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Virtual Property

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VIRTUAL PROPERTY

JOSHUA A.T. FAIRFIELD*

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This article explores three new concepts in property law. First, the article defines an emerging property form – virtual property – that is not intellectual property, but that more efficiently governs rivalrous, persistent, and interconnected online resources. Second, the article demonstrates that the threat to high-value uses of internet resources is not the traditional tragedy of the commons that results in overuse. Rather, the naturally layered nature of the internet leads to overlapping rights of exclusion that cause underuse of internet resources: a tragedy of the anticommons. And finally, the article shows that the common law of property can act to limit the costs of this internet anticommons.

INTRODUCTION

Should computer code that is designed to act like real world property be regulated and protected like real world property? This article contends that it should.

Much computer code is just one step removed from a pure idea. It is non-

rivalrous; that is, one person's use of the code does not stop another person from using it. This kind of code is, correctly, protected by the law of intellectual property.¹ Intellectual property protects the creative interest in non-rivalrous resources. If intellectual property did not exist, creators would not be able to recoup the costs of creation.²

But there is another kind of code, rarely discussed in the technical or legal literature. This kind of code is designed to act more like land or chattel than ideas. It pervades the internet and comprises many of the most important online resources. Often, this kind of code makes up the structural components of the internet itself. Domain names, URLs (uniform resource locators), websites, email accounts, and entire virtual worlds are all examples of this second type of code. They are rivalrous.³ If one person owns and controls them, others do not. They are persistent. Unlike the software on your computer, they do not go away when you turn your computer off. And they

¹ See, e.g., LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE 122-41 (1999) (discussing intellectual property as a means of controlling code by law); Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 CAL. L. REV. 1, 18-20 (2001) (discussing the impact of patent protection on software development); Michael Geist, *Cyberlaw 2.0*; 44 B.C. L. REV. 323, 335-38 (2003) (discussing the expansion of control over code in part by the expansion of copyright doctrine); Dennis S. Karjala, *Copyright Protection of Computer Program Structure*, 64 BROOK. L. REV. 519, 525-30 (1998) (discussing the evolution of intellectual property protection for software); Maureen A. O'Rourke, *Legislative Inaction on the Information Superhighway: Bargaining in the Shadow of Copyright Law*, 3 B.U. J. SCI. & TECH. L. 193, 195-96 (1997) (discussing the expansion of copyright doctrine in regulating software code); Bradford Smith & Susan O. Mann, *Innovation and Intellectual Property Protection in the Software Industry: An Emerging Role for Patents?*, 71 U. CHI. L. REV. 241, 242-44 (2004) (discussing the impact of patent protection on software development).

² As Richard Posner observed:

Intellectual property is characterized by heavy fixed costs relative to marginal costs. It is often very expensive to create, but once it is created the cost of making additional copies is low, dramatically so in the case of software, where it is only a slight overstatement to speak of marginal cost as zero. Without legal protection, the creator of intellectual property may be unable to recoup his investment, because competitors can free-ride on it; and so legal protection can expand output rather than, as in the usual case of monopoly, reduce it.

Richard Posner, *Antitrust in the New Economy* 3 (U. Chi., John M. Olin Law & Economics Working Paper No. 106, 2000), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=249316.

³ It is important not to confuse rivalrousness of consumption (the fact that one actor's use of a resource bars others from use as a consequence) with exclusivity. Exclusivity is a function of rivalrousness. Many resources, including purely non-rivalrous resources, can be protected by exclusionary rules – for example, the Recording Industry Association of America has attempted to use exclusionary rules to protect its non-rivalrous music. But where a resource is rivalrous, exclusion costs drop significantly. Thus, to the extent that this article discusses exclusionary rights, it does so precisely because exclusionary rights are so much less expensive when used to protect rivalrous resources.

are interconnected.⁴ Other people can interact with them. This kind of code I term "virtual property."⁵

There is, however, a problem. In general, we continue to govern virtual property through the law of intellectual property.⁶ Even where there has been some recognition that virtual property is somehow "different," no clear articulation of that difference has been offered. As a result, holders of intellectual property rights have been systematically eliminating emerging virtual property rights by the use of contracts called End User License Agreements ("EULAs").⁷ Despite (or perhaps because of) these contracts, no distinct protection for property rights in virtual property has appeared in the United States, even though millions of people and billions of dollars are involved in gray-market transactions in such property.⁸ In comparison, China, Taiwan, and Korea have already made significant steps toward protecting ownership interests in virtual property, hoping to attract the burgeoning industry of virtual worlds.⁹

Why is it important that we have a theory of virtual property? The common law of property works to ensure that resources are used well.¹⁰ If we do not have a good theory of virtual property, then virtual property will be poorly used. For example, a key step in the development of the internet was the adoption of a property-style regime in the form of the International Corporation for Assigned Names and Numbers ("ICANN"), an organization that acts as a recording system for internet addresses.¹¹ Property law also

⁴ I use the term "interconnected" to cover both the concept of location within a network (and thus susceptibility to network effects) and the concept of interactivity. It is certainly possible for a resource to be networked and not interactive; likewise, it is possible for a resource to be interactive and not networked – a single-user resource meets the interactivity criterion, but is not accessible to second and third order parties. "Interconnectivity" as I use it here covers both of these concepts.

⁵ Although the industry that makes virtual worlds has previously used the term "virtual property" to refer to property-like objects (virtual houses, virtual cars, and other virtual objects) within virtual worlds, I include more resources within the definition than is generally the practice. The relevant characteristics of rivalrousness, persistence, and interconnectivity appear in numerous online resources (email addresses and URLs, for example); these characteristics should therefore be included in the definition.

⁶ More precisely, virtual property is governed under a regime where initial rights are allocated to intellectual property holders, and subsequent rights are governed by license agreements (called EULAs, or End User License Agreements). See *infra* Part IV.C.

⁷ See *id.*

⁸ See Edward Castronova, *Virtual Worlds: A First-Hand Account of Market and Society on the Cyberian Frontier* 4 (CESifo Working Paper Series, Paper No. 618, 2001), available at <http://ssrn.com/abstract 294828>.

⁹ See *infra* Part IV.D.

¹⁰ See *infra* Part III.

¹¹ See Kenton K. Yee, *Location.Location.Location: Internet Addresses as Evolving Property*, 6 S. CAL. INTERDISC. L.J. 201, 203-10 (1997).

lowers search costs associated with the sale of resources by permitting a limited number of property forms that are easier to search.¹² For example, a title search on a house is less expensive because there are a fixed and limited set of ways in which the house could be encumbered. Similarly, property law lowers negotiation costs by limiting fragmentation of property rights.¹³ To give an example of fragmentation, if property rights in a tractor were split such that one person owned the wheels while another owned the chassis, you would have to negotiate with both people to be able to use the tractor as a whole, which would be more expensive. Thus, a theory of virtual property is critical to ensure efficient use of internet resources, lower search costs, and reduce negotiation costs that would otherwise prevent the flow of high-value resources to high-value uses.¹⁴

A good theory of virtual property is also important to the future of the internet. If we protect virtual property, the internet could become a three-dimensional global virtual environment. The possibilities for medical, commercial, social, military, artistic, and cultural advancement offered by such a virtual environment have just begun to be explored.¹⁵ Thus, we should care about the protection of virtual property not only because markets already value it immensely, but because we will all come to value it more due to the potential it offers for societal advancement.

Finally, a theory of virtual property is important to maintain the equilibrium of the law as it adapts to new contexts.¹⁶ The common law is a complex system that has evolved over time to encode many different factors into its rules. In particular, the law of contract and the law of property traditionally balance each other. The law of contract permits parties to realize the value of idiosyncratic preferences through trades. The law of property traditionally limits the burdens¹⁷ that parties may place on the productive use or

¹² See Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1, 26-34 (2000); see also *infra* Part III.C.2.

¹³ See Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621, 640-42 (1998); see also *infra* Part III.C.1.

¹⁴ See *infra* Part III.

¹⁵ See *infra* Part II.B.

¹⁶ In addition to this equilibrium function, the law of property itself risks becoming moribund if it is cut off from being considered in the numerous cases of first impression concerning online resources. If property law is restricted to land and physical objects, it will be of decreasing usefulness as intangible assets and resources continue to increase in importance. More importantly, law develops where disputes form and rights emerge. In the common law system, law grows (in part) from cases, especially cases of first impression. If a legal discipline is excluded from consideration in cases of first impression, it will not grow. See Caroline Bradley & Michael Froomkin, *Virtual Worlds, Real Rules*, 49 N.Y.L. SCH. L. REV. 103, 103 (2005) ("In virtual worlds . . . the Internet may accidentally provide an environment that lends itself well to the testing of legal rules.").

¹⁷ Specifically, idiosyncratic contractual burdens on property can raise search costs for

marketability of high-value resources by means of contract.¹⁸ For example, unreasonable contractual restraints on alienation are eliminated by the law of property.¹⁹ But currently in the context of the internet, we have imported the common law of contract wholesale, without the counterbalance of property law. As a result, emergent useful property forms are being eliminated by contract.²⁰

This article will therefore set forth a theory of virtual property, will demonstrate the relevance of the common law of property to cyberspace, and will address challenges to the model of virtual property. Part I defines virtual property in more depth, and gives examples of virtual property as it currently exists, as well as examples of important emerging forms of virtual property. Part II examines whether the common law of property can have any relevance to the realm of cyberspace. Part III draws the threads together, and demonstrates how property law can encourage growth and limit stagnation in use of online resources. Part IV addresses some common criticisms of the theory of virtual property from the perspectives of economics, law, and the technology industry.

I. WHAT IS VIRTUAL PROPERTY?

The “space” in cyberspace refers to something in particular: the rivalrousness, or “spatial” nature, of certain internet resources, like URLs, domain names, email accounts, virtual worlds, and more. We use the term cyberspace not because we are bad analogists,²¹ but because many online

third-party purchasers. If I want to buy a house, I know that real property can be burdened with only a limited set of recorded easements and covenants. If, however, idiosyncratic burdens on property are enforced with respect to *any* house, then purchasers of *any other* house must spend extra time and money making sure that no strange contractual burdens inhibit the use of the property they want to buy. See Merrill & Smith, *supra* note 12, at 26-27. In addition, the fragmentation of property rights among numerous different rights-holders can cause negotiation costs to rise: if I want to buy a car, but one person owns the wheels, while another owns the car body, I must negotiate with both parties, which raises my costs, and creates opportunities for the parties to extract. See Heller, *supra* note 13, at 622.

¹⁸ To give three brief examples of how property law restrains contract: property law eliminates unreasonable restraints on alienation, limits the fragmentary effects of dead-hand control (through rules like the Rule Against Perpetuities), and does not enforce novel contractual burdens on property (termed “fancies”). See Merrill & Smith, *supra* note 12, at 27-29.

¹⁹ *Id.* at 24-25.

²⁰ See *infra* Part IV.

²¹ For a selection of scholarship rejecting the space analogy, see, e.g., Jack L. Goldsmith, *Against Cyberanarchy*, 65 U. CHI. L. REV. 1199, 1200-05 (1998); Joseph H. Sommer, *Against Cyberlaw*, 15 BERKELEY TECH. L.J. 1145, 1190-92 (2000); Maureen O'Rourke, *Property Rights and Competition on the Internet: In Search of an Appropriate Analogy*, 16 BERKELEY TECH. L.J. 561, 600 (2001); Timothy Wu, *When Law & the Internet First Met*, 3

resources mimic physical properties. For example, a chat room is, in many ways, similar to a conference room; a URL is similar to real estate in the real world. This type of code is ubiquitous and important.²² It forms much of the structure of the internet. This section will define virtual property, discuss several examples of it, and show how virtual property is evolving.

A. *Virtual Property is Rivalrous, Persistent, and Interconnected Code that Mimics Real World Characteristics*

Virtual property shares three legally relevant characteristics with real world property: rivalrousness, persistence, and interconnectivity. Based on these shared characteristics, subsequent sections will show that virtual property should be treated like real world property under the law.

Much code is designed to act as a purely non-rivalrous resource. One person's use of the code does not impede another person from making use of it. Non-rivalrousness enables the creation and distribution of many perfect copies at nearly zero cost.²³ The non-rivalrousness of code is the novelty of the internet that has most captured the legal and public imagination, in the form of lawsuits against music and movie downloaders and producers of filesharing software, for example.²⁴

But not all code is non-rivalrous. Rivalrousness, in the physical world, lets the owner exclude other people from using owned objects.²⁵ We often desire

GREEN BAG 171, 172 (2000) ("Then came history. The metaphor of place did not exactly stand the test of time."). To the extent academics have approved of place language describing online resources, they have done so out of a sense of psychological utility, not a sense that the language is descriptively accurate. See Alfred C. Yen, *Western Frontier or Feudal Society?: Metaphors and Perceptions of Cyberspace*, 17 BERKELEY TECH. L.J. 1207, 1210 (2002) ("Of the many metaphors that have been applied to the Internet, the most prominent and influential has been the imagination of the Internet as a separate, new physical space known as 'cyberspace,' and its comparison to America's Western Frontier.").

²² I use the term code to include both data, and the operations of software on that data. As discussed below, property law is concerned with the proper packaging of property rights so that they will flow to high-value uses. Splitting code into data (that which is operated upon) and engine (that which does the operating) does not package code at a useful level. For example, it is the combination of data (say, a URL, or the data that resides on the computer the URL designates) and engine (the software that runs Domain Name Servers and the protocols that route users to a specific site) that creates the real-world characteristics in code that I describe here. For property purposes, splitting data and code makes as much sense as splitting the engine and wheels from a tractor – the tractor functions at the level of the whole.

²³ See Posner, *supra* note 2, at 3.

²⁴ See, e.g., *MGM Studios Inc. v. Grokster, Ltd.*, 125 S. Ct. 2764 (2005); *In re Aimster Copyright Litig.*, 334 F.3d 643, 651 (7th Cir. 2003).

²⁵ For an analysis of the right to exclude in physical property, see Thomas W. Merrill, *Property and the Right to Exclude*, 77 NEB. L. REV. 730, 730 (1998) (stating that "the right to exclude others is . . . the *sine qua non*" of property rights) (emphasis added).

the power to exclude in cyberspace too, and so we design that power into code. By design, we make code that can only be possessed by one person. Thus, rivalrousness exists also in code. If one person controls rivalrous code, nobody else does. For example, no one but the owner of an internet address (or those the owner permits) can post content to that address. If person A owns a given internet address, person B cannot put her website up at that address. If one person has a given email address, nobody else can receive mail at that same address.

There are other characteristics drawn from the physical world that are incorporated into code as well. Objects and places in the physical world are persistent. For example, a statue need only be sculpted once. After that, it remains in the city square for hundreds of years. Similarly, code is often made persistent – that is, it does not fade after each use, and it does not run on one single computer. For example, an email account can be accessed from a laptop, a desktop, or the local library. When an email account owner turns her laptop off, the information in that account does not cease to exist. It persists on the server of her Internet Service Provider.²⁶

Objects in the real world are also naturally interconnected. Two people in the same room experience exactly the same objects. Objects in the real world can affect each other, by the laws of physics. Similarly, code can be made interconnected, so that although one person may control it, others may experience it. The value of a URL or an email address is not solely that the owner can control it; the value is that other people can connect to it, and can experience it. They may not be able to control it without the owner's permission, but – as with real estate in the real world – with the owner's invitation they may interact with it.

To recap: these traits – rivalrousness, persistence, and interconnectivity – mimic real world properties. If I hold a pen, I have it and you don't. Rivalrousness. If I put the pen down and leave the room, it is still there. That is persistence. And finally, you can all interact with the pen – with my permission, you can experience it. That is interconnectivity. Why is code trying so hard to mimic these properties? Rivalrousness gives me the ability to invest in my property without fear that other people may take what I have built.²⁷ Persistence protects my investment by ensuring that it lasts.

²⁶ The trait of persistence is linked to a technological phenomenon that will have greater importance in the discussion that follows. The trait of persistence is achieved through distributed computing – that is, the code runs on multiple computers simultaneously. A common form is that code is split between a client program that runs locally, and a server that manages coordination between other interconnected accounts. Thus, for example, your email client may run on your local laptop, and receive its information from your Internet Service Provider's server, where the information is stored.

²⁷ Additionally, rivalrousness lowers monitoring and detection costs for protecting property. Whereas in commons property misuse is quite hard to police (because the misuser is entitled to be on the property and make some use of it), interference with rivalrous private property is very easy to detect. For example, if you take my pen from me, I will detect the

Interconnectivity increases the value of the property due to network effects – not least of which is the fact that other people’s experience of my resource may be such that it becomes desirable, and hence marketable, to them.

To clarify this discussion, we turn to several examples of virtual property – rivalrous, persistent, and interconnected code – as it currently exists.

B. *Examples of Virtual Property*

A URL (uniform resource locator) is a good starting example. A URL is an internet address consisting of an access protocol (e.g., *http*), a domain name (*www.microsoft.com*), and occasional additional information. There is no particular creative value associated with creating a URL. But it undoubtedly has value.²⁸ It is a piece of internet real estate. A URL is rivalrous, persistent, and interconnected. Because it is rivalrous, the owner of a URL can exclude other people from posting content to that URL.²⁹ Independent of the right of exclusion, only one website can exist at a given address. Because it is persistent and interconnected, other people can interact with the content posted to the URL without vitiating the owner’s interest in it.³⁰

Email accounts are another example. Email accounts are rivalrous – no two people can have the same address. They are persistent – unless the owner of the account deletes the information, it will continue to be stored on the service provider’s server. And they are interconnected – the entire value of an email account (as well as its vulnerability) is that anyone who has or guesses an

loss fairly quickly. See, e.g., Robert C. Ellickson, *Property in Land*, 102 YALE L.J. 1315, 1327 (1993).

²⁸ Indeed, the phenomenon of the speculative value of internet addresses is well documented. See, e.g., Yee, *supra* note 11, at 206-10.

²⁹ Absent a hack. Like all property systems, the one I describe here is subject to theft. The fact that someone may steal my pocketwatch does not, however, vitiate my ownership interest in it.

³⁰ An immediate objection to my formulation here might be that URLs are more similar to trademark – archetypal IP – than real property. The connection is only strengthened by the Anticybersquatting Consumer Protection Act, 15 U.S.C. § 1114, 1125(a) (2000), which allows courts to reassign URLs to trademark holders if the prior registrant was not making good-faith use of the site. But there the resemblance ends. Real world property is marked by low monitoring and exclusion costs – trespassers are easily identified, and self-help exclusion (like fencing around a plot of land) is comparatively cheap. Intellectual property suffers from high monitoring costs, and self-help is not an option. A trademark holder cannot exclude other people from using the trademark – he can merely ask a court to do so on a person-by-person basis. But a URL owner benefits from the same low monitoring costs that a real property owner does. The only way to take over a URL is to hack it – which is immediately detectable, unlike infringing trademark use. Further, the same self-help remedies are available to the owner of a URL that are available to the owner of real property: fencing by password protection would be only one example. Thus, in terms of monitoring, detection, and exclusion costs, URLs are much more like real world property than trademarks.

address can communicate with it. It is true that email accounts are not like physical property in many respects. But it is also true that we treat them quite differently than we do software licenses. Email accounts are personal spaces.³¹ They are alternate identities. They are unique to us. Law has begun to respond to this shared sense that an email address is something more than a routine license. For example, legislation and case law dealing with spam email attempt to enforce a right to not be contacted.³² That is a right that derives from being contacted on or through one's property. No corresponding right to refuse unwanted contact obtains in public places.³³

The question of whether online accounts are property has immediate relevance. A growing dispute is forming over who owns the online accounts of deceased soldiers in the Iraq war.³⁴ The families of soldiers claim that the accounts – which often contain pictures and journals – are the property of the decedent's estate.³⁵ The ISPs claim that the accounts cannot be released for privacy reasons – if property claims are able to touch online accounts, ISPs assert, the value of privacy that people find valuable in such accounts will be eliminated.³⁶ Whether the accounts constitute property or not will drive how they are treated in probate, whether they are devisable, and whether they are alienable.

The virtual property phenomenon is not limited to accounts. Websites also mimic characteristics of physical space.³⁷ Think of the internet as a spider web of connections. The relative position of websites to one another is intangible, but also non-duplicable and absolutely rivalrous. For example, Amazon.com maintains a salesperson program, whereby individuals may create links from their personal homepages to books sold by Amazon.³⁸ Whenever a book is sold by someone who traveled through the link, the person who maintains the personal page receives a commission. Thus, Amazon's position within the

³¹ For an extended treatment of the argument that personal connection justifies a property interest, see Margaret Jane Radin, *Property and Personhood*, 34 STAN. L. REV. 957, 958 (1982).

³² See, e.g., CAN-SPAM Act, Pub. L. No. 108-187, 117 Stat. 2699 [hereinafter CAN-SPAM] (codified at 15 U.S.C. § 7701 (2000 & Supp. 2004)).

³³ See Nicole B. Casarez, *Public Forums, Selective Subsidies, and Shifting Standards of Viewpoint Discrimination*, 64 ALB. L. REV. 501, 505-20 (2000) (describing the history and development of public forum doctrine).

³⁴ See Ariana Eunjung Chung, *After Death, Fight for Digital Memories*, WASH. POST, Feb. 3, 2005, at A1.

³⁵ See *id.* (“As computers continue to permeate our lives, what happens to digital bits of information when their owners die has become one of the vexing questions of the internet age.”).

³⁶ See *id.*

³⁷ See Yee, *supra* note 11, at 10.

³⁸ For the Amazon Associates program, see Amazon.com, http://www.amazon.com/gp/browse.html/ref=gw_bt_as/002-2103927-6536853?node=3435371 (last visited Sept. 11, 2005) (on file with author).

spider web of electronic connections is immensely valuable.³⁹ It is also rivalrous, persistent, and interconnected. In the Amazon example, it is its location within a network of links that gives Amazon's website the characteristics of virtual property.

Another commonly occurring example of virtual property is a chat room devoted to discussing stocks. There is a focusing effect that draws people to the chat room – the more people that are involved in the conversation, the more valuable the discussion becomes. You cannot take over the chat room from its creator, so it is rivalrous.⁴⁰ But people can join the conversation because of the interconnectivity and persistent traits of the space, just as they might go to a restaurant where stockbrokers are known to meet. There is a reason we call it a chat “room,” entirely divorced from the pseudopsychological sense of being in a space: the space may be electronic, but it has encoded into it some of the characteristics of a real room.

Virtual property also plays an important part in financial institutions – a bank account may be one of the earliest forms of virtual property.⁴¹ Bank accounts exist as loci within an interconnected network. The owner of an account has an exclusionary right over a nexus of electronic credits and debits located at that nexus. The bank account is persistent – even though the account balance is merely an entry, that entry remains in the bank if undisturbed. The bank account is interconnected – other people can send money to the account, and the owner of the account can authorize money to flow to other account holders.

The development of virtual property as a concept also makes possible useful secured transactions.⁴² Possession, under the Uniform Commercial Code, is a cheap way of establishing a relationship with an interest that is quickly and commonly traded.⁴³ The law therefore has set forth technological requirements

³⁹ Indeed, Amazon obtained patent protection for its referral program. See Mo Krochmal & Jason Coombs, *Amazon Associates Plan Wins Patent Protection*, TECHWEB, Feb. 25, 2000, <http://www.techweb.com/wire/story/TWB20000225S0013>.

⁴⁰ You could hack the chat room, of course, but that hack would be immediately clear to the owner of the chatroom. Further, self-help (in the form of password controls) is available to the creator of the chat room. So the exclusion costs (including monitoring, detection, and protection costs) of a chat room are lower than they are in the case of intellectual (non-rivalrous) property. A chat room falls nearer to real property, which can be protected by fences and cheaply monitored for misuse, than it does to intellectual property, for which exclusion costs are quite high and enforcement available only through the courts.

⁴¹ It is necessary to recognize that bank accounts are already tightly regulated. I am by no means suggesting that common law rules ought to supplant this banking regime; I am merely pointing out one of the oldest “intangibles” that shares the traits of rivalrousness, persistence, and interconnectivity discussed here.

⁴² See, e.g., Jane K. Winn, *Electronic Chattel Paper Under Revised Article 9: Updating the Concept of Embodied Rights for Electronic Commerce*, 74 CHI-KENT L. REV. 1055, 1061-62 (1999).

⁴³ See, e.g., U.C.C. Revised art. 9 (2001) (describing rules governing perfection of chattel

that describe an infrastructure under which electronic chattel paper may be meaningfully “possessed” for perfection purposes.⁴⁴ The relevant attributes of this electronic chattel paper are that it must be capable of being possessed by one person only, it must persist (since the value it represents must be maintained), and it must be able to be freely traded to other people who themselves can cheaply establish rights of possession.⁴⁵ Electronic chattel paper therefore is rivalrous, persistent, and interconnected – and thus virtual property.

These examples are necessarily limited, and critics can likely think of reasons to exclude one or another example. What is important to draw from the above examples is that certain kinds of code are designed to act like real world objects. When a design decision has been made to make code act like real world objects, the question is whether the law ought to enable or ignore this fact. It is that question we must bear in mind as we examine the future of virtual property: virtual environments.

C. *The Future of Virtual Property: Virtual Environments*

Thus far we have seen that rivalrous, persistent, and interconnected code, called virtual property, already comprises a large section of important online resources – URLs, domain names, email addresses, websites, chat rooms, and more. But that is only the tip of the iceberg. Virtual environments – fully three-dimensional virtual versions of the real world – are an exploding phenomenon, with tens of millions of users worldwide, encompassing trade worth billions of dollars.⁴⁶

paper by possession).

⁴⁴ UCC Revised § 9-105 (2001), entitled “Control of Electronic Chattel Paper,” states:

A secured party has control of electronic chattel paper if the record or records comprising the chattel paper are created, stored, and assigned in such a manner that:

- (1) a single authoritative copy of the record or records exists which is unique, identifiable and, except as otherwise provided in paragraphs (4), (5), and (6), unalterable;
- (2) the authoritative copy identifies the secured party as the assignee of the record or records;
- (3) the authoritative copy is communicated to and maintained by the secured party or its designated custodian;
- (4) copies or revisions that add or change an identified assignee of the authoritative copy can be made only with the participation of the secured party;
- (5) each copy of the authoritative copy and any copy of a copy is readily identifiable as a copy that is not the authoritative copy; and
- (6) any revision of the authoritative copy is readily identifiable as an authorized or unauthorized revision.

⁴⁵ See Winn, *supra* note 42, at 1061 (“Revised section 9-105(1) provides that electronic chattel paper must consist of a single authoritative copy of the chattel paper record or records which is unique, identifiable, and generally unalterable.”).

⁴⁶ See, e.g., Anna Lichtarowicz, *Virtual Kingdom Richer than Bulgaria*, BBC NEWS, Mar. 29, 2002, <http://news.bbc.co.uk/1/hi/sci/tech/1899420.stm>.

Virtual environments are like a three-dimensional version of the web.⁴⁷ People from all over the world are able to log into the same virtual environment and share the same simulated physical context. Part of that simulated physical context consists of virtual objects and places. These virtual things and spaces (for example, virtual basketballs, houses, or shopping malls) have value in real dollars.⁴⁸ There is crossover between virtual environments and the real world: people buy virtual objects with real money, and vice versa.⁴⁹ As virtual environments play an expanding role in commerce and public life, the regulation of virtual property will become increasingly important.⁵⁰

Virtual environments are currently used for medical, political, educational, military, social, entertainment, and commercial purposes. Therapists use virtual environments to treat patients with Asperger's Syndrome – a neurological disorder that impairs the ability of a person to respond to social cues.⁵¹ Many Asperger's sufferers have embraced computer skills and online communities as a way of helping them parse human relationships.⁵² The

⁴⁷ For an excellent description of virtual worlds, see Greg Lastowka & Dan Hunter, *The Laws of Virtual Worlds*, 92 CAL. L. REV. 1 (2004). For a more complete description of the economics of virtual worlds, see Castronova, *supra* note 8, at 1-8.

⁴⁸ See Castronova, *supra* note 8, at 4; Lichtarowicz, *supra* note 46.

⁴⁹ See Julian Dibbell, *The Unreal Estate Boom*, WIRED MAGAZINE, Jan. 2003, available at <http://www.wired.com/wired/archive/11.01/gaming.html> (describing purchases of virtual objects, including a \$750 virtual residence, \$5 pair of virtual sandals, and many other objects).

⁵⁰ See Lichtarowicz, *supra* note 46 (“A virtual country has entered into the world economy.”).

⁵¹ For example, Project Brigadoon, an effort devoted to developing virtual worlds for the treatment of Asperger's Syndrome, has purchased a virtual island within Second Life (a non-game open architecture virtual environment that lets users build whatever content they like), and has established a community there. See *About Briadoon*, Posting of John Lester to Braintalk, http://braintalk.blogs.com/brigadoon/2005/01/about_brigadoon.html (Jan. 7, 2005, 14:57 EST).

⁵² John Lester, the President of Braintalk Communities, explained the value of virtual worlds to Asperger's patients as follows:

[T]here are many autism/[Asperger's Syndrome] people who are very high functioning and are seeking out new online technologies to help them communicate with people and to help them practice their socialization skills. . . . What's special about the Second Life environment is that it is visually very REAL. You create your own avatar to represent you in this virtual world, and instead of just seeing names on a webpage you actually SEE other people standing around you in a 3-d world. . . .

Second life provides a more perceptually immersive socialization environment online. It looks more “real” . . . and gives you more freedom. Yet it is still not the “real world,” so it is a place that people can practice their socialization and collaborative skills in a much more consequence free place.

More About Brigadoon, Posting of John Lester to Braintalk, http://braintalk.blogs.com/brigadoon/2005/01/more_about_brig.html (Jan. 7, 2005, 14:58 EST).

patients come to an understanding of houses and social spaces by building versions of them inside a virtual environment.⁵³ They interact with each other, practice social proximity, and engage in creative works and conversations.⁵⁴

Virtual environments are also used for politics. In Second Life, a prominent virtual environment, one virtual neighborhood was devoted to political debate during the presidential elections.⁵⁵ The houses were plastered with political signs. One side of the street consisted of a series of monuments and political advertisements for one political party; the other side of the street consists in rebuttals and posters for the other party. In a square nearby, a live electronic feed of the candidates for office debating was piped in, as if the candidates were debating in the town square.⁵⁶

The United States military uses virtual worlds for training.⁵⁷ The virtual environment There has designed a Virtual Baghdad project on commission for the Army.⁵⁸ The environment re-creates sections of Baghdad down to street signs and palm trees. Other people in the There environment play the roles of inhabitants of the area, while soldiers deal with various scenarios, such as an attack on a checkpoint. The soldiers are also able to learn tactical coordination with other soldiers around the world, no matter where they are stationed.⁵⁹ The Army has since expanded the Virtual Baghdad project to permit There to build a full virtual simulacrum of the whole planet that can be used for training soldiers in specific locations.⁶⁰

Virtual environments are also used for education and acculturation.⁶¹ The

⁵³ See *About Brigadoon*, *supra* note 51.

⁵⁴ *Id.*

⁵⁵ See *The Election Comes to Second Life!*, Posting of Wagner James Au to New World Notes, http://secondlife.blogs.com/nwn/2004/04/the_election_co.html (Apr. 12, 2004, 7:15 EST).

⁵⁶ In Second Life, the virtual world I am describing here, media can be imported from the outside world into the virtual environment. In the case of the presidential debates, an enterprising netizen imported live network feeds of the candidates and placed them in the virtual world. *Id.*

⁵⁷ Beth Noveck, *Introduction: The State of Play*, 49 N.Y.L. SCH. L. REV. 1, 2 & n.8 (2005) (citing Peter S. Jenkins, *The Virtual World as Company Town*, 8 J. OF INTERNET LAW 1 (2004), available at <http://ssrn.com/abstract=565181>).

⁵⁸ See Lindsey Arent, *The Army's Virtual World*, G4TV, Mar. 16, 2004, http://www.g4tv.com/screensavers/features/492/The_Armys_Virtual_World.html.

⁵⁹ *Id.* ("Soldiers across the globe are training now and over the internet. . . . That's a capability the Army has never had. We can put hundreds or thousands of people into this environment.") (quoting James Grosse, Army engineer, on the There project).

⁶⁰ *Id.* ("The Army likes the Baghdad concept so much, it's given There four years and \$3 million to create a virtual simulation of the entire planet . . .").

⁶¹ See Noveck, *supra* note 57, at 1 & n.7 (citing The Virtual Baghdad Project, <http://www.nv.cc.va.us/home/nvbrada/braddog/Links.htm> (last visited Aug. 1, 2005) and Margaret Wertheim, *Virtual Camp Trains Soldiers in Arabic, and More*, N.Y. Times, July 6, 2004, at F3).

Tactical Language Project, being developed at the University of Southern California Center for Research in Technology for Education, teaches language using virtual environments in order to teach students language within a cultural context. Because virtual environments simulate a shared physical context, they can be used to teach social cues and non-verbal communication.⁶² More complex issues, like gaining and keeping trust, can be addressed at the social level within a virtual environment.⁶³ The Tactical Language Project is currently used to teach Arabic; Dari and Indonesian virtual environments will be created later this year.⁶⁴

Virtual environments are now one of the most important forms of entertainment. More South Koreans play in virtual worlds than watch television.⁶⁵ A single South Korean environment claims 17 million subscribers worldwide.⁶⁶ The projected virtual world population of China numbers 26.33 million.⁶⁷ And the trend is growing, especially in the United States, where the first virtual environments devoted to entertainment with a potential for over one million inhabitants have recently launched.⁶⁸

Within virtual environments, virtual objects of all types change hands for real money.⁶⁹ As a result, commerce in virtual environments – both the sale of virtual property for real money, and the exchange of virtual property for other

⁶² Wertheim, *supra* note 61 (“In tense situations like those induced by war, nonverbal messages may be just as important as words themselves. The Tactical Language Project . . . is intended to teach such skills. [A user may] learn, for example, that when [he] starts or finishes a conversation with an important person, he can cross his right hand over his heart and bow slightly, a common gesture of respect in the Arab world.”).

⁶³ *Id.* (“One of [the student’s] most critical beliefs is their trust level. . . . If [the student] behaves appropriately, he will gain . . . trust and they will help him; if not, he is likely to cause suspicion.”).

⁶⁴ *Id.*

⁶⁵ See Mimi Luse, *More than a Game*, E.PEAK, July 19, 2004, <http://www.peak.sfu.ca/the-peak/2004-2/issue12/fe-online.html>.

⁶⁶ See Posting of Gravity Corp. to Ragnarok Online, http://www.gamespot.com/pc/rpg/ragnarokonline/factsheet_6091529.html (Mar. 14, 2004, 10:44 EST). Numbers of users are difficult to determine from numbers of subscriptions. Lineage, another Korean virtual environment, had roughly four million subscribers at its peak in 2004. See generally Bruce Woodcock, *An Analysis of MMOG Subscription Growth*, available at <http://www.mmogchart.com>. (last visited Sept. 11, 2005) (tracking active subscriptions for online environments).

⁶⁷ Chinese Technological Creation Initiative, <http://www.jiaoyiba.com> (last visited Feb. 26, 2005) (state-run resource for Chinese online world development) (Chinese language website).

⁶⁸ See, e.g., Mark Ward, *Online Gaming Set to Explode*, BBC NEWS, June 9, 2002, <http://news.bbc.co.uk/1/hi/technology/2031091.stm> (predicting 114 million online gamers worldwide by 2006). World of Warcraft in fact recently became the first US-based virtual environment to exceed one million subscribers. See Woodcock, *supra* note 66.

⁶⁹ See Castronova, *supra* note 8, at 16-20.

virtual property – is expanding rapidly.⁷⁰ The projected U.S. revenue from sales of virtual objects in real-world currency is approximately \$100 million dollars, and over \$1.5 billion worth of transactions occurs yearly through in-environment trades.⁷¹ The secondary market in virtual items was recently estimated at over \$880 million dollars, and is expanding quickly.⁷² One virtual environment had, as of 2002, a greater net worth than Bulgaria and a higher GNP per capita than India or China.⁷³ Likewise, the individual as well as the aggregate value of the virtual property bought and sold is rising – a piece of virtual real estate within a virtual environment recently sold for approximately \$30,000.⁷⁴

Although the amount of current investment and interest in virtual worlds demonstrates their present and growing importance in their own right, virtual world technology will also change the real world. The shift from the telephone to the internet represented a sea change in how people did business and constructed social relationships because it changed how quickly computers could search for what we wanted. The weakest link in that chain is no longer a computer's ability to search. The weakest link is now the user's ability to evaluate what he or she is seeing.

Virtual worlds use electronically-simulated physical context as a means of conveying large amounts of information quickly to computer users. Humans do not process things in lists. Humans process things in context. The internet is still like the telephone: in many respects it lacks the capacity to put anything into a physical context. For example, if you are shopping for a bedroom set on the internet, you cannot know whether it will fit into your bedroom or whether it will match your other furniture. If you were shopping through the medium of a virtual world, you could arrange the furniture in a virtual simulacrum of your home, before buying it. Furniture retailers are already offering prototypes of this kind of service.⁷⁵ Clothing retailers offer a similar service: the customer

⁷⁰ See *id.* at 37.

⁷¹ *Id.* at 3. See also Posting of Edward Castronova to Terranova, http://terranova.blogs.com/terra_nova/2004/10/secondary_marke.html (Oct. 30, 2004, 12:37 EST) (discussing this \$100 million estimate).

⁷² See Posting of Garthilk to Okratas, <http://www.okratas.com/modules.php?op=modload&name=News&file=article&sid=57> (Feb. 13, 2005, 12:00 EST).

⁷³ Lichtarowicz, *supra* note 46 (quoting Castronova, *supra* note 8, at 3).

⁷⁴ See Tom Loftus, *Virtual Worlds End Up in Real World's Courts*, MSNBC.COM, Feb. 7, 2005, <http://scj.msnbc.com/id/6870901/>.

⁷⁵ Ikea already offers a basic version of this service, but only for its products; of course, without connectivity, you cannot compare different manufacturers – one of the reasons having an interconnected virtual environment is important. Similarly, Amazon.com's recently-released A9 function permits three dimensional searches of the real world for purposes of choosing a place to start a business. See *Take a Virtual Walk with Amazon's A9*, CNN.COM, Jan. 27, 2005, <http://www.cnn.com/2005/TECH/internet/1/27/amazon.a9.reut/> (on file with author);

creates a virtual model of himself, and fits virtual clothes to order real ones.⁷⁶

For another example of how context increases human absorption of information, examine the complexity of information that we routinely process in social situations. Imagine that you attend a party. As soon as you walk into the room, you instantly process enough information to stump a supercomputer: the way people are standing, talking, the way groups are positioned, the "tension in the air." All of this information we derive from physical and visual context. This has long been a theme in software design. For example, graphical user interfaces (GUIs) – the desktop and icons that we are so familiar with – replaced the DOS prompt that was dominant in the 1980s.⁷⁷ The reason for the change is the human-to-computer interface. The GUI does not help the computer. The GUI helps the user see information in context, and therefore process it orders of magnitude faster and better.

Virtual worlds offer the possibility of fully contextualized social software on the scale of the internet. If you need to be examined by a doctor across the world, you can do so not only immediately (a result we can achieve now with video), but interactively. If your law firm needs to create a dedicated team gathered from around the world for an IPO to work around the clock and keep each other physically accountable for staying on task, you can meet in a virtual room and work until the job is done. If you need to attend an office party in Japan, you will be able to.

Virtual environments, however, will not give us these benefits unless we protect rights in virtual property. Currently, the law in the United States does not recognize rights in virtual property.⁷⁸ Although hundreds of millions of dollars change hands annually for virtual houses, chairs, money, clothes, or the like, almost all of the transactions are gray-market.⁷⁹ People sell virtual objects on eBay for real world money every day.⁸⁰ However, rights in virtual property are either not enforced, or are expressly prohibited by the creator of the virtual environment, who holds the intellectual property interest in the environment itself.

To sum up, virtual property is code that mimics the properties of real-space objects. It is rivalrous, connected, and persistent. Further, code with such

Jefferson Graham, *Online Yellow Pages Take You on Virtual Stroll*, USA TODAY, Jan. 26, 2005, available at http://www.usatoday.com/money/industries/technology/2005-01-26-amazon-usat_x.htm.

⁷⁶ See, e.g., My Virtual Model, www.landsend.com (last visited Aug. 1, 2005) (follow "My Virtual Model" link).

⁷⁷ See, e.g., Robert Gomulkiewicz, *Getting Serious About User-Friendly Mass-Market Licensing for Software*, 12 GEO. MASON L. REV. 687, 695 (2004) (describing the evolution of graphical user interfaces).

⁷⁸ China and Korea have both begun the process of recognizing such rights. See *infra* Part IV.D.

⁷⁹ See Castronova, *supra* note 8, at 19.

⁸⁰ *Id.* at 29-36 (detailing virtual-to-real and real-to-virtual sales, and calculating the GNP for a single virtual world).

properties is rapidly becoming the rule, rather than the exception, in interconnected, online, persistent spaces like the internet. So, how should law classify code that is intangible, but that has been coded to act as if it were tangible? The law has long relied on intangibility as a proxy for non-rivalrousness, but there is no reason to cling to the proxy if the proxy is bad. If an intangible object is rivalrous, there is no reason to treat the ownership of the property purely as a matter of intellectual property. Further, the question is pressing: although virtual property is already immensely important in the form of URLs, domain names, email addresses, chat rooms, and other familiar resources, the phenomenon of virtual worlds and fully contextualized virtual environments is forcing us to look at these resources in a new light. The question then becomes whether the common law of property has anything to contribute to the regulation of rivalrous, connected, and persistent code.

II. THE COMMON LAW OF PROPERTY AND THE THREAT TO EMERGENT PROPERTY RIGHTS

We have thus far seen how many important online resources have nothing to do with intellectual property. On the other hand, these resources have been designed to have the legally relevant characteristics of real and chattel property. This makes the common law of property an obvious possible source of law for these resources. The critical question is whether the law of property can have anything useful to contribute to the regulation of intangibles such as virtual property.

Property theory examines how scarce resources ought to be put to use.⁸¹ However, it is not obvious that internet resources are scarce. Cyberspace is infinite, or practically so. People can create more space for themselves. Because internet resources do not seem to be scarce, property theorists (distinguished from intellectual property scholars) have, to date, had little to say about code.⁸² But even where there is plenty of space, people can still

⁸¹ The theories of property I describe in this section are more or less wedded to the school of welfare economics (or its cousin, public choice). Of course, there are other theories of property. For example, Margaret Radin has set forth a theory of property as personality – wedding rings and houses, she argues, are property because they are a part of the self-conception of the owner. See Radin, *supra* note 31, at 958. I do not reject such approaches, but simply note that they are outside of the scope of this piece. Further, I do not address here the question of whether an exclusionary right is the sole relevant right that defines a property interest, or whether property consists of integrated conceptions of acquisition, exclusion, and disposal, except to note that an integrated property approach (especially one that focuses on the role of labor in property) is particularly pertinent to a theory of virtual property, because nearly all of the value in virtual property is created by labor. See Adam Mossoff, *What is Property? Putting the Pieces Back Together*, 45 ARIZ. L. REV. 371, 376 (2003) (proposing an integrated theory of property that restores the role of labor in property acquisition).

⁸² Property theorists have had plenty to say about the internet. However, most property-based approaches to internet resources use a chattel-property theory. The idea is that my

block each other from making productive use of those resources they do develop. Mutual exclusion from resource use creates a problem as acute as the usual story of scarce resources. Thus, the following section outlines how property theory views resource allocation, and describes how property theory might be productively applied to online resources.

A. *As Technology Opens New Possibilities, Property Law Allocates Emerging Harms and Benefits So Owners Internalize the Costs of Property Use*

As technology changes, new uses of resources emerge. Property law protects emerging interests in property so that the emergent property interest may be productively used.⁸³ One function of property is the guiding of incentives to use resources productively as technology changes those incentives.⁸⁴

Harold Demsetz told the basic story of a commons in land, which causes overexploitation. Demsetz made his point with a simple historical example. The rise of private land values among certain Native American tribes coincided with the rise in feasibility and value of the commercial fur market.⁸⁵ The value of privatization was that it prevented overhunting, since each landowner now bore the full loss of each animal.⁸⁶ Demsetz theorized that privatization internalized the externalities of overhunting.⁸⁷ Thus, the private landowner had incentives to husband resources that the commons holder did not.⁸⁸

Demsetz emphasized that the emergence of property interests should be best understood by association with the emergence of new beneficial or harmful effects.⁸⁹ The efficient allocation of these new effects is one important goal of

control over the physical chattel of a computer gives me control over online resources. See, e.g., Patricia Bellia, *Defending Cyberproperty*, 79 N.Y.U. L. REV. 2164, 2170 (2004); Richard Epstein, *Cybertrespass*, 70 U. CHI. L. REV. 73, 76 (2003).

⁸³ HAROLD DEMSETZ, OWNERSHIP, CONTROL, AND THE FIRM: THE ORGANIZATION OF ECONOMIC ACTIVITY 177 (Blackwell 1988); Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243, 1243-1250 (1968), reprinted in ECONOMIC FOUNDATIONS OF PROPERTY LAW (B. Ackerman, ed., 1975).

⁸⁴ DEMSETZ, *supra* note 83, at 106. ("If the main allocative function of property rights is the internalization of beneficial and harmful effects, then the emergence of property rights can be understood best by their association with the emergence of new or different beneficial or harmful effects.").

⁸⁵ *Id.* at 107-09.

⁸⁶ *Id.* at 109 ("Forest animals confine their territories to relatively small areas, so that the cost of internalizing the effects of husbanding these animals is considerably reduced.").

⁸⁷ *Id.* at 108 ("Because of the lack of control over hunting by others, it is in no person's interest to invest in increasing or maintaining the stock of game. Overly intensive hunting takes place.").

⁸⁸ *Id.*

⁸⁹ *Id.* at 106-08.

property law.⁹⁰ Property rights emerge in response to the desires of the interacting parties for adjustments to the new benefit-cost possibilities.⁹¹ Property law adapts to protect the emergent interests as technology makes them possible.

Technology is an engine of change in the law of property. In Demsetz's model, shifts in the gains of internalization occur as a function of technology.⁹² And "property rights develop to internalize externalities when the gains of internalization become larger than the cost of internalization."⁹³ As new technology develops, and new markets open, changes in property law alter those rights that are poorly attuned to the new markets.⁹⁴

Much of the current new law of property is explained by this theory of shifting technology and markets. As cell lines become valuable, the question of whether the genetic contributor or the laboratory researcher has the greater property interest in the cell line becomes important.⁹⁵ Property rights in breaking news stories emerge as communications technology makes the propagation of news a matter of minutes rather than days.⁹⁶ Property rights in data compilations emerge as storage and markets for such compilations radically increase.⁹⁷ As discussed below, property rights in virtual property are emerging as the software networks take on new characteristics – those of actual spaces and objects.

This story of technological change and shifting property interests is not only told by economists. The public choice account of property predicts stability in

⁹⁰ The two theories currently in circulation indicate that the closed and limited legal forms of property have two goals: informational and aggregational. The first idea is that simple property forms are easy for third parties to search. See, e.g., Merrill & Smith, *supra* note 12, at 27. The second idea is that fragmented property rights prevent sales to high-value users. Heller, *supra* note 13, at 640.

⁹¹ DEMSETZ, *supra* note 83, at 106-07 ("It is my thesis in this part that the emergence of new property rights takes place in response to the desires of the interacting persons for adjustment to new cost-benefit possibilities.") (emphasis omitted).

⁹² *Id.* at 106 ("New techniques, new ways of doing the same things, and doing new things – all invoke harmful and beneficial effects to which society has not been accustomed.") (emphasis omitted).

⁹³ *Id.* at 107.

⁹⁴ *Id.* at 107 ("Increased internalization, in the main, results from changes in economic values, changes which stem from the development of new technology and the opening of new markets, changes to which old property rights are poorly attuned.").

⁹⁵ See *Moore v. Regents of Cal.*, 793 P.2d 479 (1990) (dealing with claims of property in genetic material).

⁹⁶ See *Int'l News Serv. v. Associated Press*, 248 U.S. 215 (1918) (protecting quasi-property interest in breaking news stories).

⁹⁷ See *eBay v. Bidder's Edge*, 100 F. Supp. 2d 1058 (N.D. Cal. 2000) (granting injunction against competitor auction website, which had been compiling eBay auction information).

property absent technological change.⁹⁸ When change occurs, interest groups surrounding emergent property rights will attempt to allocate harms and benefits as best suits them.⁹⁹ “To take an extreme but illustrative hypothetical, if technological change made it feasible for millions of citizens to live and work deep underground, we might expect some reshuffling of property rights in land – much as air rights were redefined when air travel became feasible.”¹⁰⁰ In the same way, when technological change makes it feasible for millions of citizens to interact and work in intangible three-dimensional spaces, we might well expect some reshuffling of property rights online.

However, there is an additional component: prior rights holders surrounding emergent property rights will attempt to take for themselves, or stifle, emergent property rights when new value emerges.¹⁰¹ Thus, absent the intervention of law, new value will generally be allocated according to interest-group power asymmetries.¹⁰² An emergent property right is likely to be defended by an ineffective interest group. The group defending an emergent right will be diffuse, since the boundaries of the property right itself are not choate. Thus, the constituency for an emergent property right is not likely to be effective because it will have trouble identifying who is a member and who is not.

Both the economic and public choice theories of emerging property rights reference technology as the engine of change. This portion of property theory clearly is applicable to rights in online resources. As online technology is changing, harms and benefits are shifting, and the law is shifting to map to new cost-benefit possibilities. However, the story of technology and emerging property interests only works if there is a theory of how incentives may be effectively internalized by how we allocate property. The challenge to applying theories of the commons to internet resources is that they are, if not infinite, then effectively so. Thus, the next section discusses how inefficient allocations of resources can emerge, even where resources are not scarce.

B. *The Challenge for Property Theory with Respect to Online Resources Is to Articulate a Theory of Internalization*

The primary challenge is articulating a theory by which the privatization of virtual property would result in significant efficiencies. The commons story

⁹⁸ Saul Levmore, *Property's Uneasy Path and Expanding Future*, 70 U. CHI. L. REV. 181, 191 (2003).

⁹⁹ *Id.* at 189.

¹⁰⁰ *Id.* at 188.

¹⁰¹ *Id.* (“These examples illustrate the optimistic and skeptical stories regarding the evolution of property rights. The optimistic one is of the standard law and economics variety, and it suggests alterations in rights in response to technological changes [T]he second story sketched here offers a more skeptical depiction of the evolution of property rights, as it focuses on interest groups and, the expectation that political (and litigation) power will not be distributed evenly across the population or even the economy.”).

¹⁰² *Id.*

does not seem to have direct applications to virtual property: even where property is rivalrous (i.e., one person's use excludes another's), there is no lessening of the overall ability for the next person to obtain "enough and as good."¹⁰³ Other people can simply seek more of the same type of property. If one internet address is already registered, another is available.¹⁰⁴ If one email address is taken, another can be invented.

A brief example of how the tragedy of the traditional account of the commons poorly describes use allocation problems on the net will frame the discussion. In the case of the ICANN registration system, as protected by the cybersquatting laws, there is no commons problem.¹⁰⁵ If www.monopoly.com is desired by both fans and Hasbro, we need only expand and add a name – www.monopoly.fan would do nicely – and www.monopoly.tm would be presumptively assigned to the trademark holder, obviating any confusion.¹⁰⁶ So if the system can be expanded to make more room, why have the ICANN system? Overlapping use rights in a commons seem to be, if not harmless, of lesser concern in the internet context. But there remains a problem: if parties can mutually exclude each other from productive use of resources, the resource will go underdeveloped. Thus, the next section discusses the property theory addressing overlapping *exclusion* rights – a property anticommons.

¹⁰³ See JOHN LOCKE, TWO TREATISES OF GOVERNMENT 312 (Peter Laslett ed., 2d ed. Cambridge Univ. Press 1970) (1698). Attempts to articulate a theory of commons overuse in online resources have relied on the fact that bandwidth and processor speeds are theoretically limited. See, e.g., Harold Smith Reeves, Comment, *Property in Cyberspace*, 63 U. CHI. L. REV. 761, 776 (1996) (discussing the argument that "[c]omputer systems have finite computing and storage capacity"). The problem is that processing capacity consistently outpaces use. See *id.* at 775 ("Although this argument is not without merit, it proves too much in a world where resource depletion is not a significant concern.").

¹⁰⁴ There are limits, of course. The current domain name system is now running short of useful (i.e., non-nonsense) internet addresses created using the English alphabet. In response, software developers are attempting to create a Unicode standard for internet addresses expressed in other alphabets.

¹⁰⁵ This example arose out of conversations with Eben Moglen, of Columbia Law School.

¹⁰⁶ Of course, the internet does not quite work that way, and this is important to my analysis. Let us say that two fans of the Monopoly game want to fight over the fan website. If we further differentiate, into www.monopoly.fan1 and www.monopoly.fan2, both fans lose an important and valuable part of their internet real estate: the focusing effect. This is why websites like www.dictionary.com are valuable: people have not heard of them, but they guess them when they are trying to get a certain kind of information. Another way of phrasing this point is that search costs rise as internet real estate becomes differentiated. This is Thomas Merrill's point about real world property – that legal forms of property constitute a closed and limited set (called the "numerus clausus") because limiting idiosyncratic property forms lowers search costs. See Merrill & Smith, *supra* note 12. The same is true of URLs. Thus, a response to Eben Moglen's point about the unlimited nature of cyberspace is that while it is true that the internet is susceptible to infinite expansion through variation, that very variation causes information to become more expensive.

C. *Public and Private Anticommons*

In the tragedy of the commons, overlapping use rights in property create incentives to overuse and deplete the resource owned in common. In the tragedy of the anticommons, however, overlapping rights to exclude permit rights-holders to block each other from making productive use of the resource. This section thus first describes the anticommons in property, and then shows how such an anticommons can arise from private ordering (contract) just as it can arise from government action (privatization).

1. *The Privatization Anticommons*

Michael Heller described the problem of the anticommons in property by analyzing the Russian experience of privatization.¹⁰⁷ An anticommons is a state in which overlapping rights of exclusion cause property to go unused or underused.¹⁰⁸ Heller showed that when the former Soviet Union moved from communist to capitalist market structures, it ran the risk of creating an anticommons by vesting use rights in different holders, some of whom had political or other economic interests in holding the property fallow.¹⁰⁹

Heller asked why storefronts in Moscow remained empty while illegal street-side kiosks thrived and were full of goods.¹¹⁰ The answer was that the process of privatization had fragmented and multiplied the number of people that merchants were required to negotiate with for use of the building.¹¹¹ Merchants who wished to use a storefront were required to negotiate with multiple groups that had been given rights in the structure as part of privatization.¹¹² These groups often had conflicting incentives for putting the building as a whole to productive use.¹¹³ Thus, for example, if a bakery was privatized in Moscow, one group was given rights to use the storefront space, one in the cash flow generated by the business, one in the actual building that housed the bakery.¹¹⁴ These rights were handed to the various groups that had previously been involved in operating the bakery or the building. Heller found

¹⁰⁷ See generally Heller, *supra* note 13, at 633-35.

¹⁰⁸ *Id.* at 623 (“[A]nticommons property [is] a type of property regime that may result when initial endowments are created as disaggregated rights rather than as coherent bundles of rights in scarce resources.”).

¹⁰⁹ *Id.* at 639-40.

¹¹⁰ *Id.* at 642-43.

¹¹¹ *Id.* at 656 (“For example, a worker’s cooperative may claim that the single bakery that they occupy constitutes the object of property subject to their private ownership. Another owner, such as a defunct state bread-making enterprise, may claim that the entire of several dozen bakery outlets is a single, indivisible, corporate asset.”).

¹¹² *Id.*

¹¹³ *Id.* at 640-41 (“In the storefront example, because of the divergent incentives between public agency owners and their bureaucratic agents, negotiations may only be possible through informal or corrupt channels.”).

¹¹⁴ *Id.* at 656.

that Moscow merchants preferred illegal street kiosks because there was only one party to negotiate with – the crimelords who ran a “protection” racket for kiosk merchants.¹¹⁵

To demonstrate visually how certain divisions of rights would result in unproductive resource use, Heller discussed “horizontal” and “vertical” property rights.¹¹⁶ A “vertical” property right is one that cuts across all of the various objections and permits the property to be used as a whole. A “horizontal” right is one that is not in itself useful, but which cuts across vertical rights. For example, if the ownership of a tractor were divided such that one person owned the wheels, another person owned the engine, and a third person owned the steering wheel, a person who wanted to use or buy the tractor as a whole would have to negotiate with three parties to gain any kind of useful right. The right to use the tractor as a whole would be the “vertical right.” The right in the wheel has no use value by itself, because the tractor operates at the level of the whole unit. As a result, a right in the wheel is a crosscutting horizontal right, which can be used to prevent use of the tractor as a whole.

Similarly, as in Heller’s example, if one group owns the right to the cash flow a business site produces, another has the right to make use of the storefront, and the third has managerial control over the building in which the business is situated, a merchant who wishes to use the storefront for his business will find it difficult to negotiate over the fragmented property rights.¹¹⁷ The useful unit of property is the ability to use the storefront as a whole. And each of the property fragments that cut across the vertical right to use the storefront as a whole is a crosscutting horizontal right.

Of course, the terminology is inexact. But the point of the visual is an important one: fragmentation of rights does not automatically create an anticommons. Breaking up a commons vertically – that is, with special attention to giving rights-holders useful rights that they can sell – is a form of fragmentation. But breaking up a commons vertically does not result in an anticommons because rights do not cut across productive uses. Fragmentation only creates an anticommons when the resulting property fragments cut across useful rights.¹¹⁸

¹¹⁵ *Id.* at 644 (“Creation of commercial space through corruption and protection contracts can be reasonably stable over time when procedures become routinized . . .”).

¹¹⁶ *Id.* at 670 (“Private property usually breaks up the material world ‘vertically,’ with each owner controlling a core bundle of rights in a single object By contrast, anticommons property creates ‘horizontal’ relations among competing owners of overlapping rights in an object.”).

¹¹⁷ *Id.* at 674 (“[E]ven if the number of parties and transaction costs are low, the resource still may not be efficiently used because of bargaining failures generated by holdouts, as sometimes seems to happen with Moscow storefronts.”).

¹¹⁸ *Id.*

2. The Private Anticommons

The anticommons idea is useful beyond Heller's analysis of government privatization. Private ordering can create an anticommons just as government privatization can. People can write contracts that make property unusable, or that hinder third party purchasers from making higher value use of the property. Consider the phenomenon of "fancies" in real estate law. Fancies are idiosyncratic contractual use restrictions on land (beyond the permissible covenants) that purport to run with the land.¹¹⁹ If two people agree on a fancy, they are agreeing on a new form of property rights – one will hold the right to the fancy, the other will hold a fee simple minus the fancy.¹²⁰

The difficulties arise, of course, when a third party seeks to purchase the land. There are two problems – one of information, one of negotiation. First, if the fancy is unrecorded the problem is clear: now the price of every parcel of land rises by the amount of the search cost necessary to ensure that the property is free of fancies.¹²¹ If the fragmented property form (the fee simple minus the fancy) is enforced, information costs go up.¹²² Second, the fragmented right now creates a negotiation problem. If you want to use the entire land (that is, remove the fancy), you must deal with two people, not one. Thus, the emergence of an anticommons outside of the privatization context is not a marginal event; rather, it is a common side-effect of private ordering of transactions.

When it comes to realizing value out of trades, therefore, the law of contract is balanced by the law of property. We do not permit contracts that lock property into low-value uses, or that make it too difficult for other parties to make productive use of the property.¹²³ Thus, although the idea of the anticommons is recent, the function of property law in preventing an anticommons is not. The common law of property has long sought to unify marketable title in a single person who then has the full incentives to maximize the value, minimize the damage, and alienate the property when someone can put it to better use. There are many examples. Forms of property that required a feudal relationship between lord and tenant were eliminated by the statute *Quia Emptores* in 1290, which reduced feudal property to saleable forms and

¹¹⁹ See Merrill & Smith, *supra* note 12, at 25-26 (discussing systemic costs of allowing fancies to burden property).

¹²⁰ *Id.* at 26.

¹²¹ *Id.* ("In modern terminology, the Lord Chancellor thought that permitting [fancies] to be established as property rights would create unacceptable information costs to third parties.").

¹²² See *id.* at 26-27 ("When individuals encounter property rights, they face a measurement problem. . . . The need for standardization in property law stems from an externality involving measuring costs: Parties who create new property rights will not take into account the full magnitude of the measurement costs they impose on strangers to the title.").

¹²³ RESTATEMENT (THIRD) OF PROPERTY §§ 3.2-3.7 (2000).

solved the fragmentation problem caused by subinfeudation.¹²⁴ As discussed above, fancies are generally not recognized in property law.¹²⁵ Undisclosed or unrecorded covenants are not enforced at all as against a bona fide purchaser.¹²⁶ Indeed, for a covenant to run with land, numerous restrictions must be met, each of which limits parties' ability to craft personal and idiosyncratic property rights.¹²⁷ To take another example, the infamous Rule Against Perpetuities can be quite simply read as a limit on the fragmentary effect of dead hand control – if the living inherit in fee simple, they may either put the resource to a high-value use, or sell to a higher-value user.¹²⁸ Similarly, the law of adverse possession quiets title in those making productive use of abandoned resources.¹²⁹ These and many other examples demonstrate the common law's tendency to group useful property rights in a single holder's hands. Thus, the common law of property has had a long and historic role in resisting contractual and idiosyncratic burdens on property.

To draw the strands of this section thus far together, Demsetz demonstrates that as technologies change, new rights emerge. When this occurs, Demsetz demonstrates that emerging property rights should be protected in ways that internalize the costs of use of a resource. And there is no reason to abandon this reasoning when the externality at issue is not a tragedy of the commons, but a tragedy of the anticommons, because private ownership solves anticommons problems by aggregating useful alienable rights in the hands of a single property owner.

D. *The Literature of Internet Propertization and the Anticommons*

Other theorists have reached the conclusion that property law is relevant to the internet (although they have not used the reasoning set forth here). This section examines the prior attempts at applying theories of property law to the internet, and finds them lacking. First, this section examines and rejects the currently influential scholarship describing *any* propertization of online rights

¹²⁴ DAVID R. COQUILLETTE, *THE ANGLO-AMERICAN LEGAL HERITAGE* 107-13 (1999) (describing the role of the statute *Quia Emptores* in English legal history).

¹²⁵ Merrill & Smith, *supra* note 112 at 26.

¹²⁶ See, e.g., *Story Bed & Breakfast, LLP v. Brown County Area Plan Comm'n*, 789 N.E.2d 13, 20 (2003) ("We hold that land use restrictions, however denominated . . . should be recorded or otherwise memorialized in a manner reasonably calculated to provide notice to a subsequent purchaser of land.").

¹²⁷ See Glen O. Robinson, *Personal Property Servitudes*, 71 U. CHI. L. REV. 1449, 1449-52 (2004) (discussing servitudes on real and personal property).

¹²⁸ See Jesse Dukeminier, *A Modern Guide to Perpetuities*, 74 CAL. L. REV. 1867, 1869-71 (1986) (stating reasons for the Rule Against Perpetuities).

¹²⁹ Jeffrey Evans Stake, *The Uneasy Case for Adverse Possession*, 89 GEO. L.J. 2419, 2435-36 (2001) (reviewing the justifications for adverse possession, including that adversely possessed land will be put to better use).

as creating an internet anticommons.¹³⁰ Second, this section rejects the similarly influential scholarship that describes online property rights as a pure extension of real-world chattel property rights over computers.¹³¹

1. The “Digital Enclosure” Literature Is Flawed Because Not All Fragmentation Constitutes an Anticommons

Although no economic analysis of virtual property has yet been published, there have been several previous attempts to apply property theory to the internet. The prior literature discussing the value of online propertization has either condemned private internet property as part of a supposed digital enclosure movement, or condoned private internet property as an extension of property rights in chattels.¹³² However, both of these major approaches are in an important degree wrong.

The basic story of the digital enclosure literature is one of information enclosure.¹³³ The digital enclosure literature argues that protecting websites with passwords reduces the amount of information available to the rest of us, and that as a result, such protection is undesirable. There is a fairness ethic at work: if a person benefits from the broad readership the internet provides, but does not contribute his own information to the information commons, he is supposedly wrongfully enclosing his information to the detriment of everyone.¹³⁴ Since the internet benefits from network effects (the more people who contribute the more valuable it is), any withholding of information supposedly deprives everyone else of value.¹³⁵

¹³⁰ See, e.g., Julie E. Cohen, *Lochner in Cyberspace: The New Economic Orthodoxy of “Rights Management”*, 97 MICH. L. REV. 462, 561 (1998) (arguing in favor of maximum access rather than ownership interests and maximum profit); Dan Hunter, *Cyberspace as Place and the Tragedy of the Digital Anticommons*, 91 CAL. L. REV. 439, 474-75 (2003) (contending that password protection of data on websites constitutes a digital enclosure); Mark A. Lemley, *Cyberspace as Place*, 91 CAL. L. REV. 521, 539 n.82 (2003).

¹³¹ See, e.g., Bellia, *supra* note 82, at 2170-71 (“This article argues that property-rule protection for network resources is more appropriate than scholars have thus far recognized.”); Epstein, *supra* note 82, at 75 (defending chattel-level property protection).

¹³² See Bellia, *supra* note 82, at 2224 (observing that system owners will always be able to use technology to close access); Epstein, *supra* note 82, at 81 (noting that “[a] ‘trespasser is liable to respond in damages for such injuries as may result naturally . . . in consequence of his wrong’ . . . These rules carry over to cyberspace without missing a beat”); Hunter, *supra* note 130, at 474-75 (describing the digital enclosure movement).

¹³³ See Cohen, *supra* note 130, at 561 (arguing in favor of maximum access rather than ownership interests and maximum profit); Hunter, *supra* note 130, at 474-75; Lemley, *supra* note 130, at 539 n.82 (2003).

¹³⁴ See Hunter, *supra* note 130, at 518 (“These proprietors have taken advantage of the network externalities that define the Internet, and now they assert private property rights that cut directly against it. As a matter of simple evenhandedness, then, the argument in favor of the cyberspace enclosure movement falls away.”).

¹³⁵ *Id.*

However, the digital enclosure literature fails in its effort to describe an information anticommons. The enclosure of a commons may well be a loss to holders of rights in the lost commons, but it is not an economic tragedy. Imagine the original agricultural enclosure movement: common fields were enclosed, and prior commons holders were dispossessed in favor of the new private owner.¹³⁶ This is a moral tragedy, but not an economic one, since the private owner will fully internalize the externalities of use of the land. In fact, the new-minted private owner will have incentives to husband the land that the commons-holders did not.¹³⁷

Not all fragmentation of rights in property results in an anticommons. The question is not whether a resource is carved up, but how well. Fragmentation is inefficient in and of itself (look at the development of condominiums and timeshares, for example); but that fragmentation which results in overlapping rights of exclusion creates an incentive to hold out and exclude all productive use of the resource.¹³⁸ It is the usefulness of the resulting property bundle that matters: whether the rights connected with the use of a resource are such that a third party would be interested in acquiring it. An anticommons results when the bundles of use rights that emerge from the privatization process are not themselves useful or vendable.¹³⁹ The theories of digital enclosure fall short because they do not demonstrate that the resulting enclosed resources are somehow impeded in the stream of commerce.

Further, the digital enclosure literature seeks to demonstrate an anticommons in information, which is by nature non-rivalrous. One person's use of information does not threaten another person's ability to get "enough and as good."¹⁴⁰ For example, one person's creation of a telephone directory does not stop another from going and compiling her own. An anticommons in pure information cannot exist, because there cannot be overlapping rights to exclude in a non-exclusive resource.

But where the digital enclosure literature fails, a theory of virtual property succeeds in describing an internet anticommons. The two problems with the information enclosure literature were that it dealt with information (which is non-rivalrous) and that it overestimated the role of fragmentation alone in creating an anticommons, rather than examining whether the resulting property fragments were useful and marketable. Both of these criticisms fall away

¹³⁶ See Ellickson, *supra* note 27, at 1392 (describing effects of agricultural enclosure).

¹³⁷ DEMSETZ, *supra* note 83, at 107.

¹³⁸ See Heller, *supra* note 13, at 652 n.154 ("No tenant should sell first, because the last tenant can then hold out to extract the gains from conversion.").

¹³⁹ See *id.* at 671.

¹⁴⁰ This is an argument that Locke, who wrote at the time of the agrarian enclosures, would be intimately familiar with: as with Locke's acorns, one person's gathering of information does not preclude another's gathering of the same. See Adam Mossoff, *Locke's Labour Lost*, 9 U. CHI. L. SCH. ROUNDTABLE 155, 156-59 (2002) (defending Locke's labor theory of property).

when we look at virtual property. Virtual property is, by definition, rivalrous. Virtual property is useful as a unit – and that usefulness is destroyed by crosscutting rights. If that usefulness is destroyed, as is currently happening, we may say that an anticommons forms from the resulting fragmentation into non-useful rights.

2. The Chattel-Property Literature Is Flawed Because it Ignores the Distributed Nature of Online Resources

The other influential property theory relating to online resources is advanced most prominently by Richard Epstein.¹⁴¹ This “chattel theory” states that property affects the internet through real world chattel property rights in physical computers.¹⁴² Thus, this literature considers primarily the rights of companies to control access to their real world chattels that may be affected by online activity. For example, if a company owns its own email servers, under the chattel theory, it may bring a trespass action against people who use its email servers without permission.¹⁴³

Although the chattel theory of online property does have significant appeal, it has a fatal flaw: the resources that cybertrespass suits are intended to protect (for example, email addresses) are not the same as the chattels (computers) that form the basis for the trespass action. An email address is not the same as the servers on which the information resides. A URL is not the same as the computers that access or support it. The contours of an exclusionary right based on a physical chattel will not “fit” resources that run across multiple such chattels.¹⁴⁴ Thus, when used to protect virtual property, chattel exclusion rights necessarily protect too much or too little.

For example, the exclusion right derived from a physical chattel right in a computer would protect only those functions of an online resource that occurred within that computer. If someone hacked your personal computer to get to your email, you would have a chattel exclusion right. But if someone hacked just the ISP’s server, you would have no cybertrespass right, even though they hacked your email account. The idea that a person could not bring an action because she does not own her own email server is simply strange. On the other hand, the ISP would have many causes of action against people who had not harmed its server in any significant way (after all, it was your email account that was hacked).¹⁴⁵ The chattel property theory of online rights

¹⁴¹ Epstein, *supra* note 82, at 75 (“With cyberspace, the hard question is whether technological changes could ever lead us to abandon the presumption that a deliberate trespass counts as a private wrong.”).

¹⁴² *See id.*

¹⁴³ *See Intel Corp. v. Hamidi*, 71 P.3d 296, 299-300 (2003) (deciding whether intentional trespass to an email server was actionable under trespass law where the servers were not physically damaged).

¹⁴⁴ *See Heller, supra* note 13, at 630.

¹⁴⁵ Although we are discussing cybertrespass actions here, the problem is the same with

therefore over- or underprotects rights because of the lack of fit between chattels and online resources.

Moreover, chattel property rights have the capacity to actively interfere with the productive use of online resources. Distributed computing resources are useful whole pieces of code that run on multiple computers. Chattel property rights as applied to distributed programs can become horizontal property rights that cut across the vertical property right in distributed code. If each owner of any computer involved in a distributed program can bring an action to enjoin the whole, we create precisely the anticommons problem we have been striving to avoid. As the next section shows, the chattel theory of online property can therefore cause significant inefficiencies in the use of online resources.

III. FRAGMENTATION OF VIRTUAL PROPERTY

Having rejected the current academic descriptions of how property law ought to regulate the internet, this section proposes a new model: the law should act to limit an anticommons in virtual property. The internet is, by design, layered.¹⁴⁶ The physical computers and connections that are the backbone of the net form the basis for internet communication; layered on top of that are the transfer protocols that enable communications between computers; layered on top of that is the basic code that creates a website or a virtual world; layered on top of that is the intellectual property that inheres in the content of the website or virtual world; and layered on top of that are the creations of the environment users.¹⁴⁷ Virtual property built on the structure of the internet is particularly susceptible to anticommons problems, because it is necessarily built on other people's work.

This section will first define the useful unit of virtual property that must be kept intact if property bundles are to be efficiently used and sold – the “vertical” property right in code. Second, it will give two prominent examples of how crosscutting horizontal property rights are fragmenting virtual property rights into non-useful forms, and how surrounding rights-holders are blocking the emergence of new and useful property forms online. And finally, it will discuss the emergence of virtual property regimes comparatively, with a focus on the emerging law of virtual property in China, Taiwan, and Korea.

laws that prohibit unauthorized entry to a computer: the owner of the computer, rather than the owner of the damaged virtual property, would be the beneficiary of the cause of action. See Computer Fraud and Abuse Act, 18 U.S.C. § 1030 (2000 & Supp. 2004) (prohibiting unauthorized access to “protected computers”).

¹⁴⁶ See, e.g., *Name.Space, Inc. v. Network Solutions*, 202 F.3d 573, 577 (2d Cir. 2000) (describing the structure of the domain name system); see also ICANN Glossary, <http://www.icann.org/general/glossary.htm> (last visited Sept. 11, 2005) (defining Internet Protocol).

¹⁴⁷ See Daniel Benoliel, *Cyberspace Technological Standardization: An Institutional Theory Retrospective*, 18 BERKELEY TECH. L.J. 1259, 1266-1278 (2003) (describing the structure and institutions of the internet).

A. *The “Vertical” Interest in Virtual Property Is the Code that Operates Across Multiple Computers*

Vertical rights on the internet will be underutilized if their use is subject to multiple and overlapping horizontal rights. Although the “horizontal layer” analogy is useful in the context of real property, the analogy comes into its own in the virtual context, where one type of code is literally layered on top of another.¹⁴⁸

To recap, a “vertical” interest in property is one that contains a useful and saleable bundle of rights. A “horizontal” crosscutting property right is one that is not itself useful, but which can be used to block productive use of the whole property right.¹⁴⁹ A “vertical” right in a car is the right to use the car as a whole – the car is the relevant useful unit. A crosscutting “horizontal” right might be the right to make use of the tires – not useful in its own right, but capable of stopping anyone interested in using the car as a whole.¹⁵⁰ If we are to successfully solve the internet anticommons problem, we must determine what rights in code are “vertical” and what rights are “horizontal.”

In the context of virtual property, the relevant useful unit is the code itself. Ownership of only part of an internet address, for example, is hard to sell to someone else, and is not particularly useful to the owner by itself.¹⁵¹ Ownership of part of a piece of virtual real estate is, again, not particularly useful, since you have to negotiate with all other rights-holders in the real estate to make unified use of it.¹⁵² The trait of persistence is part of the problem. For code to be persistent, it must run on multiple computers, often a mixture of servers and client-side applications. Because it does so, it is subject to crosscutting chattel property rights.

Since virtual property operates as a unified whole only at the level of code, the appropriate package of property rights also appears at the level of code. That is the right that matters. That is the right that is saleable. For example, if you sell an internet address, you don’t sell the physical computers on which it resides. If you transfer an email address, you don’t hand over your personal computer. The code right is what is important, no matter what system or chattel the code runs on. So, when we are considering where to make the slice between online property rights, we will preserve useful bundles of rights by

¹⁴⁸ See O’Rourke, *supra* note 21, at 600.

¹⁴⁹ Heller, *supra* note 13, at 670.

¹⁵⁰ *Id.* at 670-71 (“[A]nticommons property creates ‘horizontal’ relations among competing owners of overlapping rights in an object.”).

¹⁵¹ Although this should be obvious, part ownership in an entity owning a URL is not useless, but that is the point: a single entity still controls the property, even though ownership of the entity may be divided up.

¹⁵² If the purpose is not to make unified use of the property – for example, in a time-share – then this point has less force. But where the goal is to make a unified use of the whole, the division of property at the level of the code, rather than at the level of the system or the chattel, is critical to preserve useful property rights in a single bundle.

granting rights to virtual property at the level of code.

Therefore, I propose property-rights recognition at the level of code for virtual property. This is where I part ways with Richard Epstein and Patricia Bellia – leading apologists for the chattel theory of online property rights.¹⁵³ While their conception of online property rights is system-based, mine is code-based. While in their conception the power of an owner over digital artifacts ceases when the user steps past his firewall and into cyberspace, in my conception the power of an owner persists over the use of the virtual property regardless of the system or chattel currently connected to it. If I own a building in a virtual world, I own it regardless of the intellectual property inherent in the underlying code. I own it regardless of the physical chattel used by another person to experience it. I own it, control it, can invite people to be in it, hold meetings in it, work there, invest in it, and sell it to other people who might want to do the same.

B. *The Intel v. Hamidi Fallacy: Why Crosscutting Chattel Property Rights Over Online Resources Disrupt Vertical Virtual Property and Create Inefficient Outcomes*

The concept of virtual property therefore challenges the currently influential view that reduces online property rights to chattel property rights in physical computers. This section shows that dividing up online property rights at the level of physical chattel inevitably cuts across code, rather than packaging the most useful and saleable aspect of the virtual property. When this happens, physical chattel rights become horizontal crosscutting rights that threaten the use of virtual property as a productive whole.

The *Intel v. Hamidi* case demonstrates the dangers of overextending physical chattel rights over the internet.¹⁵⁴ In that case, a former Intel employee, Ken Hamidi, emailed numerous current employees of Intel to criticize Intel's employment practices.¹⁵⁵ Hamidi sent emails on six occasions, over a two year period, for a total of approximately 200,000 emails.¹⁵⁶ Intel requested that Hamidi stop sending emails, and also attempted to introduce filters to block Hamidi's emails.¹⁵⁷ Hamidi circumvented the filters and continued emailing.¹⁵⁸ Intel therefore sought an injunction against Hamidi on a theory of trespass to chattels, to stop Hamidi's mass mailings.¹⁵⁹ The trial court granted the injunction, and the court of appeals affirmed it.¹⁶⁰ The California Supreme Court reversed.

¹⁵³ See *supra* note 82.

¹⁵⁴ See *Intel Corp. v. Hamidi*, 71 P.3d 296, 299-300 (2003).

¹⁵⁵ *Id.* at 299.

¹⁵⁶ *Id.* at 313 (Brown, J., dissenting).

¹⁵⁷ *Id.* at 300.

¹⁵⁸ *Id.* at 329 (Brown, J., dissenting).

¹⁵⁹ *Id.* at 299-300.

¹⁶⁰ See *id.*

The California Supreme Court's decision was deeply unsatisfying. The court held that because Hamidi sent messages relatively few times, his unpermitted access to Intel's email servers did not cause harm, and thus did not trigger liability under the law of trespass to chattels.¹⁶¹ The court picked its numbers very carefully: although Hamidi sent emails on relatively few occasions, he sent them to between 3500 and 8000 employees each time.¹⁶² The court estimated that Hamidi sent as many as 200,000 emails,¹⁶³ yet attempted to distinguish Hamidi's use of Intel's email system from spam, which the court indicated Intel had every right to sue to block.¹⁶⁴ This distinction fails utterly: every statute restricting unpermitted emails – including California's own statutory restriction on unsolicited email – has measured harm by the number of emails sent, rather than the number of times the emails were sent.¹⁶⁵ Arguing that the harm Hamidi caused as one individual is distinct from the harm of bulk unsolicited email as an aggregate is equally disingenuous – given the low costs of sending high numbers of emails, the fact that Hamidi was only one person is irrelevant.¹⁶⁶ Thus, the California Supreme Court's decision seems to be based on a deeply flawed argument.

However, the court of appeals' decision below, which upheld the trial court's injunction prohibiting Hamidi from use of Intel's email servers, was equally disturbing.¹⁶⁷ That decision stated that Intel's ownership of email servers permitted it to enjoin use of the servers.¹⁶⁸ The problem, of course, with this decision was that it enabled control over internet traffic by virtue of physical ownership of a part of the physical structure of the internet. The decision of the court of appeals created inefficient incentives. If a company wished to be able to stop unwanted emails under the appellate standard, it was

¹⁶¹ *Id.* at 300.

¹⁶² *Id.* at 299-301. There is some dispute about the numbers. Intel indicated as many as 35,000 employees multiple times. *Id.* at 301.

¹⁶³ *Id.* at 299.

¹⁶⁴ *Id.* at 301; *id.* at 329 (Brown, J., dissenting).

¹⁶⁵ See, e.g., CAL. BUS. & PROF. CODE § 17529 (West 2005); 15 U.S.C. § 7701 (2000). California's anti-spam legislation enacted penalties against commercial email so draconian that the federal CAN-SPAM Act was passed in large part to preempt it. See William Baker, *The NetLaw Post: Canning Spam*, NEWSPAPER ASS'N OF AM., Nov. 2003, <http://www.naa.org/artpage.cfm?AID=5386&SID=107> (providing an overview of the California anti-spam law); Tom Spring, *Laws Won't Solve Everything*, PCWORLD, Nov. 10, 2003, <http://www.pcwORLD.com/news/article/0,aid,113329,00.asp>. Indeed, the court of appeals referred to this section when it determined that the legislature was aware of the costs of bulk unsolicited email. See *Intel Corp. v. Hamidi*, 114 Cal. Rptr. 2d 244, 252 (2001).

¹⁶⁶ *Hamidi*, 71 P.3d at 313-14 (Brown, J., dissenting) (discussing the large number of emails Hamidi was able to send). In fact, most of the criminal prosecutions under state and federal laws for bulk unsolicited email have been against single individuals responsible for millions of emails.

¹⁶⁷ See *Hamidi*, 114 Cal. Rptr. 2d at 244.

¹⁶⁸ *Id.* at 249-50.

required to invest in a physical server farm.¹⁶⁹ Otherwise, the cause of action would go to whomever the company selected as internet service provider. Rewarding companies for bringing their email capability in-house is not only inefficient, it causes the problem to metastasize: as more companies respond to the incentive to use physical chattel ownership to control cyberspace, more of cyberspace becomes subject to such unilateral control. In addition, protecting the physical chattel does little to mitigate the true cost of Hamidi's spam – the aggregate time spent by employees deleting emails. That is a function of the invasion of the virtual property interest, and has nothing to do with invasion of the physical chattel at all.

Caught between two unacceptable poles, perhaps the California Supreme Court's decision to choose speech values over property values was understandable. To secure the physical architecture of the internet to users, the court determined that under the common law of trespass to chattel, the plaintiff was required to show harm to the physical email servers.¹⁷⁰ The court then defined away the harm Hamidi caused by disaggregating him from every other sender of unwanted email.¹⁷¹ Hamidi's hundreds of thousands of emails were then reduced to the number of times he sent them, and his actions were deemed not subject to injunction. Oddly, however, the court attempted to rebalance the equation by adding a final caveat: Intel was free to attempt to technologically block Hamidi, even though it had been denied injunctive relief.

A theory of virtual property makes the solution to *Hamidi* easy. The email accounts that Intel provides its employees are property – not physical chattel property, but virtual property. Intel is no more required to permit people to spam its email accounts than it is required to permit a former employee to scream imprecations on the shop floor. However, the free speech values that the California Supreme Court sought to protect are also protected under a theory of virtual property. The court correctly determined that non-harmful use of Intel's physical chattel property was insufficient to support an injunction. Thus, Intel cannot enjoin the non-harmful use of its servers to pass on communications between third parties (for example, between two addresses

¹⁶⁹ See *id.* at 247-48 (discussing the requirement, for an action sounding in trespass, of a physical seizing or taking, or interference with or exercise of control over goods).

¹⁷⁰ *Hamidi*, 71 P.3d at 302-303 (“[O]ne who intentionally intermeddles with another’s chattel is subject to liability only if his intermeddling is harmful to the possessor’s materially valuable interest in the physical condition, quality, or value of the chattel, or if the possessor is deprived of the use of the chattel for a substantial time . . .”).

¹⁷¹ *Id.* at 303-04 (“[T]he undisputed evidence revealed no actual or threatened damage to Intel’s computer hardware or software and no interference with its ordinary and intended operation.”). Cf. *CompuServe Inc. v. Cyber Promotions*, 962 F. Supp. 1015, 1022 (S.D. Ohio 1996) (“[H]andling the enormous volume of mass mailings that CompuServe receives places a tremendous burden on its equipment. . . . To the extent that defendants’ multitudinous electronic mailings demand the disk space and drain the processing power of plaintiff’s computer equipment, those resources are not available to serve CompuServe subscribers.”).

unrelated to Intel), even if Intel wishes to block the content.

The *Hamidi* problem presages another difficulty: claims of theft of virtual property cannot be properly resolved by laws designed to fortify chattel rights in individual computers. As discussed below, incidents of theft or destruction of virtual property are being increasingly reported to police.¹⁷² The initial response to these thefts is for police to apply unauthorized access laws (anti-hacking laws) to punish wrongdoers.¹⁷³ However, such laws are inadequate because it is possible to steal virtual property without ever touching a chattel computer owned by the owner of the virtual property, or hacking a server. In fact, such thefts are routine. The thief logs on to the account containing the property, often making use of a password gained by fraud. The thief then transfers, sells, or deletes the virtual property.

While the environment creator (on whose server the virtual property was maintained) might have a cause of action for wrongful access, it would have very little incentive to bring such a claim.¹⁷⁴ First, the environment creator has lost nothing in net, since the virtual property has been transferred from one user to another. Second, suing hackers for theft of virtual property may alert users to security flaws through which accounts may be hacked (thus triggering potential contract liability). Finally, environment creators have thus far indicated that they perceive the recognition of virtual property to not be in their best interests, since it threatens their ability to unilaterally control the environment.¹⁷⁵ Thus, without a theory of virtual property, owners of such property are left without an effective remedy.

We have therefore seen how, without a theory of virtual property, there is no acceptable solution to the problem posed by *Hamidi*: either physical chattel rights subject the structure of the internet to impermissible private censorship, or owners of email accounts are compelled to endure unwanted contact. Similarly, we have seen how cross-cutting physical chattel rights can prevent online resources from being used as an intact and valuable whole – the definition of an internet anticommons. And finally, we see how the current laws that protect access to systems and chattel property do not provide any useful remedies for theft of virtual property.

¹⁷² For example, over 22,000 incidents of theft of virtual property were reported to South Korean police in 2004. See Mark Ward, *Does Virtual Crime Need Real Justice?*, BBC NEWS, Sept. 29, 2003, <http://news.bbc.co.uk/2/hi/technology/3138456.stm>.

¹⁷³ See, e.g., Computer Fraud and Abuse Act, 18 U.S.C. § 1030(a)(5)(A)(iii) (2005) (authorizing fines and imprisonment as a penalty for accessing protected computers without permission and causing damage in the process).

¹⁷⁴ And, as against the environment creator, such a wrongful access cause of action would be problematic. The environment creator cannot usefully distinguish between a thief with a password and a regular account user. Thus, it is unlikely that the creator could be held liable for failing to stop a thief who used a correct password to steal virtual property from an account.

¹⁷⁵ Admittedly, virtual world operators have an interest in preventing theft of virtual items in order, for example, to retain present users and attract potential users.

Crosscutting rights are only one part of the internet anticommons story. The other part is how crosscutting rights can be used to eliminate emergent new forms of property. Thus, the next section demonstrates how the internet anticommons can be used to eliminate useful virtual property rights as they emerge.

C. *Elimination of Emergent Virtual Property by Contract*

Demsetz and Levmore, discussed above, provided two complementary accounts of the dangers that threaten emerging property interests.¹⁷⁶ Demsetz's argument was that as technology changes, so the law of property must change to protect new cost-benefit possibilities.¹⁷⁷ Levmore's public choice approach predicted resistance to this change on the part of pre-existing rights holders.¹⁷⁸ If our theory of the internet anticommons in virtual property is correct, we should expect to find holders of crosscutting horizontal rights attempting to take the value of emerging virtual property interests for themselves.

This is in fact currently happening, and happening in a manner that is entirely recognizable from this discussion thus far. Private parties usually create an anticommons by contract. And, indeed, when we look at the places where virtual property interests are beginning to strongly emerge, we find contractual restrictions that explicitly attempt to knock out emergent virtual property interests.

Virtual environments consist of three-dimensional virtual spaces. The "stuff" of which virtual environments are made is code that creates a graphical representation of textures and surfaces. Those textures and surfaces are owned by the creators of the virtual environment, who have an intellectual property interest in the environment as a whole.¹⁷⁹

In order to access virtual environments, the citizens of the environments must sign contracts (End User License Agreements) with the holders of the intellectual property rights in the environment. These EULA agreements disclaim any property interest in anything a user builds or creates. In other words, the EULA creates a right to exclude on the part of the intellectual property holder that can be exercised to eliminate emergent virtual property rights.

One license agreement, recently issued, that governs one of the largest entertainment-based virtual environments in operation in the United States

¹⁷⁶ DEMSETZ, *supra* note 83, at 107-10; LEVMORE, *supra* note 98, at 188.

¹⁷⁷ DEMSETZ, *supra* note 83, at 107 ("Increased internalization . . . results from changes in economic values, changes which stem from the development of new technology . . .").

¹⁷⁸ LEVMORE, *supra* note 98, at 188 ("Technological changes play an important role in this story as well; a new technology . . . might create a powerful new industry, or an existing interest group might try to fight off a new technology with regulatory hurdles.").

¹⁷⁹ See Wikipedia: Virtual World, http://en.wikipedia.org/wiki/Virtual_world%20 (last visited Sept. 11, 2005) (describing virtual worlds).

(current population approximately 2,000,000 world-wide),¹⁸⁰ explains the position of intellectual property holders succinctly:

7. Selling of Items

Remember, at the outset of these Terms of Use, where we discussed how you were “licensed” the right to use [the virtual world], and that your license was “limited”? Well, here is one of the more important areas where these license limitations come into effect. Note that [the intellectual property holder] either owns, or has exclusively licensed, all of the content which appears in [the virtual world]. Therefore, no one has the right to “sell” [the IP holder’s] content, except [the IP holder]! So [the IP holder] does not recognize any property claims outside of [the virtual world] or the purported “sale” in the “real world” of anything related to [the virtual world]. Accordingly, you may not sell items for “real” money or trade items for things of value outside of [the virtual world].¹⁸¹

Not content with protecting its own intellectual property against the encroachment of emergent virtual property interests, the owner of the environment claims ownership of all valuable work created by the inhabitants of the virtual environment as well:

All title, ownership rights and intellectual property rights in and to [the virtual world] (including but not limited to any user accounts, titles, computer code, themes, objects, characters, character names, stories, dialogue, catch phrases, locations, concepts, artwork, animations, sounds, musical compositions, audio-visual effects, methods of operation, moral rights, any related documentation, “applets” incorporated into [the virtual world], transcripts of the chat rooms, member profile information, recordings of games played in [the virtual world], and software) are owned by [the IP holder] or its licensors.¹⁸²

These provisions surpass the usual abuses of contracts of adhesion.¹⁸³ By means of contract, virtual environment holders currently parlay their (legitimate) claim to the intellectual property in an environment into an illegitimate claim to all of the virtual property possessed by or developed by the inhabitants of the environment.

There is, however, an even stronger argument to be made. To state that such EULAs presumptively knock out any emergent property rights is to beg the question: why should we permit consensual agreements that prevent formation

¹⁸⁰ See Woodcock, *supra* note 66.

¹⁸¹ World of Warcraft Terms of Use Agreement, <http://www.worldofwarcraft.com/legal/termsofuse.shtml> (last modified May 5, 2005).

¹⁸² *Id.*

¹⁸³ See, e.g., Mark A. Lemley, *Intellectual Property and Shrinkwrap Licenses*, 68 S. CAL. L. REV. 1239, 1240-47 (1995) (discussing the use of shrinkwrap software licenses in the context of computer software).

of property rights in the first instance any more than we tolerate other consensual restraints on alienation? The function of property law is in large part to resist contractual limitations on property use.¹⁸⁴ If the restraint on alienation limits the property in question to low-value uses, we term it an unreasonable restraint, and do not enforce it.¹⁸⁵ Thus, property law provides a rationale and a mechanism for resisting the systematic expropriation of emergent online property forms by use of contract.

D. *Recognition of Virtual Property Will Permit the United States to Compete with Nascent Regimes in China and Taiwan*

If the United States does not recognize a property right that operates at the level of code, other legal regimes will.¹⁸⁶ The United States is behind the curve in terms of recognizing and protecting virtual property rights. China, with a population of over 26.3 million people who regularly access virtual worlds,¹⁸⁷ has already begun to develop law to regulate and protect these interests as part of its program to attract and build a competitive technology industry. Taiwan has developed similar statutory protection for virtual property. Korea, on the other hand, has largely attempted to solve questions of virtual property through the criminal and antitrust laws, with extremely limited success.

In a landmark decision, *Li Hongchen v. Beijing Arctic Ice Technology Development Co.*,¹⁸⁸ the Beijing Second Intermediate Court (famous for its intellectual property decisions) considered a complaint by a virtual world inhabitant against the holder of the online environment in a dispute over ownership of virtual property.¹⁸⁹ The virtual property of Li Hongchen was taken by a third party when his account was hacked. The lower court determined that Beijing Arctic Ice had an obligation to restore the property to its rightful owner.¹⁹⁰ The court of appeals affirmed the decision, and ordered

¹⁸⁴ See Merrill & Smith, *supra* note 12.

¹⁸⁵ See Robinson, *supra* note 127, at 1480 n.111 ("The common law has invalidated restraints on alienation in property from time out of mind.") (citing JOHN CHIPMAN, *RESTRAINTS ON THE ALIENATION OF PROPERTY* 2-10 (2d. ed. 1895) (discussing the history of the doctrine of restraints on alienation)).

¹⁸⁶ I am heavily indebted in this section to the research and assistance of Lingyan Peng, without whom forays into Chinese and Taiwanese law would have been impossible.

¹⁸⁷ See *supra* note 67 and accompanying text.

¹⁸⁸ The full opinion is available at www.chinacourt.org/public/detail.php?id=143455 (last visited Sept. 11, 2005) (on file with author) (Chinese language website); see also Will Knight, *Gamer Wins Back Virtual Booty in Court Battle*, *NEWSIDENTIST.COM*, Dec. 23, 2003, <http://www.newscientist.com/article.ns?id=dn4510> (discussing the *Li Hongchen* case).

¹⁸⁹ *Id.*

¹⁹⁰ *Id.*

restoration of the property.¹⁹¹ Although the court invoked the principles of contract in its decision, it did so to protect a distinct property right – the right of the owner to control the property as against the world, not merely as against the party who committed a wrongful action (here, the third party).¹⁹² The action quieted title in virtual property in its rightful owner.

The protection of virtual property has also found its way into the Chinese criminal law. The Beijing Evening News recently reported the sentencing of two 17-year-old boys for the theft of virtual property.¹⁹³ Police in Chengdu are currently investigating the theft of roughly RMB 50,000 worth of virtual equipment.¹⁹⁴ Numerous other complaints of theft of virtual property have been filed, and the number of incidents is rising month by month. To assist police in dealing with this new and rapidly increasing form of theft, the Public Security Ministry has published an advisory letter on how to punish the theft of virtual property.¹⁹⁵

These decisions and government actions do not exist in a vacuum. Rather, they are an integral part of the Chinese government's initiative to build a competitive virtual world industry. China already possesses a cadre of professional virtual world vendors: people who sell virtual property for a living. As of 2004, over 1000 professional sellers of virtual property made high-end salaries entirely from virtual worlds.¹⁹⁶ China currently has 5,000 producers of the technology underlying virtual worlds, a number it hopes to quadruple in the next few years.¹⁹⁷ China's underground market in virtual property is estimated to top RMB 1 billion.¹⁹⁸ Measured by online

¹⁹¹ *Id.*

¹⁹² *See id.*

¹⁹³ Beijing Evening News, quoted by CHONG XIN (CHINESE NEWS), October 13, 2004, www.chinanews.com.cn/news/2004/2004-10-13/26/493946.shtml (Chinese language website). An interesting aspect of many virtual property thefts is that they do not always result from a hack. Many thefts arise from a simple abuse of trust – akin to someone stealing your VCR after you invited them into your home. Thus, the laws against hacking do not cover the necessary ground. Moreover, the laws that cover chattel property, such as the Computer Fraud and Abuse Act, which limits unauthorized access of a “protected” computer, also do not protect virtual property, which are by nature persistent on servers not owned by the owner of the virtual property.

¹⁹⁴ *See* games.sina.com.cn/newgames/2003/12/12019148.shtml (last visited Feb. 26, 2005) (Chinese language website).

¹⁹⁵ *Id.*

¹⁹⁶ The salaries ranged above RMB 10,000, or roughly \$1,200. The phenomenon is not limited to China. *See* Mark Ward, *Making Money from Virtually Nothing*, BBC NEWS, Aug. 11, 2003, <http://news.bbc.co.uk/1/hi/technology/3135247.stm> (describing how virtual property dealers make money, and describing vendors with six-figure incomes from sales of virtual property).

¹⁹⁷ *See* Chinese Technological Creation Initiative, *supra* note 67.

¹⁹⁸ *See* Zang Tingting & Daragh Moller, *Legislation Proposed to Protect Virtual Property*, CHINA INTERNET INFO. CTR., January 26, 2004,

subscriptions, the Chinese market was valued at US\$159.6 million in 2003.¹⁹⁹ Online subscriptions are predicted to grow from \$159.7 million in 2003 to \$822.9 million in 2008.²⁰⁰

In late 2004, government and industry specialists convened a conference in Shanghai to discuss statutes for the regulation and protection of virtual property. Kou Xiaowei, the Deputy Director-General of the Audio, Visual, Electronic, and Internet Publishing Department under the General Administration of Press and Publication, had publicly pressed for protection of virtual property as a means of incentivizing investment in Chinese-based virtual worlds.²⁰¹ In response to this call for protective legislation, groups in Chengdu have offered draft legislation to the People's Congress that would protect virtual property.²⁰²

Taiwan has followed a similar process in developing a concept of virtual property. Early issues of virtual property dealt with property in online games, so the earliest regulations dealt with the entertainment sector. As early as 1997, Taiwanese law protected electronic records under the law of theft.²⁰³ A November 23, 2001 Taiwanese regulation promulgated by the Ministry of Justice expressly stated that virtual objects are property, are alienable and transferable, that actions on such objects or accounts sound in property, and that the theft of such property is fully punishable under criminal law:

The account and valuables of online games are stored as electromagnetic records in the game server. The owner of the [] account is entitled to control the account and valuables' electromagnetic record, to freely sell or transfer it. *Although the above accounts and valuables are virtual, they are valuable property in the real world. The players can auction or transfer them online. The accounts and valuables are the same as the property in the real world.* Therefore, there is no reason not to take the accounts and valuables of online games to be the subject to be protected by the larceny or fraud in criminal law.²⁰⁴

<http://www.china.org.cn/english/2004/Jan/85502.htm> (discussing the value of the Chinese virtual world market).

¹⁹⁹ LIANFENG WU & JUN-FWU CHIN, INT'L DATA GROUP, CHINA ONLINE GAMING MARKET SIZING AND FORECAST (2004), available at www.idc.com/getdoc.jsp?containerId=AP322103L.

²⁰⁰ *Id.*

²⁰¹ See USITO China IT Weekly Briefing, October 15, 2004, www.usito.org/uploads/269/weekly_oct15.htm; see also <http://tech.sina.com.cn/i/2004-10-10/0745437215.shtml> (last visited Feb. 26, 2005) (Chinese language website).

²⁰² See Tingting & Moller, *supra* note 198.

²⁰³ Article 323, Taiwan Criminal Code (1997) (on file with author).

²⁰⁴ Taiwan Ministry of Justice Official Notation No. 039030 (90) (emphasis added) (copy on file with author). Taiwan Criminal Code Articles 358 and 359 independently punish misuse of computer resources that cause harm. ("Those who acquire, delete, or change others' computer, or electronic record of relevant equipment [i.e., virtual property] without

Critically, the regulation expressly allocates the right to control the electromagnetic record of the virtual property to the owner of the code object, not the owner of the server on which the code happens to reside, or the intellectual property owner of the code. Supporting this ownership right, Taiwan has also developed a useful and comprehensive body of case law protecting virtual property from forcible or fraudulent expropriation. Taiwanese law requires the victim of theft of virtual property to file a police complaint before prosecution can proceed.²⁰⁵ But even with that caveat, Taiwanese jurisprudence boasts hundreds of cases on virtual property covering theft,²⁰⁶ fraud,²⁰⁷ and even robbery.²⁰⁸ Since 2003, the cause of action of theft has been revised to include the taking of another's electronic record without cause.²⁰⁹ Prosecutions under this revised statute have become routine.²¹⁰

The development of law governing virtual property in South Korea was inevitable. South Korea is commonly described as the world's "most wired society," with the greatest per-capita adoption of broadband connections.²¹¹ The South Korean population is 48 million.²¹² As of February 1, 2004, 30

cause, causing harm to the public or others, shall be punished with imprisonment of less than five years, detainment with or without fine of less than NT 200,000") (on file with author).

²⁰⁵ Prosecutor of the Dep't of the Procurator v. Li Shengxian (Taiwan Taipei District Court), *available at* <http://nwjirs.judicial.gov.tw/FJUD/index.htm> (last visited Feb. 26, 2005) (on file with author) (Chinese language website). In this case, the defendant was found guilty of stealing the victim's virtual equipment with a value of NT 20,000. However, the court dismissed the case because the victim did not file a complaint.

²⁰⁶ *See, e.g.*, Prosecutor of the Dep't of the Procurator v. Lin Qunzhi, 82, 777 (Taiwan Nantou District Court) (finding defendant guilty of cheating the victim into selling him her virtual equipment) (on file with author).

²⁰⁷ *See* <http://nwjirs.judicial.gov.tw/FJUD/index.htm> (last visited Feb. 26, 2005) (on file with author) (Chinese language website).

²⁰⁸ *See, e.g.*, Prosecutor of Dep't of the Procurator v. Xie Junjie, 91, 200 (Taiwan Maoli District Court), *available at* <http://nwjirs.judicial.gov.tw/FJUD/index.htm> (last visited Feb. 26, 2005) (noting that the defendant asked the victim to meet for a transaction, but then forced the defendant to disclose the password to his account) (on file with author) (Chinese language website).

²⁰⁹ Prosecutor of Dep't of the Procurator v. Li Shengxian, 93, 440 (Taiwan Taipei District Court) (on file with author).

²¹⁰ Prosecutor of Dep't of the Procurator v. Pan Bocun, 93, 440 (Taiwan Banqiao District Court), *available at* <http://nwjirs.judicial.gov.tw/FJUD/index.htm> (last visited Feb. 26, 2005) (on file with author) (Chinese language website). The defendant stole the victim's virtual equipment, but was not punished because the victim withdrew his complaint. *Id.*

²¹¹ *See* Mark Russel, *Gaming the Online Games*, NEWSWEEK, Oct. 18, 2004, *available at* <http://www.msnbc.msn.com/id/6199780/site/newsweek>.

²¹² CENTRAL INTELLIGENCE AGENCY, CIA WORLD FACTBOOK, *available at* <http://www.cia.gov/cia/publications/factbook/geos/ks.html> (last modified August 30, 2005); Chopin, *The Way to Cage People in the Matrix*, DDANZI-ILPO (CYNICISM DAILY), Feb. 1, 2004, at 21 (on file with author).

million users had accessed the Lineage virtual environments.²¹³ Over two million users access Lineage regularly.²¹⁴ Over forty-one percent of South Korean teenagers spend significant amounts of time in virtual worlds.²¹⁵

In the Korean system, complaints about the theft or misappropriation of virtual property are commonplace. The South Korean experience with virtual property has therefore been marked by aggressive police enforcement to protect virtual property interests against hacks and fraud. A recent BBC article reported that South Korean police received 22,000 cybercrime complaints related to virtual property in the previous year – over half the total number of cybercrimes reported in South Korea.²¹⁶ A Korean newspaper recently noted that 10,187 South Korean teenagers were arrested for theft of virtual property in a single year – over 28 per day.²¹⁷ These reports are aggressively prosecuted, resulting in numerous convictions.²¹⁸ In light of the property protections permitted under South Korean criminal law, as convictions climb, trade in virtual property continues to grow rapidly.²¹⁹

However, the Korean experience has a dark side: the lack of explicit property protection for virtual property has resulted in endless antitrust and consumer protection litigation against environment creators on the one hand, and suits seeking injunctions against the sale of virtual property by owners of virtual property on the other. In 2001, software giant NCSoft successfully petitioned the Korean government for an executive determination that Clause 16 of its End User License Agreement, which banned ownership in virtual property, was not a violation of the antitrust laws.²²⁰ Sale of virtual property remains legal, while ownership remains either ambiguous or located in the virtual environment creator.²²¹ An advocacy group, the Online Consumers' Coalition, filed a complaint against NCSoft with South Korea's antitrust regulatory agency to establish rights in virtual property.²²²

²¹³ *Id.* at 21.

²¹⁴ *Id.* at 33.

²¹⁵ *Id.*

²¹⁶ Ward, *supra* note 172.

²¹⁷ Hwa-Gyung Yoo, *Ten Thousand Teenagers "Game Criminals"*, MUNWHA-ILPO (SOUTH KOREAN CULTURAL DAILY), Feb. 27, 2004, at 10 (copy on file with author).

²¹⁸ *See id.*

²¹⁹ Unggi Yoon, Research on Legal Policy of MMORPG-Item Cash Trade (Dec. 13, 2004) (unpublished manuscript, on file with author). Unggi Yoon is a judge on the district court of Pusan, South Korea. Judge Yoon's research examined 480 convictions for theft of virtual property under South Korea's Enhancement and Protection of Telecommunication Law, which applies to virtual property theft. *Id.*

²²⁰ *See, e.g.*, Home Page of Unggi Yoon, <http://www.lovol.net> (last visited Feb 26, 2005) (Korean language website). NCSoft is now being investigated for antitrust violations. *See* Posting of Dan Hunter to Terranova, http://terranova.blogs.com/terra_nova/2005/01/korean_consumer.html (Jan. 8, 2005).

²²¹ *See* Unggi Yoon, *supra* note 219, at 55.

²²² *See* Hunter, *supra* note 220.

We can draw three conclusions from the foregoing analysis of the nascent Chinese, Taiwanese, and Korean law of virtual property. First, as virtual property gains currency across the world, the number of people invested in this kind of property will rise drastically. Second, the law of virtual property creates serious investment incentives for the inhabitants of virtual worlds, who will have their choice of legal regimes to govern their property as such structures are created in multiple countries. Finally, as noted from the Korean example, lobbying by organized industry can be expected to attempt to wipe out virtual property; if it succeeds, subsequent abuses of the resulting monopoly position can be expected. The United States should therefore profit from these comparative examples and craft moderate protections for virtual property, in order to remain competitive, protect valuable allocations of resources, and limit the potential for abuse.²²³

IV. CHALLENGES AND RESPONSES

Thus far, this article has shown that much important code mimics real world objects and spaces by design; that the common law of property offers insights into the value of private property; and that an account of a property anticommons explains why a system akin to the common law of property would do a better job than intellectual property of regulating virtual property.

This section will discuss several challenges to the virtual property model. One criticism is so important that it must be addressed up front. A common criticism leveled at the theory of virtual property is that there is no “there” there. That is, there is nothing tangible for us to talk about, so property law cannot apply.

However, the legal existence of property rights has little to do with tangibility. An interest in a timeshare, or in airspace is intangible. The right to kill this beaver but not that one is intangible. The law of property has not shied away from recognizing rights in bank account numbers, personal characteristics, or in developing news stories – all intangibles.²²⁴ Property law is an allocation system that solves certain problems. If those efficiency problems exist online, they can be potentially resolved by applying the insights of property law. Moreover, even though the resources discussed here are intangible, by design they have characteristics of tangibility: rivalrousness,

²²³ Additionally, there is a concern that dispute selection will skew the law in this area. Thus far, the only case filed in a major virtual property dispute, *Mythic Entertainment v. Black Snow Interactive*, was dropped prior to trial for failure to prosecute by the virtual property holder. See David Becker, *Game Exchange Dispute Goes to Court*, CNET, Feb. 7, 2002, http://ecoustics-cnet.com.com/Game+exchange+dispute+goes+to+court/2100-1040_3-832347.html.

²²⁴ Ward, *supra* note 172 (“It’s certainly possible to steal intangible property. It’s possible to steal any form of property right which is not represented by tangible objects In law a bank account is a credit balance. It’s not a pile of money”) (quoting Dr. Robert Leng, University of Warwick).

persistence, and interconnectivity. To the extent that virtual property shares the legally relevant characteristics of real world property, it is not a stretch to state that common law property values may have valuable insights to contribute to the regulation and protection of online use rights.

The following sections address three additional sets of challenges: (1) criticisms from economics; (2) criticisms from law; and (3) criticisms from the technology industry that creates virtual environments.

A. *Criticisms from Economics*

An economist might ask, so what? All that is being said here is that certain uses of virtual "property" are devalued because you have to buy a license rather than hold a use right in some form of online fee simple. Why won't people just pay less for the fewer uses that they do get? After all, each of the virtual objects and environments I describe already exist, and people are already sinking huge amounts of money into property-like use rights on the internet. ICANN is a (moderate) success.²²⁵ Virtual environments have inhabitants numbering in the tens of millions. Isn't this a success story?

The "discount" theory is not a strong criticism because the costs imposed by the failure to recognize virtual property are transaction costs, not merely value allocated between the parties. Transaction costs (or, if the deal does not go through, deadweight loss) are pure social waste. Failure to recognize virtual property raises both negotiation and search costs for third parties.²²⁶ Idiosyncratic contractual burdens on property require third parties to engage in expensive searches of the contractual limitations that burden their proposed purchase.²²⁷ And the existence of idiosyncratic contractual burdens on property not only hampers one transaction, but every transaction, because buyers will have to ensure that an idiosyncratic burden does not appear in their particular purchase.²²⁸ Thus, the costs of contractual and non-standard burdens on property extend beyond the immediate transaction, and raise transaction costs across the board.²²⁹ Turning to negotiation costs, we again see that resources could be locked into low-value uses if parties exercise overlapping rights to exclude.²³⁰ In Demsetz's terminology, there is always a threat that pre-existing rights holders will block an emergent property form, not because they wish to make use of it themselves, but because they worry that the emergent right might threaten their immediate profit.²³¹

²²⁵ See discussion *supra* Part III.B.

²²⁶ See Merrill & Smith, *supra* note 12, at 7-10.

²²⁷ *Id.*

²²⁸ *Id.* at 26-27.

²²⁹ *Id.* at 27-30.

²³⁰ Heller, *supra* note 13, at 629-30.

²³¹ DEMSETZ, *supra* note 83, at 107-10.

B. *Criticisms from Law*

The possible challenges grounded in legal thought are too many to be dealt with succinctly; several of the most important are discussed here. The first criticism addressed is institutional, and questions why common-law courts, rather than legislatures, ought to deal with threats to emergent virtual property interests. The second is practical, and asks why we need a system of property, when contract might be a valid substitute. The third is philosophical, and discusses the argument that legal reasoning about property is essentially transcendental nonsense. The fourth criticism draws from rights-based discourse, and deals with the idea that propertization might conflict with other valuable rights – such as the freedom to speak – that exist online.

1. Institutional Arguments: Why Common Law Courts Should Adjudicate Emergent Virtual Property Interests

An important challenge to my analysis is why and whether it is necessary to turn to the common law at all. After all, if some forms of this problem are solvable by statute, why not lobby Congress, or state legislatures, to enact rules that limit anticommons problems in internet intangibles?

Whether virtual property is protected by common law or by statute is, in the main, unimportant. Perhaps the law will evolve first as a function of the common law, and after due reflection, as statute. But in the meantime, we still live in a common law regime, and in the absence of statute, courts must decide disputes. It would be an abdication for a court to refuse to adjudicate a virtual property claim merely because no statute exists. Thus, common-law analysis of these questions is not optional. Cases applying property law to the internet are an increasing and increasingly important phenomenon.²³² To decide these cases, as applied to what is admittedly a foreign medium, courts should have a clear grounding in what property law will do in virtual spaces. Moreover, as we have discovered, virtual property problems are handled quite nicely by rules that courts are already familiar with. Thus, there is an argument from institutional competence despite the fact that courts often consider themselves intruders in virtual spaces.

There is an even stronger argument for resolving questions of use allocations on the internet by reference to the common law of property. Contract and property have evolved to balance each other. The law of contract permits parties to realize the value of idiosyncratic and personalized utility in the form of trades. The law of property restricts that ability insofar as it locks

²³² See, e.g., *eBay v. Bidder's Edge*, 100 F. Supp. 2d 1058 (N.D. Cal. 2000) (enjoining defendant from using an automated querying program that aggregated information from plaintiff's web site based on trespass); *CompuServe v. Cyber Promotions, Inc.*, 962 F. Supp. 1015, 1022 (S.D. Ohio 1997) (holding that defendant's sending of spam to plaintiff's system after plaintiff demanded that the defendant cease constituted a trespass to private property); *Intel Corp. v. Hamidi*, 71 P.3d 296, 299-300 (Cal. 2003) (declining to find an action in tort for trespass to chattels based on defendant's mass emailing to plaintiff's email system).

high-value property into low-value uses. Thus, the question of “why apply the common law of property to the internet?” makes about as much sense as the question “why apply the common law of contract to the internet?” The answer is that both are needed.

Finally, there is little reason to think that the United States will reach an effective legislative solution to the virtual property problem, because the intellectual property lobby has proven deeply effective. Under the public choice version of events, most clearly expressed by Saul Levmore, pre-existing rights holders should be expected to lobby institutions for laws that take or stifle emerging property values.²³³ Intellectual property holders have proven experienced lobbyists – especially as relates to the shifting cost-benefit possibilities of the internet. Congress’s perennial extension of copyright, and its expansion of private subpoena capacity to force ISPs to breach the anonymity of users, are just two examples.²³⁴ In the virtual property context, such lobbying efforts are already underway.²³⁵ When an identifiable, small, and wealthy group (like the holders of intellectual property) seeks legislative action against a disorganized, inchoate, and dispersed majority, the former can be confidently expected to prevail in the legislature. Thus, to the extent that these rights will emerge in the United States, they will probably do so as a function of the decisions of the courts.²³⁶

2. Contract Arguments: Why Contract Is Not an Adequate Alternative Route to Achieving the Benefits of Property Protection

Another common objection to a theory of virtual property is that it is unnecessary because contracts are available to allocate the benefits of the resources between a user and the creator of a virtual environment. But, just like the “discount” argument above, this objection misses the point entirely. Contracts only allocate costs and benefits between the parties to the contract. Property law balances the benefits of personalized transactions against the search costs imposed on *third parties* seeking to purchase such resources. Thus, for example, if person A agrees, by contract, to let person B use his wristwatch on Monday mornings, all other prospective purchasers of wristwatches must now be on the lookout for Monday-morning use agreements.²³⁷ Their costs go up.

²³³ See Levmore, *supra* note 98, at 188-91.

²³⁴ See, e.g., Digital Millennium Copyright Act, 17 U.S.C. § 512 (1998).

²³⁵ Software giant NCSoft has petitioned the government of Korea to eliminate virtual property rights by statute. See, e.g., Posting of Dan Hunter to Terranova, http://terranova.blogs.com/terra_nova/2004/04/china_virtual_p.html (Apr. 28, 2004); Home Page of Unggi Yoon, *supra* note 220.

²³⁶ It is perhaps telling that China, which lacks a developed intellectual property lobby (perhaps as a result of the failure to enforce against pirates, although cause and effect are difficult to determine), has provided extensive protection to virtual property interests.

²³⁷ See Merrill & Smith, *supra* note 12, at 26-27.

It is important not to take this argument too far, as justifying a repudiation of all contracts because of higher search costs for third parties. Rather, the goal is a balance between the frustration costs involved in not allowing people to create individualized transactions, and the search costs imposed on third parties by governing high-value resources by contract.²³⁸ This balance cannot be accomplished by a regime of contract alone.

Second, and similarly, the law of contract is ill-suited to enabling downstream sales. Under such a system, a potential downstream buyer would hold their “property” pursuant to a chain of bilateral contracts, or sub-sub-licenses. This would be a return to full subinfeudation – the practice of requiring a personal relationship between the buyer and original rights-holder in land, which was the hallmark of the feudal property system.²³⁹ If a prospective buyer of any property – virtual or otherwise – is required to check the terms of each upstream contract to which the object has been subjected, search costs again rise.²⁴⁰

3. Legal/Philosophical Arguments: Property as Transcendental Nonsense

There is another challenge that relates to all legal theories of property. The challenge is that legal reasoning consists of transcendental nonsense intended to justify the actions of courts.²⁴¹ Under this conception, the idea that something is “property” because it has value is entirely circular – after all, if a court were to not protect it, it would have no value, and would not be property.²⁴² As Felix S. Cohen explained in his critique of trademark law:

The circularity of legal reasoning . . . is veiled by the “thingification” of *property*. Legal language portrays courts as examining commercial words and finding, somewhere inhering in them, *property rights*. It is by virtue of the property right which the plaintiff has acquired . . . that he is entitled to an injunction or an award of damages. According to the recognized authorities[,] . . . courts are not *creating* property, but are merely *recognizing* a pre-existent Something.²⁴³

Certainly, Cohen’s criticism seems damning to this project, which is an unabashed attempt at reification – “thingifying” a class of resources so that they may be efficiently traded and used. The intangibility and emergent nature of virtual property make it especially vulnerable to arguments that any attempt to describe its “existence” is philosophical nonsense.

²³⁸ See *id.* at 38. (“From a social point of view, the objective should be to minimize the sum of measurement (and error) costs, frustration costs, and administrative costs.”).

²³⁹ See Robinson, *supra* note 127, at 1480 n.111 (discussing costs of subinfeudation).

²⁴⁰ See Merrill & Smith, *supra* note 12, at 26-27.

²⁴¹ See Felix S. Cohen, *Transcendental Nonsense and the Functional Approach*, 35 COLUM. L. REV. 809, 820 (1935).

²⁴² *Id.* at 815.

²⁴³ *Id.* (emphasis in original).

This article does indeed describe what virtual property is so that it may be identified, sold, and protected. But by defining the project of this piece, it is saved from being Cohen-style Nonsense. Virtual property ought not to be protected merely because it is property – although that is true, it is indeed circular. Rather, virtual property ought to be protected because it represents the *best* way of splitting up use rights so as to cause people to use it efficiently. That is a different “because”. Recognizing that a set of use rights creates efficient use incentives, and thus that the best set of use rights ought to be packaged, protected, and sold, is a reason for the protection of property that operates by reference to how humans act.

Cohen explicitly recognizes this when he establishes a theory of functionalism, which examines the effects of legal regimes rather than their legal “essence”:

If courts, for instance, should prevent a man from breathing any air which had been breathed by another (within, say, a reasonable statue of limitations), those individuals who breathed most vigorously and were quickest and wisest in selecting desirable locations in which to breathe (or made the most advantageous contracts with such individuals) would, by virtue of their property right in certain volumes of air, come to exercise and enjoy a peculiar economic advantage. . . .²⁴⁴

Cohen’s arguments therefore strongly support this article’s project: rather than focusing on formalist conceptions of property (usually expressed in the argument that virtual property cannot be property because it “isn’t real”), this article considers the effect the laws have on the incentives of people to make productive use of the resources.

Finally, the reification proposed in this article is not the creation of a separate legal regime. Rather, it is an argument that courts ought to apply common-law property doctrines to certain online resources, because people will make better use of those resources if they are packaged in a given fashion. The law of property has often resisted creating new forms of legal rights – for example, temporally fragmented rights like condominiums took a long time to develop (although, eventually, they did).²⁴⁵ But the law of property has never shied from protecting emergent cost-benefit possibilities for resources developed by technology – as new ways to use resources are created by technology, the common law has stepped in and given the emergent cost-benefit possibility the time to find its feet in the form of a political constituency that will protect it from agency influence.²⁴⁶

²⁴⁴ *Id.* at 816.

²⁴⁵ See, e.g., Mark D. West & Emily Morris, *The Tragedy of the Condominiums: Legal Responses to Collective Action Problems After the Kobe Earthquake*, 51 AM. J. COMP. L. 903, 904 (2003) (describing condominium property in general and its effects on collective action problems).

²⁴⁶ See, e.g., Kurt M. Saunders, *A Crusade in the Public Domain: The Dastar Decision*, 30 RUTGERS COMPUTER & TECH. L.J. 161, 176 (2004) (discussing this concept in the context

4. Rights-Based Discourse: Property and Freedom of Speech

A final challenge to the model of virtual property is the claim that property interests on the internet threaten valuable "rights." This challenge usually is raised in the context of free speech values.²⁴⁷ The fear is that if the internet becomes privatized, then the owner of private property may prevent others from speaking on certain topics.²⁴⁸ But this question does not apply to virtual property, because the argument conflates physical chattel interests – which may, if permitted, impermissibly generate controls on internet speech by denying access to the architecture of the internet itself – with virtual interests. As discussed above, the threat to free speech is the use of a physical chattel right to exercise control over all of the internet traffic that passes through the chattel. The threat to free speech posed by virtual property is more akin to the right to not be contacted in one's own house – much less corrosive than a censorship right over the means of communication.

Furthermore, interests in virtual property can enhance freedom of speech as well as restrict it.²⁴⁹ If speakers have web pages on which they can publish what they like (subject to defamation laws), then they can communicate their ideas. To take up the *Hamidi* case again, the problem was not that Hamidi could not speak: under the rubric of FACE-Intel (his group challenging Intel's employment policies), Hamidi could create a website and speak to fellow disgruntled employees.²⁵⁰ The problem was that he wanted to use Intel's email

of unpatented boat hull designs and the Supreme Court's decision in *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141 (1989)).

²⁴⁷ I use the term "free speech values," rather than discussing the First Amendment directly, because the actors are generally private when an owner of private property exercises legal rights to silence someone else from speaking on or through his property. While a claim that a state's complicity in permitting a cause of action to suppress speech (here a property cause, whereas famously in *New York Times v. Sullivan*, 376 U.S. 254 (1964), an action for defamation) might be successful, generally state action would be quite difficult to prove. See, e.g., *Universal City Studios, Inc. v. Corley*, 273 F.3d 429, 455 (2d Cir. 2001) (holding that the Digital Millennium Copyright Act was not an unconstitutional restriction of free speech).

²⁴⁸ For an excellent discussion of speech issues in virtual worlds, see Jack M. Balkin, *Law and Liberty in Virtual Worlds*, 49 N.Y.L. SCH. L. REV. 63, 73 (2005).

²⁴⁹ See Balkin, *supra* note 248, at 63 ("[M]any virtual worlds are becoming sites of real world and virtual worlds commerce. . . . To the extent that spaces are designed for and encourage buying and selling of real and virtual goods, the First Amendment will not shield game designers . . .").

²⁵⁰ See *Intel Corp. v. Hamidi*, 71 P.3d 296, 317-18 (Cal. 2003). There are other constraints as well. A company that squelches criticism while only permitting positive content may run afoul of the securities laws, just as boiler-room statements that raise stock-price are subject to enforcement. This dynamic most often plays out in chat rooms, as part of the SLAPP (strategic litigation against public participation) phenomenon of the dot-bust, during which companies sued posters to stock chat rooms in the hope of stopping criticism of the management. Such strategies have generally not been successful for the companies,

accounts to do it. If other people are entitled to stop me from speaking on their virtual "real estate," conversely, I am able to say what I like on mine. It is not clear, therefore, that using a private property paradigm on the net significantly decreases the ability to communicate ideas.²⁵¹ At the least, it may increase the ability of people to make statements on their own property (which is accessible by the world if they wish it) as much or more than it decreases their ability to speak against infrastructure owners.

5. The Role of Intellectual Property in Virtual Property

One extremely important caveat: recognition of virtual property rights does not mean the elimination of intellectual property. The owner of virtual property does not own the right to copy it. We understand instinctually and logically that ownership of a thing is always separate from ownership of the intellectual property embedded in a thing. Ownership of a book is not ownership of the intellectual property of the novel that the author wrote. The book purchaser owns the physical book, nothing more. Ownership of a CD is not ownership of the intellectual property in the music. The music purchaser owns that copy of the music, nothing more. In precisely the same fashion, ownership of virtual property does not threaten the intellectual property interest held by the creator of the property. It protects the interests of the purchaser of the object. An owner of virtual property owns the same rights that the owner of a book does.

Thus, intellectual property need not conflict with virtual property. In fact, the two, if well-balanced, will complement each other. We already have very successful regimes balancing these interests. The first-sale doctrine, for example, minimizes transaction costs by building the value of future sales into the cost of the item the first time it is sold.²⁵² Thus, the creator of the intellectual property cheaply realizes all of the potential value of future sales of its intellectual property without having to monitor a long chain of potential

and it is my sense that this constraint operates over any attempt to restrain what people say to criticize a company. Note, however, that not even the SLAPP cases say that the defendant had a right to use the company's own equipment to spread the dissenting view. See Joshua R. Furman, *Cybersmear or Cyber-SLAPP: Analyzing Defamation Suits Against Online John Does as Strategic Lawsuits Against Public Participation*, 25 SEATTLE UNIV. L. R. 213, 253 (2001).

²⁵¹ This analysis does not solve the problem of content regulation by backbone communicators. But given the packet-switching decentralized nature of the flow of information over the system, a decision by an infrastructure contributor to block would be unsuccessful. Moreover, an infrastructure provider blocking data would likely cause common carrier litigation that, my sense is, the infrastructure owner would lose. But the emergence of common carrier law does not obviate private property; it modifies it in a limited circumstance.

²⁵² See R. Anthony Reese, *The First Sale Doctrine in the Era of Digital Networks*, 44 B.C. L. REV. 577 (2003) (arguing that technology alters the first-sale calculus where easy duplication alters the affordability and availability calculi).

downstream sales. Similarly, virtual property will raise the value of intellectual property. Take the example of websites: clear-cut rights in websites have fostered serious commercial investment in content for the websites. That obviously benefits creators of content. Similarly, real estate in a virtual world has real value, in that the creator of the software that generates the virtual world underlying the virtual real estate will profit. Thus, the value of intellectual property is not a reason to discard virtual property rights.

C. *Criticisms from Industry*

While the question of virtual property is an emerging topic for the law, it is an established and longstanding problem for industry designers.²⁵³ There are three basic arguments from industry. The first is that environment creators must maintain control over the environment, and that the need for such control is incompatible with private property interests.²⁵⁴ The second is that commodification of virtual objects will corrode other values – like the enjoyment of games – that people find valuable.²⁵⁵ The third is that propertization threatens community values.²⁵⁶ The following sections address these arguments from control, commodification, and community in turn.

1. The Argument from Control Is Not Persuasive Because the Need for Control Does Not Require the Prohibition of Property Interests

The first criticism from industry is the argument that ownership interests in virtual property limit the industry's ability to control the online resources they manage.²⁵⁷ Thus, for example, an ISP might argue that a property right in email accounts would overly constrain its ability to stop people from engaging in bad acts via the ISP's email services. Virtual world holders often argue that their need to develop and expand the virtual environment necessitates locking out private property interests.²⁵⁸

Commentators often use the problem of speculation in virtual property as a way of expressing the control argument.²⁵⁹ What happens if the actions of the environment holder in some way damage or devalue the virtual object in which

²⁵³ See Richard A. Bartle, *Virtual Worldliness: What the Imaginary Asks of the Real*, 49 N.Y.L. SCH. L. REV. 19 (2005) (describing industry design standards for virtual worlds). Dr. Bartle is one of the fathers of modern virtual worlds, having designed the early text-based virtual environments.

²⁵⁴ See Richard A. Bartle, *Bartle of Virtual Property* 9-11 (The Themis Group April 2004), available at <http://www.themis-group.com/uploads/Bartle%20of%20Virtual%20Property.pdf>.

²⁵⁵ See Bartle, *supra* note 253, at 16, 23-25.

²⁵⁶ Bartle, *supra* note 254, at 13-15; Bartle, *supra* note 253, at 23-25.

²⁵⁷ Bartle, *supra* note 254, at 9-10.

²⁵⁸ *Id.* at 9.

²⁵⁹ *Id.* at 9-10 (arguing that virtual property would render virtual world holders liable for obsolescence).

a user holds a property interest?²⁶⁰ For example, after parties invest in valuable virtual real estate, the environment developer might create new virtual real estate in which rival commercial hubs are built. Or, another example: if a given virtual object carries a social cachet due to its rarity, such that possession of the virtual object is desired, would the developer be liable if the rarity of the object changed? Finally, what about pulling the plug – industry's fear is that the creator of a virtual world would be somehow required to maintain that virtual world in perpetuity because of still-existing property on its servers.²⁶¹

But these questions are not new to the law, nor do they inevitably lead to liability for virtual world creators. Speculation in land, for example, is not always a wise return: new developments can always devalue prior investments. Any owner of a shopping mall knows the threat of a newer establishment. Real estate developers, however, are not constrained – absent contractual non-competition clauses – from building competing real estate by virtue of the fact that they sold prior ones. Manufacturers artificially limit or expand supply of goods all the time, knowing that the resulting changes in value due to scarcity will affect prior purchasers. Zoning laws routinely take away from or enhance the value of property without compensation to or payment from the owner. Pulling the plug on a virtual world certainly deprives the inhabitants of the value of their holdings, but in no greater fashion than bankruptcy deprives equity holders of the value of their stock: this is not a reason to eliminate private property holdings in stocks. Even the strongest case for control – that of government – cannot justify the prohibition of private property. Imagine if a state government argued that its need to secure an orderly public life compelled it to abolish private property.

The need to foster development, limit speculation, control losses of property holders, or secure public life do not each vitiate the value of private property, and the efficiencies private property engenders. These principles may provide some limits to rights in virtual property – as they do to real property – but that is the most they can do. The criticism from control does not justify eliminating private virtual property rights entirely.

Moreover, managers are not required to give up all hope of usefully managing the resources if property rights in virtual property are recognized. Private ownership has never meant complete freedom from control, even from other private entities. Use restrictions in the form of easements and covenants have always been available for managers of property plots that are divided among private owners. Further, some restrictions on virtual property are unlikely to be resisted, since they will increase the value of each person's holdings. Like a real estate subdivision, a virtual property holder may receive some return on the restriction in their use of the property. For example, many

²⁶⁰ *Id.* at 10.

²⁶¹ This has already occurred. On the day that a person purchased \$3,000 worth of virtual property from another user on eBay, Electronic Arts pulled the plug on Earth and Beyond, an entertainment-oriented virtual world. *See id.* at 12.

homeowners' associations forbid their members to hang their wash out on the line, which increases the value of each member's property. The key is that the property rights are not absolute and can be modified, both in the virtual and real space contexts.

2. The Argument from Commodification Is Not Persuasive Because the Items in Question Are Already Commodities

Commodification is less of an issue for virtual property, such as email addresses, URLs, etc., that are not bound up in tightly-knit social groups. But it is important not to dismiss the commodification argument too easily. Many virtual worlds have a sense of distance from the real world – and that is precisely what people in these virtual worlds enjoy. The fear of these small internet communities is that commodification would corrode other values that virtual world denizens enjoy.²⁶²

The argument generally states that commodification by itself cheapens the object commodified.²⁶³ For example, studies comparing the blood donation market in the United Kingdom (where such donations are non-compensated), to similar markets in the United States (where compensation for donation is permitted) showed that there were costs to commodification.²⁶⁴ Blood giving dropped when people perceived it as an economic activity, rather than a donative activity.²⁶⁵

This sort of argument works when there is commodification of a previously non-commercial source, like body parts, or blood. The idea is that the commodification not only cheapens the new commodity, but also imposes costs on related objects (i.e., if sale of blood is accepted, sale of transplanted organs or children may follow).²⁶⁶ However, the slippery slope argument fails to the extent that the objects dealt with are already commodities. The virtual objects discussed here – virtual houses, tools, clothes, etc. – are already commodities. They are the objects of encouraged intra-world trade.

²⁶² See *id.* at 16.

²⁶³ There is a third form of argument, which focuses on the threat real world laws (like taxes) pose to the fun of games. See, e.g., Edward Castronova, *The Right to Play*, 49 N.Y.L. SCH. L. REV. 185 (2005). I do not focus on this objection, since it is not really an argument from commodification, except to note that the law has not had a hard time dealing with economic gains from games. Generally, the rule is that if a poker player, football player, or vendor of virtual property cashes out his gains in the form of real cash, he should tell the IRS.

²⁶⁴ See Margaret Jane Radin, *Market-Inalienability*, 100 HARV. L. REV. 1849, 1856 (1987).

²⁶⁵ *Id.* at 1913-14.

²⁶⁶ See, e.g., Michele Goodwin, *Altruism's Limits: Law, Capacity, and Organ Commodification*, 56 RUTGERS L. REV. 305, 318 (2004) ("According to a cadre of market opponents, permitting organ sales is akin to allowing commercial forces to dictate the value of human flesh An open market in organ sales, they suggest, would lead to unpleasant collateral results").

Commodification has already occurred in the most important sense – virtual property is already packaged so as to be usefully traded. Validating the already tacitly accepted practice of exchanging real world currency for virtual objects is unlikely to do more damage.²⁶⁷

3. The Argument that Virtual Property Threatens Online Communities
Begs the Question as to Whether We Should Improve Communities by
Lock-In Effects

Another argument is that private property threatens community values in online communities, and ought to be prohibited as a result.²⁶⁸ Indeed, property interests do give people an option of exit (i.e., they could cash out their interest and leave the environment); conversely, blocking property interests is a way to lock people into communities. But it is not at all clear that the right of exit provided by propertization is a bad thing.

Property theorists have noted that early “colony-style” groups often prohibit private property in land. Robert Ellickson wrote of communal property arrangements in Hutterites, Kibbutzim, Mormons, and early American pioneer settlements.²⁶⁹ Each of these small colonization communities (of under 1,000 residents) initially experimented with negating private property in favor of communitarian ideals.²⁷⁰ The concept was that everyone on the expedition was “in it together,” while the returns from the colonization were unclear at the outset.²⁷¹ Under circumstances such as colonization, where the eventual gains made by the group could not be apportioned ahead of time, Ellickson argued that such forms of property ownership might even be optimal as a crude form of insurance.²⁷²

The parallel to the colonization of virtual space is startling. The specific experience of a virtual community has been likened to a community property interest.²⁷³ In order to protect this community interest, private property is, initially, prohibited.²⁷⁴ But as small groups expand and become connected to other groups, social controls (in the examples provided by Ellickson, the Hutterite religious credos, or the specific secular ideology of the kibbutzim)

²⁶⁷ See Interview with Steve Salyer, *supra* note 72 (discussing the practice of virtual world creators in tacitly permitting trades).

²⁶⁸ See Bartle, *supra* note 253, at 24-26 (arguing that the need to protect community values requires and justifies the ability to obliterate accounts and characters at the environment creator's will).

²⁶⁹ Ellickson, *supra* note 27, at 1346.

²⁷⁰ *Id.* at 1346-47.

²⁷¹ *Id.* at 1354-60.

²⁷² *Id.* at 1341-44.

²⁷³ Castronova, *supra* note 263, at 186 (“The essence of the argument is that the play-station of a virtual world is a common property resource, and is therefore subject to long-run erosion effects (the ‘Tragedy of the Commons’).”).

²⁷⁴ *Id.* at 187-89.

become attenuated.²⁷⁵ One of the most important such social controls, in Ellickson's communities, was a rule against private property, which constrained exit.²⁷⁶ Just so with virtual worlds now, where the restrictions on alienation of virtual property limit exit and reinforce strong top-down control by virtual world designers.²⁷⁷ In addition, the early insurance benefits of communitarianism in a colony-style enterprise are replaced by the value of selling to markets as the gains from the colony are realized in the form of developed property.²⁷⁸ If Ellickson's predictions hold true, what we are currently observing in virtual worlds is the natural movement from the communitarian/entrepreneurial model to the private property model.

This article does not advance the claim that nothing is lost in the shift from community to private property models. Likely something is. But it is important to realize that an overarching system of private property does permit communal property groups to continue to exist, if the community is able to make its social controls stick. The contrary is not true: the elimination of private property leaves, by definition, no room for private property.

D. *The Objections from Economics, Law, and Industry Do Not Convincingly Support the Prohibition of Private Property*

The challenges from economics, law, and industry – although important – do not eliminate the efficiency gains of regulating virtual property under the common law of property. A property approach will lower search and negotiation costs, and will generate social wealth and create incentives to use important online resources well. Further, the common law of property is an already-developed institution with which courts are familiar. Once courts realize that they already have the tools to recognize and protect virtual property, they will do so following the incremental, iterative process of the common law. This process will have the additional benefit of protecting emergent rights in property against interest group lobbying by intellectual

²⁷⁵ Ellickson, *supra* note 27, at 1352-54. Ellickson delineates the strict social controls necessary to preserve communitarian values in property. These are strikingly similar to the following statement of the practice of such controls:

I knew that people might break the unwritten rules that protected the virtual world from the real one. Some indeed did so. Individually, they were usually easy to deal with; I would speak to them and explain the problem: it was unfair to the other players if they behaved however they were behaving, and please would they stop. Most understood and obliged. Those that did not were reminded that . . . I could therefore obliterate [their account] entirely if I so chose. Some, very few, I did obliterate entirely.

Bartle, *supra* note 253, at 24 (footnotes omitted).

²⁷⁶ Ellickson, *supra* note 27, at 1352-54.

²⁷⁷ See Noveck, *supra* note 57, at 5 ("Must the creators [of virtual worlds] be free to reign within the confines of the virtual world, or should the law prevail over the virtual leviathan?").

²⁷⁸ Ellickson *supra* note 27, at 1354.

property holders until the beneficiaries of virtual property become choate and self-aware enough to defend their interests independently.

The standard industry arguments against virtual property are not convincing. Control of virtual property is possible without prohibiting private property interests. Commodification is not a threat because the virtual objects concerned are already commodities. Finally, the argument that virtual property threatens online communities begs the question: should we lock people into communities to improve their incentives to get along with other people in the community, or should we permit people to sell their property as a right of exit and leave for other communities in which they might be more comfortable?

CONCLUSION

Property law has had a decade-long problematic relationship with cyberspace. Although the language is full of descriptions of cyber-"space," chat "rooms," virtual "worlds," and internet "addresses," legal academics have consistently rejected these descriptions as having no useful content. And while the place and space language is routinely used by courts and lawyers, again, legal academics have either supported the place metaphor as merely psychologically useful, or have completely rejected it as a bad analogy.

I propose a different answer: cyberspace is neither a bad analogy nor a metaphor. Cyberspace is a descriptive term. It describes the degree to which some kinds of code act like spaces or objects. Taking this approach frees us to apply the developed body of property law to assist in solving inefficient allocations of rights on the internet. It also provides us with a useful tool for separating the intellectual property interest from the property interest in code. And finally, it provides a useful tool for restraining abuses of contract online.

However, getting virtual property right is not important solely because of efficiency concerns. This kind of property is also very important to develop for the social, medical, commercial, and cultural changes it can allow. Virtual worlds are fully contextualized social software with the ability to communicate information to humans far faster than the world wide web. We began this change when the telephone was replaced by the internet. We will finish it when we protect the building blocks of virtual worlds.