See* Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 SCI. 698, 698 (1998).

the information commons generally.[114] It is within this context that it proves useful to juxtapose the tragedy of the commons with the tragedy of the anticommons.

B. The Tragedy of the Commons

The original tragedy of the commons espoused by Hardin arises when too many people have a privilege to use a resource and no one user has a legal right to exclude any other user with the end result being over consumption and the depletion of the resource.[115] Hardin used the notion of a "pasture open to all" so as to make the point that each herdsman has an incentive to add more cattle than the pasture as a whole can bear since the costs of the cattle are socialized and the benefits of the cattle are privatized in favor of the herdsman.[116] Hence, under this tragedy each herder is motivated to add more and more animals because she receives the direct benefit of her own animals and bears only a share of the costs resulting from overgrazing. As Hardin describes the consequences:

> Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit—in a world that is limited. Ruin is the destination toward which all men rush, each pursing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.[117]

Of course Hardin was not the first to become aware of the tragedy of the commons. Aristotle long ago observed that: property that is common to many has the least care conferred upon it.[118] The state of nature as described by Hobbes is yet another variation of this theme: People seek their own good and end up killing one another.[119] In the nineteenth century, Lloyd outlined a theory of the commons that foresaw careless use for property owned in common;[120] contemporary

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114. *See* Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 996-98 (1997).

115. *See generally* Garrett Hardin, *Tragedy of the Commons*, 162 SCI. 1243, 1244 (1968).

116. LESSIG, *supra* note 21, at 22.

117. Hardin, *supra* note 115, at 1244. *See also* LESSIG, *supra* note 21, at 22.

118. OSTROM, *supra* note 8, at 2 (citing ARISTOTLE, POLITICS, bk. II, ch. 3 (Trevor J. Saunders trans., Clarendon Press 1996)).

119. *See* HELEN THORNTON, STATE OF NATURE OR EDEN?: THOMAS HOBBES AND HIS CONTEMPORARIES ON THE NATURAL CONDITION OF HUMAN BEINGS 1 (2005). *See also* OSTROM, *supra* note 8, at 2-3.

120. William F. Lloyd, *On the Checks to Population*, *in* MANAGING THE COMMONS (Garrett Hardin & John Baden eds., 1977).

scholarship concerning resource economics also postulates that where a number of users have access to a common-pool resource, the cumulated resource units withdrawn from the resource will be more than the optimal economic level of withdrawal.[121]

One of the great ironies of the tragedy of the commons discourse is that Hardin's thesis originally aimed to explain why private incentives would lead firms to pollute their environment even against their own long-term interest, and thereby to justify pollution controls.[122] The tragedy of the commons thesis has since taken on a life of its own coming to stand for the proposition that all commons are tragic and that property rights are a necessary precondition to efficient, or even sustainable, resource management.[123]

It is true that there is a diverse range of instances where the tragedy of the commons has eventuated. Examples include various famines, firewood provision crises, and climate change.[124] Nevertheless, it is equally true that not all commons situations have fallen into the trap of the commons dilemma.[125] Ostrom hypothesizes that the difference

121. COLIN W. CLARK, MATHEMATICAL BIOECONOMICS: THE OPTIMAL MANAGEMENT OF RENEWABLE RESOURCES 27 (1976); Colin W. Clark, *Restricted Access to Common-Property Fishery Resources: A Game-Theoretic Analysis*, *in* DYNAMIC OPTIMIZATION AND MATHEMATICAL ECONOMICS (Pain-Tai Liu ed., 1980); PARTHA S. DASGUPTA & GEOFFREY M. HEAL, ECONOMIC THEORY AND EXHAUSTIBLE RESOURCES 74-75 (1979).

122. Benkler, *The Political Economy*, *supra* note 87, at 7.

123. Robert J. Smith, *Resolving the Tragedy of the Commons by Creating Private Property Rights in Wildlife*, 1 CATO J. 439, 467-68 (1981).

124. OSTROM, *supra* note 8, at 3. *See also* Anthony C. Picardi & William W. Seifert, *A Tragedy of the Commons in the Sahel*, 43 EKISTICS 297-304 (1977) (discussing sahelian famine); Colin Norman, *No Panacea for the Firewood Crisis*, 226 SCI. 676 (1984) (discussing firewood crisis); James T. Thomson, *Ecological Deterioration: Local-Level Rule Making and Enforcement Problems in Niger*, *in* DESERTIFICATION: ENVIRONMENTAL DEGRADATION IN AND AROUND ARID LANDS 57-79 (Michael H. Glantz ed., 1977); Rick K. Wilson, *Constraints on Social Dilemmas: An Institutional Approach*, 2 ANNALS OF OPERATIONS RES. 183 (1985) (discussing acid rain); Kari Bullock & John Baden, *Communes and the Logic of the Commons*, *in* MANAGING THE COMMONS 182-99 (Garrett Hardin & John Baden eds., 1977) (discussing Mormon Church); Kenneth A. Shepsle & Barry R. Weingast, *Legislative Politics and Budget Outcomes*, *in* FEDERAL BUDGET POLICY IN THE 1980S, at 343-67 (Gregory B. Mills & John L. Palmer eds., 1984) (discussing United States Congress overspending); Philip A. Neher, *The Pure Theory of the Muggery*, 68 AM. ECON. REV. 437-45 (1978) (discussing urban crime); Duncan Snidal, *Coordination Versus Prisoner's Dilemma: Implications for International Cooperation and Regimes*, 79 AM. POL. SCI. REV. 923-42 (1985) (discussing public-sector/private sector relationships); Malvern Lumsden, *The Cyprus Conflict as a Prisoner's Dilemma*, 17 J. CONFLICT RESOL. 7-32 (1973) (discussing the Cyprus conflict).

125. *See* MAKING THE COMMONS WORK: THEORY, PRACTICE AND POLICY 63-267 (Daniel Bromley & David Feeney eds., 1992) (discussing a number of case studies). *See also* OSTROM, *supra* note 8, at 58-102; ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES 167 (1991).

between those who fall victim to the commons dilemma trap and those who do not may relate to factors internal to a given group.[126] The participants may not have the ability to communicate with each other (as per the prisoner's dilemma), no means to foster trust, and no sense that they are to share a common future.[127] Moreover, even where a commons dilemma has become entrenched, the predicament may be rectified through strategic external assistance measures such as the provision of a government subsidy.[128]

Although the commons dilemma is not *fait accompli*, the notion that "the whole world is best managed when divided among private owners" has principally dominated public debate over the last three decades and, as a corollary, the prevailing tendencies have been to divide as many resources as possible among private owners so as to better manage the world.[129] Indeed, the coupling of the tragedy of the commons arguments with the Demsetzian notion that such "tragic" situations gives rise to solutions grounded in exclusionary property right regimes has provided a powerful springboard to support the neoliberal privatization propensity.[130] The Demsetzian conception is symbolized by the work of Smith who pronounced the following "privatize or perish" perspective with respect to environmental conservation in 1981:

> Both the economic analysis of common property resources and Hardin's treatment of the tragedy of the commons [means that] the only way to avoid the tragedy of the commons in natural resources and wildlife is to end the common-property system by creating a system of private property rights.[131]

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126. OSTROM, *supra* note 8, at 21.

127. *Id.* For an excellent overview of scholarship that discusses circumstances under which common property regimes are more efficient than individual property regimes, see Hess & Ostrom, *supra* note 97, at 118-21, suggesting that scholars sometimes conflate resource classification with property right issues.

128. OSTROM, *supra* note 8, at 21. This description of strategic behavior exemplifies the public choice theory scenario, which will be discussed in future research.

129. Carol Rose, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, 53 U. CHI. L. REV. 711, 712 (1986). It is possible that the Global Financial Crisis that has eventuated throughout 2007-2009 will tame the privatization tendencies that gained currency since the 1980s. For a colloquial and distinctly Australian exposition of this submission, see Kevin Rudd, *The Global Financial Crisis*, THE MONTHLY, Feb. 2009, at 20-29.

130. *See* Demsetz, *supra* note 101, at 347.

131. Smith, *supra* note 123, at 467. *See generally id. See also* W. P. Welch, *The Political Feasibility of Full Ownership Property Rights: The Cases of Pollution and Fisheries*, 16 POL'Y SCI. 165 (1983). "[T]he establishment of full property rights is necessary to avoid the inefficiency of overgrazing." *Id.* at 171.

This privatisation paradigm has dominated even though "our legal doctrine has strongly suggested that some kinds of property should not be held exclusively in private hands, but should be open to the public."[132] Rose has pointed to this tension by implicating that the traditional rules concerning public acquisition of streets and roads does not sit comfortably with the private property assumptions of classical economic theory:

> Indeed, public acquisition of roadways by long usage seems a particularly striking illustration of the imperviousness of practice to theory: the doctrines by which the public acquired roads over private property, without purchase even through eminent domain, flourished side by side with the popularization of classical economics and burgeoning of privately owned commerce and industry.[133]

In the context of property-based ironies and the privatization predilection generally, Rose advances an argument—adopted by Lessig and Benkler—that the underutilization of resources might be as tragic as their exhaustion.[134] This, of course, is the tragedy of the anticommons. By contrast with the *tragedy of the commons*, the *tragedy of the anticommons* points to the quandary of where "too many owners hold rights of exclusion, the resource is prone to under use."[135] The anticommons tragedy is, in many ways, the mirror image of the commons tragedy.[136]

C. *The Tragedy of the Anticommons*

Anticommons property exists where multiple owners have a right to exclude others from a scarce resource, and no one has an effective privilege of use.[137] As others had already theorized that anticommons property might exist in theory, Heller's contributions were more nuanced.[138] Firstly, to demonstrate how a limited number of exclusory

132. Rose, *supra* note 129, at 711-13.

133. *Id.* at 723. *See also* Harry N. Scheiber, *Public Rights and the Rule of Law in American Legal History*, 72 CAL. L. REV. 217, 221-27, 233-49 (1984).

134. *See generally* Rose, *supra* note 129.

135. Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621, 624 (1998) [hereinafter Heller, *The Tragedy*].

136. Michael A. Heller, *Three Faces of Private Property*, 79 OR. L. REV. 417, 423 (2000) [hereinafter Heller, *Three Faces*].

137. *Id.* at 423-24; Heller, *The Tragedy*, *supra* note 135, at 624-26.

138. Hunter, *supra* note 5, at 509-11.

rights would suffice to generate anticommons property, and secondly, to provide actual physical-world examples of anticommons property.[139]

An important differentiator between Hardin's tragedy of the commons and Heller's tragedy of the anticommons is the "right to exclude."[140] As Aoki explains, in the commons tragedy, part of the problem is that no one has the right to exclude, thereby giving rise to over-utilization and depletion.[141] By contrast, under the anticommons tragedy, too many parties independently possess the right to exclude, which gives rise to under-utilization amounting to the "tragedy of the anticommons."[142] As the commons is defined as "for joint use, shared; land belonging to the community,"[143] most theorists assumed that the anticommons could only come into existence if every member had the right to exclude.[144] Since "member" in this context meant any person, the requirement was thought to mean that an anticommons would only occur if every single individual could prevent other uses.[145] As a consequence, practically speaking, the anticommons under these preconditions would be virtually impossible. Given such difficult prerequisites, theorists were simply unable to conceptualize a physical-world equivalent, and hence did not progress the argument.[146]

Heller's insight concerning how a limited number of exclusory rights would suffice to generate anticommons property was used to demonstrate that a small number of individuals could effectively frustrate a more efficient use by others.[147] The classic example used by Heller to exemplify this phenomenon is that of the post-1989 Moscow storefronts that remained empty while at the same time flimsy metal kiosks promulgated.[148] Kiosk vendors were required to sell goods in the cold, rather than using the empty shops behind them, as a direct consequence of the complex bundle of property rights that had been

139. Heller, *The Tragedy*, *supra* note 135, at 627-60; *see also* Hunter, *supra* note 5, at 509-11.

140. Keith Aoki, *Neo-Colonialism, Anticommons Property and Biopiracy in the (Not-So-Brave) New World Order of International Intellectual Property Protection*, 6 IND. J. GLOBAL LEGAL STUD. 11, 29-30 (1998).

141. *Id.*

142. Heller, *The Tragedy*, *supra* note 135, at 622.

143. THE AUSTRALIAN OXFORD POCKET DICTIONARY (1976).

144. Hunter, *supra* note 5, at 509-11.

145. *Id.*

146. *Id.* at 509-11 n.490 (citing Frank Michelman, *Ethics, Economics and the Law of Property*, 24 NOMOS 3, 5-6 (1982)).

147. Hunter, *supra* note 5, at 509-11 (citing Heller, *Three Faces*, *supra* note 136); Heller, *The Tragedy*, *supra* note 135, at 621-26, 659; Heller, *Three Faces*, *supra* note 136, at 424.

148. Heller, *The Tragedy*, *supra* note 135, at 623-24, 628-33.

established in the transition from a socialist to a market economy.[149] The convoluted set of divided and coordinated entitlements meant that someone could always inhibit the efficient usage of the relevant property.[150] As Heller notes:

> Once anticommons property is created, markets or governments may have difficulty in assembling rights into usable bundles. After initial entitlements are set, institutions and interests coalesce around them, with the result that the path to private property may be blocked and scarce resources may be wasted.[151]

Heller argues that in the digital information era the anticommons poses a more serious threat than the post-1989 Moscow shopfronts because the digital brand of anticommons simultaneously averts better uses of the resource and conceals the recognition that better uses exist.[152] That is, while the empty Moscow shopfronts advertise the existence of the anticommons, in the digital information anticommons the new product that might have been generated through the novel use of gene fragments, for instance, is never realized.[153]

One might theorize that if Adam Smith's perfect information were to exist, and if Coase's transaction costs were to disappear, and if all economic actors were perfectly rational and if economic actors did not engage in strategic behavior, then it may be possible to simply reassemble the various property entitlements into efficiently usable bundles. However, as one of Diderot's famous characters exclaimed when confronted by his masters relentless if questions: "If, if, if . . . if the sea boiled, there would be a lot of cooked fish!"[154] In the physical world with less than perfect information, real transaction costs, irrational economic actors and active strategic behavior, the anticommons is difficult, if not completely impossible, to rebundle.[155] It is at this juncture that the utility of semicommons theory becomes apparent, particularly as it underlines the nature of strategic behavior while

149. *See id.*

150. See *id.* at 659.

151. *Id.*

152. Hunter, *supra* note 5, at 511-12.

153. Heller, *Three Faces*, *supra* note 136, at 424-25; Heller & Eisenberg, *supra* note 113, at 700-01.

154. MURRAY BOOKCHIN, PHILOSOPHY OF SOCIAL ECOLOGY: ESSAYS IN DIALECTICAL NATURALISM 39 (1990).

155. *See* Heller, *The Tragedy*, *supra* note 135, at 625-26; Heller, *Three Faces*, *supra* note 136, at 424 ("Once an anticommons emerges, collecting rights into usable private property may prove to be brutal and slow.").

simultaneously fostering an appreciation for the dynamic interaction between private and commons uses of information.

D. The Tragedy of (Ignoring) the Information Semicommons

As implied above, information is significantly different from most tangible commodities because of its nonrival and nonexclusive traits.[156] Given this, the legal structures and policy discourse that surround information should also be different.[157] As information has become a critical raw material for production in the digital information age, questions concerning the ownership of information have dramatically increased in importance.

Two global viewpoints are generally identifiable concerning information ownership. The first concentrates on private ownership (and thus private control) of information in frameworks drawn primarily from property theory.[158] The second viewpoint gives attention to common ownership (and thus common control) of information.[159] For the most part, the two viewpoints are presented as a contra-distinction, where private use exists at the expense of common use and vice-versa.[160] Themes related to individual autonomy, efficiency, and justice are all employed by opposing theorists to support entrenched positions.[161] Private use proponents advocate more private control, longer ownership terms, and more rights in relation to information, whereas commons proponents argue the opposite.[162]

The IPR debates primarily stem from the understanding that common and private uses of information are intrinsically at odds.[163] For instance, granting longer copyright protection for information is seen as having the effect of removing that information from the information

156. BOYLE, PUBLIC DOMAIN, *supra* note 2, at 264.

157. *See* LESSIG, *supra* note 21, at 19-23; MICHAEL PERELMAN, STEAL THIS IDEA: INTELLECTUAL PROPERTY RIGHTS AND THE CORPORATE CONFISCATION OF CREATIVITY 196 (2004); MARK ROSE, AUTHORS AND OWNERS: THE INVENTION OF COPYRIGHT 8 (1993); Heverly, *supra* note 47, at 1130-41.

158. Andrew Beckerman-Rodau, *Are Ideas Within the Traditional Definition of Property?: A Jurisprudential Analysis*, 47 ARK. L. REV. 603, 604 (1994) (concluding that common law idea protection, trade secret law, and patent law are all property based regimes predicated on the recognition of property rights in ideas).

159. Yochai Benkler, *From Consumers to Users: Shifting the Deeper Structures of Regulation Toward Sustainable Commons and User Access*, 52 FED. COMM. L.J. 561, 562-63 (2000).

160. Heverly, *supra* note 47, at 1143.

161. *Id.*

162. *Id.*

163. *Id.*

commons.[164] Accordingly, copyright protection and the information commons remain mostly mutually exclusive.[165] A critical thread within this debate, as evidenced by the second enclosure movement critique, is that private property displaced the commons so as to make more efficient use of the resource in question.[166] Indeed, this thread has become so entrenched within contemporary IPR discourse that some IPR minimalists have pleaded to recast IPR discussion away from the property metaphor.[167]

Interestingly, despite this plea, Heverly postulates that there is perhaps scope to further develop the property metaphor within the information environment.[168] He employs this argument, not to add weight to the maximalist IPR arguments, but rather to shift the focus away from the public/private dichotomy of information ownership and on to the dynamic interaction between private and common uses of information.[169]

1. The Semicommons

Heverly's arguments are built upon the insights of Smith, Rose, and others that all types of property contain rudiments of private and common ownership, albeit often one or the other dominates.[170] As Smith explains, a person possesses quasi-private rights to that moving spot on the highway that her vehicle occupies when driving, yet a highway is accepted as a "commons" because that is its more significant feature.[171] Likewise, a parcel of land that is subject to an easement for emergency services is generally thought of as "private."[172] It is this

164. *Id.*

165. Contemporary initiatives such as Free (Libre) and Open Source Software and the Creative Commons provide the rationale to move the debate away from the historically based "private use versus common use" dichotomy.

166. Hardin, *supra* note 115, at 1243-48; Heverly, *supra* note 47, at 1144. For alternative viewpoints, see Robert C. Allen, *The Efficiency and Distributional Consequences of Eighteenth Century Enclosures*, 92 ECON. J. 937, 950-51 (1982) and ROBERT C. ALLEN, ENCLOSURE AND THE YEOMAN 2-3 (1992), and compare Michael Turner, *English Open Fields and Enclosures: Retardation or Productivity Improvements*, 46 J. ECON. HIST. 669, 687-88 (1986).

167. Hunter, *supra* note 5, at 458-503 (arguing that the "place" metaphor used in discussing and referring to the Internet has colored our perceptions and led us to accept property based conceptions of information, and raising important issues as to the way in which metaphors affect law).

168. *See* Heverly, *supra* note 47, at 1146-47.

169. *Id.*

170. Smith, *Semicommon Property Rights*, *supra* note 8, at 131-32; Rose, *supra* note 84, at 105; *see also* OSTROM, *supra* note 8.

171. Smith, *Semicommon Property Rights*, *supra* note 8, at 131-32.

172. *Id.*

dynamic interaction between private and common uses of resources that lies at the heart of semicommons theory. Within a semicommons, property is owned and used in common for one chief purpose; however, in relation to some other key purpose, private interests obtain property rights to separate pieces of the commons. Smith exemplifies the semicommons thus:

> The archetypal example of a semicommons is the open-field system of medieval and early modern northern Europe. In the open-field system, peasants had private property rights to the grain they grew on their individual strips of under 1 acre, which were scattered in two or three large fields around the central village. However, during certain seasons, peasants would be obligated to throw the land open to all the landowners for grazing their animals (especially sheep) in common, under a common herdsman. This enabled them to take advantage of economies of scale in grazing and private incentives in grain growing (with no important scale economies).[173]

Traditionally under the open-field system, a peasant grain grower engaged in strategic behavior by influencing, coercing or bribing the shepherd to graze the flock on other private users' plots during the day (so as to avoid the detrimental impact on the soil from grazing), and to pen up the flock on his property at night (so as to capture the benefit of fertilization from sheep droppings).[174] To avoid this strategic behavior, a private owner's lands were scattered throughout the designated area of the whole grazing land.[175] The rationale of this approach was to increase the cost of engaging in strategic behavior in that it made it very difficult, if not impossible, for the grazing shepherd to work out whose land the flock was either grazing upon in the day or enclosed in for the evening.[176] As the scattering created property demarcation challenges for the shepherd, agreement between the shepherd and the private user concerning strategic grazing or enclosure of the flock involved considerable transactions costs.[177] As a corollary, scattering had the effect of minimizing strategic behavior while at the same time capturing

173. Smith, *Semicommon Property Rights*, *supra* note 8, at 132.

174. Heverly, *supra* note 47, at 1172.

175. Smith, *Semicommon Property Rights*, *supra* note 8, at 132.

176. Heverly, *supra* note 47, at 1164.

177. Note that the transaction costs in this context were represented by the time and effort for the shepherd and the private user to enact an agreement relating to the strategic grazing or enclosure of the flock. For further discussion, see Heverly, *supra* note 47, at 1164.

the dynamic benefits that flowed from using the land for both private and common uses.[178]

Although scattering may appear prima facie inefficient due to peasant farmers being required to farm in varied locations, this apparent inefficiency was in fact a source of efficiency when the costs of strategic behavior were taken into account.[179] As Smith explains, scattering of private plots, and thus private uses, was part of the overall design used to prevent strategic behavior, and in this sense it was an economically efficient, and indeed rational, method of property ownership.[180] This is particularly the case in that semicommons property ownership maximized wealth to an extent not possible under either a purely common or a purely private ownership scheme.

2. The Information Semicommons

In adapting semicommons theory to the information environment, Heverly employs the "fair use" copyright doctrine so as to draw attention to the interaction of private and common uses of information.[181] The example of a standard book review within the information environment demonstrates the benefits of an information semicommons property scheme.[182] Heverly submits that a book reviewer often relies upon fair use provisions within the IPR regime to quote a book author's words for the purposes of critiquing and reviewing the book.[183] This is a classic example of an information semicommons as clearly private and common uses are interacting. This interaction is dynamic in the sense that private use affects commons use and vice versa.[184] The benefit lies in the exposure to the public that the author

178. Smith, *Semicommon Property Rights*, *supra* note 8, at 132-39.

179. Note that there were no economies of scale for farming during this time period, but there were economies of scale to herding. Smith, *Semicommon Property Rights*, *supra* note 8, at 135-36; Heverly, *supra* note 47, at 1165.

180. Smith, *Semicommon Property Rights*, *supra* note 8, at 132-34.

181. *See, e.g.*, Heverly, *supra* note 47, at 1130 (explaining that information is viewed as private property, and exceptions such as fair use are viewed as tolerable infringements on the rights of private property owners).

182. In relation to the costs of prohibiting strategic behavior within the information semicommons, strategic behavior can be exemplified from the perspective of information users or producers. Unauthorized copying and distribution of information goods exemplifies the former. The latter can be exemplified by anti-competitive behavior known as tying whereby information producers require information users to purchase additional information (or non-information goods) so as to be granted legal access to desired information. For further discussion, see Heverly, *supra* note 47, at 1172-73, 1175-76.

183. Heverly, *supra* note 47, at 1169-70.

184. *See id.* at 1167.

receives of her book.[185] In this sense, the fair use provisions within IPR might be thought of as the equivalent of an easement in real property in that both private and common uses are better off for the existence of the other. Heverly states that if we imagine that, from its inception, Copernicus's "De Revolutionibus" was subject to pure private control to the point where all common uses were prohibited, then we begin to understand the importance of the dynamic interplay between private and common uses of information.[186]

Examples of laws that combat strategic behavior in the information environment include the requirement that property rights in information not be automatically perpetual, and the use of definitions that set the boundaries of information protection such as where copyright law protects particular expressions of information fixed in a tangible medium without allowing ideas to be copyrighted.[187] Fair use provisions inherent within copyright law provide yet another example of averting strategic behavior since it protects common users' rights to use information to criticize information owners, even in the face of the information owners' explicit objection.[188] The fair use provisions are in fact so fundamental to the semicommons perspective of information that Heverly suggests that information is in fact a natural semicommons because too much change in the landscape of fair use, and the Supreme Court would reject the changes based on the needs of the First Amendment.[189]

Once it is accepted that IPRs create a property regime in information, the application of the semicommons theory to the IPR regime is readily achieved. The application of semicommons theory to information does, however, entail a more detailed exposition of the dynamic nature of the private and common uses of information than was required for Smith's account of the semicommons in the open-field system.[190] This requisite exposition has typically been lacking due to the fact that the efficiencies of the dynamic interaction between private and

185. *Id.*

186. *See id.* at 1171-72.

187. *See, e.g.*, Harper & Row Publishers, Inc. v. Nation Enters., 471 U.S. 539, 547 (1985). Note that Heverly discusses strategic behavior from both the information producer perspective and the information user perspective. For example, "[a]nother method used to dissuade strategic behaviour from a legal perspective is the use of enforcement actions by information owners. Where information owners bring lawsuits for the unauthorized use of information, common users may reduce their strategic behaviour." Heverly, *supra* note 47, at 1179. This paper focuses solely on strategic behavior by the information producer.

188. *See* Heverly, *supra* note 47, at 1179-80.

189. *Id.* 1179-80 & n.140 (discussing Smith, *Semicommon Property Rights*, *supra* note 8, at 165-67 n.124). *See also* Heverly, *supra* note 47, at 1179-80 n.195.

190. Heverly, *supra* note 47, at 1164-65.

commons uses have largely been left out of the debates concerning information ownership and regulation.[191] Although a full cost-benefit analysis of the information semicommons is beyond the scope of this paper, it is important to recognize, as Heverly does, that in many instances information does fall within a semicommons framework.[192] And that, in at least some instances, the information semicommons is wealth-maximizing in that the private uses benefit the commons uses and vice versa.

If Heverly's insights are coupled with Lessig's "code as law" principle, it can be reasoned that when the regulation of information tends from law to technology, the possibilities of realizing efficiencies associated with a semicommons structure are removed from the cost-benefit semicommons equation.[193] As such efficiencies are removed from the equation, they simply disappear. Traveling full circle back to Boyle's analysis, just as the environment disappeared, and just as the public domain disappeared, so too the efficiencies related to the dynamic interaction between private and commons uses has disappeared.

Of course, the idea of governance by architecture is not new.[194] Even under the traditional open-field system of medieval Europe the semicommons was governed not just by law, but also by architecture and technology.[195] Likewise, as Lessig has stressed, the information environment is often bound to a greater extent by technology than law.[196] Digital Rights Management (DRM) technology, such as DVD CSS encoding, exemplifies this trend as it provides potentially absolute bars against actions that private users consider strategic on the part of common users.[197] Technology manufacturers and information producers cooperate, drawing upon DRM technology, to assure technological protective measures are implemented so as to provide what is a strong, effective, and inexpensive means of combating strategic behavior.

While undoubtedly the avoidance of strategic behavior is an important aspect of semicommons theory, it is to be noted that the simple avoidance of strategic behavior does not per se equate to

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191. *See id.*

192. *See id.*

193. *Id.*; *cf.* LAWRENCE LESSIG, CODE: VERSION 2.0, at 24, 81-82 (2006) [hereinafter LESSIG, CODE].

194. JEREMY BENTHAM, THE PANOPTICON WRITINGS 29-95 (Miran Bozovic ed., 1995).

195. *See* Smith, *Semicommon Property Rights*, *supra* note 8, at 132.

196. LESSIG, CODE, *supra* note 193.

197. *See, e.g.*, Universal City Studios, Inc. v. Corley, 273 F.3d 429, 444 (2d Cir. 2001) (holding that the DMCA anti-circumvention provisions prohibit circumvention of the DVD CSS).

efficiency.[198] The cost-benefit equation of the semicommons involves weighing up the benefits that flow from the dynamic relationship between private and commons uses and the costs of avoiding the strategic behavior.[199] If the focus remains on the avoidance of strategic behavior without an acknowledgment of the benefits that flow from the dynamic interaction between private and commons uses, then the semicommons efficiency equation is unjustly skewed. It is this dynamic that establishes a tragedy of great proportion: the tragedy of (ignoring) the information semicommons.

V. CONCLUSION

This paper has made an important contribution to furthering the employ of environmental analytical frameworks to IPR issues through cultural environmental discourse. The broad nature of challenges arising within the contemporary information environment, and the interaction between these challenges and the IPR regime, makes it imperative to employ and develop the analytical frameworks of cultural environmentalism.[200] The end goal is to diagnose and resolve contemporary information environment challenges.

After outlining the second enclosure movement critique[201] and the emergent cultural environmental discourse,[202] this paper settled on the analytical framework of the commons and related tragedy discourse being the tragedy of the commons, the tragedy of the anticommons and the tragedy of (ignoring) the information semicommons.[203] Through the engagement of this tragedy discourse it was argued that it is critical that IPR dialogue move beyond the commons/private dichotomy of property ownership, toward a more mature dialogue that recognizes the efficiencies that arise from the dynamic interaction between different types of property ownership.[204] Indeed commons and private usages of information need not be mutually exclusive, and can in fact be symbiotic leading to mutual benefits.[205]

The paper submits, in closing, that Lessig's ideas relating to the perpetual struggle between freedom and control within the information

198. *See* Heverly, *supra* note 47, at 1164.
199. *Id.*
200. Boyle, *A Politics*, *supra* note 25, at 109-111; *supra* Part III.
201. *Supra* Part I.
202. *Supra* Part II.
203. *Supra* Part III.
204. *Id.*
205. Heverly, *supra* note 47, at 1169-70.

environment[206] might be best anointed through semicommons theory. It is true that it is a vexed question as to how to determine whether particular information resources should be private or public; free or controlled; or rather whether information should display a combination of ownership/regulation traits. Nevertheless, the struggle need not be without purpose or achievement. The tragedy of (ignoring) the information semicommons is by no means inevitable and, indeed, if appropriate institutional arrangements are struck the results may be truly "comedic" in the classic sense of a happy outcome.[207]

206. McShane, *supra* note 93, at 3.
207. *Id.*

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