ARTICLE

THE INTELLECTUAL PROPERTY RENAISSANCE IN CYBERSPACE: WHY COPYRIGHT LAW COULD BE UNIMPORTANT ON THE INTERNET

ERIC SCHLACHTER†

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† UCLA B.A. 1988, M.B.A., J.D. 1994. The author is an attorney practicing cyberspace law with Cooley Godward L.L.P. <http://www.cooley.com>, Palo Alto, California, and is also an adjunct professor of Cyberspace Law at the Santa Clara University School of Law. The author wishes to extend special thanks to: the members of the CNI-COPYRIGHT mail list, whose contributions to an initial draft of this paper were invaluable to refining his interest in this topic; Stephan Paternot and Todd Krizelman of Cooley Godward's client WebGenesis, whose leading edge business models have led to numerous insights; and Lisa Sanger, a constant source of inspiration. The author also appreciates the comments to pre-publication drafts of this paper given by Brad Biddle, John Cummerford, Viraj Jha, Michael Lean, Mark Lemley, Shawn Molodow, Ross Mutton, Mark Perkins, Eric Reifschneider, Lisa Sanger, Paul Startz and Shelly Warwick.

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The author can be reached at schlachtere@cooley.com.

I. INTRODUCTION

Influential futurist Ithiel de Sola Pool wrote:

> For copyright, the implications [of electronic publishing] are fundamental. Established notions about copyright become obsolete, rooted as they are in the technology of print. The recognition of a copyright and the practice of paying royalties emerged with the printing press. With the arrival of electronic reproduction, these practices become unworkable. Electronic publishing is analogous not so much to the print shop of the eighteenth century as to word-of-mouth communication, to which copyright was never applied.[1]

The emergence of electronic networks has undeniably placed significant pressure on our existing intellectual property system. As with each new technological advance, copyright law must adjust to fit the new circumstances presented by the Internet. Until law and technology reach an equilibrium, many predict that intellectual property creators will be reluctant to create works for the Internet environment since creators will be unable to protect their copyright interests.[2] Others have argued that only minor adjustments are necessary to fit copyright law to electronic

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1. ITHIEL DE SOLA POOL, TECHNOLOGIES OF FREEDOM 214 (1983).

2. *See* U.S. DEP'T OF COMMERCE, INFORMATION INFRASTRUCTURE TASK FORCE, INTELLECTUAL PROPERTY AND THE NATIONAL INFORMATION INFRASTRUCTURE: THE REPORT OF THE WORKING GROUP ON INTELLECTUAL PROPERTY 10-11 (1995) [hereinafter NII WHITE PAPER], *available at* <http://www.uspto.gov/web/offices/com/doc/ipnii>; Ken Kay & Steve Metalitz, *Copyright Act Needs Digital Expansion*, LEGAL TIMES, Apr. 8, 1996 <http://www.cic.org/clip5.html>; Mark Stefik, *Trusted Systems*, SCI. AM., Mar. 1997 <http://www.sciam.com/0397issue/0397stefik.html> ("Uncontrolled copying has shifted the balance in the social contract between creators and consumers of digital works to the extent that most publishers and authors do not release their best work in digital form.").

[Throughout this article, websites are referenced as both primary and secondary sources. Unless otherwise noted, all websites were verified on May 1, 1995.]

networks such as the Internet.[3] Still others—a distinct minority—believe that copyright law has become less important in the age of electronic networks, and that production of intellectual property will continue unabated even without powerful copyright rights.[4]

Unlike Professor Pool, we have the benefit of a few years of empirical evidence to draw upon in analyzing the effects of electronic networks on intellectual property. This article analyzes some of the lessons we have learned in the commercial Internet's toddler years to glean some insights into the implications for copyright law and Internet-based commerce. After analyzing recent economic, business, sociological and technological developments, this article concludes that, while copyright law has a role to play on the Internet, other developments overshadow copyright law as a tool for conforming behavior such that copyright law may be unimportant to the Internet. The public policy implications are clear: the business models, sociology and technology of the Internet are evolving so rapidly that efforts to conform copyright law to this environment would be detrimental.

Part II summarizes a few basic points of U.S. copyright law. Part III describes specific threats that the Internet poses to the enforcement of rights under copyright law. Part IV analyzes the economics of electronic networks to identify why intellectual property might be created even in a putatively anarchistic, piracy-infested environment such as the Internet. Part V discusses sociological attitudes towards intellectual property on the Internet, identifying why it will be difficult to conform behavior on the Internet to the strict letter of existing copyright laws. Part VI discusses technologies that copyright holders can use in the battle over works subject to copyright. Finally, part VII concludes with thoughts about how we can live in a world where copyright laws are not the primary influence on our behavior towards intellectual property.

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3. NII WHITE PAPER, *supra* note 2, at 17. However, criticism of the NII WHITE PAPER has been widespread, with commentators arguing that its proposed changes are not minor. *See, e.g.*, Pamela Samuelson, *The Copyright Grab*, WIRED, Jan. 1996, at 134, *available at* <http://www.hotwired.com/wired/4.01/features/white.paper.html>; Digital Future Coalition <http://www.ari.net/dfc>.

Although this article focuses on the Internet, much of the analysis applies with equal force to other networks such as BBSs and on-line services.

4. *See* John Perry Barlow, *Selling Wine Without Bottles: the Economy of Mind on the Global Net* (a.k.a. *The Economy of Ideas*), WIRED, Mar. 1994, at 85, *available at* <http://www.hotwired.com/wired/2.03/features/economy.ideas.html> ("Intellectual property law cannot be patched, retrofitted, or expanded to contain digitized expression any more than real estate law might be revised to cover the allocation of broadcasting

II. UNITED STATES COPYRIGHT LAW BASICS[5]

Many excellent summaries of U.S. copyright law exist,[6] and this section will not attempt to duplicate those efforts. However, mapping out the basic contours of the existing U.S. copyright law scheme is helpful in understanding the import of the conclusions of this article.

The Constitution authorizes Congress to establish a legislative scheme "to promote Science and the useful Arts, by securing for limited Times to Authors . . . the exclusive right to their . . . writings . . . ."[7] In response, Congress enacted the Copyright Act of 1909, which it later replaced with the Copyright Act of 1976 (the "Copyright Act").[8]

The Copyright Act governs original works of authorship that are fixed in a tangible medium of expression. While the standard for originality is low, facts and ideas may not be copyrighted.[9] For copyrightable works, the owner has the following exclusive rights:

> (1) to reproduce the copyrighted work in copies or phonorecords;
>
> (2) to prepare derivative works based upon the copyrighted work;
>
> (3) to distribute copies or phonorecords of the copyrighted work to the public by sale or other transfer of ownership, or by rental, lease, or lending;
>
> (4) in the case of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works, to perform the copyrighted work publicly;
>
> (5) in the case of literary, musical, dramatic, and choreographic works, pantomimes, and pictorial, graphic, or sculptural works, including the individual images of a motion picture or other audiovisual work, to display the copyrighted work publicly; and
>
> (6) in the case of sound recordings, to perform the copyrighted work publicly by means of a digital audio transmission.[10]

These exclusive rights are subject to numerous restrictions. First, in the case of works created after January 1, 1978, these rights cease 50 years after the death of the author, or, in the case of works made for hire, the earlier of 75 years from the date of first publication or 100 years from the date of creation.[11]

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spectrum . . ."); Esther Dyson, *Intellectual Value*, WIRED, July 1995, at 136, *available at* <http://www.hotwired.com/wired/3.07/features/dyson.html>.

5. This article discusses only U.S. copyright law, although other copyright law schemes are similarly worthy of analysis.

6. *See, e.g.*, NII WHITE PAPER, *supra* note 2, at 19-147; Terry Carroll, *Frequently Asked Questions About Copyright*, version 1.1.3, January 6, 1994 <http://www.eff.org/pub/intellectual_property/copyright.faq>.

7. U.S. CONST. art. 1, sec. 8, cl. 8.

8. 17 U.S.C. § 101 et seq. (1994).

9. *See* Feist Publications, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 340 (1991), *available at* <http://www.seamless.com/rcl/feist.html.

10. 17 U.S.C. § 106 (1994).

11. *Id.* § 302.

Second, these exclusive rights are subject to the doctrine of fair use, which may permit the infringement of an exclusive right of a copyright owner if its conditions are met. The Copyright Act enumerates four factors that are to be considered to determine whether or not a use is fair:

> (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
>
> (2) the nature of the copyrighted work;
>
> (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
>
> (4) the effect of the use upon the potential market for or value of the copyrighted work.[12]

In evaluating a claim of fair use, the court is to consider all four factors. However, taking 100 percent of a copyrighted work ordinarily militates against a finding of fair use,[13] and the fourth factor is generally considered the most important.[14]

There are numerous other statutory exceptions and limitations to copyright owners' rights, generally set out in Sections 108 to 120 of the Copyright Act.

Other intellectual property rights in U.S. law often also apply to works for which copyright protection is sought, including trade secret rights, trademark rights, patent rights, rights of publicity, and rights of privacy. While these other forms of intellectual property are not addressed in this paper, collectively they form an important additional basket of rights available to creators of intellectual property.

III. THREATS TO ENFORCING COPYRIGHT RIGHTS ON THE INTERNET

This section describes some of the unique ways that the Internet poses a threat to copyright owners' ability to enforce their copyrights.

A. No Loss of Quality In Reproduction

Unlike copies of intellectual property made using analog copiers (such as photocopy machines, video and music tape recorders, facsimile machines and others), digital copies of intellectual property produce perfect copies without any loss of quality. The first generation and the 1000th generation copy of digital material are indistinguishable. Since each copy is a perfect copy, no quality-related limits inhibit pirates from making as many copies as they please, and recipients of these copies

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12. *Id.* § 107.
13. *See* Sony Corp. v. Universal City Studios, Inc., 464 U.S. 417, 449-50 (1984).
14. *See* NII WHITE PAPER, *supra* note 2, at 79.

have no incentive to return to authorized sources to get another copy equal in quality to the original version.

B. No Meaningful Marginal Costs of Reproduction or Distribution

Unlike the business of selling and distributing physical copies of books, magazines, music cassettes or CDs, video cassettes or software, the costs of making one extra copy of intellectual property on-line are insignificant, as are the distribution costs associated with moving that copy to the end user over the Internet. Assuming no per-byte or other volume costs are imposed on the site owner (which is the current state of the market), infringement can occur at virtually no marginal cost.

C. Ability to Act Anonymously

Using anonymous remailers and other existing technologies, pirates are able to act anonymously on-line, leaving no traceable trail of activity. Anonymity poses a significant threat on the Internet, because it theoretically allows pirates to cause harm without bearing any risk of loss, thus undermining the general presumption that those causing harm can be forced to internalize the costs of their actions. As a result, more infringement is likely to occur than if costs were properly internalized.

However, anonymous activity is not a copyright-specific problem; it applies to all crimes and torts that can be committed on-line. Therefore, it may be more appropriate to address the harm caused by anonymity generally, rather than drafting a specific resolution applicable only to losses suffered by copyright owners. Furthermore, there is a built-in limitation to the scope and size of anonymous actions, particularly if any element of the activity is commercial; at a certain point the activity should become large enough to leave at least shreds of evidence, both in physical space and cyberspace, sufficient to allow attribution.[15]

D. Uneducated Users

Many users do not understand the existing copyright legal framework.[16] While the lack of user education applies in both physical

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15. Lance Rose, *The Emperor's Clothes Still Fit Just Fine*, WIRED, Feb. 1995, at 103, 104, *available at* <http://www.hotwired.com/wired/3.02/departments/rose.if.html>; *See* Philip E. Ross, *Cops Versus Robbers in Cyberspace*, FORBES, Sept. 9, 1996, at 134, 137, *available at* <http://www.forbes.com/forbes/090996/5806134a.htm> (noting that "[intellectual] property owners rely heavily on old-fashioned methods: police raids, lawsuits and tip-offs," all of which become more likely as the size of the venture increases).

16. *See* Jessica Litman, *The Exclusive Right to Read*, 13 CARDOZO ARTS & ENT. L.J. 29, at 50-51 (1994), *available at* <http://yu1.yu.edu:80/csl/journals/aelj/articles/13-1/litman.html> ("The current copyright statute has proved to be remarkably education-

space and cyberspace, the Internet permits these users to widely disseminate works with relative ease. Often times, this publication can inadvertently cause harm, such as the forwarding of works subject to copyright to third parties. The result may be a number of relatively small infringements that, in the aggregate, can lead to significant losses for copyright holders.

E. Conclusion

The foregoing threats indicate that copyright holders face substantial risks on-line. Nevertheless, we already have ample evidence that intellectual property is still being created for distribution on the Internet. Indeed, a staggering—almost unmanageable—quantity of intellectual property continues to be produced and made available on-line despite these threats.[17] Therefore, despite the assertions of those who believe that the threats posed on-line to copyrighted works would result in disincentives to create and distribute works, it appears other forces are at work on the Internet.

IV. ECONOMICS AND THE INTERNET

This section applies economic theory and surveys existing business models to suggest why, without increased copyright protection, intellectual property is still likely to be produced even if it is given away on the Internet.

A. Price-Setting Behavior in a Nearly Efficient Marketplace When Marginal Costs Are Meaningfully Zero

The Internet is not a perfectly efficient market, but it does represent a close approximation. Among the requirements for an efficient market are perfect information and zero transaction costs. First, while the Internet does not offer perfect information, some industries provide enough information on the Internet to give buyers an opportunity to compare prices based on nearly perfect information.[18] On the Internet, it

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resistant.... [O]ur current copyright statute could not be taught in elementary school, because elementary school students couldn't understand it. Indeed, their teachers couldn't understand it. Copyright lawyers don't understand it.").

17. *See* Steve G. Steinberg, *Seek and Ye Shall Find (Maybe)*, WIRED, May 1996, at 108, *available at* <http://www.hotwired.com/wired/4.05/features/indexweb.html> (noting that "at its current growth rate, the Web will contain more words than the giant Lexis-Nexis database by [summer 1996], and more than today's Library of Congress by the end of 1998").

18. *See* Netbot <http://www.netbot.com/>. For example, the Internet provides numerous "agents" for buying music CDs. These agents search the available pricing databases on the Internet and deliver a comprehensive set of results, allowing customers to

is likely that many additional industries will experience this phenomenon. Second, while transaction costs are not zero, the Internet has significantly reduced transaction costs. In particular, buyers may experience no marginal transaction costs attributable to using the Internet for finding purchasing opportunities or consummating a transaction.[19]

In an efficient marketplace, a firm's profit-maximizing price is the price where marginal revenue from each sale of the product equals the marginal costs of the product.[20] If marginal costs are zero, what is the profit maximizing price?

1. *MARGINAL COSTS ON THE INTERNET*

For many intellectual property creators, the marginal cost of each additional "sale" of the intellectual property is likely to be effectively zero. While many costs are associated with producing intellectual property, including the time of the creator and the Internet infrastructure (such as the hardware, software and Internet connection), these costs become fixed costs once the intellectual property is produced.[21] At that point, if the intellectual property is uploaded to the Internet, the remaining costs are trivial—further reproduction or distribution on the Internet imposes no meaningful marginal costs.

2. *OPTIMAL PRICING*

Economic theory predicts that if the marginal costs to "selling" intellectual property is zero, then some producers will accept zero marginal revenues. In other words, the profit-maximizing price for theses producers will be zero. Since this is a seemingly anomalous result, how can this be explained? There are at least four different possible explanations:

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easily compare prices and, presumably, choose the lowest. *See, e.g.*, BargainFinder Agent <http://bf.cstar.ac.com/bf/>.

19. *See* part III.B *supra*. In part, transaction costs are limited due to current market conditions of pricing for access that does not vary with usage. There has been much discussion suggesting that per-byte or per-unit pricing will be required because of the problems inherent in a system where users can get unlimited use of the scarce resources of the Internet without paying marginal costs. *See* Jeffrey K. MacKie-Mason & Hal R. Varian, *Economic FAQs About the Internet* (June 1995) <http://www.spp.umich.edu/ipps/papers/info-nets/Economic_FAQs/FAQs/FAQs.html>.

20. A producer will continue to produce so long as the marginal revenue from an additional unit of output is greater the marginal cost of such output, since the difference represents a contribution towards fixed costs. In an efficient market, the party with the lowest marginal cost sets the price, since it is able to undercut its competitors' prices and therefore win customers.

21. In the long run, all costs are variable costs. However, in the short run, costs that cannot be varied easily are fixed costs. Therefore, costs such as salaries, hardware and software expenses and contractual commitments for Internet service are all fixed costs in the short run.

(i) A zero-revenue pricing strategy may persist only in the short run; but, ultimately, because no profits are being made, all producers will exit this business. This is fundamentally the assertion of those who believe that intellectual property owners must be paid directly for their creative efforts, or else they will not produce.[22]

(ii) The only sustainable pricing strategy may be a scheme involving price discrimination, where prices are set in accordance with users' willingness to pay. In this situation, intellectual property will be offered at varying prices, including possibly free, depending on the user.[23]

(iii) Traditional economic theory may break down on the Internet so that intellectual property will not be offered for free despite the absence of marginal variable costs. If this were true, the profit-maximizing price may not be where marginal revenue equals marginal cost. This would be a rather profound result, implicating large chunks of existing economic theory.

(iv) Finally, the profit-maximizing price on the Internet may be where marginal revenue equals marginal cost because intellectual property will be cross-subsidized by other products in a manner sufficient to cover the fixed costs associated with intellectual property creation and distribution. If this is true, a market price of zero for intellectual property can still create long-term economic profits attributable to intellectual property creation.

Of the four possible explanations, as explained in the remainder of this part IV, the author believes that the last proposition best explains why the production and distribution of intellectual property will continue even in the absence of marginal revenues directly attributable to users of the intellectual property.

The remainder of this part IV will discuss why the last theory is at least supportable when it comes to many categories of intellectual property on the Internet.

B. Cross-subsidization of Intellectual Property Creation

There is nothing new about the proposition that vendors may give away X to sell Y. In the classic formulation of its strategy, Gillette is credited with conceiving the business model of giving away razors to sell

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22. *See, e.g.*, James Gleick, *I'll Take the Money, Thanks*, NEW YORK TIMES MAGAZINE, Aug. 4, 1996, at 16, *available at* <http://www.around.com/copyright.html>.

23. *See* Hal R. Varian, *Differential Pricing and Efficiency* (June 1996) <http://alfred.sims.berkeley.edu/Different/different.html> (arguing that it is optimal for intellectual property to be offered on a price-discriminated basis). Price discrimination is tricky because it requires careful definition of the product being price-discriminated. If the business model adopted by an Internet company is to provide free intellectual property as an inducement to sell other goods or services, is the "product" the intellectual property or the package of intellectual property plus the ancillary goods or services?

its blades.[24] However, the deployment of this strategy is inherently limited because a razor is a tangible "thing" that will always have marginal costs to produce. On the Internet, where the marginal costs of reproduction and distribution of intellectual property are effectively zero, cross-subsidization becomes viable for a significantly greater number of products.

An intellectual property owner can use a myriad of alternative business models to extract value from the free distribution of intellectual property. If successful, these business models will permit the cross-subsidization of intellectual property creation. Internet entrepreneurs will be induced to create intellectual property if they are able to use it to make a profit from alternative revenue sources.[25]

The remainder of part IV.B provides a survey of Internet-based cross-subsidization models that may support the production of intellectual property designed to be given away freely.

1. *ADVERTISING*

Advertising is one of the highest-profile business models on the Internet. Under the advertising model, a company gives away intellectual property to attract visitors to its site and then sells advertising space on its site to others. A broad range of companies are launching advertising-based attempts to freely give away intellectual property and substantive services, including email accounts,[26] interactive news agents,[27] editorial periodicals[28] and search engines and indexes.[29]

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24. *See* Robert Metz, *Shaking the Money Tree* (Nov. 4, 1996) <http://www.talks.com/library/rm110496.html>.

25. It is generally believed that few, if any, Internet businesses are currently making a profit. *See, e.g.*, Kathy Rebello, *Making Money on the Net*, BUS. WEEK, Sept. 27, 1996, at 104, *available at* <http://www.businessweek.com/1996/39/b34941.htm> (indicating that Internet businesses losing money outnumber moneymakers two to one); *See* Jeff Moad, *Web Shakeout*, PC WEEK, July 15, 1996, at E1, *available at* <http://www8.zdnet.com/pcweek/ExecConnect/0715/15emain.html> (describing a number of high-profile failures of Internet businesses). This limited empirical evidence does not yet prove that the Internet will provide insufficient profits to induce the creation of intellectual property. The Internet is far from mature, either as a commercial environment or in terms of the predictability its technical or legal framework. Further, in most industries, significant upfront investments must be made before profits accrue—and most Internet businesses are less than 3 years old. Instead, the high stock valuations of many Internet companies indicates that many investors forecast significant future profits.

26. *See, e.g.*, Juno On-line <http://www.juno.com> and Hotmail <http://www.hotmail.com>. Other companies, such as Cyber FreeWay <http://cyberfreeway.net> and @bigger.net <http://bigger.net> are offering lifetime email accounts for a low one-time fee. However, Freemark, one of the early entrants in this arena, has already gone defunct.

27. *See, e.g.*, Pointcast Network <http://www.pointcast.com>, Freeloader <http://www.freeloader.com> and Mercury Mail <http://www.merc.com/>.

28. *See, e.g.*, HotWired <http://www.hotwired.com> and C | Net <www.cnet.com>.

29. *See, e.g.*, HotBot <http://www.hotbot.com/>, Yahoo! <http://www.yahoo.com>, Excite <http://www.excite.com>, InfoSeek <http://www.infoSeek.com>, Switchboard

However, the slow increase in Internet advertising dollars suggests that, in the short run, advertising revenue may be insufficient to support the level of free distribution of intellectual property that exists today.[30] Because the supply of advertisement placement opportunities exceeds the demand of advertisers, advertisers are becoming more demanding.[31] Moreover, Internet users have grown weary of the often annoying banner advertisements. Nevertheless, the results obtainable from on-line advertising can be so compelling that certain advertisers have strong incentives to choose Internet advertising over other media.[32]

Furthermore, other media industries indicate that multi-billion dollar industries can be built primarily on advertising. For example, the multi-billion dollar broadcast TV industry effectively gives away its intellectual property to viewers, supporting itself almost exclusively on advertising. The television broadcasting model is consistent with the contention that Internet users will not be required to pay for intellectual property, and that the production of intellectual property can be entirely supported by advertising.

In reality, many intellectual property owners will combine the advertising model with other forms of ancillary revenues.[33] Nevertheless, advertising remains a critically important component of Internet cross-subsidization business models.

<http://www.switchboard.com>, Four11 <http://www.four11.com> and BigBook <http://www.bigbook.com/>.

30. *See* Lauren Gibbons Paul, *Web Rewards Wait Only for the Patient*, PC WEEK, July 15, 1996, at E4, *available at* <http://www8.zdnet.com/pcweek/archive/1328/pcwk0007.htm> (suggesting that content sites should not expect to break even before the year 2000); Rosalind Resnick, *Follow the Money*, INTERNET WORLD, May 1996, at 34, 34-36 [hereinafter Resnick, *Follow the Money*], *available at* <http://www.iw.com/1996/05/money.html> (noting that advertising revenue is heavily concentrated among a small number of sites, leaving few advertising dollars for other sites); *See also* Hunter Madsen, *Reclaim the Deadzone*, WIRED, Dec. 1996, at 206, 212, *available at* <http://www.wired.com/wired/4.12/esmadsen.html> (describing how the limited real estate for banner advertisements suggests that banner advertisements will be insufficient to support Web publishing). Web advertisement revenues were $71.7 million in the first six months of 1996, although they are expected to increase to $5 billion in 2000. Rebello, *supra* note 25, at 107.

31. *See* Zachary Schiller, *For More About Tide, Click Here*, BUS. WEEK, June 3, 1996, at 44, *available at* <http://www.businessweek.com/1996/23/b3478129.htm> (describing how Procter & Gamble, America's largest advertiser, has attempted to pay based solely on click-through rates, not page impressions).

32. *See* Craig R. Evans, *The Web's REAL Opportunity—Advertising!*, ELEC. RETAILING, Sept./Oct. 1996, at 6 (describing a survey of Web users indicating that 46% of those who used the Web to research products and services went on to buy the product at retail).

33. *See* Rosalind Resnick, *AdTech '96: Is Banner Advertising Dead?*, INTERACTIVE PUBL'G ALERT, July 1, 1996 <http://www.netcreations.com/ipa/banners.html> [hereinafter Resnick, *Banner Advertising*] (describing "sponsored content," "targeted direct mail" and "pay-per-use" advertising strategies).

2. *SPONSORSHIPS*

A variant on the advertising model, sponsorship is the "co-branding" of intellectual property with the sponsor's trademarks. In the old days of television, sponsorship was common; companies would purchase all of the advertising for a show and be acknowledged as the sponsor.[34] On-line, sponsorship can take many forms, but the fundamental premise is that the sponsor will be more integrated with the content than just sticking its banner ad at the top of the page. For example, Riddler <http://www.riddler.com/home/html> promotes a contest which gives rewards to participants who can answer riddles that require the participants to visit sponsors' sites.[35]

Sponsorship is emerging as a strong alternative to banner advertising, at least partly due to advertisers' dissatisfaction with the results from banner advertising.[36] However, sponsored content also raises difficult issues about editorial integrity as the line between advertisement and editorial information becomes blurred.

3. *"TRY BEFORE YOU BUY"*

In the "try before you buy" model, companies provide consumers with a free copy of a work which is limited in some way (such as duration or functionality) in the hopes that the consumers will purchase a full copy. For example, a vendor may give away software in the hopes that recipients will return to purchase a copy. Moreover, in many instances consumers may unilaterally pirate works and then later decide to purchase legitimate copies, even though the vendor never intended to provide "try before you buy" copies.[37] On the Internet, the "try before you buy" model has become extremely popular, in part because no meaningful marginal costs are associated with manufacturing or distributing trial copies. Thus, software,[38] content[39] and subscription services[40] are routinely given away on a "try before you buy" basis.

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34. Madsen, *supra* note 30, at 220.

35. In another example, IBM makes the full text of patents issued to it since 1971 available for free on its website. IBM's motivation is, in part, to reinforce the message that IBM has received more patents than anyone else for the past several years. *See* IBM Patent Server <http://patent.womplex.ibm.com/>.

36. Resnick, *Banner Advertising, supra* note 33.

37. *See* Margie Wylie, *Can Copyright Survive the Digital Age? Should It?*, DIGITAL MEDIA: A SEYBOLD REPORT, July 3, 1995 (on file with author) ("'Some of the more popular spreadsheet and wordprocessing programs were greatly aided by being ripped off to a certain degree.' It let people use them enough that they were convinced it was worth the money to buy a legitimate copy, with documentation, support and upgrades." (quoting R.W. Lucky of Bellcore Labs)).

38. This model is exemplified by the long-standing "shareware" industry. *See, e.g.*, McAfee, <http://www.mcafee.com>, which makes anti-virus shareware software, and Netscape <http://www.netscape.com>, which gives its browser away as shareware. Id Software, the makers of Doom II, a popular (and violent) computer game, took a slightly

4. *SALES OF UPGRADES*

Under the sale of upgrades model, consumers are freely given intellectual property with the expectation that some of them will purchase a superior version. In some ways a variant of the "try before you buy" model, this model capitalizes on the fact that version 1.0 of a product can be the best device to sell version 2.0. For example, sales of upgrades are ubiquitous in the modem software business, where companies bundle their "lite" version of software with the modem for free in the hope that consumers will upgrade to the "professional" version. However, the model is not limited to software; an author might give away a short story as a way to build demand for a "further adventures" sequel story or the movie.[41]

5. *SALE OF COMPLEMENTARY TECHNOLOGY*

The truest application of Gillette's maxim, the Internet version might be "give away the client software to sell the server software." For example, the Internet's "browser software wars" have focused heavily on the free distribution of client software. With a large installed base of client software, the server software—which is sold and provides added functionality for people using the client software—becomes more attractive. More generally, software companies who also have hardware businesses may give away software to encourage the use of complementary proprietary hardware.[42]

6. *SALES OF PHYSICAL GOODS*

Companies may use the free distribution of intellectual property to foster the sale of physical goods in many ways. For example, Digital initially intended to popularize its Alta Vista search engine in order to

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different approach—they gave away the first 3 basic "levels" of the Doom II dungeon; the other 47 levels were made available for a charge.

39. Numerous pornography sites on the Internet offer a few free photos for browsing as a teaser to purchasing access to the remaining database of photos. *See generally* <http:www.yahoo.com/Society_and_Culture/Sexuality>.

40. *See, e.g.*, the Wall Street Journal Interactive Edition <http://www.wsj.com>, which offers a free two-week trial subscription.

41. *See* Paulina Borsook, *Steal This Article*, UPSIDE, Mar. 1996 at 80, 88 [hereinafter Borsook, *Steal This Article*], *available at* <http://www.upside.com/texis/archive/search/article.html?UID=9603011002> (describing how music groups have a love/hate relationship with their underground fans, knowing that infringement by the underground is often a way to expand their fan base). Spectrum Press <http://users.aol.com/specpress/free.htm> gives away samples of short stories and novels that it sells in electronic form delivered on floppy disks. *But see id.* ("'You can upgrade software, not music.'" (quoting Judith Saffer, in house attorney for BMI)).

42. *See* Caryn Gillooly, *Cabletron's Unbeatable Price Plan*, INFO. WEEK, July 24, 1995, at 28 (describing how Cabletron was giving away its Spectrum software, worth $20,000, as an entree to sell its other network management products).

showcase the speed of its Alpha servers.[43] Digital thus intended to give away a search tool as a way to enhance sales of its physical goods. Similarly, in the area of character merchandising, many companies may seek to build character awareness on-line through free distribution of character-related content; the increased character awareness may translate into increased demand for character-branded merchandise.[44] Finally, electronic distribution of intellectual property could be used to create demand for physical copies of intellectual property that have been bolstered with additional content or experience-enhancing elements.[45]

7. *SALES OF SERVICES*

Companies may stimulate demand for services by distributing free intellectual property on-line. For example, consultants may find it relatively easy to attract potential customers by distributing free content that demonstrates expertise. Alternatively, software companies can give away software as a way to sell systems integration or customized application development.

A notable example of the use of cross-subsidization to sell services is the free distribution of software as an avenue to sell technical support. For example, Microsoft gives away its Internet Explorer browser without a licensing fee, but users must purchase technical support. The sale of technical support unbundled from the underlying software has become increasingly popular.

8. *PERSONAL INFORMATION COLLECTION AND DATA MINING*

Internet sites can easily collect a fair amount of information about their users, much of it without the user's consent. For example, Internet sites can learn the user's IP address and most recently visited site. Furthermore, by placing a unique identifier into the user's "cookie"[46] (or, with less precision, by analyzing the server logs), the Internet site can trace the user's activity through the site and glean insights into what the user looks at and for how long. In addition, many sites may request or

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43. Rose Aguilar, *Digital to Market Alta Vista*, Mar. 29, 1996 <http://www.news.com/News/Item/0,4,1005,00.html>.

44. This model may explain why companies tolerate unauthorized fan sites. *Cf.* Constance Sommer, *Film Rights Falling Through the Net*, SAN JOSE MERCURY NEWS, Dec. 10, 1996, at 10E (referring to Disney's laissez-faire attitude toward on-line fan sites).

45. *See* Paulina Borsook, *Music Lessons*, UPSIDE, Mar. 1996 at 84, [hereinafter Borsook, *Music Lessons*] (describing how music companies can add value to free on-line music sufficient to induce purchases of CDs through better packaging, thicker CD booklets, and accompanying video).

46. A "cookie" is a file on the user's hard drive where websites may store user-specific information. Most browser software programs support the use of the cookie.

require users to fill out registration forms which call for the disclosure of extensive personal information.

Companies can then exploit this information for commercial gain in a number of ways, such as selling email mailing lists to other companies or selling advertising space to companies that want to provide users with customized product offerings or page views based on their perceived preferences.[47] Although the commercial use of this personal information can create some significant privacy issues,[48] such use is generally not subject to legal restrictions in the United States.

9. *COMMUNITIES*

The Internet is particularly useful for facilitating community formation. In physical space, community formation may be inhibited by geography, the cost of communication, or the asynchronous methods of communication. On the Internet, however, groups can form quickly and cheaply since these barriers are absent. Moreover, the absence of these barriers may facilitate the formation of communities devoted to extremely narrow topics, which otherwise would not form.

The formation of Internet communities offers one of the most promising Internet business opportunities. If an Internet site can successfully attract like-minded people to interact with each other on the site, it will have a number of ways to extract value from these relationships.[49] In addition to the obvious methods, such as selling the demographics to advertisers and selling the mailing list to merchants interested in reaching the target audience, the Internet site can extract value by enhancing the community members' ability to communicate with each other. The site could accomplish this by providing proprietary tools to facilitate onsite communication and tools and methods to facilitate and enrich physical-space meetings between members.

For example, WebGenesis <http://www.theglobe.com> provides chat rooms oriented primarily towards young adults. While the general public can access the chat rooms for free, subscribers receive "bonus" onsite privileges, including an onsite home page to which all their onsite chat postings are hypertext linked automatically, access to private chat

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47. *See, e.g.*, CyberGold <www.cybergold.com> (a service which will pay users to read advertisements sent to them based on their articulated preferences).

48. *Cf.* Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 <http://www2.echo.lu/legal/en/dataprot/directiv/directiv.html> (discussing the protection of individuals with regard to the processing of personal data and the free movement of such data).

49. *See* Rebello, *supra* note 25, at 106 ("'[Community-building] is the secret weapon of an electronic merchant.'" (quoting Amazon.com founder Jeff Bezos)). *See generally* Arthur Armstrong & John Hagel III, *The Real Value of On-Line Communities*, HARV. BUS. REV., May-June 1996, at 134.

rooms available only to other subscribers (who presumably are also dedicated chatters), and the ability to use tools such as Java that enhance the chatting experience. In other words, by providing the chat rooms for free, WebGenesis is able to identify those members of the communities who desire a greater relationship to the community and target these people for the sale of advanced onsite communications products.

Companies could also derive revenue opportunities from Internet communities by organizing conferences and other events of interest to the community. A site that forms a community dedicated to river rafting, for example, could sell river rafting trips to its members, an endeavor that would have the added value of creating an opportunity to meet other members of the community in physical space.

10. REINFORCEMENT OF PHYSICAL-SPACE MESSAGES

Internet sites can be used to reinforce marketing and sales efforts being made elsewhere. Such reinforcement can occur in the form of customer support and outreach, such as Federal Express' <http://www.fedex.com>, use of its website to provide data tracking services to its customers, or a software company's use of the Internet to distribute bug fixes, FAQs, usage tips and other forms of customer assistance.

Alternatively, some companies use Internet sites to increase customer loyalty or provide branding opportunities.[50] For example, the websites prepared by Zima <http://www.zima.com> and Miller Genuine Draft <http://www.mgdtaproom.com/> contain offerings designed to allow their consumers to feel like the part of a community and to encourage brand loyalty. The Internet market has been described as a "relationship" market;[51] free intellectual property can be the way to initiate, build or reinforce the relationship.

C. Importance of Attribution

As the prior section has indicated, companies can try a myriad of methods of creating value by giving away intellectual property. However, for cross-subsidization to work, buyers impressed with product X (freely given away) must be led to product Y (for sale). In most cases, this will mean that product X must give proper attribution to the seller of product Y so that buyers can make the connection.

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50. *See* Neil Gross & Peter McCoy, *The Technology Paradox*, BUSINESS WEEK, Mar. 6, 1995, at 76, 80 (describing how giving intellectual property away for free can build mindshare in the coming "attention economy").

51. *Id.* at 77.

U.S. copyright law affords no "right of attribution" to owners of intellectual property distributed on the Internet.[52] While some trademark, unfair competition, or right of publicity theories may limit the ability of users of intellectual property to falsely represent the origin of the intellectual property, there is no copyright obligation of attribution.[53]

In some cases, attribution may be the only right that matters on the Internet. In fact, an intellectual property owner seeking cross-subsidization may encourage people to "infringe" the intellectual property through wide distribution, so long as attribution is given.[54] Thus, existing copyright law lacks an important right, the absence of which could hinder the deployment of key business models on the Internet.

The NII White Paper recognized that attribution could be important and therefore recommended that copyright law be amended to "prohibit the provision, distribution or importation for distribution of copyright management information known to be false and the unauthorized removal or alteration of copyright management information."[55] The White Paper defines copyright management information as the name of the copyright owner and the terms and conditions for use of the work.[56]

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52. 17 U.S.C. § 106A applies only to "visual works," which include paintings, drawings, prints or sculptures in a limited edition of less than 200 copies which are signed and consecutively numbered, or a still photographic image which is a single copy signed by the author or is a limited edition of less than 200 copies signed and consecutively numbered. *Id.* § 101. While it theoretically possible for a work existing on the Internet to be categorized as such, this possibility is highly remote.

53. None of the six exclusive rights of copyright have been interpreted to require attribution. *See* Mark A. Lemley, *Rights of Attribution and Integrity in On-line Communications*, 1995 J. ON-LINE L. art. 2 <http://warthog.cc.wm.edu/law/publications/jol/lemley.html>.

54. *See* John S. Erickson, *Open Commerce through Enhanced Attribution* (1996) <http://www.netrights.com/EnhancedAttribution.html>; *cf.* Borsook, *Music Lessons*, *supra* note 44, at 84 (describing how a musical group used the name of a Japanese character for one of the group's songs; the litigation over the use of the name was amicably settled when the group pointed out that the character owner could not buy the kind of free advertising it had received).

Some of the business models, such as advertising, may require the attribution to occur only on the site where the advertising is located. Therefore, not every business using cross-subsidization will necessarily encourage widespread infringement.

55. NII WHITE PAPER, *supra* note 2, at 235. See also Julie A. Cohen, *Some Reflections on Copyright Management Systems and Laws Designed to Protect Them*, 12 BERKELEY TECH. L.J. 161 (1997) [hereinafter Cohen, *Copyright Management Systems*] (discussing policies prohibiting alteration of copyright management information).

56. *Id.* The reference to terms and conditions of use may be problematic because it suggests that owners can unilaterally impose "contract" terms on all consumers of the file. *See* Julie E. Cohen, *A Right to Read Anonymously: A Closer Look at Copyright Management in Cyberspace*, 28 CONN. L. REV. 981 (1996) [hereinafter Cohen, *Right to Read Anonymously*]. While this unilateral contract approach might be the right result, as found in ProCD v. Zeidenberg, 86 F.3d 1447 (7th Cir. 1996), *available at* <http://www.kentlaw.edu/7circuit/1996/jun/96-1139.htm>, no consensus currently exists that the *federal* government should be dictating that licensors should be permitted to unilaterally impose contract terms on licensees. *See* U.C.C. *proposed* Article 2B (Mar. 21, 1997 draft) <http://www.lawlib.uh.edu/ucc2b/> (a controversial attempt to develop model *state*

While not adopted into law in the United States, a virtually identical proposal was adopted at the proceedings of the World Intellectual Property Organization ("WIPO").[57] Time will tell if the treaty will be adopted without changes in the United States.

The White Paper proposal and the WIPO treaty represent an important step toward the recognition of the right of attribution in the United States. However, the proposed law could have profound effects on some current Internet practices.[58] First, website operators commonly incorporate content maintained on remote servers into the pages delivered to users through a direct hypertext link to the remote content.[59] Intellectual property owners whose files are linked this way may object (1) because these direct-linked users do not actually visit their site, and (2) because the file may be displayed so as to suggest that the site providing the link is the source of the file. Does this form of direct linking run afoul of the White Paper's proposal? Should it? Would it matter if the linked-to site provided a notice denying access to others who attempted to link to the site?[60]

Second, robots and agents can, for example, survey multiple search engines and display the search results to the end user in summary form, without displaying any advertising contained on the search engine's site (or, for that matter, giving any attribution to the search engine).[61] As a

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legislation permitting increased ease in the formation of unilateral contracts by licensors); *See also* Maureen O'Rourke, *Copyright Preemption After the ProCD Case: A Market-Based Approach*, 12 BERKELEY TECH. L.J. 53, 71 (1997). This issue is particularly important because presumably the licensor-imposed terms will exceed the licensor's rights under copyright law (otherwise, why would they need to impose them?). However, terms and conditions would be less problematic if they were merely grants of licensor's copyright rights (i.e., "you may use this material for any noncommercial use").

57. *See* World Intellectual Property Organization, Diplomatic Conference on Certain Copyright and Neighboring Rights Questions, WIPO Copyright Treaty (Dec. 23, 1996) <http://www.wipo.org/eng/diplconf/distrib/94dc.htm>; World Intellectual Property Organization, Diplomatic Conference on Certain Copyright and Neighboring Rights Questions, WIPO Performances and Phonograms Treaty (Dec. 23, 1996) <http://www.wipo.org/eng/diplconf/distrib/95dc.htm>. *See also* Cohen, *Copyright Management Systems*, *supra*, note 56 at 161, 165-69.

58. Prof. Samuelson also notes that the proposal could protect devices incorporated into files that effectively report on users' behavior, raising potentially serious privacy concerns. Samuelson, *supra* note 3, at 188; *See also* Cohen, *Right to Read Anonymously*, *supra* note 56.

59. The HTML command "img src," followed by a URL, instructs the user's browser software to access the file contained at the referenced URL and to incorporate that file into the page displayed to the user. The user will see the file displayed on the page, but the user will not see the site from which the file originated, nor will the linking site store a copy of the linked-to file on its server. Issues related to linking are discussed in part VI.D.1, *infra*.

60. *Cf.* CompuServe, Inc. v. Cyber Promotions, Inc., 1997 U.S. Dist. LEXIS (S.D. Ohio Feb. 3, 1997), *available at* <http://www.bna.com/e-law/cases/compus1.html> (discussing how when a mass email sender was notified by CompuServe that their "junk" email was no longer welcome, the sender's continued sending of mass emails was a trespass to chattels; however, notice "may be insufficiently communicated to potential third-party users when it is merely posted at some location on the network.").

61. *See, e.g.*, SavvySearch <http://williams.cs.colostate.edu:1969/>.

result, the search engine sites must bear the costs of providing the service without getting the anticipated benefits from the consumers of the information. Does this type of robot behavior run afoul of White Paper's proposal? Should it? Would it matter if the search engine's site contained a notice that notified others that robots and agents were not welcome?

D. Conclusion

The large number of alternative business models presented above is necessarily incomplete; entrepreneurs have proven highly capable of developing new ways of extracting value from the Internet. However, the mere existence of so many alternatives reinforces the fundamental message: intellectual property creators can cross-subsidize the production of their works in many ways.

The impact of this concept is powerful: if even one person is able to produce and freely distribute a type of intellectual property through cross-subsidization, why would consumers continue to pay for an equivalent work? While each copyrightable creation is theoretically unique, many types of intellectual property have substitutes which consumers would readily choose if they were available for free.[62] In other words, if the Internet is a relatively efficient market and intellectual property is somewhat fungible, then the free availability of a type of work should establish the market price for that type of intellectual property at zero.[63]

The implications of this proposition are truly profound. It suggests that intellectual property owners who expect to be paid directly by end users will face extreme competitive pressures. A single entrepreneur able to cross-subsidize the production of substitute intellectual property should theoretically drive the market price to zero and eliminate all prospects that end users will directly pay for the intellectual property. Given the plethora of methods an entrepreneur could use to achieve this result, zero pricing may be inevitable for many classes of intellectual property.

A recent case involving the use of "frames" raises similar issues which arise when one site engages in "free riding" on the efforts of other sites. *See* Washington Post Co. v. Totalnews, Inc. (complaint filed Feb. 20, 1997) <http://www.ljx.com/internet/complain.html>. However, Totalnews does provide attribution to the sites it frames.

62. *But see* Cohen, *Right to Read Anonymously*, *supra* note 56 (assuming that each intellectual property is unique to the point that owners are able to exercise monopoly powers sufficient to impose unfair terms on consumers seeking access to the work).

63. *See generally* Gross & McCoy, *supra* note 50 (describing the recurring phenomenon of valuable goods and services being given away for free, even where manufacturing and distribution have marginal costs).

However, some categories of intellectual property almost certainly will not be given away for free.[64] For those categories that will support user payments, entrepreneurs can deploy various technologies to protect their intellectual property and increase the likelihood of payment. These technologies are discussed in part VI.

V. SOCIOLOGY OF THE INTERNET

While business and technological factors significantly impact the market for intellectual property, some noteworthy features about users' attitudes towards intellectual property also warrant attention. This section describes certain sociological aspects of the Internet culture and how they may influence users' willingness to pay.

A. Attitudes Towards Intellectual Property

Attitudes towards intellectual property can be placed on a spectrum ranging from "intellectual property should not be protected" to "intellectual property should be highly protected." Though not discrete nodes, five distinguishable segments of this spectrum can be identified:[65]

1. *INFORMATION WANTS TO BE FREE*

Adherents to this perspective believe that any intellectual property should be in the public domain and available for all to use. While finding dogmatic adherents to this perspective may be difficult, finding people who believe that anything they find on the Internet is "fair game" for free use is relatively easy.

2. *RIGHT OF ATTRIBUTION*

Adherents to this perspective believe that intellectual property can be freely "infringed" so long as the source is attributed. Again, though it may difficult to find people who strictly adhere to this perspective, it is very easy to find people—even among creators of intellectual property—who subscribe to this perspective at least some of the time. Interestingly, U.S. copyright law rarely requires attribution (see part IV.C, *supra*), although netiquette usually encourages it.

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64. Which categories these are is presently unclear, but presumably they will be categories lacking high fungibility between specific intellectual property outputs.

65. *See* Lance Rose, *Is Copyright Dead on the Net?*, WIRED, Nov. 1993, at 112, *available at* <http://www.hotwired.com/wired/1.5/departments/idees.fortes/copyright.on.net.htm> (discussing various visions of what copyright law means on the Internet).

3. *LIMITED USE OF WORKS SUBJECT TO COPYRIGHT*

Adherents to this perspective believe that intellectual property creators should have protectable rights in their creations, but they do not believe that these rights are absolute. Often, adherents want to strike a balance between protecting creators' interests and permitting "infringement" of the intellectual property in a manner consistent with their lifestyle or business. This position arguably represents the framework for existing U.S. copyright law, which gives significant protection to copyright holders but provides the fair use defense and statutory exemptions.

4. *MORAL RIGHTS*

"Moral rights" are the rights of the author to be attributed as the author of the work and to object to a particular use of the work.[66] As between the author and any potential user (including assignees or licensees), this perspective strongly favors the author; often the author cannot assign his or her rights, and in some jurisdictions the author cannot waive the enforcement of his or her moral rights.[67] Generally, moral rights reflect a belief that the author's creations are an extension of the author, and therefore the author can control how the public views author through his or her creations. U.S. copyright law does not explicitly recognize moral rights except in a very limited set of circumstances.[68]

5. *STRONG INTELLECTUAL PROPERTY RIGHTS*

Adherents to this perspective believe that the author should have significant power to control the use of his or her intellectual property. Adherents would extend the author's power beyond moral rights and permit the author to control all uses of his or her work.

From a policy perspective, it is useful to think about how our copyright laws can conform the behavior of people who subscribe to the perspectives outlined above. Importantly, people who subscribe to the "information wants to be free" theory may very well abuse copyright restrictions regardless of the strength of intellectual property laws, in which case strengthening copyright laws to conform their behavior serves little purpose.[69] To the extent that the Internet culture has increased the number of people unsupportive of strong intellectual property rights, new

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66. *See generally* Berne Convention for the Protection of Literary and Artistic Works (Paris Text 1971), § 6*bis* <http://www.law.cornell.edu/treaties/berne/6bis.html>.

67. *See* NII WHITE PAPER, *supra* note 2, at 146.

68. 17 U.S.C. § 106A (1994).

69. *See* Rose, *supra* note 15, at 104.

copyright laws designed to increase creators' rights are unlikely to produce the desired results.

B. Internet Culture and Micro-Infringements

Historically, the Internet has been populated by academics and technologists, many of whom would properly be categorized in the "Information Wants to be Free" segment (or perhaps the "Right of Attribution" segment) of the intellectual property attitude spectrum.[70] While waves of newcomers to the Internet have diluted this culture, many of these newcomers bring complementary attitudes towards intellectual property.

Take, for example, people under the age of thirty. During most or all of their life, they have had easy access—often in their home—to a number of devices they could use to infringe copyrights: audio cassette recorders (and cheap blank tapes); video cassette recorders (and again cheap blank tapes); high quality, low cost photocopy machines; fax machines; and perhaps the most powerful copying device of all, the personal computer (and cheap blank disks and hard drives). As a result, the under-thirty generation has grown up being able to freely expropriate intellectual property easily and at little cost.[71] As college students, how many of them bought most (or even some) of the software on their computer, rather than "borrowing" it from their folks or from a friend down the hall? How many of them put together a compilation tape of their favorite songs? How many of them made a cassette tape of someone else's music album? What mechanisms are in place—or could be put into place—to effectively convince these people that these acts are impermissible under the existing system?

The early Net users and the under-thirty crowd appear to have combined to create an interesting psychology on the Internet. The Internet community reacts with widespread disbelief when someone tries to assert that web browsing is an infringement,[72] that linking to a third party's materials is an infringement,[73] that forwarding an email to a mail list could be copyright infringement,[74] or that setting up a fan site could be an

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70. *See* Rebello, *supra* note 25, at 113-14.

71. *Cf.* Litman, *supra* note 16, at 34-35 ("Most of us can no longer spend even an hour without colliding with copyright law. Reading one's mail or picking up one's telephone messages these days requires many of us to commit acts that [the NII WHITE PAPER] now tells us ought to be viewed as unauthorized reproductions or transmissions.").

72. *See* NII WHITE PAPER, *supra* note 2, at 64-65.

73. *See* The Shetland Times Ltd v. Wills, Court of Sessions, Edinburgh, October 24, 1996 <http://www.shetland-news.co.uk/opinion.html> (a United Kingdom court enjoined one newspaper from hypertext linking to stories at a competing newspaper's website).

74. *See* Mitch Betts, *On-line Pay Per View*, COMPUTERWORLD, June 5, 1995, at 58, *available at* <http://www.computerworld.com/search/AT-html/9506/950605SL22 rights.html> (citing a survey of 255 information systems professionals which indicating

infringement.[75] Conceivably, the Internet community could be educated to understand why these actions implicate copyright rights, but changing the state of the Internet to conform to expansive readings of the copyright law would cause major upheaval. Furthermore, the logistics involved in trying to police these "micro-infringements" are daunting, and perhaps not efficient from a social cost versus social benefit standpoint.[76] Indeed, such an approach could ultimately prove economically counterproductive for intellectual property owners as well.[77]

More generally, the combination of the Internet culture and the general effect of technological evolution may be affecting our collective attitudes toward intellectual property. We have become a culture largely comfortable with serial micro-infringements. Generally, we want to respect other people's intellectual property rights, but we also want to run our lives in a way that ultimately results in numerous minor, almost trivial, but still theoretically actionable infringements.[78] The effect of trying to try to apply copyright laws (or worse, to try to strengthen them) to overcome this attitude would likely be regressive.

C. Conditioning to Expect Freebies

Because so many intellectual property owners are giving away valuable intellectual property for free, users are becoming conditioned to expect free intellectual property everywhere they go. In this environment, users become very reluctant to pay for intellectual property, since they know that free substitutes are likely to be available elsewhere. Even minor non-cash impediments, such as required registration forms, may be sufficient to drive users away. This conditioning makes it increasingly

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that 72% believed they "should be able to download on-line news articles and share them with as many people as they want").

75. For example, when Lucasfilms, the owner of Star Wars, contacted a dedicated fan who had established a Star Wars appreciation website regarding alleged infringements, the fan transcribed the conversation and posted the transcription on the website. After Lucasfilms was flooded "with angry emails, demanding to know how it could presume to assert such totalitarian control over a product some fans had woven into the very fabric of their lives," Lucasfilms backed down. Sommer, *supra* note 44, at 10E.

76. *See* Wylie, *supra* note 37 ("Copyright doesn't work today because people pay 100 percent of the time. It works because people pay often enough that intellectual property owners make a profit."); *cf.* Borsook, *supra* note 45, at 84 (noting that the music industry long ago accepted that it would lose 15-20% of its potential revenues to home copying).

77. A good example can be found in the movie studios' action against video cassette recorder manufacturers, Sony Corp. v. Universal City Studios, Inc., 464 U.S. 417 (1984), where the studios' victory would have inhibited the development of an industry (video cassette rental) that generated $13 billion in revenues for the studios in 1993. *See Current Revenue of Target Markets*, UPSIDE, Dec. 1994 at 18 (graph referencing a Yankee Group study); *cf.* Litman, *supra* note 16, at 46 ("Whenever we have discovered or enacted a copyright exception, an industry has grown up within its shelter.").

78. *The Property of the Mind*, ECONOMIST, July 27, 1996, at 57, 57. <http://www.economist.iconnet.net/issue/27-07-96/wbsf1.html>.

difficult for intellectual property owners to charge users directly for intellectual property.

VI. TECHNOLOGIES AND METHODS FOR CONTROLLING INTELLECTUAL PROPERTY

This section analyzes existing technological tools and other methods that enable intellectual property owners to protect their property. Technology will by necessity play an essential role in the controlled distribution of intellectual property on the Internet, despite the fact that many categories of intellectual property will be made available to consumers free of charge. Technology will help support revenue-producing markets in those categories of intellectual property that are not going to be freely given away, and it may also help those intellectual property owners who desire attribution.

Some people believe that the availability of the technologies described in this section will lead to the development of a micropayment economy, where even minor uses of intellectual property will result in micropayments to the intellectual property owners. In addition to this result being unlikely for the reasons described in part IV, micropayments raise other difficult issues. In particular, the transaction costs of micropayments can be relatively large—and any customer support is likely to be too costly to provide.[79]

Clearly no single technology or method can prevent all forms of infringement. However, it is both theoretically and practically possible that a combination of technologies and other methods will provide significant protection against unwanted infringement throughout the productive life of the intellectual property. By setting up impediments to infringement, the intellectual property owner can conform the behavior of those who are unwilling to invest the extra effort to infringe. Furthermore, while the pirates will have plenty of incentive to defeat the technology, "technology does tend to favor the good guys because the good guys are better funded."[80]

A. Pre-Infringement

This section describes technologies and methods that copyright owners may put into place before distributing their intellectual property to control or inhibit infringement of their works.

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79. Tom Steinert-Threlkeld, *The Buck Starts Here*, WIRED, August 1996 at 132, 134, *available at* <http://www.wired.com/wired/4.08/features/nanobucks.html>.

80. Ross, *supra* note 15, at 137.

1. *LIMITED FUNCTIONALITY*

Under this approach, intellectual property owners provide a copy of the work which is functionally limited. This approach provides one way to technically implement the "try before you buy" and "sell the upgrades" business models. For example, software creators can distribute software that cannot print or save. Under a slightly different approach, a software vendor can distribute "buggy" software, such as beta versions. While buggy software gives people the opportunity to use and become familiar with it, buggy software also induces those who desire stable software to purchase it. As a last example, database providers or other vendors of large pieces of intellectual property can deliver the content in small chunks, making it difficult to compile the complete work.[81]

2. *DATE BOMB*

Analogous to the limited functionality approach, under this approach the intellectual property owner distributes fully functional intellectual property but locks off access at a pre-specified date.[82] Under a variant of this approach, the vendor can lock off access after a certain number of uses (i.e., after viewing the file 10 times, the file may no longer be viewed).

3. *COPY PROTECTION*

Under this approach, the vendor limits the number of times a file can be copied. Copy protection was standard in the 1980s, but it fell into disfavor largely because consumers resented the inconvenience and because copy protection was relatively easy to break.[83] While users are unlikely to be significantly more responsive to copy protection schemes now, copy protection is currently being used in certain situations.[84] For example, a creator can save a file in Adobe Acrobat's PDF format in a manner that prevents others from making copies, either directly or by such indirect means as printing the screen or copying the text displayed on the screen.[85] While this form of copy protection is probably not

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81. *Id.* Compare the approach used by Lexis in delivering cases on a screen-by-screen basis; compiling the full case by capturing each screen would be arduous.

82. *See, e.g.*, Release Software's SalesAgent <http://www.releasesoft.com/sadiagram.html>.

83. Ross, *supra* note 15, at 136.

84. *Cf. id.* (describing how Macrovision "spoilers" are inserted into movies; the spoilers confuse VCRs and produce distorted versions of the movies if copied).

85. Maximized Software's SiteShield software <http://www.maximized.com/products/siteshield/> encodes files in such a way that they may be browsed but not otherwise copied.

"hack-proof," it is sufficient to inhibit the vast majority of users from copying files.[86]

4. *ENCRYPTION ENVELOPES*

Encryption envelopes are software devices which encrypt intellectual property in such a way that access can be obtained only by using the proper key.[87] These devices are often referred to by IBM's trademark name "cryptolopes." Creators can protect their works by distributing files in cryptolopes and requiring users to pay for keys that remove the work from the envelope.

5. *CONTRACTS*

Contracts are an underrated pre-infringement control. When properly formed, contracts enable intellectual property owners to restrict the use of their intellectual property in excess of the rights granted under copyright laws.[88] An unresolved debate continues about the extent to which on-line shrinkwrap contracts (sometimes referred to as "clickthrough agreements") are enforceable.[89] If such agreements are enforceable, intellectual property owners may choose to rely heavily on contract law to control the use of their intellectual property.

B. Metering

This section describes technologies and methods that intellectual property owners can use to ensure payment prior to or at the time of a consumer's use of the intellectual property.

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86. "'Now, people say to themselves "Hey, let me take this for free," but with [Maximized Software's SiteShield], they'd have to decide to be trespassers.... People would have to put effort into stealing the images, and they'd know they were violating the copyright.'" Ross, *supra* note 15, at 139 (quoting Kenneth Spreitzer, president of Maximized Software).

87. *See* <http://www.cryptolope.ibm.com/wiacc.htm>; *See also* Digital Delivery's TitleBuilder <http://www.digitaldelivery.com/tbpage.html>; Portland Sotware's ZipLock <http://www.portsoft.com/ziplock.html>.

88. In some circumstances the enforcement of the contract will be limited because the contract provisions are preempted by copyright law. *See* Vault Corp. v. Quaid Software Ltd., 847 F.2d 255, 268-70 (5th Cir. 1988). *See generally* I. Trotter Hardy, *Contracts, Copyright and Preemption in a Digital World*, 1 RICH. J.L. & TECH. 2 (1995) <http://www.urich.edu/~jolt/v1i1/hardy.html>; *See also*, O'Rourke, *supra*, note 56.

89. *Cf.* ProCD v. Zeidenberg, 86 F.3d 1447 (7th Cir. 1996), *available at* <http://www.kentlaw.edu/7circuit/1996/jun/96-1139.htm> (holding that a shrinkwrap license, the functional equivalent of a "clickthrough" license, could constitute a properly formed contract); Hill v. Gateway 2000, Inc., 105 F.3d 1147 (7th Cir. 1997) (following ProCD); U.C.C. *proposed* Article 2B (Mar. 21, 1997 draft) <http://www.lawlib.uh.edu/ucc2b/> (making it easier for licensors to form shrinkwrap agreements with end users).

1. *ACCESS CODES*

Many of the devices described in the pre-infringement section can be coupled with "access code" devices. These devices permit users "unlock" protective mechanisms embedded in intellectual properties themselves, such as date bombs or functional limitations. This method allows the intellectual property owner to meter usage of the intellectual property, either by unlocking the intellectual property for a one-time license fee or by requiring periodic procurement of access codes.

2. *RIGHTS-MANAGEMENT ENVELOPES*

As with encryption envelopes, the creator places intellectual property inside special software envelopes. However, under this approach the envelope periodically communicates with a home base to implement the business parameters imposed by the intellectual property owner. For example, Wave Interactive Networks <http://www.winhome.com> provides a system which allows publishers to encrypt a file as a .wxn file, which when activated causes the Wave plug-in to debit the user's account maintained at Wave's website.[90]

3. *HARDWARE DEVICES*

Hardware device approaches require the user to acquire and install the requisite hardware device. For example, using a debit card approach, the user purchases a debit card that is pre-loaded with a certain amount of value. After installation, the debit card is debited automatically as the user consumes the intellectual property. In a "superdistribution" approach, the hardware device meters the usage of intellectual property and automatically debits an account maintained at a central base.[91] In this way, even if the recipient has received a copy forwarded from a third party, the hardware device can ensure payment to the intellectual property owner.

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90. *See* InterTrust <http://www.intertrust.com/products/flow.html> (describing the DigiBox envelope, which communicates with a clearinghouse based on business rules encapsulated in the envelope); Gary N. Griswold, *A Method for Protecting Copyright on Networks*, 1994 <http://www.cni.org/docs/ima.ip-workshop/www/Griswold.html> (describing a software envelope which requires periodic confirmation with a home base prior to permitting further access); Stefik, *supra* note 2 (describing protocols to permit the permanent transfer or temporary lending of files while holding the number of files to the number actually paid for).

91. Brad Cox, *Superdistribution*, WIRED, Sept. 1994, at 89, *available at* <http://www.hotwired.com/wired/2.09/departments/idees.fortes/superdis.html>; *see* Infosafe Systems <http://www.infosafe.com/> (offering both a hardware system and a software-only system).

4. *DOWNLOADABLE EXECUTABLES*

Downloadable executables, such as Java applets and ActiveX scripts, are pieces of code which download from the server to the client on a "use and discard" basis. In other words, the executable runs during a particular session but will be flushed from RAM at the end of the session. These executables can be metered out because they need to be downloaded each session.

5. *CENTRALIZED COMPUTING*

Under this approach, all of the executables, other than a user interface on the client side, remain at the server. Therefore, the user's computer must establish contact with the server each time the executable is used, allowing the central computer to meter access. Centralized computing is actually the old "timeshare" model used in the early days of computing, when the client's processing power was so weak that centralizing processing power at the server level was more efficient.

6. *DIGITAL CERTIFICATES*

In the digital signature context, a certification authority issues to a user an electronic file (a "digital certificate") which identifies the user as the owner of a public key. However, digital certificates can be used to certify more information than mere identity. For example, they can be used to identify rights associated with a particular person. In these ways, vendors can use digital certificates to control access to system resources, including intellectual property files, by making files available to users who can provide a digital certificate with specified rights (such access, downloading, use, etc., including time limits). A user would obtain the digital certificate from either the vendor or a third party.

7. *COPYRIGHT CLEARINGHOUSES*

Under this approach, intellectual property owners would vest "clearinghouses" with the ability to license usage of their intellectual property. A user would pay a license fee to such a clearinghouse to obtain rights to the intellectual property. Copyright clearinghouses currently exist for music-related intellectual property,[92] although these are products of statutory compulsory licensing.[93] No similar comprehensive

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92. *See* ASCAP <http://www.ascap.com/ascap.html> and BMI <http://bmi.com/>.

93. 17 U.S.C. §§ 115 (making and distributing phonorecords), 116 (public performances by means of coin-operated phonorecord players ("juke boxes").

mechanisms have developed for other forms of intellectual property,[94] despite some long-standing attempts to do so[95] and the widely recognized benefits of having such a scheme in place. As a result, some technological efforts are being made to include copyright management information in all electronic files so that contact information for procuring copyright permissions will always be available.[96]

8. *SALE OF PHYSICAL COPIES*

As anachronistic as it may sound, selling physical copies of intellectual property remains a highly effective method of metering the usage of intellectual property. While the electronic distribution of intellectual property has many advantages, numerous advantages to purchasing physical copies of works available on the Internet still remain. First, many people still prefer reading physical copies over reading electronic copies. Second, obtaining a mass-produced physical copy rather than printing out the electronic copy may be beneficial from a cost or quality standpoint. Third, in the case of large electronic files, obtaining a physical copy may be more time-effective or convenient than downloading the electronic copy. Fourth, the consumer may use devices that have been optimized for use with physical copies, providing results that exceed the results available from using the downloaded electronic copy. Therefore, we should expect that certain categories of intellectual property will continue to be demanded in physical versions.

C. Post-Infringement

This section describes technologies and methods that creators can use to identify infringements and thus enhance enforcement of intellectual property rights.

1. *AGENTS*

Agents are programs that can implement specified commands automatically. Intellectual property owners can used agents to search the public spaces of the Internet to find infringing copies.[97] While agent

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94. The Copyright Clearance Center <http://www.copyright.com/> can grant licenses to reproduce 1.75 million documents—an impressive number, but clearly far short of the overall set of works subject to copyright available in the world.

95. Project Xanadu, an attempt to ensure compensation to creators whenever even small chunks of intellectual property are used, was initiated in 1960. Xanadu FAQ, § 1b, June 29, 1996 <http://www.xanadu.com.au/xanadu/faq.html>.

96. *See Seybold Report on Desktop Publishing*, July 8, 1996 <http://www.media.sbexpos.com/OldHotStories/960702.htm> (describing digital object identifiers and the LicensIt product from NetRights).

97. *See* Stanford Copy Analysis Mechanism (SCAM) <http://www-db.stanford.edu/~shiva/SCAM/scamInfo.html>; *see also* Hyperstamps CyberGumshoe

technology is still being developed and refined, even today creators can perform a relatively powerful set of searches using full-text search engines such as HotBot <http://www.hotbot.com> and Alta Vista <http://www.altavista.digital.com>.

2. *STEGANOGRAPHY*

Steganography, as applied to electronic files, refers to the process of hiding information in files in such a way that the hidden information is not easily detected by the user. Intellectual property owners can use steganography in a number of different ways on the Internet. One approach is to insert into the file a "digital watermark" which can be used to prove that an infringing file was the creation of the intellectual property owner and not the pirate.[98] The owner of the work could also store copyright management information using this technology. Another approach is to encode a unique serial number into each authorized copy of the file, enabling the owner to trace infringing copies to a particular source.[99]

3. *COPYRIGHT LITIGATION*

Copyright litigation is a powerful tool for enforcing intellectual property rights, one that should not be overlooked. While not every infringement will be the subject of litigation, the threat of litigation helps keep large pirate operations in check.[100] Copyright litigation not only helps the intellectual property owner obtain relief for specific acts of infringement, it publicly warns others of the dangers of infringement. Indeed, a number of intellectual property owners have had well-

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Services <http://www.hyperstamps.com/misc/gumshoe.html> (offering a robotic search of the Internet for documents containing serialized document numbers that developers may insert (for a cost) into an HTML page); Intellectual Protocols' Copysight <http://www.ip2.com/copysight.cgi> (offering a service similar to Hyperstamps); *cf.* MarkWatch <http://www.markwatch.com/> (providing an automated monitoring service for trademark usage on the Internet); Alex Alben, *The Death of Copyright in a Digital World: The Reports are Slightly Exaggerated*, ENT. LAW REP., July 1995 (describing "bounty hunter" programs used by intellectual property owners to cut down on infringements; third-party attorneys bringing suits against infringers were allowed to keep any damages won in the actions).

98. *See* Digimarc <http://www.digimarc.com/~digimarc/>; Highwater FBI <http://www.highwaterfbi.com/>; SysCoP <http://syscop.igd.fhg.de/>; Argent, a product created by the Palo Alto startup Dice (reported in Ross, *supra* note 15, at 139). Tests have indicated that digital watermarks are resilient enough to survive most editing and are still discernible after numerous reproductions. Ben Long, *Watermarking Makes Impression on Photos*, MACWEEK, Oct. 21, 1996, at 16, *available at* <http://www.macweek.com/mw_1040/ga_watermark.html>.

99. David Voss, *Stop That Copy*, WIRED, Aug. 1994, at 34, *available at* <http://www.hotwired.com/wired/2.08/departments/electric.word.html>; *see also* Jim Warren, *GovAccess.107*, March 12, 1995 <http://www.eff.org/ftp/Publications/E-journals/GovAccess/govaccess.107> (describing a similar approach).

100. *See* Borsook, *Steal This Article*, *supra* note 41.

publicized successes enforcing their copyrights against on-line infringers.[101]

D. Additional Problems Under Copyright Law Possibly Solvable by Technology

This section discusses some additional complex issues under U.S. copyright law that are not fully addressed by the technologies and methods described in parts VI.A-C, *supra*, but are still addressable by technology. In particular, linking and caching are both techniques used in the normal functioning of the Internet, yet their permissibility under U.S. copyright law is unclear.

When the technologies available for controlling linking and caching are combined with the technologies and methods described in parts VI.A-C, *supra*, the mosaic of the overall set of protection technologies and methods available to intellectual property owners becomes clearer. This clarity will lead to the question, discussed in part VI.E, infra, of whether situations exist the intellectual property owner should have the obligation—if he or she wants to exercise it—to prevent users from infringing before the owner is given the right to claim infringement.

1. *LINKING*

Hypertext linking is one of the blessings of the Internet, but its application has proven problematic. Most copyright experts generally believe that linking should not lead to copyright liability,[102] because the mechanical operation of the hypertext link does not implicate one of the exclusive rights of copyright owners; a hypertext-linked URL is merely an instruction which is loaded into the user's browser software, and the browser software does all of the work from there. As a result, the server providing the hypertext link never makes a copy or otherwise processes any of the data from the linked site.[103]

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101. *See* Lance Rose, *The Copyright Escalator of Fear*, BOARDWATCH, Nov. 1994 at 92, (describing $500,000 settlement reached in Playboy v. Event Horizons BBS), *available at* <http://www.boardwatch.com/november/LEGALLY.htm>; COMPUTER INDUSTRY LITIG. REP., Jan. 4, 1996 at 21634 (reporting on a $600,000 settlement reached in Sega of America v. The Ghetto); Playboy Enters. v. Frena, 839 F. Supp. 1552 (M.D. Fla. 1993), *available at* <http://www.jmls.edu/cyber/cases/frena.txt>; Sega v. MAPHIA (N.D. Cal. Dec. 18, 1996) <http://www.bna.com/e-law/cases/sega2.html>; Sega v. Sabella, 1996 U.S. Dist. LEXIS 20470 (N.D. Cal. Dec. 18, 1996).

There have also been well-publicized criminal indictments, including actions against Davey Jones Locker, Rose, *supra* note 15, at 104, and Rusty & Edie's BBS, Michael A. Hobbs, *ACLU Cries Foul in Computer Raid*, THE PLAIN DEALER, Feb. 19, 1993 at 3B.

102. *See, e.g.*, James Evans, *Internet Issue: Use of the Web Raises Copyright Concerns*, L.A. DAILY J., Feb. 9, 1995, at 1.

103. If browsing the Web is an infringement because a copy of the page is made and sent to the user's computer, as proposed by the NII WHITE PAPER, *supra* note 2 at 64-65, then the linking site has arguably committed contributory infringement by substantially

While the plain language of the copyright statute suggests the above conclusion, commentators, to ensure that linking is not copyright infringement, have argued that uploading intellectual property to the Internet grants an "implied license"[104] to link. Alternatively, linking might be considered fair use.

Of course, given the alternative business models discussed earlier, in many cases Internet sites eagerly seek out linking as an entree to generate ancillary values. In fact, a nascent business of providing links has developed.[105] However, if an Internet site does desire to keep others from linking to some or all of its pages, a number of technologies are available to inhibit linking:

- The system operator (the "sysop") can make the page a "dynamic" page by building the page only when the user causes the execution of a program resident on the server. This prevents linking because dynamic pages have no fixed reference point to which to link. This technique, while effective, is also currently somewhat expensive. Alternatively, the low-technology approach is for the sysop to manually change the page's URL periodically, so that any links made to the page will become ineffective.
- If the sysop desires to prevent a specific site from linking to a page, the sysop may code the page in such a way that it refuses browsers who access the site from the forbidden linking site.[106]
- In the case of automatic linking performed by robots and spiders (such as those used by the search engines), the sysop may load information into the header of the page that instructs the robots and spiders not to index the page.
- The page can be password protected, although this practice inhibits the page's free accessibility to people browsing the Internet.

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contributing to the user's infringement (which occurred during the process of browsing). *See* Niva Elkin-Koren, *Copyright Law and Social Dialogue on the Information Superhighway: The Case Against Copyright Liability of Bulletin Board Operators*, 13 CARDOZO ARTS & ENT. L.J. 345, 353-56 (1995), *available at* <http://yu1.yu.edu:80/csl/journals/aelj/articles/13-2/elkin.html>. The assertion that browsing is an actionable infringement has met strong criticism. *See id.* at 354; Samuelson, *supra* note 3, at 137.

104. Although the term "implied license" is frequently bandied about on the Internet, the concept is rather amorphous under copyright law. At its heart, an implied license is an estoppel doctrine, arising because the infringing party detrimentally and justifiably relied on the intellectual property owner's actions.

105. *See* R. Lee Sullivan, *Toll Booths on the Info Highway*, FORBES, March 25, 1996, at 118.

106. *See* Maximized Software's SiteShield <http://www.maximized.com/products/siteshield/> (providing a product that prevents linking from all URLs other than those on the specific website); Kristi Coale, *Intellecast Smartens Up to Banner Bypass*, WIRED NEWS (Mar. 28, 1997) <http://www.wired.com/news/technology/story/2844.html> (describing how Intellicast, a weather site, prevented links to its weather maps which bypassed the associated banner advertisements).

- To address the problem of unattributed graphics being incorporated into pages on a remote system, the graphic may contain a program that automatically causes a notice to appear to users who access it that the graphic is the copyrighted work of the intellectual property owner.[107]

2. *CACHING*

Caching is a loosely used term that generally refers to the process of making an extra copy of a file or set of files for more convenient retrieval. On the Internet, caching of third party files can occur both locally on the user's client computer (either in RAM or on the hard drive) or at the server level (called "proxy caching"). When a user requests a file that has been cached, the browser will deliver the file from the cache rather than retrieving a fresh copy over the Internet.

Although different concepts, similar issues to caching arise with mirroring (establishing an identical copy of an Internet site on a different server), archiving (providing an historical repository for information, such as with newsgroups and mail lists, where the proceedings would otherwise be evanescent), and full-text indexing (the copying of a document for loading into a full text or nearly full-text database which is searchable for key words or concepts).

Caching is an integral part of the Internet's operation, in part because it speeds the user's access to files and in part because it reduces the infrastructure required for operation of the Internet (by reducing the number of files that must be transferred using the infrastructure). Without caching, our already taxed infrastructure would be even more clogged, to the point where it may become unworkable. As a result, a number of serious business plans have been predicated on using caching.[108]

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107. This is one of the features of the Copysight service from Intellectual Protocols <http://www.ip2.com/copysight.cgi>.

108. For example, @home <http://www.home.net> is deploying a network that permits users to use high-speed cable modems for Internet access. So that users will experience cable modem speeds as often as possible, @home will cache (or archive or mirror, depending on the terminology) the entire Internet on regional servers to which users will connect via their cable modems.

The recent start-up Marimba <http://www.marimba.com/> uses caching as a way to make the use of Java programs more robust.

Also, the number of offline browsers is growing. Offline browsers are software that automatically download some or all of an Internet site to the user's computer, allowing the user to browse without having to wait for the delivery of each page. *See, e.g.*, WebEx <http://www.gowebex.com>, WebWhacker <http://www.ffg.com/whacker/index.html>, InContext Flashsite <http://www.incontext.com/products/flashsite/ index.html> and DocuMagix HotCargo Express <http://www.documagix.com/products/hotcargo_express/welcome.html>.

However, caching could cause harm because the copies in the cache are not necessarily the most current and up-to-date copies.[109] For example, users relying on the cached copy may unwittingly use out-of-date material; similarly, harms such as defamation or infringement that existed on the original page may propagate for years until flushed from each cache where they have been replicated.[110] Also, since caching is an infringement under a literal reading of U.S. copyright law, either caching must be the subject of an implied license or fair use defense or it is (at least theoretically) actionable.

Internet sites can deploy a number of technologies to restrict or prevent caching:

- Sysops can make the page a "dynamic" page by building the page only when the user causes the execution of a program resident on the server. As in the case of linking, this solution may be expensive.
- Sysops may place information on the page's header which tells the party trying to cache the page when to replace the copy in the cache with a new copy (this is called an "expiry header"). In the case of a sysop who does not want the page cached at all, the sysop merely sets the expiry date as a date before the date on which the information is loaded. Unfortunately, no technology standards presently exist under which caching entities can read and manage this process automatically, so a sysop's instructions may well be ignored or not processed.
- The page can be password protected, although again this inhibits the page's free accessibility to Internet browsers.

Finally, parties trying to establish caches have an incentive to deploy software that automatically updates the cache every time the cached page changes. While this practice solves many of the problems, it leaves control of the process with the entity doing the caching rather than with the website being cached.

E. Is Technology a Substitute for Copyright Law?

Many on the Internet implicitly believe that the failure of an intellectual property owner to use available technology to prevent infringement controls grants to all comers an implied license to infringe.

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109. *See* Lisa Sanger, *Caching on the Internet*, Spring 1996 <http://seamless.seamless.com/eric/cache.html>; Eric Schlachter, *Cache-22*, INTELL. PROP. MAG. OF THE RECORDER, Summer 1996, at 15, *available at* <http://www.ipmag.com/schlacht.html>.

110. Toys R Us v. Akkaoui, 1996 U.S. Dist. LEXIS 17090 (N.D. Cal. Oct. 29, 1996) (describing injunction granted in favor of a trademark owner against an infringing website requiring the website to notify all publishers of directories or lists to remove reference to the website and to flush all references to the website from their caches).

This attitude is seen most often in the arguments raised against copyright infringement for linking and caching. However, based on all of the possible technological controls available to intellectual property owners as described in this part VI, the "use technology or accept infringement" argument might be expanded to apply to all types of infringement, going far beyond just linking and caching.

In some ways, this argument is unprecedented. No other situation come to mind where a copyright owner's failure to use technological protective controls has the effect of diminishing their rights under copyright law.[111] Why should the Internet create a new paradigm?

On the other hand, the normal functioning of the Internet is predicated on multiple infringements of copyright rights. If we want the Internet to work as it currently operates and as it can operate in the future, we must reduce the chilling effect of the threat of copyright litigation by changing the rules (or interpreting them differently) or placing some burden on intellectual property owners to "opt out" of the system by deploying technology controls.

Given that many intellectual property owners' business models are based on encouraging "infringement" by users, and that many users believe (innocently but mistakenly) that intellectual property found on the Internet is free for the taking, a trend is emerging toward increasing the burden placed on intellectual property owners to adopt technology controls rather than relying on copyright infringement litigation. Interestingly, this trend is incompatible with the efforts of those seeking to increase the scope of the copyright laws.[112]

VII. CONCLUSION

Even though many of this article's specifics will be out-of-date soon after it is published, its general conclusions should have lasting relevancy to the policies of future U.S. copyright law. This article has marshaled evidence to support the following conclusions:

- The creation and dissemination of intellectual property, both on the Internet and more generally, seems highly robust despite all of the threats.
- The economics of the Internet dictate that, in many cases, businesses must find a way to generate revenues without charging users for intellectual property.

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111. A different analysis might apply in regard to trade secret and trademark law. In the case of trade secrets, the owner must use efforts, whether technological or otherwise, to keep the information secret in order to preserve the information's status as a trade secret. In the case of trademarks, the owner must use quality control, whether technological or otherwise, to maintain the trademark.

112. *See, e.g.*, NII WHITE PAPER, *supra*, note 2, at 7-17.

- A wide variety of sustainable business models permit businesses to accomplish that end.
- Users are becoming increasingly unwilling to pay directly for intellectual property.
- The elimination of all infringements is an impossible and possibly undesirable goal.
- A cadre of entrepreneurs and existing companies are introducing a wide variety of technologies that intellectual property owners can use to manage the process of infringements.
- The perception is increasing that intellectual property owners should be required to use the available technological tools rather than relying on the threat of litigation over micro-infringements.

As a practical reality of these conclusions, the real battle between intellectual property owners and Internet users is being waged using the business models and technological tools available to intellectual property owners. Combined with the trends in sociological beliefs about the Internet, the business models and technological tools will evolve over time to make copyright law increasingly less important as a tool for conforming behavior on the Internet.

Concluding that copyright law's unimportance on the Internet suggests that copyright law should be abolished generally would be inaccurate. The fact that the existing copyright laws may have no effect on the way creators and consumers operate on the Internet does not mean that we no longer need these laws. Existing copyright laws are critically important to the world of physical space.[113] This holds true even though the Internet may become the preeminent vehicle for the dissemination of intellectual property.

However, except in the possible case of attribution rights, no new laws designed to increase the rights of intellectual property owners on the Internet are currently needed. Any such legislation would most likely destroy the delicate balance being struck in the marketplace right now. Furthermore, any anomaly in the existing laws is likely to be resolved by technological and business innovation, which is occurring at a dizzying rate.

We live in an energizing information age, where we are beginning to realize many of yesterday's dreams about information exchange on a

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113. At least two important exceptions to this general statement exist. First, the conclusion that loading a copy into RAM is an infringement creates a great deal of uncertainty for browsing. At a minimum, clarifying that browsing is not an actionable infringement would be helpful. Second, although generally a topic outside the scope of this paper, the conclusion reached in some cases that sysops are directly liable for copyright infringements occurring because users upload works subject to copyright onto their system has caused a great deal of consternation. If as a policy matter a consensus exists that sysops should not be liable in this circumstance, statutory clarification would be useful.

global scale. We should facilitate this environment by letting the marketplace reach its own equilibrium. We can do this best by pursuing legislation which regulates only the most extreme behavior, leaving the rest of the spectrum of behavior for marketplace solutions.