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Network Effects and the Emerging Doctrine of Cybertrespass

Daniel Kearney†

INTRODUCTION

Recent years have seen a number of legal actions to block access to electronic networks and web sites. A phone company has sought damages for a teenager's unauthorized access of its network.1 An ISP has gone to court to block junk email, or "spam," from reaching its subscribers.2 In eBay v. Bidder's Edge3—the most important case of this kind—eBay successfully sought an injunction from a federal court to stop Bidder's Edge from using automated means to collect auction data from eBay's site on the ground that it was tying up eBay's server and bandwidth capacity.

In each of these cases, courts applied the traditional common law tort of trespass to chattels to the modern domain of information technology. Academic commentators have criticized this new doctrine of "cybertrespass" and, in particular, the eBay ruling. One author decries the court's creation of "a broad property right without ensuring that the policies on which analogous rules are based translate equally well into this new context."4 An amicus brief filed in the appeal of the eBay case by a group of law professors claims that the district court's ruling "threatens the very foundations of the Web."5 Another author calls the court's argument a "sham theory."6 To proponents of the norm of open access, the eBay decision is both bad policy and bad law.

This Note argues that eBay was rightly decided and that giving sites like eBay a right to exclude will tend to maximize the social value of the Internet.


3. 100 F. Supp. 2d 1058 (N.D. Cal. 2000).
5. Brief of Amici Curiae in Support of Bidder's Edge at 19, Bidder's Edge, Inc. v. eBay, Inc., No. 00-15995 (9th Cir. filed June 22, 2000) [hereinafter Amicus Brief of Law Professors]. The brief was signed by many of the most prominent names in the field of cyberspace law, including Yochai Benkler, Dan Burk, Julie Cohen, William Fisher, Mark Lemley, Lawrence Lessig, Maureen O'Rourke, Pamela Samuelson, and Jonathan Zittrain.
This is because online auctions—like much activity on the Internet—are characterized by strong network effects. Network effects arise whenever a good’s value is dependent on the number of other people using that good or a complementary good. A telephone, for instance, is only worth something when someone else owns one, or when you expect someone else to own one—and the more people there are who own one, the more valuable a phone is. The same holds for online auctions: it is only worth placing an item up for auction if the site can promise to deliver bidders. From the seller’s perspective, the addition of a bidder makes an auction site more valuable; from the buyer’s perspective, the addition of a seller adds value. In short, when a buyer or seller chooses to participate in the auction, she creates real external benefits—positive externalities—for the existing user base. eBay, as owner of its auction market, can internalize these externalities, and thus has an incentive to expand the market to its optimal size. For reasons closely connected to this feature of networks, I argue that eBay should be granted a right to exclude.

By focusing on network effects, this Note attempts to avoid a nettlesome problem in the debate over eBay: the lack of shared criteria for what constitutes a “good” rule of cybertrespass. The critics of eBay resist the idea that the issue is one of “rights.” Cyberspace is a realm of indeterminate entitlements, so any mention of rights or “consent” presupposes the question to be answered—namely, where should entitlements lie? The metaphor of the Internet as a “place,” in the critics’ view, is similarly without normative force. On the other hand, proponents of the eBay ruling are inclined to offer just such considerations in support of their view. There is, however, some agreement that utility-maximizing solutions should be preferred. Any utility-maximizing solution must account for the significance of network effects to the Internet.

Critics of eBay have failed to appreciate the significance of network effects to the eBay case and to the Internet generally. Most commentators have ignored the issue. At least one author has even argued that the presence of network effects cuts against a right to exclude. Only one commentator has understood

7. See Dan L. Burk, The Trouble with Trespass, 4 J. SMALL & EMERGING BUS. L. 27, 39 (2000) ("Couching the issue of access as one of consent frames the debate as a matter of contract, that is, a license to use property whose boundaries are already set.").


10. On the critics’ side, see Burk, supra note 7, at 52-53 (“An optimal regulatory standard, rather than imposing a blanket possessory exclusion, might provide for consideration of comparative harm, imposing liability where the harm from the use exceeded that attending exclusion.”); on the proponents’ side, see McGowan, supra note 9, at 374 (arguing that the true problem with utilitarianism is measurement).

11. In a leading article, Professor Maureen O’Rourke conflates the idea of network effects with the separate issue of whether eBay is somehow free-riding on the Internet’s norm of open access. See O’Rourke, supra note 4, at 615-16.
the threat that Bidder's Edge posed to eBay in light of network effects, but he views the harm as only to eBay and not to social welfare generally.

A clear rule of cybertrespass will maximize the efficiencies of networks such as online auctions. Trespass leaves little room for courts to balance harms and benefits in individual cases or to consider the public interest. Private bargaining can solve those problems more effectively. Critics of a right to exclude generally prefer "muddy" rules such as nuisance. In part, this grows out of an understandable desire to apply flexible rules to evolving technologies. But it is also motivated by a belief in the existence or the value of the digital "commons" and too much faith in the ability of judicial decision-makers to fully comprehend the economics of a particular dispute. The complexities of network effects are poorly suited to case-by-case judicial resolution. Balancing tests and other muddy rules not only leave private parties no basis on which to negotiate, but they will also often get networks-effects cases wrong.

I shall argue, in short, that a clear rule of trespass provides incentives for innovation and creation, enables private bargaining, and (paradoxically) may generate greater openness on the web. Part I outlines the technology that defines cyberspace and has figured prominently in cases of cybertrespass. Part II traces the development of the trespass to chattels tort as a rule of cybertrespass and discusses its application in the eBay case. Part III introduces the economics of network effects, examines their significance to eBay's online auction marketplace, and explains why criticism of the outcome of eBay is mistaken. Part IV argues that a right to exclude should apply to web sites generally. Finally, the Note argues that the trespass to chattels tort, as applied in eBay, offers a good bright-line rule of cybertrespass.

I. THE MECHANICS OF SPIDERING TECHNOLOGY ON THE WEB

A right to exclude is in a certain sense contrary to the Internet's norm of open access. Internet users can usually travel freely from web site to web site without having to log in or otherwise identify themselves. Sites sometimes use technological means to restrict access, but such restrictions are often minimal. Instances where sites seek to exclude access are comparatively rare. A number of sites, of course, charge subscription fees or require passwords to access their content, but this is not what most critics mean by exclusion. Concern generally arises only when sites resort to the law to block certain parties from


13. Professor Warner only briefly sketches out the dynamics of network effects in eBay. See id. at 136-37. While he recognizes that a rule of open access provides little incentive to develop business models that depend on network effects for their financial success, he gives little explanation why this is suboptimal from a social welfare standpoint. Id. at 137.

14. See, e.g., O'Rourke, supra note 4, at 620.

15. For a discussion of different aspects of exclusion, see McGowan, supra note 9, at 367-73.
accessing information that is otherwise publicly available.

The Internet also allows users to freely organize and publish information created by others. Often this is accomplished by "linking" to content elsewhere on the web. The top three English-language sites on the web, as of March 2004, were web "portals"—gateways, in essence, to information provided elsewhere on the web.\(^\text{16}\) Such portals organize a huge amount of information, systematize it, and allow users to link to web sites that have relevant information. Sites like the Drudge Report, one of the most visited news sites on the Internet, operate in much the same fashion: they exercise their editorial judgment in selecting news stories to which to link.\(^\text{17}\) In the same way, linking is a central part of the phenomenon of web logs (or "blogs"). In one sense, these sites appropriate information belonging to others; in another, by reorganizing existing information—by rationalizing it in some way—these sites very obviously create new information. In most instances a regime of open access benefits everyone. Content originators are generally happy to have their information disseminated as widely as possible, and information aggregators attract valuable visitors to their site. Consumers, meanwhile, get information tailored to their tastes.

But disputes over access and content ownership have arisen where aggregators employ a practice called "spidering" or "crawling," which allows the rapid gathering and organization of data from content originators.\(^\text{18}\) Sites that gather and distill large amounts of information—search engines such as Google or Yahoo, for example, or price comparison services such as MySimon—use software programs to comb through the Internet and collect data. These programs are known as "bots" or "spiders;" their activity is generally known as "crawling" or "spidering." Bots are capable of executing thousands of requests per minute.\(^\text{19}\) They typically request particular items of information (e.g., a web page) from a server, extract relevant information (e.g., the name of a product or its price), and sort the information into a database.

Spiders operate at varying levels of intrusiveness, depending on the type of information they are designed to gather. Price-comparison sites are generally interested in only a few pieces of information—product name and price, most importantly. Search engines such as Google are far more invasive. Because the entire web page is relevant, Google's spiders make stripped-down copies of web pages, place those pages on their own servers, and make them searchable.

\(^ {16} \) According to Alexa.com, the top English language sites were, in order, Yahoo!, the Microsoft Network, and Google. Top 500, Alexa Internet, Inc., http://www.alexa.com/site/ds/top_500 (last visited Oct. 4, 2004).


\(^ {18} \) A good summary of the technical workings of the Internet can be found in O'Rourke, supra note 4, at 567-74.

\(^ {19} \) eBay, 100 F. Supp. 2d at 1060-61.
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for users.

Where information is especially time-sensitive, bots often monitor sites periodically to ensure accuracy. Many price comparison sites operate in this manner, and in such cases, spidering is likely to be more intrusive. Because spiders often make a tremendous number of requests to the server of the site being indexed, they drain far more system resources than the average user. Spiders that only infrequently check information present less of a problem for sites. Google, for example, indexes most web sites only once a month.20

Spidering in effect allows other sites—known as information aggregators or indexers—to appropriate all of a site’s data and put it to another use. In many instances, these information aggregators are welcomed because they assist sites in broadcasting their content. For example, sites usually cooperate with search engines in order to get listed or categorized in an accurate way. Given the vastness of the Internet, the usual problem for web sites is not how to exclude users but how to be found by them.

At the same time, information aggregators present two problems for web sites. First, the high level of network activity involved in spidering may strain a site’s capacity. Spidering may slow down a site, making it less appealing and less profitable for the operator. Second, and more importantly, some information aggregators may use the data they gather in a way that is not consistent with the interests of the original site. For example, absent some kind of legal regime, an aggregator could copy the entire contents of an online newspaper and publish them on its own site. While this situation might be resolved by copyright law, similar instances of “adverse aggregation” do not always yield such clear legal solutions.21

Spidering can be especially harmful to sites characterized by strong network effects. Consider the eBay case, where spidering was the central issue. The regular user of eBay’s site is looking to buy or sell an item. She arrives at the site, gleans the information she is seeking, and leaves. By contrast, an information aggregator who engages in spidering automatically gathers all information from eBay’s site and republishes it on its own site. The aggregator thus risks becoming a competitor to eBay and eroding its network.

If a site wishes to block the operation of bots on its servers, it has a number of options. First, it can place an invisible software “tag,” known as a robot exclusion header, on its web pages to warn bots not to enter the site. Such tags are the cyberspace equivalent of “no trespass” signs, but they have no legal effect. Their effectiveness instead depends on an informal norm among bot

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developers to honor these tags. Many indexing sites—Google among them—employ bots that respect these tags. If a bot ignores a robot exclusion header, site administrators have a second option: they can attempt to identify the location, or Internet Protocol (IP) address, from which the bot’s activity originates. Once the IP address is identified, the site can block all further requests from it. Of course, this method of self-help presents several problems. For one, it is resource-intensive, requiring a great deal of vigilance on the part of site administrators. Second, it risks blocking legitimate requests that originate from the same IP address used by the targeted bot. Finally, a bot can readily evade the block by using proxy servers which mask the IP address from which its request truly originates. The process can easily become an endless game of cat and mouse.

II. The Trespass to Chattels Tort and the eBay Case

A web site needs no justification for using self-help to block bots. It may block IP addresses as freely as it may limit site access to holders of passwords. The site’s situation, before legal intervention, is very much that of the private landowner, with near absolute dominion over who may and may not access the site. The primary question for the law of cyberspace is whether a site may, for any reason, invoke a court’s aid in its attempt to exclude unwanted bots.

The problem does not arise very often. Despite the potential burdens of bots, sites generally welcome them: the benefits of inclusion in the indexed database are apparently greater than the harm of the extra server load. For small sites in particular, inclusion in a database is an important way to get greater exposure in cyberspace. A growing number of retailers even pay to have their products included in online price-comparison sites, and cases where companies have sued to block access are relatively few.

A. The Rise of Trespass to Chattels

In a series of cases beginning in the mid-1990s, courts developed a doctrine of cybertrespass. The main vehicle for this development is the common law tort of trespass to chattels. The choice is surprising, if only because the tort is an obscure one and had largely fallen into disuse before it was resurrected as a rule


23. The situation of a site that allows open access might more appropriately be likened to that of the private shopkeeper subject to public accommodations laws. But because visitors to a site come only as numbers, without race or sex, those laws have little practical relevance. But see Colin Crawford, Cyberplace: Defining a Right to Internet Access Through Public Accommodation Law, 76 TEMP. L. REV. 225 (2003)

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of cybertrespass. There is something ironic—and to some, infuriating—in the application of an obsolescent common law tort to the Internet.

The trespass to chattels tort has several elements at common law. A cause of action arises when a defendant intentionally engages either (1) in "dispossessing another of [a] chattel" or (2) in "using or intermeddling with a chattel in the possession of another." While mere dispossession may form the basis of an action, intermeddling, by itself, does not guarantee liability unless one of the following can also be shown: (1) that "the chattel is impaired as to its condition, quality, or value"; (2) that "the possessor is deprived of the use of the chattel for a substantial time"; or (3) that the possessor or some person or thing in which the possessor has a legally protected interest is harmed. Trespass to chattels thus chiefly differs from trespass in land in requiring this additional element of harm when there is merely interference with the use of a chattel. Harmless intermeddling alone cannot give rise to liability under trespass to chattels.

An early common law case illustrates both the chattel tort's basic scope as well as its broad allowance for self-help remedies. In White v. Twitchell, White took a pole from Twitchell without his permission and used it to erect a stage. After the stage was constructed, Twitchell realized that his pole had been used in the construction and removed it without telling White. When White later mounted the stage, the stage collapsed and White was injured. He then sued for damages. The court ruled that Twitchell was fully within his rights to reclaim the pole, even without notice to White, because White had committed a trespass in taking it. According to the court, "[t]he right of the defendant was absolute . . . . [The plaintiff] was, all the time, he continued in the use of the bar, as a part of his staging, but a tortfeasor".

The trespass to chattels tort, however obsolescent, had not fallen into total disuse in the years since White v. Twitchell. Courts have been called on to decide a chattel tort claim on a few occasions in recent years. But the chattel tort came to life when it was first applied to the domain of computer-related activity by the California Court of Appeal in Thrifty-Tel, Inc. v. Bezenek. In

25. See Burk, supra note 7, at 28 (describing trespass to chattels as an "obscure tort action"); see also Thrifty-Tel, Inc. v. Bezenek, 54 Cal. Rptr. 2d 468, 473 (Cal. Ct. App. 1996) (noting that "there is nary a mention of the tort in Witkin's Summary of California Law").
27. Id. § 218.
28. See Burk, supra note 7, at 28.
29. 25 Vt. 620 (1853).
30. Id. (emphases added).
31. See, e.g., Seaphus v. Lilly, 691 F. Supp. 127, 135 (N.D. Ill. 1988) (plaintiff alleged that defendants committed a trespass to chattels when they slashed the tires on the plaintiff's car and poured "foreign substances" into his gas tank); Wint v. Ala. Eye & Tissue Bank, 675 So. 2d 383 (Ala. 1996) (family of deceased man sued eye bank in conversion and trespass to chattels alleging that the bank had taken the man's eyes after his death).
32. 54 Cal. Rptr. 2d 468 (Cal. Ct. App. 1996).
Thrifty-Tel, a teenager and his friends acquired a secret access code with which they could gain entry to the switching system of a small telephone long-distance company. The youths dialed into the network numerous times in an attempt to crack a second authorization code that would allow them to make long-distance calls using the network. Although they never succeeded in hacking the code, the group managed to tie up a considerable portion of Thrifty-Tel’s network, and their efforts were detected by the company’s computer security system. The company sued for damages on a theory of conversion. On appeal, the court found liability on a theory of trespass to chattels, concluding that this afforded the more appropriate remedy.

Although the court recognized the novelty of applying the tort to computer-related offenses, it paid very little attention to the particulars. There was no need for direct physical touching of Thrifty-Tel’s property, according to the court, because the modern rule “recognizes an indirect touching or entry.” The court cited cases of trespass involving dust particles and smoke to support its view that “the requirement of a tangible has been relaxed almost to the point of being discarded.” “[E]lectronic signals,” in the court’s view, were therefore “sufficiently tangible” to give rise to a trespass action. The court engaged in no further discussion of the potential complications of applying the tort to electronic communications.

The trespass to chattels tort was later applied in a case involving the Internet. In Compuserve Inc. v. Cyber Promotions, Inc., an ISP sought to block junk email, or “spam,” on behalf of its customers and brought suit on a theory of trespass to chattels. The court agreed with the Thrifty-Tel court’s conclusion that electronic signals were “sufficiently physically tangible” to give rise to an action in trespass. The more troublesome question was whether Compuserve’s chattel suffered any harm—i.e., any diminution in its “condition, quality, or value” as is generally required in cases of intermeddling. The court found that Compuserve was harmed in two ways. First, since Compuserve’s equipment was only valuable insofar as it could serve the company’s customers, junk email diminished its value by tying up network resources. Second, the inundation of junk email directly caused Compuserve to lose customers, which constituted a legally protected interest. The court also

33. Id. at 471.
34. Id. at 472.
35. Id. at 472-73. For detailed criticism of the Thrifty-Tel ruling’s analysis, see Burk, supra note 7, at 33-34.
36. Id. at 473 n.6.
37. Id.
38. Id.
40. Id. at 1021.
41. RESTATEMENT (SECOND) OF TORTS § 218 (1965).
42. See id. § 218(d).
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rejected the defendant’s claims that Compuserve, as an ISP, should be considered a public utility, and that Cyber Promotion’s use of Compuserve’s network for junk email was protected by the First Amendment.43

B. eBay v. Bidder’s Edge

With this scant history of application to electronic communications, the trespass to chattels tort came to be invoked in a case involving eBay, the titan of the online auctions. Bidder’s Edge was one of several companies operating on the periphery of the online auction industry. Modeled on price-comparison sites like MySimon.com, it used bots to gather information from online auction sites and create a searchable database of auction data on its own site. By visiting Bidder’s Edge, buyers could search for goods across several auction sites without having to visit sites one at a time. Furthermore, because it stored information collected from eBay on its own site, Bidder’s Edge could potentially offer its users enhanced functionality, such as email notifications and bidding tools. At the very least, Bidder’s Edge promised to greatly reduce buyers’ search costs—but also, potentially, to weaken eBay’s market position.

eBay has long barred bots from its site, a policy it announces in its user agreement and seeks to enforce by using robot exclusion headers.44 Bidder’s Edge was aware of eBay’s policy and, in 1999, tried to negotiate with eBay to gain access to its auction information. eBay had, at first, allowed Bidder’s Edge to gather data from a limited number of auctions.45 When Bidder’s Edge expanded its listings, eBay gave it approval to use bots on the site until the two companies worked out an agreement. By September 1999, however, there was still no agreement, and eBay asked Bidder’s Edge to cease operating bots on its site.46

The crux of the licensing disagreement was over the use of bots. eBay would not allow Bidder’s Edge to use them to index information from its site. It would instead only permit real-time searches: Bidder’s Edge could query eBay’s site only when a user entered a search term on Bidder’s Edge.47 eBay claimed that this arrangement would minimize the load on eBay’s network and reduce the chances of Bidder’s Edge publishing erroneous or out-of-date information.

During the two months after they failed to reach an agreement, eBay and Bidder’s Edge engaged in low-level electronic combat. The latter continued to use bots to gather data from eBay. eBay, in turn, resorted to blocking those IP addresses from which Bidder’s Edge bots were operating. Bidder’s Edge

45. These included only auctions for Furbies and Beanie Babies. Id. at 1062.
46. Id.
47. Id.
responded by using proxy servers to circumvent eBay's restrictions. As of November 1999, eBay claimed to have barred access to its site for 169 IP addresses related to Bidder's Edge.48 It filed suit against Bidder's Edge shortly thereafter.

eBay asserted nine legal bases for its suit, but the district court focused almost exclusively on the trespass to chattels claim.49 The court first dealt with the issue of whether a claim of trespass to chattels theory could warrant a preliminary injunction. Injunctions, the court noted, are normally reserved for an ongoing trespass to real property. While injunctions are common in cases of trespass to real property,50 the court could not find any authority for granting an injunction in a trespass to chattels case.51 Nevertheless, the court granted the injunction: "[U]nder the circumstances present here, [Bidder's Edge's] ongoing violation of eBay's fundamental property right to exclude others from its computer system potentially causes sufficient irreparable harm to support a preliminary injunction."52

The court divided its consideration of eBay's likelihood of success on the merits into two questions: (1) whether Bidder's Edge had interfered with eBay's site "intentionally and without authorization;" and (2) whether that interference had caused damage to eBay.53 As to the first issue, the court found that eBay's robot exclusion header clearly notified Bidder's Edge that bots were forbidden.54 It also found that Bidder's Edge exceeded the scope of any implied consent to use the eBay site by deliberately evading blocks on its IP address. With respect to the second prong, eBay did not present evidence of having lost customers as a result of the defendants' activities, as Compuserve had.55 It only produced statistics detailing the additional load placed on its servers due to Bidder's Edge bots.56 Still, the court managed to find harm to

48. Id.
49. The other causes of action were false advertising, trademark dilution, violation of the Computer Fraud and Abuse Act, unfair competition, misappropriation, interference with prospective economic advantage, and unjust enrichment. Id. at 1069. Bidder's Edge also counterclaimed on antitrust grounds.
50. 42 AM. JUR. 2D § 110 (2004).
51. eBay, 100 F. Supp. 2d at 1067; see 42 AM. JUR. 2D § 113 (2004) (noting that injunctions in trespasses to personal property are "very rare").
52. eBay, 100 F. Supp. 2d at 1067.
53. Id. at 1069-70.
54. The court's concern was not the enforceability of robot exclusion headers per se but whether Bidder's Edge was on notice that the use of spiders on eBay's site was not authorized. Thus, under eBay, it is a necessary component of the claim that the aggregator have some notice that its use is forbidden before liability can attach. Of course, the additional element of harm to the chattel is required before one can ultimately be found liable for damages.
56. Bidder's Edge made approximately 100,000 daily requests to the eBay site, according to eBay. This amounted to up to 1.53% of all requests received by eBay in a day. eBay, 100 F. Supp. 2d at 1063.
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eBay in the specter of future auction data aggregators let loose on eBay's site. In the court's view: "If preliminary injunctive relief were denied, and other aggregators began to crawl the eBay site, there appears to be little doubt that the load on eBay's computer system would qualify as a substantial impairment of condition or value." eBay was not required to suffer this "disaster" before pursuing a legal remedy. Less than a year later, while the ruling was on appeal to the Ninth Circuit, Bidder's Edge settled with eBay and ceased operation of its auction listing site.

C. Criticism of the eBay Case

The emergence of the chattel tort as a legal theory of cybertrespass has occasioned a great deal of criticism. Some fear that the eBay rule threatens to close off the "digital commons." Others have argued that the chattel tort is a bad doctrinal fit for the Internet. In at least one respect, the critics of the eBay ruling are right: it is important to settle the question of the chattel tort soon. Courts can be risk-averse, more inclined to rely comfortably on prior decisions than venture a new legal rule. And the chattel tort—inchoate as it is—is quickly finding adherents in the courts. As Professor O'Rourke predicts, "[t]he latter adoptions [of the trespass to chattels tort] are likely to occur without in-depth analysis. . . ." This indeed has been true. The eBay court in particular can be faulted for applying Thifty-Tel as though it was settled law. This kind of judicial "stickiness" rightly has critics of the chattel tort concerned.

Another concern of eBay's critics—that the ruling would produce a wave of exclusion on the Internet—has not been so prescient. On the contrary, the eBay rule has been invoked sparingly. One important Second Circuit case where the trespass to chattels issue was considered was instead decided primarily on contract law grounds. Another court has denied a preliminary injunction for an alleged trespass. The California Supreme Court—still more to the critics' liking—refused to find a trespass actionable where a company

57. Id. at 1071-72.
58. Id.
60. See, e.g., Hunter, supra note 8, at 519 ("We may already be past the point where we can do anything about this. . . . But unless we do something, as we all stake out our little private claim in cyberspace, the commons that is cyberspace will be destroyed. And this would be the real tragedy.").
61. See infra Section IV.A.
62. O'Rourke, supra note 4, at 598.
63. See eBay, 100 F. Supp. 2d at 1069-70.
64. See Amicus Brief of Law Professors, supra note 5, at 8-11.
65. See Register.Com, Inc. v. Verio, Inc., 356 F.3d 393 (2d Cir. 2004) (holding that defendant was bound by plaintiff site's conditions and that lower court decision that plaintiff was likely to prevail on trespass to chattels claim was not unreasonable).
could not show that bulk email harmed its computer network or any other legally protected interest. This is not to say that these decisions were necessarily correct, but only that the scope of eBay is narrower than some predicted and that relatively few trespass to chattels actions have been brought.

Of course, concern about the eBay rule becoming entrenched is only justified if it is the wrong rule. And this question turns in part on whether one thinks—irrespective of the rule itself—that eBay’s outcome was the right one. The critics of eBay do not merely quibble with the rule laid down by the court. They argue that the outcome itself was incorrect—that eBay should not, under any rule, have been able to exclude Bidder’s Edge. This distinguishes eBay from earlier application of the chattel tort. Even some critics, while objecting to the courts’ reasoning, approved of the outcomes in Thrifty-Tel and Compuserve.

This Note attempts to show both that the outcome in eBay is socially optimal and that sites such as eBay should have a bright-line right to exclude. Seven years after the first application of the chattel tort to the Internet, cybertrespass is still an inchoate doctrine. Courts maintain the power to craft an efficient rule. Of course, we do not start with a tabula rasa: the world of cyberspace has its own settled expectations and norms and is not so divorced from the physical world as to be unaffected by its legal intuitions. That said, we are undoubtedly in a period of common law evolution during which policy judgments are more important than doctrinal purity. It is thus appropriate to consider, first, whether the outcome of eBay is socially optimal and, second, what the proper rule should be.

III. eBay and Socially Optimal Networks

A socially optimal legal regime for cyberspace must account for one of the Internet’s salient features: network effects. This Part argues that eBay should be permitted to exclude information aggregators from its site because of the network efficiencies of eBay’s online auction market. It briefly explains the economics of network effects and analyzes the network efficiencies of an online auction market like eBay. It then describes how eBay’s ability to capture these efficiencies has produced investment and innovation. Finally, it shows how a rule of open access risks destroying the network efficiencies of the online auction market.

68. Amicus Brief of Law Professors, supra note 5, at 5 (“The district court’s injunction threatens to wipe these benefits [i.e., of data aggregation] away with a single stroke of the pen.”).
69. See, e.g., Burk, supra note 7, at 54 (“I find spam to be just as bothersome as anyone else does, and the actual result of cases like [Compuserve] to be salutary.”).
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A. The Economics of Network Effects

Network effects arise whenever "the benefit, or surplus, that [a person] derives from a good" changes with "the number of other [persons] consuming the same kind of good." Any good whose value is related to the number of people using it exhibits network effects. The paradigm example is a telephone, which has value only if another person possesses one. But network effects arise wherever there is a connection between a good's value and others' use of it—in the market for credit cards, for example, or computer operating systems, or even automobiles. The more merchants accept a particular credit card, the more valuable the card becomes for consumers and vice versa—the more consumers use a particular credit card, the more valuable honoring that card becomes for merchants. So too in operating systems, a large user base makes the system more valuable by promising greater compatibility across platforms. One might even prefer a best-selling car to a more exotic one because more mechanics might have developed expertise working with the former than the latter.

Of course, the magnitude of the network effect is different with respect to each of these goods. One usually does not buy a car chiefly because others are driving it, though that may be a subsidiary consideration. But compatibility is likely to be a major factor when buying an operating system. In this way, it has been suggested that the value of a good exhibiting network effects has two components: an autarky value and a synchronization value. A product's autarky value is its value standing alone, irrespective of the number of other users. A good's synchronization value is the portion of its value attributable to the fact that other consumers use it. Thus, elements such as functionality, ease of use, or speed comprise an operating system's autarky value, while the availability of compatible software or the ability to share files with other users might comprise a system's synchronization value. Network effects are greater the larger a good's synchronization value is as a share of its total value.

Under this scheme, it is easy to see that network effects are especially strong in the case of standards. A standard, broadly considered, is any agreed-upon convention that allows multiple users to interact. The VHS format or the CDMA protocol for mobile phone networks are obvious examples of standards. The synchronization value of a standard tends to be high relative to its autarky value: the inherent features of the standard are less important than that the standard has a lot of users. An operating system is also a standard of sorts, though perhaps one with greater autarkic value. Indeed, it has been observed

72. See 2 id. See also STAN J. LIEBOWITZ & STEPHEN E. MARGOLIS, WINNERS, LOSERS, & MICROSOFT: COMPETITION AND ANTITRUST IN HIGH TECHNOLOGY 93-94 (1999). This terminology is specific to the work of these authors.
73. See LIEBOWITZ & MARGOLIS, supra note 72, at 67.
that "[n]etwork effects are intrinsic to many of the newest technologies—particularly the so-called information technologies." 74

Networks have some special economic properties. The most important for our purposes is the presence of network externalities. 75 A network externality is an externality in the usual economic sense: some quantum of value that is not internalized by the market. Externalities commonly arise in the context of environmental regulation. Pollution is viewed as an externality because the market fails to internalize its full social cost. As this example suggests, externalities are often encountered as negative externalities, but externalities can be positive as well. When your neighbor beautifies his yard, for example, some part of the benefit accrues to you.

Networks are characterized by positive externalities. This is not difficult to see if we revisit the example of a telephone network, whose value consists entirely in its synchronization component. Imagine such a network with only two users, X and Y, who currently value the network at x and y respectively. Suppose now that Z is considering joining the network and values the network at z. If Z joins the network, it will increase both X's and Y's valuations of the network by some increment, say, by one unit each. Thus, if Z joins the network, he will confer a one-unit benefit on X and Y such that they subsequently value the network at x + 1 and y + 1, respectively. Similarly, the value of the network as a whole would increase by z + 2. 76

We can already see how the full benefit of Z joining the network might not be taken into account in Z's decision to join. There are, in fact, two possibilities depending on the ownership structure of the network. Suppose first that the network is not owned by anyone in particular. This may be easier to imagine in the case of standards (e.g., VHS), though it is equally true of the Internet as a whole. In this scenario, no party can appropriate any portion of the value that Z confers on X and Y by joining the network. Z will have too little incentive to join the network, and those two units of value will be lost. As a result, network size is smaller than optimal. As Professors Liebowitz and Margolis point out, this situation is another form of the typical "tragedy of the commons." 77 The benefit to X and Y is a kind of "common." While negative externalities lead to too much production, markets that fail to internalize positive externalities tend to produce too little.

But network ownership—the second scenario—solves this problem. The owner of the telephone network can capture the benefit of Z joining the

74. Id.
75. See Nicholas Economides, The Economics of Networks, 14 INT'L J. INDUS. ORG. 673, 678 (1996). Professors Liebowitz and Margolis note that the distinction between network effects and network externalities is not always observed. See Liebowitz & Margolis, supra note 71, at 671.
76. For an excellent and very readable discussion of network externalities, see LIEBOWITZ & MARGOLIS, supra note 72, at 67-83.
77. Id. at 76-78 (discussing the "comedy" of positive externalities).
network by pricing network participation so as to maximize the total value of
the network. In effect, the owner can “subsidize” Z. This is not a “subsidy” in
the usual sense: by “subsidizing” Z’s entry into the network, X and Y are not
paying for something they do not value. Since Z’s joining will increase the
value of network participation to X and Y—as well as other prospective
network joiners—the owner can exact a higher price from them. When
network externalities are internalized in this fashion, networks will tend to
achieve their socially optimal size.

B. The Network Efficiencies of eBay

Economists have long recognized that online marketplaces feature strong
network effects. It is not hard to see why this is. As a component of total
value, an electronic market’s synchronization value is certain to be relatively
large. Sellers of goods value markets with many buyers, and buyers value
markets with many products. Conversely, the autarkic value of markets is likely
to be small: a market of one is an absurdity.

eBay is a massive electronic market of buyers and sellers. In 2003, its
various auction sites—both eBay.com and its affiliates outside the United
States—carried 971 million auction listings and hosted the exchange of $24
billion-worth of goods. According to the company, this amounted to 22% of
all sales of goods on the Internet. In effect, eBay is a sprawling network for
the exchange of goods.

What exactly does this network consist of? eBay has a great variety of
users. Some are registered as sellers—more than 430,000 individuals and
businesses are said to earn a substantial part of their living from eBay. The
number of occasional sellers is much higher, in the tens of millions. Since eBay

78. Such “subsidization” often takes the form of pricing network participation below cost for early
joiners and then charging higher prices once the network reaches a certain size—and thus has a greater
value—to its users. This is a familiar model for many Internet-based businesses.
79. See Liebowitz & Margolis, supra note 71, at 672.
80. See, e.g., DAVID S. EVANS & RICHARD SCHMALENSEE, SOME ECONOMIC ASPECTS OF
ANTITRUST ANALYSIS IN DYNAMICALLY COMPETITIVE INDUSTRIES 10 (Nat’l Bureau of Econ.
presence of significant network effects) is also true for market-making services such as eBay, where
buyers benefit from there being more sellers, and sellers benefit from there being more buyers.”) (last
visited Oct. 19, 2004); Arun Sundararajan, Network Effects, Nonlinear Pricing, and Entry Deterrence
(July 2003) at 2 (unpublished manuscript, on file with Yale Law & Policy Review), available at
http://oz.stem.nyu.edu/papers/net0703.pdf (“[E]lectronic marketplaces like eBay are widely recognized
as displaying positive network effects, which stem from increased liquidity, as well as a wider
availability of robust systems supporting marketplace services (reputation, escrow, payment, settlement,
dispute resolution).”).
81. Press Release, eBay, eBay Inc. Announces Fourth Quarter and Full Year 2003 Financial Results
Financial Results].
requires sellers to provide bank account or credit card information for billing purposes, these users are on average the most committed members of eBay’s network. Buyers are required to register in order to bid on an item. In all, eBay claims 94.9 million registered users (buyers and sellers) of whom it classifies 41.2 million as “active users”—users who bid, bought, or listed an item in the previous twelve months. Yet, because anyone can perform a search on eBay without registering, eBay’s network extends still further. Given this heterogeneity, the best measure of the seller side of eBay’s network is simply the total number of seller listings.

The buyer side is more complicated. From eBay’s perspective, there are two elements to the buyer side of its network. Product views—what I will call “looks”—are the first element. eBay would like as many people as possible to view its auction listings. The other element on the buy side is bids. Each listing, look, or bid has a value to the network. A listing for a Beanie Baby will attract looks. These looks, in turn, attract more Beanie Baby listings or even listings for other items. Looks, in some cases, eventually turn into bids, which have a still greater network value for several reasons. First, since bids require registration, bidders may be more likely to participate in the market again in the future. Second, bidding increases a user’s comfort level, making her likely to bid again in the future. Finally, bids may have an independent value in that they reveal information to other participants in the auction. Many of the goods auctioned on eBay have what is called a “common value element,” meaning that bidders would generally arrive at the same valuation for the good if only they could assess the actual condition of the item. In online auctions, the item itself is not available, and bidders must make their best guess—based on photos or other information—as to its true value. This makes bidders susceptible to what is known as the “winner’s curse”: the winning bidder is the one who overestimates the value of the item by the greatest amount. The auction format used by eBay and other online auction sites helps to reduce this problem. It is known as an open-ascending auction format—"ascending" because the bids go up in value and "open" because information about the leading bid is open to view. Because others’ bids are partially revealed,
bidders can alter their strategy to incorporate information about what others are bidding and minimize their chances of suffering the winner’s curse.

We should expect that eBay, as the network’s owner, will internalize the network value of each element of network activity. It will price network participation so as to increase the network to its optimal size and to maximize its total value. eBay’s ownership of the network thus should produce a socially-optimal level of online auction activity. Similarly, an ownerless electronic marketplace would fail to internalize network benefits. The network value of an additional look, bid, or listing could not be appropriated. As a result, the network would be smaller than optimal: there would be comparatively too little use of online auctions and comparatively too much of other forms of distribution (e.g., fixed-price selling or bricks-and-mortar retailing).

C. Innovation in Market Mechanisms

eBay’s rise itself demonstrates how the capture of network benefits encourages firms to innovate. Its success is due less to being in the right place during the Internet boom than to its own innovations. In particular, eBay has created a number of overlapping mechanisms to ensure that its auction market runs cheaply and efficiently. Inasmuch as “the case for closing access is much stronger the more we think it is necessary to encourage innovation and investment,” eBay offers a good argument for the benefits of clear property entitlements.

Markets have an organic quality to them. They seem to develop effortlessly from the collective will of their participants. But in truth, markets require calibrated mechanisms of coordination and enforcement to function. Every transaction in a trading market threatens good or ill for the rest of the market’s participants. Fraudulent transactions lead to wariness and raise transaction costs as traders demand risk premiums or stricter contractual terms. Trades that are executed smoothly have the opposite effect, encouraging greater market participation and lowering costs. In this respect, markets bear an obvious

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for the maximum amount the next highest bidder was willing to pay (the so-called “second price”). It is this price that eBay’s listings display.

88. This is not to say that eBay will, or even can, appropriate the network externality of every look, bid, or listing. It is only to say that eBay alone is in a position to internalize these network benefits and that, assuming perfect information and profit maximization, it would do so.

89. In a certain sense it may seem odd to talk of eBay’s “pricing” network participation on the bidder side since anyone can freely browse the listings on its site and it costs users nothing to register. Of course, eBay prices seller participation in a very direct way by charging commissions on sales, and this fee in effect shared by buyers when a sale is consummated. But “pricing” can also be conceived of more broadly to include, for example, eBay’s expenditures on advertising to attract bidders or even eBay’s “Anything Points” program. See eBay Anything Points—How It Works, http://anythingpoints.ebay.com/faq/index.html (Jul. 15, 2004).

comparison to the dynamics of networks.

Established institutions come with enforcement and coordination mechanisms already in place. Within the family or the clan, the consequences of fraudulent behavior can be severe. As markets expand beyond basic institutions, the problems of coordination become greater—even crippling. In instances where such markets have succeeded, economic historians have often discovered mechanisms that allowed such problems to be overcome. The most noteworthy example is perhaps that of the Maghribi traders. Professor Greif has offered a convincing explanation how these eleventh-century Mediterranean traders overcame problems associated with employing overseas agents. The use of overseas agents in an era of slow communication and diffuse political structures presents an obvious difficulty: "Without supporting institutions, agency relations are not likely to be established, since the agents can act opportunistically and embezzle the merchant's goods. Anticipating this behavior, a merchant will not hire agents, and efficient cooperation is not initiated." The Maghribi traders solved this problem of agent commitment through a coalition. By this method, they created a reputation mechanism that threatened ruin for fraudulent agents. If a Maghribi trader found himself swindled by an agent, the news was quickly communicated to other members of the guild and the agent was cut off. This mechanism was apparently successful even where it hurt the short-run profits of other traders.

Beyond being a diverting tale, the experience of the Maghribi traders illustrates the very problem eBay had to solve in the early years of its growth. In 1997, Times Mirror engaged in discussions with the founder of eBay about buying the company for $40 million. But it eventually decided it was not interested in eBay because, in the words of one journalist, "strangers would never trade with strangers over the Internet in large numbers." Given the problems of coordination in a marketplace of anonymous traders, this was not an unreasonable conclusion. How did eBay overcome these problems?

Throughout its development eBay has employed various systems of community coordination to police fraud. In its earliest days, no formal enforcement mechanism existed. Traders were of course protected by state laws concerning contract and fraud, but that recourse was simply too costly to invoke. Instead, disputes were battled out over email, with the parties often

91. For a general survey of this literature, see James E. Rauch, Business and Social Networks in International Trade, 39 J. ECON. LITERATURE 1177 (2001).
93. Id. at 526.
94. Id. at 540.
95. COHEN, supra note 59, at 60, 64.
96. Id. at 64. Three years later, in March 2000, eBay was worth twice the value of Times Mirror. Id. at 65 n.
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calling in eBay’s founder to settle them.97 Remarkably enough, disagreements are reported to have been relatively rare.98

Early on, eBay instituted a discussion board where traders could exchange information. This “Feedback Forum” allowed users to rate their dealings with other users.99 The idea owed its origin partly to the idealism of the company’s founder and partly to the company’s lack of resources. But it may not have succeeded without the strong community feeling that eBay had cultivated. Stories are told of traders spending all night on eBay discussion boards sharing their life experiences and posting pictures of themselves and their family members.100 Some traders formed a kind of neighborhood watch to punish fraudulent users.101 This cooperative culture undoubtedly contributed to the early success of the feedback mechanism.102

eBay’s rapid expansion has, if anything, spurred still more investment in market-enhancing mechanisms. The company has recently had to take a more active part in preventing and sanctioning fraudulent trading. It has promised to suspend bidders who fail to pay103 and developed and acquired payment systems that require bidders and sellers to verify their identity and hold them financially accountable for fraud.104 The sheer size of eBay’s platform may itself lead to a more efficient market. eBay has spawned an enormous constituency of users who are constantly monitoring the site and its operation. Multiple firms have opened “drop-off” stores that offer to sell customers’ items on eBay for a commission;105 one such chain has even received venture capital financing.106 There is also a web site dedicated entirely to news and information about the online auction industry.107 Collectively, these stakeholders have a strong incentive to lobby eBay for fair and efficient market mechanisms.

Nor is eBay alone in creating innovations that foster markets. Sites such as StubHub.com, where users buy and sell tickets for sports contests, rock concerts, and other events, have developed trading platforms suited to their

97. Id. at 26-27.
98. Id. at 26.
99. Id. at 27.
100. Id. at 50-52.
101. Id. at 52.
102. Interestingly, the economic literature is mixed as to whether the reputation mechanism has an effect on the price at which items are eventually sold. Moreover, there are a number of divergent theories about what elements of the feedback rating, if any, traders find important. The literature is nicely summarized in Bajari & Hortacsu, supra note 86, at 470-76.
103. COHEN, supra note 59, at 158.
104. The most visible of these systems is the online payment service PayPal. See Betsy Streisand, Make New Sales, But Keep the Old, U.S. NEWS & WORLD REP., Feb. 16, 2004, at 40.
particular products. In fact, it may be one of the weaknesses of eBay that it offers only one basic format for the thousands of different products traded on its site. eBay may eventually find that competitors are able to pick off particular categories of trade by creating specialized markets in them. For eBay and other trading sites, the reward for this innovation is that they are able to capture some part of the value of the network they have created.

D. How a Rule of Open Access Squanders Network Efficiencies

As a practical matter, the efficiencies outlined above are what a rule of open access threatens to squander. Allowing Bidder's Edge free rein to aggregate information from eBay would produce an inefficient outcome because it would lead to an ownerless marketplace that is incapable of internalizing the network efficiencies of online auctions.

To see why this is so, imagine that Bidder's Edge has achieved perfect success. Potential buyers, on this assumption, enter the online auction market entirely through Bidder's Edge. Because Bidder's Edge does not itself host auction listings—it is only a search tool—sellers continue to list items through the traditional auction sites. All transactions are completed on sellers' sites. What happens to network efficiencies in this market?

There are three things to notice. First, sellers no longer gain any benefit from listing their auctions where other sellers are listing. Because Bidder's Edge searches all auction sites, the synchronization value of an auction site no longer matters: all auction sites have access to all potential buyers through the Bidder's Edge tool. The benefit to the network of an additional seller can therefore no longer be captured by auction sites. Second, the network benefits of Bidder's Edge are no longer directly tied to the network benefits of the auction market. In other words, Bidder's Edge cannot capture the full marginal benefit of an additional potential buyer. Its critical mass of users allows it to reap profits from, say, advertising, but the site cannot alter its price structure to attract more sellers into the market, as eBay could. Finally, Bidder's Edge lacks the incentive to turn bids into looks because the site is indifferent between the two. From Bidder's Edge's viewpoint, all "eyeballs" are equal. Of course, Bidder's Edge would presumably develop tools to facilitate bidding so as to attract users who are interested in bidding. But if bids have a network value over and above mere looks, as I have argued, then Bidder's Edge may turn too few looks into bids.

There is, however, another possible way to capture network effects. There

110. See supra text accompanying notes 86-87.
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is no reason that buyers and sellers need to be served by the same firm: Bidder's Edge and the auction sites could bargain over network efficiencies. This might turn out to be more efficient than having one site serve everyone. Larger auction sites could capture network value by withholding access to their sites from Bidder's Edge buyers; Bidder's Edge could charge smaller sites to have their listings included.

The rule of open access, however, leaves no room for this kind of bargaining. Bidder's Edge alone decides which auctions to list. It can extract some of the network value of its large user base by charging sites to have their listings included. But it cannot charge too much because Bidder's Edge, like the auction sites, is vulnerable to unrestrained indexing of the information on its own site. Under the rule of open access, a competitor may freely copy the information from the Bidder's Edge site and set up business in direct competition with Bidder's Edge. In fact, something similar has already happened. MySimon, the shopping comparison site, filed suit when it found that its own information was being indexed by a competitor site, Priceman.com.

In short, the rule of open access makes it difficult or impossible for auction sites to internalize network efficiencies. Sites with established networks lose users to the information aggregators, who freely appropriate data from the auction sites. Network efficiencies might still be captured by the aggregators themselves, if only they could hold on to their information. But this is impossible under a rule of open access, and these aggregators then become the target of multiple second-level or "meta" aggregators. The market soon figures this out. Network efficiencies are too fleeting to pursue; any innovation can be appropriated, almost cost-free, by competitors. As a result, investment in network-related innovation disappears.

This scenario perhaps seems unrealistic. eBay is a huge site, and it is hard to imagine that Bidder's Edge could so easily draw away a significant group of eBay's buyers. It is even more unlikely that Bidder's Edge could come to

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111. Another option is for Bidder's Edge to begin to host listings itself. I suspect that eBay's suit was motivated in part by a concern that Bidder's Edge would eventually move in this direction. Of course, a rule of open access would leave Bidder's Edge auctions just as vulnerable to indexing by others as eBay was to Bidder's Edge.

112. I am inclined, however, to think otherwise. Placing buyers and sellers under one umbrella seems more likely to produce mechanisms conducive to efficient and fair exchange. If all transactions were to take place on sites catering to sellers, we might see a "race to the bottom," in which sites compete to offer the most seller-friendly trading rules. A site's reputation with buyers might suffer, but if the auction site market were to become sufficiently splintered, consumers might have a difficult time enforcing reputational consequences.

113. See Amicus Brief of Law Professors, supra note 5, at 7.

114. It might be suggested that Bidder's Edge could bring new buyers into the online auction market. This seems unlikely—search tools typically appeal to more sophisticated users—but in any case it does not change my analysis of the eBay rule. If Bidder's Edge did attract entirely new buyers, we would not expect eBay to exclude Bidder's Edge bots to protect network efficiencies. We might even expect eBay to set up a coordinate site as a competitor to Bidder's Edge.
dominate the buyers’ side altogether. But what is true of the extreme case is also true of the marginal case. Each look or bid that leaves eBay as a result of Bidder’s Edge eliminates some quantum of network efficiency. The customer’s defection from eBay is a loss suffered by the entire eBay network—and is not made up for by a corresponding network efficiency that can be captured by Bidder’s Edge.115

A number of objections might be made to this analysis. First, eBay was willing to allow Bidder’s Edge to continue to make real-time searches of the eBay site; it only denied permission to use bots to collect data. Professor David McGowan argues that “[n]o evidence in the [eBay] case suggested capture; eBay’s offer to license Bidder’s Edge if Bidder’s Edge would agree to real-term querying and eBay’s actual licensing of other aggregators contradict[s] this thesis.”116 More likely, it is argued, eBay was concerned primarily with the drain on its servers and network capacity.

The fact that eBay was willing to negotiate a license, however, does not imply that eBay was completely indifferent to real-time searching and its consequences. eBay would presumably have received something in return from Bidder’s Edge for the license or, at the very least, eBay would have acquired some control over the search function. Furthermore, eBay may have even believed that it would benefit from the search function—both because it would attract new or more valuable users to its network, and because only the additional functionality made possible by automated indexing would have been detrimental to the network. In either case, eBay’s readiness to license the search function is consistent with the view that eBay’s suit was motivated in part by the dynamics of network effects.

A second potential objection is that eBay had other means of blocking unauthorized access if it was really concerned about the integrity of its auction network. eBay could have easily excluded Bidder’s Edge simply by requiring all users to log in with a username or password. The eBay site currently requires users to log in only before listing items for sale or placing bids. eBay could have simply expanded this regime to all users. A number of sites characterized by network effects bar access to all but registered users.117

115. We might imagine certain instances where this new customer benefits sufficiently from the reduced search costs of using Bidder’s Edge that she would increase her use of online auctions, thereby providing network benefits to other participants in the auction market. This is the functional equivalent of Bidder’s Edge bringing entirely new bidders to the market. See supra note 114. Again, the fact that eBay has not sought to offer a product like Bidder’s Edge argues against this possibility. Furthermore, only with a right to exclude could we be confident that Bidder’s Edge was in fact offering benefits to eBay and other auction networks.


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It is not hard to see how requiring passwords would be detrimental to network activity. Unregistered users would not be able to access any eBay information. To make even a quick search for an item would require a cumbersome registration process. Registered users could not view the site without logging in. Undoubtedly, the effect would be to harm eBay, but worse still, it would hinder the growth of networks generally and make network efficiencies harder to capture. In essence, registration imposes an additional cost on network participation without any apparent efficiency gain. The result, once again, would be a suboptimal level of network participation.

A final potential concern with networks is the problem of “lock-in.” Lock-in occurs when a network with a very high synchronization value cannot be dislodged even by a superior rival network. The classic example is the competition between VHS and Beta in the video recording industry of the 1970s. It is commonly thought that Beta was the superior technology but that, for almost accidental reasons early on, the market “tipped” in the direction of VHS. Once VHS gained control of the market, it was locked-in—unbeatable by even a subsequent better standard. While it turns out that this classic account is not historically accurate, lock-in remains a theoretical possibility; the problem has been adduced as a reason that networks deserve special antitrust consideration. Similarly, it could be urged, we might structure entitlements on the Internet so as to minimize the potential for lock-in.

There are, however, reasons to think that the problem of lock-in is overstated. For one, it is important to recognize that the problem of lock-in is distinct from that of network externalities. “In the case of positive network externalities, all networks are too small.” Thus, even if we are concerned about lock-in, we should still want to arrange entitlements so as to enable the capture of network efficiencies. Second, network effects are much more localized than usually thought: a product might have a high synchronization value even if it has only a few high-value users. For example, the decision whether to use a Windows or Macintosh operating system may depend a great deal on what system is used by other members of one’s family or firm and very

118. Warner, supra note 12, at 131.
119. Some strongly maintain that the right to exclude harms the norm of open access or creates a digital anti-commons. For more on this, see infra Section IV.C.
120. See LIEBOWITZ & MARGOLIS, supra note 72, at 120.
121. Despite its classic status, VHS versus Beta is a bad example of lock-in. Liebowitz and Margolis have successfully debunked the idea that lock-in had anything to do with VHS’s eventual dominance of the market. See id. at 120-27. And, of course, the DVD format has now rendered the VHS standard obsolescent.
123. See Liebowitz & Margolis, supra note 71, at 672.
124. Id.
125. See id. at 673 ("[T]he extent (and homogeneity) of network effects may be much more limited than is commonly assumed.")
little on what system is used by the firm or family across the street. The upshot is that it may take only a few users to achieve significant network benefits and overcome lock-in. eBay offers ready examples of this dynamic. Its own early growth was driven partly by its specialized market in Beanie Babies.\textsuperscript{126} Even today, as immense as it is, eBay has not been as successful in the used and rare book trade, where specialty sites have flourished.\textsuperscript{127} Strong differences in consumer tastes also make lock-in an unlikely scenario. One reason Macintosh has survived despite its low market share is that the system’s graphical capabilities are highly valued by certain niche customers.\textsuperscript{128}

There is a final reason that lock-in presents, at best, a limited problem: the potential capture of network efficiencies makes networks appealing targets for rivals. Firms in network industries compete not so much within the market as \textit{for the market}.\textsuperscript{129} If a firm develops a superior product, it has a strong incentive to develop innovative ways to capture its rival network and overcome any lock-in. Evans and Schmalensee observe:

> There are... good reasons to suspect that such bad lock-in is much less common than simple theories suggest. Bad lock-in means that consumers could be made better off. There is a profit opportunity for any entrepreneur who can figure out how to move the market from the poor technology to the great technology.\textsuperscript{130}

If sellers and buyers should someday grow unhappy with eBay’s auction platform, it will only present a more enticing business opportunity for an aspiring rival.

Ultimately, then, this Part has attempted to demonstrate that the presence of network effects in the online auction market argues in favor of \textit{some} right to exclude. A rule of open access—one that allows entry to all aggregators—threatens to cripple network-related activity and the innovation which the potential capture of that activity has spurred. In short, the court in \textit{eBay} reached the correct outcome in granting eBay a right to exclude.

\textbf{IV. TOWARD A BRIGHT-LINE RULE OF CYBERTRESPASS}

The remainder of this Note discusses precisely what the \textit{scope} of the right to exclude should be. First, it argues that the trespass to chattels tort is a good doctrinal vehicle for cybertrespass because it offers a bright-line right to exclude. Second, it argues that the \textit{eBay} rule should be applied generally to web sites because network effects are pervasive on the Internet. Finally, it addresses concerns that a right to exclude will ultimately harm openness of the Internet.

\textsuperscript{126} COHEN, \textit{supra} note 59, at 45 ("It would be an exaggeration to say that eBay was built on Beanie Babies, but not by much."). As recently as May 1997, Beanie Babies made up 6.6% of eBay’s total trading volume. \textit{Id.} at 46.

\textsuperscript{127} See Karen Raugust, \textit{A Wired World for Old Books}, PUBLISHER’S WKLY., Apr. 23, 2001, at 22.

\textsuperscript{128} See LIEBOWITZ \& MARGOLIS, \textit{supra} note 72, at 106.

\textsuperscript{129} See EVANS \& SCHMALENSEE, \textit{supra} note 80, at 1.

\textsuperscript{130} Evans \& Schmalensee, \textit{supra} note 122, at 37.
A. **Is Trespass to Chattels the Right Doctrine?**

This section examines (1) whether the threat to network efficiencies posed by information aggregators justifies giving web sites a *bright-line* right to exclude and (2) whether the trespass to chattels tort is the appropriate legal framework for such a right.

1. **The Advantages of a Bright-Line Right to Exclude**

A court faced with the question of whether a site has a legal right to exclude has, broadly speaking, three choices: (1) deny any right to exclude; (2) grant an absolute right to exclude; or (3) grant a right to exclude in some circumstances but not in others.\(^1\) The first option is necessarily foreclosed by this Note's conclusion that the optimal result in eBay requires a right to exclude. The choice is really between an absolute right to exclude and a conditional right to exclude.

This choice is independent of eBay. We are, after all, proceeding on the assumption that either rule would protect eBay's network from predations by Bidder's Edge. This result could be accomplished by rules of different scope. A court could grant eBay a right to exclude only after weighing the harms and benefits of the particular situation. If network effects are given their proper weight in the analysis, a court should find for eBay. Alternatively, the right to exclude could be an absolute one, covering any unauthorized use of the eBay site.

The law often faces this choice between "mud" and "crystal"—between contextual, judicially-managed standards and clear-cut rules.\(^2\) Crystalline rules allow private parties to bargain to an efficient outcome by clearly demarcating property rights at the outset. Under a regime of standards, assignments of entitlements await judicial intervention. Disputes may be resolved more equitably ex post, but parties ex ante simply do not know what their entitlements are and are therefore unable to reach a settlement through bargaining.\(^3\) Standards-based regimes, it has been argued, are inefficient: entitlements are worth little because it costs too much to figure out what they are.\(^4\)

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1. Professor O'Rourke frames the possibilities as follows:
The choices are essentially three: (i) a system in which users have unfettered access to sites; (ii) a strong property rights regime premised on a real property analogy that allows a site owner to exclude whomever it wants for whatever reasons; and (iii) a regime of divided entitlements in which web site owners have certain property rights but users also have certain privileges.

O'Rourke, supra note 21, at 2003-04.


4. See id. at 11 ("A right that cannot be the subject of bargaining is worth less, just as eagle
The point is that there is some inherent efficiency in having clear entitlements, no matter what they are. I have tried to show that, in light of the significance of network efficiencies, giving web sites a right to exclude will produce efficient results. But even if we thought that some subset of cases does not deserve a right to exclude, we might still favor a bright-line rule because it facilitates ex ante bargaining. In the end, a clear entitlement, even if it only gets most cases right, is better than a mushy one.

Furthermore, rules might also be preferred to standards if we have little confidence that judges have the information or expertise to resolve individual situations correctly. On this point, Professor McGowan writes:

Contracting places decisions in the hands of persons actually affected by bargains, who have relatively good information and who bear the costs and reap the benefits of the decisions. It aligns benefits and the costs necessary to create them and internalizes at least some effects of different behaviors. It avoids the uncertainty and cost of ex post facto damages determinations by persons such as judges, who have less reliable information than contracting parties and who do not bear the costs or enjoy the gains of their decisions.\(^1\)

Judges often have difficulty reasoning to optimal outcomes in the ordinary tort or contract case. Network effects complicate the matter still more: If, as I have argued, many commentators have missed the significance of network effects to eBay, a judge deciding such cases is likely to be lost.\(^1\) For this reason, a bright-line rule will generally produce better outcomes.

Scholars of cyberspace law raise at least two objections to a bright-line rule. First, some argue that the law should favor “muddy” rules so as to give courts “flexibility in dealing with emerging technologies.”\(^1\) This concern might be partly addressed by applying a bright-line rule of narrow scope—that is, by confining the right to exclude to web sites. But the deeper problem is that technologies are almost always emerging. As the Internet develops, it is unlikely to reach any stage at which it would be stable enough to warrant a bright-line rule under this narrow approach. A prudential approach that values flexibility may therefore inadvertently give rise to a permanent regime of mushy rules. Of course, there are reasons to be wary; there should be a careful consideration of the costs and benefits of any potential rule. But we would be making a mistake if our wariness induced a general abhorrence of bright-line rules.

A second objection is that transaction costs are too high to allow for private bargaining on the Internet. Liability rules are thought to be more appropriate to high-transaction-cost situations.\(^1\) If significant obstacles to private bargaining

\(^1\) McGowan, supra note 15, at 376.

\(^1\) See supra text accompanying notes 11-13.

\(^1\) O’Rourke, supra note 4, at 620-21. Professor O’Rourke suggests that a nuisance regime would allow for such flexibility. Another possibility is the common law tort of misappropriation.

\(^1\) See generally Guido Calabresi & A. Douglas Melamed, Property Rules, Liability Rules, and
exist, hard-edged property rules are less likely to yield efficient outcomes. While this claim has some theoretical basis, the nature of the Internet suggests that transaction costs are likely to be low. In the case of automated indexing of web sites, for instance, robot exclusion headers are a straightforward way of alerting aggregators that their activity is not welcome. If an aggregator wishes to pay for the right to index a site, it is usually simple enough to contact the site’s operators. At the very least, the ease and speed with which the Internet allows parties to communicate promises some reduction in transaction costs.  

2. Trespass to Chattels as a Bright-Line Right to Exclude

Beyond disagreeing with its outcome as a policy matter or objecting generally to a bright-line right to exclude, critics of eBay argue that the court—like the Thrifty-Tel and Compuserve courts before it—mangled the trespass to chattels doctrine. In their view the eBay decision creates an intellectual property right of unprecedented breadth, without legislative sanction and without any of the balances or limits that characterize existing intellectual property rights. Rights to control “trespass to chattels” were carefully circumscribed at common law to prevent them from morphing into a broader form of property right. But the district court ignored those safeguards... and created a new kind of property right that protects every piece of information on the plaintiff’s Web site, whether or not it is copyrighted, patented, or secret.  

In other words, the court got the trespass to chattels doctrine wrong: eBay’s right to exclude is too broad and too absolute.  

Professor Burk argues that, as applied by courts to the Internet, the chattel tort “amounts to a rule of inviolability” much like trespass in land. This is largely because courts have dispensed with the impairment requirement. As noted earlier, liability for trespass to chattels is limited to dispossessions and instances of intermeddling where the chattel is impaired as to its “condition,


139. See Trotter Hardy, Property (and Copyright) in Cyberspace, 1996 U. CHI. LEGAL F. 217, 236-38 (1996). Professor Hardy also suggests that the transaction costs of cyberspace bargaining may be unpredictable because persons will engage in many new, “low-value” transactions—such as the rapid mass distribution of newspaper articles—that were never before possible. See id. at 239-40.

140. Amicus Brief of Law Professors, supra note 5, at 11-12.  

141. Also contained in thisexcerpt is the suggestion that the court was not the proper institution to craft a right to exclude. But some degree of common law evolution is to be expected. The transformation of the chattel tort into a rule of cybertrespass is not so drastic as to suggest that the eBay court abused its authority in extending it, especially in light of the rule’s significant policy advantages. Like any common law rule, it is subject to revision by the legislature, which is more than can be said of suggestions that the First Amendment should be called in to supply a rule of open access. See, e.g., Yochai Benkler, Through the Looking Glass: Alice and the Constitutional Foundations of the Public Domain, 66 LAW & CONTEMP. PROBS. 173, 219 (2003) (suggesting that if cases like eBay “cannot be won on state common law grounds, they must be challenged either on preemption grounds—based solely on copyright law—or on First Amendment grounds—using the model of New York Times Co. v. Sullivan”).  

142. Burk, supra note 7, at 34. Professor Burk points out that the court in Thrifty-Tel relied on cases of trespass to land in finding electronic transmissions to be sufficiently tangible to constitute a trespass. Id. at 33.
This means that in a case involving only intermeddling the chattel must be somehow damaged for trespass to lie. In the cybertrespass cases, however, the server suffers no damage at all: a bot that has collected information from a site leaves the server in no worse condition than before. Courts have circumvented this problem merely by redefining the chattel. Rather than the server itself, it is the use of the server over time—or network capacity, broadly understood—that is impaired. The eBay court, for example, accepted the claim that Bidder’s Edge was “appropriating eBay’s personal property by using valuable bandwidth and capacity, and necessarily compromising eBay’s ability to use that capacity for its own purposes.”

There is no doubt that the cybertrespass cases alter the common law rule significantly. If the property is defined as bandwidth, then any unauthorized use is a potential trespass: Every request to a web site occupies some quantum of bandwidth and thus interferes with the owner’s ability to use it for the owner’s own purposes. That said, we should expect some doctrinal stretching when an age-old common law rule is applied to a dynamic modern realm such as the Internet. The courts’ redefinition of the chattel to include bandwidth does not do unacceptable violence to the basic shape of the trespass to chattel tort. The more pressing question is whether the application of the rule is warranted.

One difficulty is that the usual common law technique of reasoning by analogy does not offer easy answers. The Internet straddles physical space and “virtual,” or informational, space. The web lends itself to easy comparisons with physical space. Its vocabulary includes “addresses” and “surfing” and “cyberspace.” Furthermore, the Internet is connected to physical space. The servers, routers, and wires that make up the Internet do exist somewhere, and they are someone’s property. At the same time, of course, the Internet is not a place. In the words of one observer: “[T]he idea that the Internet is literally a place in which people travel is not only wrong but faintly ludicrous.” Rather, it is a medium for exchanging information on a massive scale—so massive that it mimics the real world in its fullness. For this reason perhaps, we are inclined to think of the Internet as a place, but not the telephone or the fax machine.

Since metaphors do not yield easy answers, we should instead be concerned with crafting a legal rule that maximizes the value of the Internet as a medium. A good rule should protect both information and the physical networks that make the exchange of information possible. The trespass to chattels tort as modified by eBay accomplishes this by offering the clear right to exclude that I

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143. See supra Section II.A.
145. See Hunter, supra note 8, at 453-54 (cataloging Internet words that suggest an analogy to physical space). There is a near obsession with metaphor and analogy in the cyberspace law literature. See O’Rourke, supra note 4 (considering “the website as a book” and “the website as real property”); Lemley, supra note 8, at 521-23 (discussing the importance of spatial metaphor).
146. Lemley, supra note 8, at 523.
have urged. In its pristine common law form, the trespass to chattels tort would be useless as a rule of cybertrespass. Damage to a site’s physical equipment will never be found, even in the most egregious cases. At most, a hacker may damage the software that runs the system (e.g., with a virus). If the definition of chattel did not include network capacity, even hostile attempts to disable a site by overwhelming it with requests (commonly known as “denial of service” attacks) would not fall within the tort’s reach. It is only because courts expanded the chattel tort to include network capacity that it offers any basis for a right to exclude.

Critics also object to the chattel tort not only because the tort in effect bars the unauthorized use of web site information.\textsuperscript{147} This would indeed be a problem if there were not good reason for sites to try to protect their information. This Note has argued, however, that the integrity of information is \textit{precisely} what we should protect if we wish to maximize the productive capability of the Internet. The network efficiencies of the online auction marketplace inhere in the information itself—and in the way users access it. Only a clear right to exclude that protects information will allow web sites to capture these efficiencies.

\section*{B. The Pervasiveness of Network Efficiencies and Why All Web Sites Should Have a Right to Exclude}

It is possible that eBay and the online auction market are special cases—that network efficiencies make them uniquely vulnerable to the depredations of others. If this were true, it would not make sense to argue from the proper outcome in eBay to a general right to exclude. A narrow rule, applicable in the particular circumstances of eBay, might be warranted, but certainly not one that would give all web sites a similar right. If, on the other hand, network effects are widely prevalent on the Internet, a broad right to exclude would be appropriate.

Instances where Internet firms have tried to block access to their sites suggest obvious potential applications of a right to exclude. Several concern web sites seeking to block access to an information aggregator, such as a search engine or price comparison site. One aspect of the \textit{Ticketmaster} case\textsuperscript{148} falls into this category as does the attempt by MySimon, the price comparison site, to bar access to another price comparison site.\textsuperscript{149}

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147. See Benkler, \textit{supra} note 141, at 219 (“Decisions like eBay create an exclusive private right in information under the common law.”).
148. See \textit{supra} note 66.
149. See Mike France, \textit{Copyright on the Net: Who 'Owns' a Price?}, BUS. WK., Dec. 13, 1999, \textit{available at} http://www.businessweek.com/1999/99_50/b3659014.htm (last visited Oct. 19, 2004). Another category of cases concerns unwanted email, or “spam.” It is not clear that the same rationale for a bright-line right to exclude should apply to these situations. At the very least, they may not be characterized by the same network efficiencies that characterize eBay and other online businesses. For
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These cases involve network efficiency considerations similar to those in
*eBay*. The business model for MySimon's price comparison shopping site, for
instance, depends greatly on network efficiencies for its success. Each buyer
MySimon attracts makes inclusion in its listings more valuable as a marketing
tool to retailers, and each retailer it adds makes it a better resource for buyers. It
turns out that attracting buyers is the more valuable commodity: MySimon
charges retailers for premium placement in its listings.\textsuperscript{150} MySimon's ability to
capture the efficiencies of this network has driven the development of the site
and spurred innovation. Allowing a competitor such as Priceman.com to index
MySimon's site would destroy the incentive to develop this technology and
cause this kind of activity to be underproduced.\textsuperscript{151}

In some situations, however, the business model of the complaining web
site may not be dependent on network efficiencies. For example, suppose that
an online retailer such as Amazon tried to block MySimon from indexing its
site. Professor Warner suggests a useful distinction between this kind of case
and those involving network effects, and he argues that a right to exclude
should not extend to the former.\textsuperscript{152} He offers two reasons for his conclusion.
First, Amazon is likely to benefit from inclusion in MySimon: as a “primary
aggregator,” it “is not being asked to tolerate a threat from a competitor; rather,
it is being asked to benefit from a business ally.”\textsuperscript{153} Second, allowing Amazon
a right to exclude risks giving rise to “preferential indexing”—i.e., a regime in
which search engines and price comparison sites have to negotiate agreements
before indexing sites. Professor Warner regards this as a suboptimal
arrangement:

The point is not that this is \textit{likely} to happen; the point is that there is an adequate
justification for foreclosing the \textit{possibility} that it might by not granting primaries a
right to exclude. The justification is that a minimal limitation on individual freedom
is worth the substantial gain in overall welfare that effective, comprehensive search-
engine indexing offers.\textsuperscript{154}

However useful the distinction he draws, Professor Warner's argument is
unpersuasive for two reasons. First, if a primary aggregator such as Amazon is
indeed prepared to block access to a price comparison site, there is little basis
for believing that Amazon will in fact benefit from a rule of open access. This
same objection applies to the supposition that comprehensive search engines
and comparison sites plainly contribute to social welfare: if this is truly the

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  \item \textsuperscript{150} See Stefanie Olsen, \textit{Yahoo To Launch Product Comparison Service}, CNET News.com, Sept.
    advertisers have wised up to the advantages of search marketing via Overture and Google (they pay only
    when people click to their sites), major brands like J. Crew and Circuit City are more willing to go
    straight to shopping comparison sites to advertise.”).
  \item \textsuperscript{151} This is the now familiar argument about the *eBay* case. \textit{See supra} Section III.C.
  \item \textsuperscript{152} Warner, \textit{supra} note 109, at 142-44.
  \item \textsuperscript{153} \textit{Id.} at 142.
  \item \textsuperscript{154} \textit{Id.} at 143.
\end{itemize}
case, we should expect private bargaining to produce them. Of course, private bargaining is producing them, and even large retailers are prepared to pay search sites to get their products listed.

Second, it is not always easy to distinguish so-called primary aggregators from secondary aggregators. For example, Amazon.com offers both products from its warehouse and from a number of "zShops"—retail operations that Amazon hosts but does not itself run. Of course, Amazon also includes auctions. Both zShops and auctions are subject to obvious network effects. Under Professor Warner's dichotomy, it is not at all clear which rule of access should govern Amazon. This is, at the very least, a practical difficulty, if not also an indication that the distinction does not make sense. Network effects are complex phenomena. Even a basic retail site will exhibit some network effects with respect to advertising or agreements with marketing partners. Retail sites that seek to cultivate community participation, as eBay does, implicate network effects still more. In short, it is hard to imagine a workable rule that treats the presence or absence of network effects as a threshold condition of its application.

This suggests that web sites exhibit sufficiently strong network effects for the eBay analysis to apply. Even where network effects are not apparent now, innovations that attempt to capture network benefits may emerge in the future, as has occurred in the case of Amazon. In the context of information aggregation, a right to exclude therefore preserves the efficiencies of existing networks and allows for development of network-related innovations.

C. The Digital Anticommons Problem

Finally, it has been suggested that giving web sites a legal right to exclude threatens to create a digital anticommons—a situation where property is subject to too many rights-holders and too many persons with a veto over its use. Professor Hunter argues that requiring information aggregators to have the permission of web sites before indexing content will make information aggregation impossible:

[Web]sites will either hold out for much of the value of the aggregation product (a characteristic strategy of smaller competitors) or, if they seek to build a competing


156. Even if the rule could be applied as a practical matter, the bifurcation of the Internet into network-effect and non-network-effect sites could give rise to market distortions.

aggregation product, will stonewall until the new entrant collapses (a strategy of large competitors). In neither case will the socially desirable innovation occur.\textsuperscript{158} In other words, bargaining problems will prevent information aggregators and web sites from efficiently allocating resources. As Hunter acknowledges, whether such problems will arise is ultimately an empirical question.\textsuperscript{159} This Note has argued that in fact we should expect transaction costs to be fairly low on the Internet.\textsuperscript{160} There is also good reason to believe that licensing will only occur in cases where both market power and strong network effects are present. Moreover, since eBay, information aggregators have had little problem expanding their reach. Google raised $1.7 billion in its initial public offering,\textsuperscript{161} and it has developed a price comparison site, Froogle, which for now distinguishes itself from other such sites by listing products free of charge. The evidence from the post-eBay world seems inconsistent with a looming anticommons problem.

Professor Hunter follows up his hypothesis of an anticommons problem with proposals to “restor[e] the commons” by “challeng[ing] the cyberspace enclosure movement head on.”\textsuperscript{162} Indeed, the notion of a productive digital commons is widely accepted among cyberspace law scholars.\textsuperscript{163} The idea is that property left in the commons lends itself to constant improvement by others who take it up and alter it for their own purposes. Professor Lessig calls the entire Internet an “innovation commons.”\textsuperscript{164}

Of course, the question of whether, in certain instances, common property regimes are more productive than systems of private entitlements is also an empirical one—and one that lies beyond the scope of this Note. I wish instead to conclude with only two observations about the digital commons as a theoretical and legal problem. First, we should keep in mind that property rights do not destroy the commons altogether. Even strong property regimes leave room for significant innovation within the commons. Producers of new technology can never completely appropriate the full benefit of their creation. eBay may have created the online auction market—it may have developed reputation mechanisms, payment systems, and bidding formats—but it cannot stop Amazon or Yahoo from imitating those ideas in their basic form.\textsuperscript{165} In this

\textsuperscript{158} Hunter, supra note 8, at 513.
\textsuperscript{159} Id.
\textsuperscript{160} See supra text accompanying notes 138-139.
\textsuperscript{162} Hunter, supra note 8, at 514.
\textsuperscript{164} Id. at 23.
way, perhaps paradoxically, property rights may increase the amount of information in the public domain.\textsuperscript{166} Second, positing a digital commons does not really help us solve the problem of legal entitlements in cyberspace. This is partly because the commons, as it is usually understood, does not exist. The servers, the network capacity, and the content are in private control. Web sites can require passwords, block IP addresses, or take themselves off the Internet altogether. They may not have a legal entitlement to block unwanted access, but they certainly have the power to make their content available on whatever basis they wish, or not at all. If we are to have a commons at all, we must construct it ourselves. And if web sites find the commons we have constructed too brutal for their liking, they can easily shut themselves off from it. The task, then, for the emerging law of cyberspace should be to design a commons that is hospitable—one that encourages web sites to remain open to the Internet.

V. CONCLUSION

The Internet did not arrive with a set of preexisting legal entitlements. The problem of arranging appropriate entitlements in cyberspace must chiefly be informed by considerations of social welfare. Critics of a right to exclude have argued that \textit{eBay} and other cases applying the trespass to chattels tort were wrongly decided. In their view, a right to exclude information aggregators impedes socially productive innovation. This Note has set out to accomplish three goals. First, it has argued that critics have missed the importance of network effects both to \textit{eBay} and to other web sites, including information aggregators themselves. Network ownership is socially desirable because it allows for the internalization of the positive externalities of networks. In the case of \textit{eBay}, these network efficiencies were undermined by its inability to exclude Bidder’s Edge, and thus a right to exclude was appropriate. Second, the Note has suggested that, for reasons of economic efficiency, a bright-line right to exclude should be preferred to rules requiring more contextual application. Such rules allow parties to bargain ex ante to an efficient allocation of resources. Moreover, in light of the prevalence and complexity of network effects on the Internet, it is unlikely that courts can consistently reach decisions that are optimal from a social welfare standpoint. Finally, it has argued that the trespass to chattels tort, as applied in \textit{eBay}, offers an appropriate doctrinal basis for a bright-line right to exclude.

The conclusions presented here are perhaps unsurprising. It is, after all, generally acknowledged that, absent market failure, property entitlements produce efficient outcomes. In a sense, this Note has attempted no more than to

\textsuperscript{166} Id. at 1033 (“That each creation of even proprietary information expands the sum total of open information available for further technological, cultural, and social development suggests that the distinction between intellectual and more traditional forms of property may in fact provide even stronger justifications for intellectual property.”).
demonstrate that this is a superior arrangement for cyberspace as well. Maximizing network efficiencies on the web, as elsewhere, demands a legal regime with the usual prerequisites of private ordering—clear property entitlements and a bright-line right to exclude.