Copyright Misuse and Modified Copyleft: New Solutions to the Challenges of Internet Standardization

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Chip Patterson*

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INTRODUCTION

The Internet is a truly global community within which myriad economic, social and technological forces interplay to cause its standardization.[1] Much of the competition in the industry has revolved around which product will become the standard for a given market sector. Some markets have seen victors; for example, TCP/IP is the Internet communication protocol,[2] MP3 appears to be dominating music compression,[3] and Microsoft Corporation's Windows ("Windows") is

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1. *See* Mark A. Lemley, *Antitrust and the Internet Standardization Problem*, 28 CONN. L. REV. 1041, 1042 (1996) (arguing in part "that a variety of economic factors affecting the computer industry in general, and which apply to the Internet with particular force, make product standardization in some areas almost inevitable."); Marcus Maher, Note, *An Analysis of Internet Standardization*, 3 VA. J.L. & TECH. 5, ¶ 95 (Spring 1998) <http://vjolt.student. virginia.edu/graphics/vol3/home_art5.html> ("[T]he Internet has become a vast network of diverse interests competing to control its future. The interplay of these forces leads the Internet toward standardization"); William J. Clinton & Albert Gore, Jr., *A Framework For Global Electronic Commerce* (visited Mar. 24, 2000) <http://www.iitf.nist.gov/eleccomm/ ecomm.htm> ("Standards are critical to the long term commercial success of the Internet as they can allow products and services from different vendors to work together.").

2. *See* Maher, *supra* note 1, ¶ 12.

3. MP3's standard status, however, has raised concern in the recording industry. In response, at least three companies, Apple, Microsoft, and Real Networks, are vying to produce the technology that they hope will be adopted by the recording industry as the standard. *See*

clearly the standard operating system.[4] Similarly, the Internet must adopt a standard for web browsing and searching, for email, and for web programming.[5] In many cases, the competition for this standard will be fierce,[6] because the winner likely will have intellectual property rights in the technology and hence reap a significant reward. Such incentives often are needed for the development of objectively good standards.[7] Yet, as a consequence of granting intellectual property rights, a monopoly is created in a product that Internet users need.[8] Once an Internet technology becomes a standard, how can the owner of the corresponding copyright be prevented from extracting monopoly rents and thereby negating the increase in consumer welfare that the standard created?[9]

It is an understatement to say that the Internet has become an important communications and commercial network.[10] The large num-

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John Markoff, *Apple Media Software Challenges 2 Rivals: Racing Microsoft and Real Networks on an Internet Technology*, N.Y. TIMES, Apr. 20, 1999, at C2.

4. *See* United States v. Microsoft Corp., 65 F. Supp. 2d 1, 5 (D.D.C. 1999) ("Currently there are no products, nor are there likely to be any in the near future, that a significant percentage of consumers world-wide could substitute for Intel-compatible PC operating systems without incurring substantial costs.").

5. *See* Lemley, *supra* note 1, at 1046.

6. Examples of this competition are in the news daily. *See* Gene Koprowski, *A Babel of Browsers: Web Developers Suffer In Microsoft vs. Netscape War*, CHI. TRIB., Nov. 22, 1998, at C3 (web programming with Sun Microsystems' Java and challenges to it from Microsoft); Steve Lohr, *Microsoft Goes To Court*, N.Y. TIMES, Oct. 19, 1998, at C1 (the browser war); Markoff, *supra* note 3 (the three-way race over the distribution of multimedia content); John Markoff, *New Program Is Introduced To Ease Use of Linux System*, N.Y. TIMES, Mar. 4, 1999, at C2 (Linux's challenge to Microsoft Windows' and Macintosh's dominance); Tom Stein, *Net Instant Messaging Sides Forming*, S.F. CHRON., July 30, 1999, at B1 ("instant messaging" services provided by the two teams of Microsoft and Yahoo against AOL and Apple.); *Apple's iMac Led Quarter Computer Sales*, N.Y. TIMES, Jan. 22, 1999, at C20 (Microsoft Windows' dominance and challenges to it from Macintosh and Linux (an open standard)).

7. *See, e.g.*, John Swinson, *Copyright or Patent or Both: An Algorithmic Approach to Computer Software Protection*, HARV. J.L. & TECH., Fall 1991, at 210 (arguing that at least some copyright protection is necessary because "[t]here must be incentive to motivate creation of new user interface implementations."). Lemley points out that such rights are necessary to preserve the incentive to innovate: if the standard, once adopted, were free for all to use, developers would have little incentive to enter the initial competition. He points out, though, that the reward is excessive for this purpose. *See* Lemley, *supra* note 1, at 1053-54.

8. The United States Constitution gives Congress the authority to grant to authors the "exclusive right" to their "writings," and Congress did so in the Copyright Act. *See* U.S. CONST. art. I, § 8, cl. 8.; 17 U.S.C. §§ 101-1332 (1994 & Supp. IV 1998).

9. This Note will discuss copyright protection and not patent or trade secrets because patent rights are not as uniformly important in monopoly standard cases. Further, trade secrets protection, which requires secrecy and limited distribution, is unlikely to play a significant role in Internet standards cases, because standards are not usually secret and are widely licensed. Trademark rights will enter the picture in some respects, but they are not as problematic because they do not protect the technology itself.

10. *See, e.g.*, Jane C. Ginsburg, *Putting Cars on the "Information Superhighway": Authors, Exploiters, and Copyright in Cyberspace*, 95 COLUM. L. REV. 1466 (1995); Ilene

ber of Internet consumers grants each user the benefit of network effects — the effects of a system whose value to a given user increases with the number of users of that system — a significant externality that affects decisions by potential new participants.[11] Network effects are particularly important with regard to the Internet, because the more users it has, the more valuable it is as an information resource, a communications tool, and a marketplace for goods and services.[12]

In fact, the network effect of the Internet would be destroyed were it not for the adoption of common standards to ensure compatible communication. For example, computers use the public domain protocol TCP/IP, which allows the network effect to prosper, because it allows everyone using the Internet to speak the same language.[13] Without such compatibility, email messages would not be readable by, and web pages would not be accessible to, all users; such facile interchange is precisely the value of being on the network in the first place. Thus, the need for compatibility also drives the standardization of Internet protocols and tools, because the network effect requires users to be on the same network.[14]

Sun Microsystems ("Sun") created the Java programming language precisely because of the importance of compatibility. The chief advantage of Java is that it permits developers to write a single program in

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Knable Gotts & Alan D. Rutenberg, *Navigating the Global Information Superhighway: A Bumpy Road Lies Ahead*, HARV. J.L. & TECH., Spring, 1995, at 275.

11. This added value rewards the producer of the system for utility it did not itself create. Examples of such networks are telephones, facsimile machines, email and the Internet. In all of these cases, the more users each system has, the more important and more efficient it will be for a new user to join the network. For articles about network effects, see, for example, Joseph Farrell & Michael L. Katz, *The Effects Of Antitrust and Intellectual Property Law on Compatibility and Innovation*, 43 ANTITRUST BULL. 609, 610-13 (1998); Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 AM. ECON. REV. 424 (1985); Michael L. Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 J. ECON. PERSP. 93 (1994); Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CAL. L. REV. 479 (1998). Closely related is the virtual network, which similarly affects consumer choice based upon consideration of the number of users, but is not literally a network (like the Windows operating system). *See* Farrell & Katz, *supra*, at 610; Lemley, *supra* note 1, at 1047-48.

12. *See* Julie E. Cohen, *Lochner in Cyberspace: The New Economic Orthodoxy of "Rights Management,"* 97 MICH. L. REV. 462, 543 (1998) (noting that network effects are particularly salient in computer applications and interfaces where "[c]onsumers benefit from the ability to share files and migrate them between platforms, and from decreased retraining costs as applications and interfaces become standardized," which describes many of the attributes of the Internet); Lemley, *supra* note 1, at 1045 (arguing that the Internet is clearly one case in which network effects do have a role to play).

13. *See* Maher, *supra* note 1, ¶ 4.

14. *See* Lemley, *supra* note 1, at 1047-49. A third factor, in addition to network effects and compatibility, also causes standardization: resource commitment (or path dependence), which is defined as the user's learning of a program's features and storage of data readable by that program, such as bookmarks. *See id.* at 1050-51.

one language that consumers can run on any platform[15] that is "Java compatible."[16] This "write once, run anywhere" advantage is especially important on the World Wide Web, where host websites need to upload programs to users' computers in order to allow them to interface with the host's computer to, for example, make airline reservations on-line.[17] Both ease of use and cost-saving factors are implicated in the ability to upload universal programs to such users, because users need not even be aware of the transmission of the program to their computers, nor worry about whether or not their platforms are compatible with a given website.[18]

Sun's vision has serious implications for the vitality of Windows' virtual network, because with such compatibility, the network effects that indirectly benefit Microsoft likely would vanish or at least diminish significantly.[19] Although users would still need *some* platform, the benefit of having the same platform as other network users would decrease dramatically.

To accomplish its goal of cross-platform compatibility, Sun needed to incorporate its Java technology into each of the major platforms by licensing to them its copyrights and trademarks in Java.[20] Sun and

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15. A platform is "[t]he underlying hardware or software for a system .... The term is often used as a synonym of operating system." PC Webopedia, *Platform* (last modified May 18, 1998) <http://webopedia.internet.com/TERM/p/platform.html>. Web browsers, like Netscape Navigator and Internet Explorer, are software, and could function as platforms as well. *See also* Second Amended and Supplemental Complaint, Sun Microsystems, Inc. v. Microsoft Corp., 21 F. Supp. 2d 1109 (N.D. Cal. 1998) (No. C 97-20884) (visited Mar. 24, 2000) <http://www.java.sun.com/lawsuit/amend_complaint.html> (discussing the reasons for Java's development).

16. In some cases, such as causing a scanner to operate, this is not completely true, but the advantage is still present because the job of rewriting the code for other platforms is proportionately easier since only the platform-specific code need be changed. *See* Transcript of Proceedings Before Honorable Ronald M. Whyte, United States District Judge, September 10, 1998, Sun Microsystems, Inc. v. Microsoft Corp., 21 F. Supp. 2d 1109 (N.D. Cal. 1998) (No. C 97-20884) (visited Mar. 24, 2000) <http://web2.java.sun.com/lawsuit/hearing.091098.html> [hereinafter Transcript].

17. The phrase "Write Once, Run Anywhere" is a Sun trademark and advertising slogan. *See Java Look and Feel Design Guidelines* (visited Apr. 19, 2000) <http://java.sun.com/products/jlf/dg/notice.html>.

18. *See* Transcript, *supra* note 16.

19. *See supra* note 11 for a definition of virtual network. Microsoft benefits from the network effect that its monopoly standard provides, because a consumer's choice is influenced by the fact that, if she either buys a computer that cannot run Windows or chooses not to purchase Windows for a computer that could run it, she will not be able to use as many software applications, and may have some trouble exchanging information with users of Windows machines. Cross-platform compatibility would remove this incentive to buy Windows and force Microsoft to compete for market share and sales based solely upon the relative merits of its operating system.

20. Although the copyrightability of the Java language itself may be debatable, *see infra* note 55, Sun would have copyright protection in the code for its technology. Computer Assoc. Int'l, Inc. v. Altai, Inc., 982 F.2d 693, 702 (2d Cir. 1992) ("[I]t is now well settled that the literal elements of computer programs, i.e., their source and object codes, are the subject of copyright protection.").

Microsoft entered into a license agreement in which Microsoft promised that if it made any changes to Java technology to make it Windows-specific, Microsoft would include pure Java options as well — options that would keep Java cross-platform compatible.[21] Further, Microsoft's Java implementations would need to pass Sun's compatibility tests.[22] Unsurprisingly, a dispute between Sun and Microsoft developed. Microsoft did make changes that inhibited compatibility and caused Microsoft's Java products to fail Sun's compatibility tests.[23] Sun sued Microsoft and successfully obtained two preliminary injunctions; both are in force until the products pass Sun's compatibility tests.[24] It appears likely that Sun will win summary judgment on these claims as well.[25] The dispute is important because it illuminates potential monopoly problems in this arena while serving as an example of the judicial enforcement of intellectual property rights in a standard, thereby maintaining the standard's integrity.

While Java presumably has copyright protection,[26] this conclusion is not indisputable. Two commentators have noted that to "the extent

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21. *See Technology License and Distribution Agreement,* § 2.6 (visited Mar. 24, 2000) <http://www.java.sun.com/lawsuit/document.html> [hereinafter *TLDA*].

22. *See id.*

23. *See* Sun Microsystems, Inc. v. Microsoft Corp., 21 F. Supp. 2d 1109, 1114-17 (N.D. Cal. 1998) (involving a similar injunction to block Microsoft's use of any code derived from Java); Sun Microsystems, Inc. v. Microsoft Corp., 999 F. Supp. 1301, 1305 (N.D. Cal. 1998) (involving a preliminary injunction blocking Microsoft's use of the Java logo). Judge Whyte found that *only* Java applications written with Microsoft's Java Developer's Kit ("JDK") would run on Microsoft's Java implementations, forcing programmers to use Microsoft's JDK if they wanted their Java programs to work on Windows. Consequently, those applications would only run on Windows and Internet Explorer.

24. *See Sun,* 21 F. Supp. 2d at 1127. Microsoft appears to have at least temporarily complied with the injunctions. *See Microsoft to Support Java Developers and Consumers in Complying with Court's Preliminary Ruling, Customer Access to Microsoft Products Not Impeded* (visited Mar. 25, 2000) <http://www.microsoft.com/presspass/press/1998/Nov98/sunpr.htm>.

25. Judge Whyte has issued tentative summary judgment rulings in favor of Sun on its claims. *See Tentative Order Granting Sun's Motion for Summary Judgment of Copyright Infringement and Denying Microsoft's Motion for Summary Judgment Re: Sun's Copyright Infringement Claim* (visited Jan. 6, 2000) <http://java.sun.com/lawsuit/052499copyright.html>. The Ninth Circuit vacated and remanded the copyright preliminary injunction because the district court failed to find, as a matter of law, that the claim was one that was entitled to the presumption of irreparable harm, although it agreed with the district court that Sun was likely to prevail on the merits. *See* Sun Microsystems, Inc. v. Microsoft Corp., 188 F.3d 1115, 1117 (9th Cir. 1999). Judge Whyte heard arguments to determine whether the injunction should reissue. *See* John Cook and Dan Richman, *Realnetworks Forms Technology Alliance,* SEATTLE POST-INTELLIGENCER, Sep. 8, 1999, at F4 ("Sun Microsystems Inc. on Friday sought to reinstate a federal injunction forcing Microsoft Corp. to conform its operating systems, Internet browser and development tools to Sun's Java Native Interface."). The Judge reinstated the preliminary injunctions based upon unfair competition rather than copyright, leaving the copyright determination for final summary judgment or trial. *See* Sun Microsystems, Inc. v. Microsoft Corp., No. C 97-20884 RMW (PVT), 2000 U.S. Dist. LEXIS 1917, at *40 (N.D. Cal. Jan. 24, 2000).

26. Interestingly, Judge Whyte did not question Sun's right to a copyright in Java (and, in fact, held that it was presumptively valid). *See Sun,* 21 F. Supp. 2d at 1119. Even

Sun's assertion of intellectual property rights might preserve the integrity of a cross-platform standard that might otherwise be fragmented, those rights are presently aligned with broader social welfare interests."[27] Thus, Sun's assertion of its copyright and trademark rights in the standard *in this case* is unlikely to raise antitrust or anticompetitive concerns,[28] because few will worry about Microsoft's unequal bargaining power or susceptibility to the control of a monopolist.[29] Yet, there are two reasons to pause for concern. First, this decision will have precedential power in other situations more likely to raise anticompetitive issues, especially if the exercise of Sun's rights exceeds the scope of maintaining compatibility — if it were, for example, to try to control price, development, and access once Java is adopted. Further, Java, in concert with a web browser like Netscape Navigator, has the potential simply to replace Windows as the market standard for a platform, substituting monopolist for monopolist.[30] The only difference is that Sun publicly has vowed to keep Java an open standard, and has made much of the technology and specifications public.[31] In contrast, Windows is a closed standard.[32] Of course, the question remains as to

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Microsoft only half-heartedly disputed the copyright, arguing only that the presumption of a valid copyright from registration was rebutted by the showing of some unoriginal content. *See id.*; Brief of Appellant at § VII.A.1.e., Microsoft Corp. v. Sun Microsystems, Inc., 188 F.3d 1115 (9th Cir. 1999) (No. 99-15046) (visited Mar. 25, 2000) <http://www.microsoft.com/presspass/java/01-15appealsbrief.htm>. Microsoft likely has self-interested reasons for not challenging such a ruling.

27. Mark A. Lemley & David McGowan, *Could Java Change Everything? The Competitive Propriety of a Proprietary Standard*, 43 ANTITRUST BULL. 715, 765 (1998). For a definition of social welfare interests, see *infra* note 37. Essentially, social welfare interests include the absence of monopoly rent extraction and healthy competition, providing a competitive price, as well as the social interest in technological improvement and realization of the benefits of network effects.

28. *See* discussion *infra* Section I.B.

29. *Cf.* United States v. Microsoft Corp, 980 F. Supp. 537, 539 (D.D.C. 1997) (discussing antitrust actions being brought against Microsoft by the Department of Justice for attempts to monopolize).

30. Java and Netscape would function as a meta-platform, operating "on top of" Windows or any other operating system, and usurping the user interface function. *See* Lemley & McGowan, *supra* note 27, at 770.

31. An open standard or, more generally, an open architecture is an "architecture whose specifications are public. This includes officially approved standards as well as privately designed architectures whose specifications are made public by the designers. The opposite of open is closed or proprietary." *See* PC Webopedia, *Open Architecture* (visited Mar. 25, 1999) <http://webopedia.Internet.com/TERM/o/open_architecture.html>. See *infra* Part III for a discussion of the specific vows Sun has made.

32. *See* United States v. Microsoft Corp., 65 F. Supp. 2d 1, 42 (D.D.C. 1999) (stating that "licensees of Microsoft software were, and are, contractually prohibited from reverse engineering, decompiling, or disassembling any software files" — the paradigmatic closed system).

whether the public can ensure that Sun does not close the standard or try to extract monopoly licensing fees once Java is so adopted.[33]

Some argue that giving intellectual property rights to standards creates a monopoly problem and a consequential risk of diminution of social welfare and utility.[34] The concern is that standard holders are able to extract monopoly rents in excess of a normal intellectual property reward, an occurrence that decreases social welfare.[35] But others counter that there are cases like Java, where such concerns are moot because Sun is presently using its copyright and trademark rights to develop, enhance, and maintain an open standard.[36] This is important because one might want to treat the monopolist of an open standard with more leniency when it is not extracting monopoly rents, but rather is using its monopoly in procompetitive ways. The incentive-based justifications for intellectual property protection need to be balanced against the public interest and consumer welfare justifications.[37]

This Note suggests how standardization competition can proceed so as to tame the resulting monopolist, illustrating the debate by considering Java and the dispute involving Microsoft. This Note begins with the premise that although standards need intellectual property protection while competing to become the standard, limits should be imposed upon those rights once the standard is adopted in order to prevent monopolistic behavior. In Part I, this Note discusses the two traditional limits that have been applied to such standards in the past — limiting the scope of copyright protection and antitrust remedies —

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33. *See* Lemley & McGowan, *supra* note 27, at 751 (identifying, though not purporting to address, this problem). Sun has received formal recognition from the ISO to submit its proprietary product for adoption as a standard, and may already be the "de facto" standard for web-based programming. *See id.* at 759.

34. *See, e.g.,* Lemley, *supra* note 1.

35. A closed standard can limit the efficient functioning of the market, slow technological improvement, and reduce the benefits of network externalities. *See* Willow A. Sheremata, *Barriers to Innovation: A Monopoly, Network Externalities, and the Speed of Innovation,* 42 ANTITRUST BULL. 937 (1997) (discussing the effects of monopoly standards on innovation, consumer welfare, and the market and suggesting open standards as a way to mitigate these effects).

36. *See* Lemley & McGowan, *supra* note 27, at 751.

37. Consumer welfare can mean many different things. For the purposes of this Note, consumer welfare has several components. First, it is the interest against which the "creator's rights" are balanced. *See* Mark A. Lemley, *Beyond Preemption: The Law and Policy of Intellectual Property Licensing,* 87 CAL. L. REV. 111, 170-71 (1999) (discussing the balance of creator protection and consumer protection in the intellectual property law). Second, it is the efficient functioning of a market (for example, the absence of monopoly rent extraction and healthy competition providing a competitive price). Third, it is the interest in technological improvement: the better the technology is in a standard, the more valuable it should be to consumers. Fourth, it is the consumers' realization of the benefits of network effects. Fifth (which may be a part of the first), it is the reservation of a public right implicit in the grant of a "limited right," i.e., the uncompensated positive externalities or "ancillary social benefits" that arise from publication of creative works. Cohen, *supra* note 12, at 547-48 (outlining the ancillary social benefits that are derived from creative works).

and concludes that the latter is too slow and limited in its effectiveness, while the former too drastic, especially in the case of Java. In Part II, this Note advocates taking a "middle ground" approach to limiting enforcement of intellectual property rights in standards through the use of the copyright misuse doctrine. Finally, Part III proposes a "modified copyleft"[38] to provide added assurance that intellectual property owners in standards will be held to their promise to mitigate, with an open standard, the dangers of enforcing intellectual property rights, providing another middle ground approach to the extreme options outlined in Part I. This Note concludes that the combination of the copyright misuse defense and a modified copyleft contract would prevent standard holders from turning around and locking up the standard, once adopted, with their intellectual property rights.

I. LIMITING COPYRIGHT: EVALUATING TRADITIONAL PARADIGMS

This Part analyzes the traditional limitations that have been applied to the enforcement of intellectual property rights in standards. Section I.A examines the use of the idea/expression doctrine, an approach some courts have used to define the scope of copyright narrowly so as to deny protection. It concludes that the results thus obtained are too severe, because they deny the copyright holder the ability to reap the full reward intended in the grant of copyright protection. Section I.B analyzes the use of antitrust actions and concludes that they are often too slow and ineffective to prevent damage to consumer welfare from the anticompetitive exercise of monopoly power.

A. *Delimiting the Scope of Copyright*

One way of mitigating the problem of intellectual property rights in a standard is to deny intellectual property protection to methods of operation as did the First Circuit in *Lotus v. Borland*.[39] Yet, this Sec-

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38. A "copyleft" describes a license agreement under which a copyrighted work is distributed and which requires that the user must agree not to assert copyright to protect any improvements or changes he makes, must distribute those changes, if at all, subject to the same license terms, and must make all source code for those changes publicly available. The term "copyleft" was coined and explained by Richard Stallman at the GNU project's website. *See* Richard Stallman, *What is Copyleft?*, (last modified Mar. 20, 2000) <http://www.gnu.org/copyleft/copyleft.html>. The term "copyleft" is also defined and discussed in Ira V. Heffan, Note, *Copyleft: Licensing Collaborative Works in the Digital Age*, 49 STAN. L. REV. 1487, 1508 (1997). The term herein coined "modified copyleft" is discussed *infra* Part III.

39. *See* 17 U.S.C. § 102(b) (1994) (listing uncopyrightable subject matter, including a method of operation, idea, procedure, process, system, concept, principle, and discovery); Lotus Dev. Corp. v. Borland Int'l, Inc., 49 F.3d 807, 815 (1st Cir. 1995) (holding that the Lotus 1-2-3 menu command hierarchy is an uncopyrightable "method of operation"), *aff'd*

tion concludes that the result reached by the *Lotus* court, effectively deeming the standard an idea for which copyright protection is unavailable, is problematic because companies might not invest the time required to develop standards if they will not be adequately rewarded financially.[40] In the case of Java, denying copyright protection would be too harsh because Sun would be unable to protect compatibility, and consumers would not receive the benefits of cross-platform compatibility that Java offers.[41]

Lotus v. Borland involved the literal copying of the menu command hierarchy for the Lotus 1-2-3 spreadsheet program by a rival spreadsheet developer, Borland. Borland felt it necessary to copy this hierarchy because it had become the industry standard due to Lotus's dominance in the field.[42] In order to accommodate Lotus 1-2-3 users' path dependence,[43] Borland had to make user-written macros[44] for Lotus 1-2-3 interoperable with Borland's spreadsheet (Quattro Pro). It had to be able to read users' macro instructions according to the Lotus menu command hierarchy, thus necessitating a literal copy of the hierarchy in Quattro's code.[45] The court held that the Lotus 1-2-3 menu structure was an uncopyrightable "method of operation" under section 102(b) of the Copyright Act, and thus Borland had not in-

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by an equally divided court, 516 U.S. 233 (1996); *cf.* Lemley & McGowan, *supra* note 11 (criticizing this approach).

40. *See* David Friedman, *Standards as Intellectual Property: An Economic Approach*, 19 DAYTON L. REV. 1109, 1122 (1994) (arguing that when standards involve significant development costs, "the availability and quality of the standard" and the "incentive to produce it" may depend greatly on the reward provided by intellectual property law).

41. One paramount example, again, is the Microsoft case described *infra* Section I.B.

42. *See Lotus*, 49 F.3d at 810.

43. *See supra* note 14 for a definition of path dependence.

44. A macro is a "symbol, name, or key that represents a list of commands, actions, or keystrokes. Many programs allow you to create macros so that you can enter a single character or word to perform a whole series of actions." PC Webopedia, *Macro* (last modified November 6, 1997) <http://webopedia.Internet.com/TERM/m/macro.html>. This is another example of "resource commitments" or "path dependence" that needs to be overcome for a competitor to oust an entrenched standard holder and allow free competition. *See supra* note 14 and accompanying text.

45. It did not, however, copy the underlying code for this menu structure. *See Lotus*, 49 F.3d at 810. A literal copy was necessary because the macros were written by reference to the first letter of the name of each menu or submenu in 1-2-3 (for example, F for "File"), requiring Quattro Pro to include the 1-2-3 menu and submenu names and structure (the "menu command hierarchy") within its code.

fringed Lotus's copyright.[46] In other words, the court called Lotus's menu hierarchy an "idea" rather than an "expression."[47]

While this result allowed Borland to compete effectively with the standard holder, the ramifications were severe. The court's conclusion allows any competitor to use Lotus's hierarchy, regardless of whether the competitor offers a better product, a result that is difficult to jus-tify.[48] To deny copyright protection to 1-2-3 because it "was so innova-tive that it occupied the field and set a *de facto* industry standard" is, as an earlier case noted, to "have flipped copyright on its head,"[49] be-cause the explicit aim of copyright is to secure to authors the exclusive right to their writings exactly so they can reap the rewards of a popular work.[50] In the case in which this argument was made, another soft-ware developer's copying of Lotus 1-2-3 was "overwhelming and per-vasive," especially in comparison to Borland's copying of only the menu hierarchy. Had the *Lotus* court's approach been used in the earlier case, the result would have been especially severe — the com-petitor would have been allowed to pirate the Lotus 1-2-3 program features solely because of its standard status.[51] This has led some crit-ics to argue that copyright is no longer an appropriate doctrine to pro-tect network features of computer software at all. Because the

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46. *See Lotus*, 49 F.3d at 815. It is important not to misunderstand the result here. The court did not deem the Lotus *code*, which is explicitly granted protection by § 117 of the Copyright Act, to be a "method of operation," but rather found the hierarchy or interface, which is the manifestation of the code, to be a "method of operation." *See id.* To analogize this to a literary work, the court would protect the written text (code), but not the resulting story (the interface).

47. Fundamental copyright principles dictate that copyright protects only the expression of an idea, not the idea itself, and this principle is reflected in § 102(b)'s list of uncopy-rightable subject matter. *See* Nichols v. Universal Pictures Corp., 45 F.2d 119 (2d Cir. 1930) (holding that copyright protects more than just the literal text, but does not extend as far as protecting the ideas expressed therein; in this case it did not protect the "idea" of a story de-picting the quarrel between a Jewish and Irish Father, the marriage of their children, the birth of grandchildren, and a reconciliation).

It could be stated alternatively that the idea "merged" with the expression as in *Baker v. Selden*, 101 U.S. 99 (1879). The effect is the same either way — copyright protection fails. The court suggested that it might consider the "long prompts" (short phrases describing the menu choices) under the merger doctrine if the issue were before the court on appeal. *See Lotus*, 49 F.3d at 815-16 n.9.

48. Judge Boudin's concurrence would have adopted a different approach: it would al-low a privileged use where the competitor is not seeking to appropriate Lotus's advances but is seeking to aid interoperability (allowing consumers to switch between competing pro-grams) and to prevent path dependence (see *supra* notes 14 and 44 for a definition). This approach, he said, "would not automatically protect Borland if it had simply copied the Lotus menu (using different codes), contributed nothing of its own, and resold Lotus under the Borland label." *Lotus*, 49 F.3d at 821 (Boudin, J., concurring). This approach, however, has never been used explicitly by a court.

49. Lotus Dev. Corp. v. Paperback Software, 740 F. Supp. 37, 79 (D. Mass. 1990).

50. *See* U.S. CONST. art. I, § 8, cl. 8.

51. *See* Lotus Dev. Corp. v. Paperback Software, 740 F. Supp. at 79.

Copyright Act explicitly protects computer programs, however, this argument must fail.[52]

Although one interpretation of what the *Lotus* court did appears at first blush to be procompetitive, it rests on a faulty premise. One view of the effect of *Lotus* is that it forced the competing standards to be interoperable, allowing consumers to switch back and forth between them, and permitting the better product to win the standard competition.[53] This has the advantage of not stranding those customers who choose the losing standard, because their files, programs, or hardware would be compatible with the winning standard. This advantage reduces the tendency of consumers to choose the firm they believe will succeed, rather than the one that has the better, if different, standard ("market tipping").[54] Thus, the *Lotus* approach might offer one feasible way to address a case like Sun's, not explicitly fleshed out by commentators — disallowing Sun's intellectual property rights in the Java language itself.[55] This approach would force Sun to compete with others over whose Java virtual machine, which runs Java programs, will become the standard.[56]

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52. *See* Peter S. Mennell, *An Epitaph for Traditional Copyright Protection of Network Features of Computer Software*, 43 ANTITRUST BULL. 651 (1998) (interpreting the purposes of copyright and recent court decisions to mean that such protection actually is not available for these features, nor should it be). *But see* Dennis S. Karjala, *The Relative Roles of Patent and Copyright in the Protection of Computer Programs*, 17 J. MARSHALL J. COMPUTER & INFO. L. 41, 50-56 (1998) (asserting that even though the code could be a "method of operation" or "process," denying protection in this fashion would be contrary to congressional intent in providing copyright protection to computer software code).

53. *See* Lemley, *supra* note 1, at 1060 n.64 (suggesting such an approach for standardization competition); *see also* Sheremata, *supra* note 35, at 961.

54. *See* Sheremata, *supra* note 35, at 958-59 and 941 (discussing the ways in which standards can and do compete, the effect of market tipping, and the convincing evidence that DR-DOS, the competing product to MS-DOS, was a far superior product but did not become the standard because of Microsoft's dominant market position). Market tipping that results in an inferior standard being chosen is not in the best interests of consumer welfare.

55. *Cf.* Seth A. Cohen, *To Innovate or Not to Innovate, That is the Question: The Functions, Failures, and Foibles of the Reward Function Theory of Patent Law in Relation to Computer Software Platforms*, 5 MICH. TELECOMM. TECH. L. REV. 1 (Nov. 23, 1998) <http://www.mttlr.org/volfive/cohen.html> (discussing a similar proposal for restriction of patent rights in computer software platforms to promote "rivalry").

There has been some doubt expressed that a computer language itself is copyrightable, although it is patentable if it meets the general patent qualifications. *See* Lotus Dev. Corp. v. Paperback Software, 740 F. Supp. 37, 72 (D. Mass. 1990); *see also* Pamela Samuelson, *Computer Programs, User Interfaces, and Section 102(b) of the Copyright Act of 1976: A Critique of Lotus v. Paperback*, L. & CONTEMP. PROBS., Spring 1992, at 311, 334-35 & n.109 (discussing the *Paperback* court's handling of the copyright issue). Sun does not, however, necessarily claim rights to the language as such, but rather to the "technology" that implements the code like the Virtual Machine, Java Native Interface, JDK, and class libraries, as well as constant improvements and upgrades. *See* TLDA, *supra* note 21, § 2.1(a). Furthermore, it seems clear that the virtual machine itself would be copyrightable (and patentable), because it is just the type of computer program the Copyright Act was amended to protect. *See supra* note 52.

56. Different computer chips (like the Pentium or PowerPC) have different specifications for what series of ones and zeroes are needed to perform a given function. What is of-

The market-tipping effect, however, cannot be so easily avoided — the competition for the adoption of a standard will simply drop down to the next level, and focus, in Sun's case, on whose virtual machine will become the standard.[57] Even with interoperability, people will tend to use the product they think is likely to become the standard or the one with the most convenient distribution channels, such as a company like Microsoft that is dominant in other areas.[58] This may be just what happened to 1-2-3 after the *Lotus* case — Lotus's inability to enforce a copyright in its interface played a part in its demise as the market leader for spreadsheets and in the ascendance of Microsoft Excel.[59] The end result is merely a transfer of monopolies. This does little to resolve the substantive monopoly and incentive problems; the winner of the new competition will still have a monopoly in a standard, and the original standard holder still forfeits its entitlement to a copyright reward. Further, the *Lotus*-type interoperability mandate would not permit Sun, for example, to maintain the cross-platform compatibility features, the very benefit that the standard brings in the

ten referred to as a Java Virtual Machine (JVM) parses the Java code and "translates" it to the computer chip's specific code. The JVM is not usually a piece of hardware like the chip — hence it is a "virtual" machine — but rather software that runs "on top of" the operating system, bypassing the necessity of writing several versions of a program, each with chip-specific code. The JVM must produce these individual computer chip instructions, so each JVM is specific to the type of computer chip. *See* MARY CAMPIONE & KATHY WALRATH, THE JAVA TUTORIAL: OBJECT-ORIENTED PROGRAMMING FOR THE INTERNET 4-5 (1998).

57. This is just what has happened with email, for example. The standard is established and non-proprietary, which has the same effect as making the standard interoperable, but it can be argued that the "next level" for which there is now fierce competition is "instant messaging," where compatibility is seen as antithetical to capturing an installed base. *See* Stein, *supra* note 6. At one point Lemley notes that such a JVM competition may result from independent development of Java bytecodes with non-Java programming languages. *See* Lemley, *supra* note 1, at 1052 n.36.

58. Both of these tendencies are illustrated in the "browser wars" between Microsoft and Netscape. That consumers would tend to use the product they believed to be the winner or likely winner was reflected in Microsoft's belief that development of a superior product in Internet Explorer *and* offering it for free would not be sufficient to dislodge Netscape from its market-leading position. *See* United States v. Microsoft Corp., 65 F. Supp. 2d 1, 37 (D.D.C. 1999). That people tend to use a product with convenient distribution channels is illustrated by Microsoft's attempt to restrict Netscape's access to such channels in order to gain market share for Internet Explorer. *Id.* at 38.

59. The decision certainly prevented Lotus from reaping the rewards of establishing the industry standard. It may be that cognizant of this risk, Lotus was unwilling or unmotivated to develop a better interface, as did Microsoft in Excel. If for no other reason, the result is severe because Lotus lost the right to be rewarded for its "writings" into which it had poured large sums of money and time in development. It is doubtful that Lotus would have invested the resources into such development if it would not have been able to protect the product at all, in other words, to recoup its investment. *See* Friedman, *supra* note 40, at 1122. To be fair, the court did not deny protection to all of 1-2-3, just to the menu hierarchy, but it essentially enabled Borland to copy that which had become one of 1-2-3's most useful features: the way in which 1-2-3 made simple the writing and executing of macros.

first place, because it could not prevent licensees like Microsoft from developing incompatible versions of Java technology.[60]

One commentator has suggested, along the lines of *Lotus*, that to foster competition and innovation by limiting the intellectual property rights of the standard holder, copyright law ought to adopt the patent idea of "blocking" to protect improvements.[61] The idea of blocking patents is that the improver can, by securing a patent, block the original patent holder from making that improvement herself. The improver, however, cannot use the improvement because it is based upon a previously granted patent — thus, both parties are blocked from using the improvement, hopefully an incentive to negotiation.[62] Such an approach, it is argued, would protect these improvers by providing the protection for improvement that copyright traditionally denies authors of unauthorized derivative works and would further the incentives that copyright is meant to encourage: progress, innovation, and protection of new expression.[63] This approach would accomplish what the *Lotus* court did, allowing Borland to improve upon 1-2-3, but would arguably not be as drastic, because it would only have prevented Lotus from capitalizing on Borland's improvement, and would not have diminished the protection Lotus had for 1-2-3.

This proposition, however, is not much better than *Lotus* because it would require either a statutory change or the overruling of many precedents.[64] Unless Congress changed the basic tenets of copyright

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60. In order to maintain the utility of the network effect (cross-compatibility), Sun would have to have some control over the use of the Java "network," but it need not control access to the specifications which are now public, nor control who can write programs in Java, much like Microsoft can for Windows. The recent antitrust litigation by the Department of Justice has focused on this control. The estimate of Windows' market share is usually 90%. United States v. Microsoft Corp., No. 98-1232 & 98-1233, 1998 U.S. Dist. LEXIS 14231, at *11 (D.D.C. Sept. 14, 1998). Trademark rights in JAVA enable Sun to enforce compatibility requirements — ensuring that programs written in Java will run on any platform — because if claims of compatibility were untrue, Sun could enjoin the competitors under the Lanham Act. This point mitigates against the preservation of copyright protection (it does not need copyright to protect compatibility), but the fact that no one need license the trademark to market a product as compatible (if it is) favors maintaining copyright protection to preserve the incentive to innovate. Thus, both trademark and copyright protection are necessary. Irrespective of the standard status of Java, there is no compelling reason to restrict trademark rights in a standard where the company has invested in building the brand name. Trademark law provides a remedy if the mark unduly inhibits competition because of its "monopoly" status: genericide, which is beyond the scope of this Note.

61. *See* Mark A. Lemley, *Economics of Improvement in Intellectual Property Law*, 75 TEXAS L. REV. 989, 992 (1997).

62. *See* Robert Merges, *Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents*, 62 TENN. L. REV. 75 (1994).

63. This change would evidently be accomplished by analogy to patent law and through the fair use doctrine. *See* Lemley, *supra* note 61, at 992.

64. The Copyright Act nowhere provides for blocking copyrights, *see* 17 U.S.C. §§ 101-1205 (1994 & Supp. IV 1998); it specifically prohibits unauthorized derivative works, *see* 17 U.S.C. § 106(2) (1994), and there is a long history of court cases finding such improvements to be infringing, *see, e.g.*, Mirage Editions, Inc. v. Albuquerque A.R.T. Co., 856 F.2d 1341

law, this approach would not be helpful, because copyright law, unlike patent law, allows for independent creation.[65] Thus, suppose a Sun competitor improves upon Java and seeks protection under this approach. She could only do so if Sun was unable to independently create this improvement, because once Sun learned of the *idea*, it could create its own *expression* of this idea without violating her blocking copyright.[66] Furthermore, Sun's access to her *idea* would not satisfy the access requirement for infringement, because the *idea* is not copyrightable.[67] She would only be protected from Sun's literal copying of her code. Moreover, given the pace at which companies such as Sun innovate, it is unlikely that it would need her code. Thus, neither the approach adopted in *Lotus*, nor any approach derived therefrom, is capable of adequately addressing the problems presented by internet standardization.

B. *Antitrust Enforcement*

Antitrust enforcement presents a possible approach to the problem of Internet standardization, as it is the traditional response to concerns regarding a monopolist.[68] This Section acknowledges that there are some limited circumstances where antitrust enforcement can be useful, often after a standard is adopted. But this Section argues that, in most cases, antitrust is too slow and its remedies too blunt to be an effective tool for remedying the monopoly and incentive problems inherent in internet standardization cases such as the Java dispute.

(9th Cir. 1988) (affirming summary judgement for plaintiff where defendant purchased copies of book, cut out pictures, glued them with a border to tiles, and sold them).

65. *See* Arnstein v. Porter, 154 F.2d 464 (2d Cir. 1946) ("If evidence of access is absent, the similarities must be so striking as to preclude the possibility that the plaintiff and defendant independently arrived at the same result.").

66. *See supra* note 47.

67. *See* Sheldon v. Metro-Goldwyn Pictures Corp., 81 F.2d 49 (2d Cir. 1936) (Hand, L.) ("defendants were entitled to use ... even the plaintiffs' contribution itself, if they drew from it only the more general patterns; that is, if they kept clear of its 'expression.' ").

68. The Sherman Act, 15 U.S.C. §§ 1-7 (1994), prohibits unreasonable restraints of trade, like price fixing, under Section 1 but this Section does not play a significant role in standardization any more than it does in any other industry. Section 2's prohibitions on monopolization and attempts to monopolize are the source of antitrust power in the standardization case; by definition, a standard with copyright protection has a monopoly. *See supra* note 8 and accompanying text. Of course, the granting of intellectual property rights by Congress carries with it an exemption from the antitrust laws; that is, a copyright holder is not guilty of attempting to monopolize just because she registers her copyrighted work. The Clayton Act, 15 U.S.C. §§ 12-27 (1994), provides jurisdiction to the Federal Trade Commission (FTC) under Section 18 to approve mergers and acquisitions where "the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly."

One way that antitrust can protect post-adoption[69] standard competition is that the government can compel licensing or interoperability through antitrust decrees or as a condition for the approval of mergers.[70] But as a tool for balancing the competing interests, antitrust is limited, because it requires that the standard holder's activities be proscribed by antitrust law or that they fall under the purview of the Federal Trade Commission ("FTC"). An interesting example is the compulsory license imposed upon West Publishing for its star pagination system, which a court had determined was copyrightable, as a condition for approval of its purchase by Thompson.[71] In many ways, West's pagination system is a standard in the legal community that resembles a network and has many of the same characteristic network effects. There is an added value to the network in being able to use one standard citation for a case because it enables quick and accurate identification of the authority, and the more that users adopt this standard, the more valuable and efficient it becomes.[72] The government evidently recognized this anticompetitive concern and made the standard, in effect, interoperable, meaning that anyone could license it on a reasonable basis,[73] thereby forcing West to compete in other areas. This requirement prevents West from being able to leverage its monopoly over the standard into market share in the burgeoning electronic database market.[74] In such cases, there could

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69. This Note will differentiate between the competition among various possible standards before the "market" settles on one from the competition between the standard holder and those competitors who seek to oust the standard by referring to the former as pre-adoption competition and the latter as post-adoption competition.

70. For a review of cases where the government has used antitrust to protect post-adoption standard competition in such ways, see James P. Love, *A Free Trade Area for the Americas: A Consumer Perspective on Proposals as They Relate to Rules Regarding Intellectual Property* (visited Mar. 28, 2000) <http://www.cptech.org/pharm/belopaper.html>.

71. *See* United States v. Thomson Corp., No. 96-1415, 1997 U.S. Dist. LEXIS 2790, at *20 (D.D.C. Mar. 7, 1997); United States v. Thomson Corp., No. 96-1415, 1997 U.S. Dist. LEXIS 1893, at *9 (D.D.C. Feb. 27, 1997); United States v. Thomson Corp., 949 F. Supp. 907 (D.D.C. 1996) (approving a complex settlement that requires West to license its star pagination); *see also* West Publ'g Co. v. Mead Data Cent., Inc., 799 F.2d 1219, 1223 (8th Cir. 1986) (finding the star pagination system copyrightable as a compilation). The decision in *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340 (1991), which found that the "white pages" are not original enough to be copyrightable under the Constitution or the Copyright Act, likely increased West's willingness to agree to a settlement in this case.

72. The West Reporters are often the required citation. *See* THE BLUEBOOK: A UNIFORM SYSTEM OF CITATION § 10.3.1(b), at 62 (16th ed. 1996) (instructing that citation to a computer database should be used only if a regional, official, or preferred unofficial reporter, many of which are West's, is not available).

73. Of course, the government could also have made West "license" the system for free, although this would have been in conflict with the Eighth Circuit's decision in *West Publishing*, 799 F.2d at 1223.

74. This latter market ostensibly would have been cornered in large part by West were it not for this compulsory license, because Bluebook form requires citation to West's page numbers. *See* THE BLUEBOOK, *supra* note 72, § 10.3.1(b), at 62. This would essentially translate into a lock on the electronic database market for published case law. The extent of

hardly be a better solution, because there is no danger of inadvertently diminishing the scope of copyright protection for works that are *not* the subject of network effects, because there is no precedent established.[75] Nor would one worry about the anticompetitive effects in these cases, because the copyright owner has agreed to license the work while maintaining its copyright.[76] But again, the limited circumstances under which this type of remedy can be used — in mergers and settlement decrees — reduce its effectiveness. In the case of Java, such remedies would be of limited use because Sun has neither exhibited anticompetitive behavior nor attempted any large scale mergers, but that proves the larger point that the remedies can be effective in important situations.

Antitrust enforcement can sometimes help during the pre-adoption standards competition as well. Some commentators argue that antitrust enforcement should be used to police anticompetitive conduct during the period of competition for the adoption of the standard to ensure that the best standard is adopted, instead of the standard of the firm with the most leveraging power.[77] Surely Sun's actions during the time it is competing to have Java adopted as the standard should be scrutinized for anticompetitive conduct under the antitrust laws, just as any firm's would be. And when it enters into agreements such as the AOL/Netscape merger, an agreement to purchase various assets from Netscape and to provide certain services to the new AOL/Netscape combination,[78] the FTC has the ability to balance consumer welfare interests with those of Sun in ways similar to those employed in the West purchase mentioned above.[79] Such actions have little built-in disincentive for innovation and pose little

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the market share garnered by West would have been limited to those situations where pinpoint cites are required, which includes, at the very least, all academic legal writing, although arguably not necessary for the practitioner who may or may not conform to the Bluebook. Even in the latter case, however, such practitioners might choose to use Westlaw (West's online database) exclusively just because of the times when it is more convenient to cite to a West page.

75. *See* Lemley & McGowan, *supra* note 11, at 540 (identifying "the problem the First Circuit confronted in the *Lotus* case: how to craft an intellectual property rule that will enhance social welfare in network effects cases without inflicting too much damage on the fundamental tenets of intellectual property law in the majority of cases where network effects do not play a role.").

76. *See* United States v. Borland Int'l, Inc., No. C 91-3666, 1992 U.S. Dist. LEXIS 5095, at *4 (N.D. Cal. Mar. 13, 1992) (reporting a similar solution when Borland acquired Ashton-Tate, the producer of the "dBase" standard: Borland was required to forego "initiating or making any claim or counterclaim that asserts claims of copyright infringement in the command names, menu items, menu command hierarchies, command languages, programming languages and file structures used in and recognized by Ashton-Tate's dBase family of products . . . .").

77. *See* Lemley & McGowan, *supra* note 27, at 727.

78. *See Sun-America Online Terms Disclosed*, N.Y. TIMES, Feb. 11, 1999, at C20.

79. *See* United States v. Thomson Corp., 949 F. Supp. 907 (D.D.C. 1996).

danger to the rights of a standard holder, because they only arise when companies either engage in anticompetitive behavior or attempt to merge or purchase competitors.[80] In other words, the restrictions are self-imposed to a large extent.[81] Unfortunately, such remedies are consequently limited in reach.[82]

Despite these two limited circumstances when antitrust is helpful, there are several good reasons why antitrust is not well equipped to handle *all* of the problems of Internet standardization. First, antitrust actions are notoriously slow; the IBM case spanned thirteen years,[83] the AT&T case nine years,[84] and the ongoing case against Microsoft began in 1990.[85] By the time the IBM case was over, it no longer seemed the daunting monopolist it once had been, and not because of any antitrust remedy.[86] Rather, the market had changed much faster than the antitrust case could proceed.[87] Although such cases might proceed more quickly against companies not quite as large as IBM,

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80. Although such restrictions may in truth reduce the incentive to innovate because the possibility of excessive monopolistic rewards is reduced, the most important incentive — that for which the Constitution provides a copyright — remains intact.

81. The restrictions are self-imposed because they can only be instituted if the firm is anticompetitive or if it attempts to merge with or purchase other companies — both actions within its control.

82. *See* United States v. Thomson Corp., 949 F. Supp. 907 (D.D.C. 1996) (discussing the agreement entered into when Thomson sought to purchase West); United States v. Thomson Corp., No. 96-1415, 1997 U.S. Dist. LEXIS 2790, at *20 (D.D.C. Mar. 7, 1997); United States v. Thomson Corp., No. 96-1415, 1997 U.S. Dist. LEXIS 1893, at *9 (D.D.C. Feb. 27, 1997) (discussing the difficulties in enforcing the consent degree approved of in the decision of March 7, 1997); United States v. Borland Int'l, Inc. and Ashton-Tate Corp., No. C 91-3666 (MHP), filed Oct. 17, 1991, ¶ IV(A) (discussing the final judgment between the United States and Borland when Borland acquired Ashton-Tate).

83. *See* PHILLIP AREEDA & LOUIS KAPLOW, ANTITRUST ANALYSIS: PROBLEMS, TEXT, CASES 67 (5th ed. 1997).

84. *See* United States v. AT&T, 552 F. Supp. 131 (D.D.C. 1982), *aff'd sub nom.* Maryland v. United States, 460 U.S. 1001 (1983) (commencing in 1974).

85. *See* United States v. Microsoft Corp., 159 F.R.D. 318, 334-35 (D.D.C. 1995) (discussing the Federal Trade Commission action against Microsoft beginning in 1990, and the instant action brought by the Justice Department), *rev'd* 56 F.3d 1448 (D.C. Cir. 1995); United States v. Microsoft Corp., 147 F.3d 935 (D.C. Cir. 1998); United States v. Microsoft Corp., 65 F. Supp. 2d 1 (D.D.C. 1999); *see also* B. MacAllister, *The Big Case: Procedural Problems in Antitrust Litigation,* 64 HARV. L. REV. 27 (1950) ("Prolonged proceedings and a massive record are almost inevitable . . . for the rules of law that have been developed, with respect to both the offense and the proof which may be adduced, generally permit the entire history of a major company or industry to be placed in issue.").

86. The government moved for an outright dismissal of the case just before the end of the trial. *See In re* IBM Corp., 687 F.2d 591, 600-603 (1982) (granting mandamus directing district judge to cease consideration of the case).

87. Interestingly, Microsoft makes the same argument about the present antitrust case against it, and argues that the computer/Internet market (characterized by network effects) is so different from standard markets that antitrust law should view Microsoft's tactics differently. *See Setting the Record Straight: Microsoft Statement on Government Lawsuit* (visited Mar. 29, 2000) <http://www.microsoft.com/presspass/doj/10-13record.htm>.

AT&T, or Microsoft, even significantly shorter times would still be too lengthy, especially in the fast-changing world of technology.[88]

Second, antitrust remedies have a "blunt hand." Specifically, they can be unduly harsh, and, as a threat, they can inhibit innovation.[89] In the absence of anticompetitive behavior to enjoin, or acquisitions that require the FTC's approval, the most likely remedy a court would order in an antitrust case is a restructuring of the company.[90] In such situations, "antitrust is a fairly blunt instrument,"[91] because forcing divestiture of the standard or prohibiting a firm from competing in the market does little to remedy the monopoly status of the standard. Instead, it merely changes the owner, and it is still severe and poses a veritable threat. In a case like Java, such structural relief cannot compel the maintenance of its open specifications.[92] Spinning off the Java standard into the hands of a new company does little to remedy the consumer welfare concerns that accompany a closed standard. Moreover, absent some method of guaranteeing that the standard will

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88. The median total length from complaint to termination of *private* antitrust cases is 17 months. *See* Steven C. Salop & Lawrence J. White, *Economic Analysis of Private Antitrust Litigation*, 74 GEO. L.J. 1001, 1009 (1986). Even the government's *trial* against Microsoft, which has received praise for its brevity, still took eight months from the beginning of testimony to the release of the findings of fact. *See* United States v. Microsoft Corp., 65 F. Supp. 2d 1 (D.D.C. 1999). The time frame for developing a standard varies with the technology and market factors, but it would seem that a one to three year range is typical. *See* Charles W. L. Hill, *Establishing a Standard: Competitive Strategy and Technological Standards in Winner-take-all Industries*, ACAD. OF MGMT. EXECUTIVE 7, May 1997 at 7, 12 (citing the rapid industry acceptance of a standard for CD technology once Sony and Philips agreed on a standard — over 30 companies agreed to license the technology within 2 years, and a technological development time of 3 years for a competing CT scanner); Julie Pitta, *Format Wars*, FORBES, July 7, 1997, at 266 (detailing the competition between Adobe Systems' PostScript document format and Xerox's rival format standard, noting that after two years, a standards committee approved a standard that was a combination of the two formats, by which time PostScript had been adopted by the market, so that the committee's standard was worthless).

89. *See* Lemley & McGowan, *supra* note 27, at 770-71.

90. The possibility of courts requiring a firm to predisclose or license its standard has been rejected repeatedly. *See*, 35 U.S.C. § 271(d)(4) (1994) (patentee has the right not to license its patent); Berkey Photo, Inc. v. Eastman Kodak Co., 603 F.2d 263, 284-85 (2d Cir. 1979) (holding that Kodak has no obligation to predisclose interface specifications of its new cameras to film makers, notwithstanding that Kodak would have temporary control over the film market as well); United States Department of Justice and Federal Trade Commission, *Antitrust Guidelines for the Licensing of Intellectual Property*, 4 Trade Reg. Rep. (CCH) ¶ 13,132, at § 2.2 (April 6, 1995) (possession of market power does not impose an antitrust obligation to license intellectual property); Lemley, *supra* note 1, at 1070.

91. *See* Penelope A. Preovolos, *Litigation in the Interface: Connecting to 'Essential Facilities': Will Antitrust Law Developed to Unblock the Monopolies of Railroads be Applied to Open Interoperability for the Information Superhighway?*, IP WORLDWIDE, Mar. 1995 (visited Mar. 24, 2000) <http://www.ipmag.com/preovolos.html> ("The antitrust laws have been employed to address problems of this sort only in rare, albeit dramatic, instances. The antitrust laws are geared to address anticompetitive acts, not to force a firm that has achieved great success legitimately, by being the best innovator or the most effective marketer, to share the rewards of its efforts with others.").

92. *See supra* note 90.

remain open, the new owner cannot be prevented from acting just as its predecessor did. Again, the Internet is naturally driven toward standardization. Despite the fact that the winner of the standard competition receives too great a windfall upon adoption,[93] standards are efficient and necessary for the operation of the Internet.[94] The threat of antitrust action upon the firm after the technology is adopted as a standard is, if effective, also counterproductive because it could deter the development of such standards.[95]

Third, antitrust cannot address anticompetitive licensing provisions that fall short of Sherman Act violations.[96] In a case like Sun's, this shortcoming is particularly conspicuous. Sun is not yet a monopolist, because Java has arguably not yet been adopted as a standard.[97] In addition, there is no evidence that Sun has engaged in anticompetitive or monopolistic conduct that might bring it under Sections 1 or 2 of the Sherman Act.[98] The Microsoft antitrust case in progress was only initiated once Netscape was injured, by which time AOL had moved in to acquire it.[99] Thus the antitrust action, at least insofar as it is seeking to ensure fair competition in the browser market, may be moot. Antitrust law would allow Sun, with impunity, to champion Java as an open standard in order to push for its adoption and then close the standard once adopted.

Fourth, some antitrust remedies threaten to severely diminish the incentive structure in place to promote "the useful arts."[100] The government's antitrust action against Microsoft has led at least one commentator to argue that the essential facilities doctrine, which forces the monopolist to allow competitors to use its facilities, is an appropriate remedy for monopoly leveraging of electronic networks by entrenched monopolists holding proprietary rights to standards, like

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93. The reward is at least a greater incentive for innovation than is needed. *See* Farrell & Katz, *supra* note 11, at 638 (stating that the winner of a standards competition may be over rewarded); Lemley, *supra* note 1, at 1060 n.64.

94. *See* Farrell & Katz, *supra* note 11; Friedman, *supra* note 40.

95. To the extent that such rewards are a necessary incentive for the standard development, which is often, but not always, true. *See* Farrell & Katz, *supra* note 11; Friedman, *supra* note 40.

96. *See* Sherman Act, 15 U.S.C. §§ 1-7 (1994).

97. Sun had submitted but then withdrew applications to the International Organization for Standardization (ISO) and ECMA (a European standards body). *See* Amy Zuckerman, *Rules on the Way for Tech Suppliers*, J. COM., Dec. 29, 1999, at 8.

98. Enforcing one's copyright does not constitute a Sherman Act antitrust violation. In fact, there would be no antitrust violation in Sun's decision to close the Java standard. *See* Sherman Act, 15 U.S.C. §§ 1-2 (1994).

99. *See Sun-America Online Terms Disclosed, supra* note 78.

100. U.S. CONST. art. I, § 8, cl. 8 (providing that Congress may allow authors copyright protection pursuant to Congress's power "[t]o promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries . . . .").

Windows.[101] The commentator posits that "[a] guarantee of open access to Windows would insure that consumers could choose among a variety of suppliers for word processing, spreadsheets, data bases, browsers, and other applications that run on Windows."[102]

Yet the argument that it would not punish Microsoft is unpersuasive. Requiring Microsoft to open its code to the world is something that would deter further innovation on its part.[103] Although such a remedy would indeed help other software manufacturers, it does not provide sufficient incentive for the development of standards, a process which requires enormous resources which only will be invested if commensurate rewards can be expected.[104] If the next standard holder must worry that its proprietary code will become an essential facility, the information economy may end up mired in a technological standstill because firms will have insufficient incentive to invest the necessary resources to develop standards.

On the other hand, if a firm gets to the point where its standard is important enough to become an essential facility, it may be willing to lose control over it because it has recouped its costs and profited immensely. This argument is based upon the premise that all standards reward their creators relatively quickly, which may not always be true. It also does not address the concern that the owner of the standard would have far less incentive to offer improvements or upgrades to its standard. If Microsoft were required to treat Windows as an essential facility, two problems would emerge. First, once the next version of Windows is released, the "facility" would be different, and the solution moot. Second, if all successive versions of Windows were to be

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101. *See* Thomas A. Piraino Jr., *An Antitrust Remedy for Monopoly Leveraging by Electronic Networks*, 93 Nw. U. L. REV. 1, 50-63 (1998). *Cf.* AREEDA & KAPLOW, *supra* note 83, at 501 (the essential facilities doctrine "acts to preclude the dominant firm in an industry from refusing to grant competitors access to its essential facilities"); MCI Comm. v. AT&T, 708 F.2d 1081 (7th Cir. 1983).

102. Piraino, *supra* note 101, at 7.

103. *Cf.* Farrell & Katz, *supra* note 11, at 648 (discussing the potential effects of antitrust on innovation, concluding: "Public policy regarding the mandatory sharing of an interface must balance adverse effects on the incentive to improve the interface against the positive competitive effects from sharing it once it has been created. By and large, when the creation of an interface involves large costs and great ingenuity, the adverse innovation incentive effects are likely to be relatively strong.").

104. *See* Hill, *supra* note 88, at 15 (discussing the "hundreds of millions of dollars" that Philips has spent on trying to develop its Digital Compact Cassette technology); Karjala, *supra* note 52, at 50. For examples of software development costs, see Dickerman Assocs., Inc. v. Tiverton Bottled Gas Co., 594 F. Supp. 30, 32 (D. Mass. 1984) (discussing the development time of 22 man months until first sale and additional 12 months to first installation, at a cost of $400,000); Com-Share, Inc. v. Computer Complex, Inc., 338 F. Supp. 1229, 1233 (E.D. Mich. 1971) (development cost of $2 million for programs and related time-sharing technology), *aff'd*, 458 F.2d 1341 (6th Cir. 1972); Aries Info. Sys., Inc. v. Pacific Management Sys. Corp., 366 N.W.2d 366, 367-68 (Minn. Ct. App. 1985) (discussing the initial $100,000 for research and development and subsequent "substantial capital investment" over eight to ten years for later version).

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considered essential facilities, it is unlikely that Microsoft would continue to invest the same amount of time and resources into its development.

Antitrust, then, is not often capable of providing ex post protection from a standard's intellectual property rights monopoly because of its tendency toward slowness and severity, frequent powerlessness, and potential to inhibit innovation and creativity. Thus, two of the most commonly suggested and implemented solutions, discussed in this Part, for the remedy of monopoly control over a standard fail to achieve an effective balance between the protection of producer incentives and of consumer welfare interests in a competitive marketplace. Limiting the scope of copyright, as did the *Lotus* court, is too dangerous to innovation, and antitrust's hand is too slow and too blunt to be effective.

II. THE COPYRIGHT MISUSE DEFENSE

There is a middle ground between the two approaches outlined in Part I that catches anticompetitive behavior that antitrust does not and that avoids the problems inherent in a *Lotus*-type approach. This approach is the copyright misuse defense, and it can be invoked in contract or infringement actions.[105] It achieves an appropriate balance between consumer welfare needs and the maintenance of an adequate incentive structure for innovators, and it also addresses anticompetitive licensing provisions.[106] Because copyright misuse does not require actions that would otherwise be a violation of the antitrust laws, its invocation may be more effective.[107] This Part explores the brief history of copyright misuse and its potential application in Internet standardization cases. It concludes that copyright misuse indeed may be helpful in addressing some of the problems outlined so far in this Note. By providing a defense to those sued by a copyright owner like Sun, for example, copyright misuse can keep such standard holders from closing their standards and enforcing their rights through infringement actions. Yet, this Part will also show that the defense is somewhat new and the scope of its application unclear, so there is still a need for a clearer ceiling to standard holders' rights.[108]

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105. *Lasercomb*, decided in 1990, is regarded as the first case to seriously apply this middle ground. *See* Lasercomb America, Inc. v. Reynolds, 911 F.2d 970 (4th Cir. 1990).

106. *See, e.g.*, Alcatel USA, Inc. v. DGI Techs., Inc., 166 F.3d 772, 778 (5th Cir. 1999) (requiring users of its copyrighted software to use its hardware as well); *Lasercomb*, 911 F.2d at 978 (discussing the ninety-nine year prohibition on the licensee's development of similar software).

107. *See supra* Section I.B.

108. *See infra* Part III.

The copyright misuse defense was first established in *Lasercomb v. Reynolds*,[109] which allowed the defense to an infringement action if the copyright was being "used in a manner violative of the public policy embodied in the grant of a copyright."[110] In that case, the copyright holder attempted to prevent its licensees, through contract provisions, from independently innovating a competing product for ninety-nine years.[111] The licensee in the case actually had never signed the contract, but the court held that the defense was not limited to those *subject* to such anticompetitive contract provisions.[112]

The application of copyright misuse in *Lasercomb* has much broader implications.[113] This is important in the context of the Internet and particularly in the case of Java, because Sun's practice of keeping Java open is not based in contract language. Thus, having the copyright misuse defense applied in non-contract cases broadens its applicability. For example, the holding of *DSC Communications v. DGI Technologies*,[114] another case in which the defense was successfully used, was not restricted to anticompetitive contract provisions like those targeted in *Lasercomb*.[115] The Court of Appeals based its

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109. *Lasercomb*, 911 F.2d 970. *See also* Mitchell Bros. Film Group v. Cinema Adult Theater, 604 F.2d 852, 865 n.27 (5th Cir. 1979) (recognizing the copyright misuse defense).

110. *Lasercomb*, 911 F.2d at 978.

111. *See id.* at 973.

112. *See id.* at 977. It did, however, base its finding of misuse upon such contract provisions — it just allowed any would-be infringer to rely on the misuse defense regardless of whether it was under such a contract. The court explicitly rejected the notion that the charge had to rise to the level of an antitrust violation. *See id.* at 978.

113. The Second, Fourth, Fifth, Seventh, Eighth, Ninth, and Tenth Circuits have recognized the copyright misuse defense. *See, e.g.*, Practice Mgmt. Info. Corp. v. AMA, 121 F.3d 516, 520 (9th Cir. 1997) (adopting the defense and finding misuse); Service & Training, Inc. v. Data Gen. Corp., 963 F.2d 680, 690 (4th Cir. 1992); Broadcast Music, Inc. v. Claire's Boutiques, Inc., 949 F.2d 1482 (7th Cir. 1991); United Tel. Co. of Mo. v. Johnson Publ'g Co., 855 F.2d 604, 610-12 (8th Cir. 1988); CBS, Inc. v. ASCAP, 607 F.2d 543, 544-45 (2d Cir. 1979). The other circuits have expressed support for the proposition. *See, e.g.*, Data General Corp. v. Grumman Sys. Support Corp., 36 F.3d 1147, 1169-70 (1st Cir. 1994) (citing *Lasercomb* with approval); Budish v. Gordon, 784 F. Supp. 1320, 1336 (N.D. Ohio 1992) (recognizing that the 6th Circuit has not adopted the defense, but that even were misuse found, the plaintiff purged itself by withdrawing the agreement); *see also* Ramsey Hanna, Note, *Misusing Antitrust: The Search for Functional Copyright Misuse Standards*, 46 STAN. L. REV. 401, 404-10 (1994) (charting the development of the defense).

114. DSC Communications Corp. v. DGI Techs., Inc., 81 F.3d 597 (5th Cir. 1996) (interlocutory appeal of narrow preliminary injunction affirmed because of likelihood of copyright misuse by plaintiff/appellant), *modified sub nom.* Alcatel USA, Inc. v. DGI Techs., Inc. 166 F.3d 772, 777 (5th Cir. 1999) (holding that DSC (now Alcatel) was guilty of copyright misuse).

115. *See Alcatel*, 166 F.3d at 777. The only factual problem with this case is that DGI made copies of DSC's software and removed them from a third-party licensee's premises. Thus "DGI duped [the licensee] into breaching its own contract with DSC" and provided the basis for the judgment against it for misappropriation of trade secrets. *Alcatel*, 166 F.3d at 785. Although the court found that the copyright law preempted the state unfair competition claim, it did not address the preemption of the trade secrets claim. *See id.* If the court purposefully avoided the issue, it would be understandable, because it is not an easy argu-

finding of misuse on the fact that DSC tried to extend its copyright to protect its unpatented hardware, something that the Copyright Act does not protect.[116] At the same time, the court affirmed the dismissal of DGI's antitrust counterclaims, reaffirming that conduct which constitutes misuse need not rise to the level of an antitrust violation.[117]

Copyright misuse provides yet another advantage. Specifically, courts can apply it with discretion, tailoring it to prevent the "lock up" of a network standard and to provide a ceiling to the level of copyright protection available in cases where there is anticompetitive conduct. At the same time, courts may refuse to apply it in situations where intellectual property rights and social welfare interests are aligned.[118] It is far better for courts to have significant discretion than to stamp out innovation with blunt antitrust remedies or harsh limitations on intellectual property rights.[119]

In order to check such discretion, some commentators advocate an antitrust standard for misuse, meaning that only separate antitrust violations would rise to the level of copyright misuse.[120] Such a standard would, it is argued, avoid "inflicting too much damage on the fundamental tenets of intellectual property law in the majority of cases where network effects do not play a role" because the rule of reason methodology in antitrust will allow the court to consider procompetitive justifications for and the anticompetitive effects of restraints on

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ment to say that copyright misuse should trump misappropriation of trade secrets claims. Generally, such claims survive preemption by copyright, and addressing this issue might require developing a different standard for "misuse preemption," but this issue is beyond the scope of this Note. The applicability of the misuse defense would have saved DGI from liability in this case were it not for its deception. This is evidenced by the Fifth Circuit's approval of the initial injunction, which only prevented DGI from *removing* copies of DSC's software from the premises of the licensee and explicitly allowed copying incidental to testing the cards. *See DSC*, 81 F.3d at 599-600.

116. *See Alcatel*, 166 F.3d at 793. In fact, although the court mentions the other devious actions by DSC, it based its finding solely on the jury's finding of misuse and on a contract requirement that the licensor use only DSC hardware. *See id.* at 778, 793.

117. *See Alcatel*, 166 F.3d at 777.

118. *Cf.* Lemley & McGowan, *supra* note 27.

119. See *supra* Section I.B for a discussion of the effects of (inflexible) antitrust application on the incentive structure and innovation. *Cf.* Farrell and Katz, *supra* note 11 (concluding that "[p]ublic policy . . . must *balance* adverse effects on the incentive to improve the interface against the positive competitive effects from sharing it once it has been created.") (emphasis added). Implicit in such an ability to balance is sufficient discretion in fashioning remedies.

120. *See* Lemley & McGowan, *supra* note 11, at 540. The authors point to the *Lotus* case as an example of potential damage to the "fundamental tenets of intellectual property," but fail to explain how the application of misuse would fix this problem. *Id.*; *see also* Roger Arar, Redefining Copyright Misuse, 81 COLUM. L. REV. 1291, 1310-11 (1981) ("[C]ourts applying a misuse defense can do no better than to look to substantive antitrust principles . . . .").

trade.[121] Yet, this Note argues that courts can use a rule of reason balancing approach without requiring an antitrust violation. Such a balancing approach is implicit in the *Lasercomb* language defining misuse as occurring when "copyright is being used in a manner violative of the public policy embodied in the grant of a copyright."[122] To the extent that procompetitive justifications for an extension of the rights provided by copyright violate such public policy, no problem exists, because any extension of rights beyond those granted in copyright should be authorized by Congress, not by the courts.[123] In fact, allowing courts to consider such procompetitive justifications would itself inflict too much damage on the fundamental tenets of the constitutional separation of powers.[124] Furthermore, if courts use antitrust as a barometer, they will miss a lot of behavior that decreases social welfare, such as the anticompetitive licensing provisions in *Lasercomb* or *DSC*.[125]

Moreover, misuse is more narrowly tailored than either the approach the *Lotus* court used or antitrust.[126] By not invalidating the copyright, as the *Lotus* court did, the misuse defense does less damage to the "fundamental tenets of intellectual property law."[127] Once the owner has "purged itself of the misuse," it can again assert its rights.[128]

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121. For an explication of the "Rule of Reason," see, for example, Chicago Bd. Of Trade v. United States, 246 U.S. 231, 238 (1918) (writing that "the true test of legality is whether the restraint [of trade] imposed is such as merely regulates and perhaps thereby promotes competition or whether it is such as may suppress or even destroy competition. To determine that question the court must ordinarily consider the facts peculiar to the business to which the restraint is applied; its condition before and after the restraint was imposed; the nature of the restraint and its effect, actual or probable. The history of the restraint, the evil believed to exist, the reason for adopting the particular remedy, the purpose or end sought to be attained, are all relevant facts."); Standard Oil Co. v. United States, 221 U.S. 1 (1911) (announcing Rule of Reason).

122. Lasercomb America, Inc. v. Reynolds, 911 F.2d 970, 978 (4th Cir. 1990).

123. The Constitution authorizes *Congress*, not the courts, to "promote the Progress of Science and the useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. CONST. art. I, § 8, cl. 8.

124. Article I of the United States Constitution enumerates the powers of Congress, and the copyright and patent granting authority is contained therein. *See* U.S. CONST. art. I, § 8, cl. 8. On the other hand, under Article III, "[i]t is emphatically the province and duty of the judicial department to say what the law is. Those who apply the rule to particular cases, must of necessity expound and interpret that rule." Marbury v. Madison, 5 U.S. (1 Cranch) 137, 177 (1803). Thus, the courts may *interpret* laws passed by Congress, not modify them to extend their reach to those circumstances the judges feel are warranted.

125. *See* Alcatel USA, Inc. v. DGI Techs., Inc., 166 F.3d 772, 777 (5th Cir. 1999); *Lasercomb*, 911 F.2d 970. For a discussion of the implications of such behavior on social and consumer welfare, see *supra* note 37.

126. *See* Lotus Dev. Corp. v. Borland Int'l, Inc., 49 F.3d 807, 815 (1st Cir. 1995) (calling the standard an uncopyrightable "method of operation"), *aff'd by an equally divided court*, 516 U.S. 233 (1996); *supra* Section I.A.

127. Lemley & McGowan, *supra* note 11, at 540.

128. *Lasercomb*, 911 F.2d at 979. *See, e.g.*, Budish v. Gordon, 784 F. Supp. 1320, 1336 (N.D. Ohio 1992) (recognizing that although the Sixth Circuit has not adopted the defense,

It seems possible that courts might achieve a just result short of antitrust-level violations by application of the defense. For example, the court that found West's star pagination copyrightable could have used the copyright misuse defense as a more palatable way to allow Lexis to use the pagination system, rather than invalidating West's copyright, had it been suggested.[129] The court could have found that West's attempt to extend its copyright to the pagination was misuse, and thus a defense to the infringement action it brought against Lexis. In this way, the court could have avoided inflicting too much damage to the intellectual property regime because it would not have had to expand the protection of copyright to cover what was arguably not expression, nor would it have had to invalidate the copyright entirely.[130]

Some commentators argue that because reverse engineering — ascertaining the process by which some program, device, or technology was created by starting with the finished product and working "in reverse" — is available, the copyright misuse defense need not often be applied.[131] There are significant problems with reverse engineering in an open standard case, though. For one, the time it takes to reverse engineer may amount to an insurmountable entry barrier.[132] Further, the advantage of reverse engineering is not obvious, because most of the ideas that could be extracted with impunity already are open and available. If a reverse engineer wanted to distill the functionality from, for example, a Java Class Library — perhaps one that if used in a program would produce a dialog box with an "OK" button and a

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the offending anticompetitive settlement agreement would not rise to the level of misuse under *Lasercomb*, but that even if it did, the plaintiff purged itself by withdrawing the agreement). *Cf.* Julie E. Cohen, *Reverse Engineering and the Rise of Electronic Vigilantism: Intellectual Property Implications of "Lock Out" Technologies*, 68 S. CAL. L. REV. 1091, 1181-1198 (1995) (arguing that the application of misuse could be limited by allowing only parties that have standing to defend with misuse).

129. *See* West Publ'g Co. v. Mead Data Cent., Inc., 799 F.2d 1219 (8th Cir. 1986); *see also supra* Section I.B.

130. As to the former, see *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340 (1991) (finding that the "white pages" are not original enough to be copyrightable under the Constitution or the Copyright Act), after which West's copyright in its page numbers is certainly questionable. The *Lotus* court did the latter. *See* Lotus Dev. Corp. v. Borland Int'l, Inc., 49 F.3d at 815 (calling the standard an uncopyrightable "method of operation").

131. In the software context, this means starting with the object code (machine language) and "decompiling" it to come up with the human-readable source code. *See* Sega Enters. v. Accolade, Inc., 977 F.2d 1510, 1519-27 (9th Cir. 1992) (holding that reverse engineering of a copyrighted computer program is fair use when it is the only way to gain access to ideas and functional elements and there is a legitimate reason for so doing); *see also* Cohen, *supra* note 128. Professor Cohen's article deals with technological protections, one possible way that Sun could protect Java if it closed the standard. But the Digital Millennium Copyright Act provides an exception for reverse engineering such protective devices. *See* 17 U.S.C. § 1201(f) (Supp IV 1999).

132. *See* Andrew Johnson-Laird, *Software Reverse Engineering in the Real World*, 19 U. DAYTON L. REV. 843, 901 (1994) (stating that reverse engineering software is technically difficult, time consuming, expensive, and yields imperfect results).

"Cancel" button — she could easily do so. But the specifications of that library are already freely available to her under Java's open standard. If she did reverse engineer the library, she only would be permitted to use the ideas, not the expression of the code that enabled the functionality.[133] Most of the work involved would be in expressing this idea, and her efforts would be futile.[134]

To be effective, the misuse defense must have a broad application. Users need a way to prevent a standard holder like Sun from establishing the standard, in part due to reliance on its promise of open specifications, and then closing the standard once it is adopted. It is worth noting that in Sun's case, should it close the standard, the optimal remedy would require more than just reverse engineering. The goal would be to gain access to more than just functionality, but rather to all that was previously open, because it would have been partly on that basis that it was accepted as a standard. The copyright misuse defense provides an avenue for securing this access because without the enforcement of its copyright, Sun would not be able to keep the specifications closed.

The enforcement of Java's copyright, as in Sun's dispute with Microsoft, is aligned with social welfare interests because it has enabled Sun to maintain the compatibility of its product. Microsoft, however, has accused Sun of misuse in the lawsuit.[135] This provides an example of the defense functioning perfectly, because nothing that Sun has done in the context of its dispute with Microsoft, nor any of the language in its license agreement, warrants the application of copyright misuse.[136] In considering the defense, the court must take Sun's motives into account.[137] If Sun used its copyright to lock up access to a licensor who, like Microsoft, was taking actions that would destroy the

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133. Again, the trade secrecy problem introduces interesting variations to the issue, because Sun might try to protect its newly closed standard with secrecy, but this is beyond the scope of this Note (as it was in Cohen's article, *supra* note 128).

134. The idea of producing a dialogue box is simple. Expressing this idea in code is where the work is involved.

135. Microsoft has accused Sun of misusing its copyrights in court filings pertaining to Sun's case against it. These accusations are evidently based upon Sun's proposed preliminary injunction orders, which Microsoft argues attempt to "restrict Microsoft's competitive use of the unprotectible [sic] subject matter in Sun's copyrighted works." Microsoft's Opposition to Sun's Motion to Reinstate Preliminary Injunction Under 17 U.S.C. § 502 at § IIC, Sun Microsystems, Inc. v. Microsoft Corp., 81 F. Supp. 2d 1026 (N.D. Cal. 2000) (No. C 97-20884) (visited Mar. 31, 2000) <http://www.microsoft.com/presspass/java/09-27opposition. htm>.

136. *Compare* Brief of Appellant at § VII.C., Microsoft Corp. v. Sun Microsystems, Inc., 188 F.3d 1115 (9th Cir. 1999) (No. 99-15046) (visited Jan. 6, 2000) <http://www.microsoft. com/presspass/java/01-15appealsbrief.htm>, *with* Sun Microsystems, Inc. v. Microsoft Corp., 188 F.3d 1115 (9th Cir. 1999) (making no mention of Microsoft's claim of misuse).

137. *See* Lasercomb America, Inc. v. Reynolds, 911 F.2d 970, 981 (4th Cir. 1990) (discussing the intentions and motivations of the parties).

cross-platform compatibility, the application of the misuse defense would have to fail. This is because Sun's actions would not be "violative of the public policy embodied in the grant of a copyright,"[138] but rather in concordance with it, protecting the expression itself.

The copyright misuse defense, then, presents a more moderate and reasonable approach to placing limits on the rights of Internet standard holders. The defense can be used in a fair and balanced manner in order to ensure that the holder of intellectual property rights does not extend her control beyond protecting her expression. Because its application does not require an antitrust violation, many of the concerns outlined above regarding the use of antitrust are not problematic here. Moreover, it presents no danger of creating worrisome precedent for future standard holders, as did the *Lotus* decision, and it also ensures that even the copyright holder found to have misused his copyright is not forever barred from protecting his expression if he rectifies the violations of public policy.

Yet although the copyright misuse defense can be helpful, it is on such uncertain legal ground that courts may be reluctant to apply it. Moreover, it is only a defense — it cannot compel a standard holder like Sun to keep its specifications open. Thus, in order to maintain the appropriate balance between incentives to innovate and consumer welfare, additional legal remedies are needed.

III. AN EQUITABLE REMEDY: CAN ESTOPPEL IMPLY A COPYLEFT?

One issue that critics have not adequately explored is whether courts could use the strong equity tradition in the field of intellectual property law and apply equitable estoppel. In a case like Sun's, where the adoption of a standard is based upon certain promises, implied or expressed, courts could estop the promissor from asserting its legal rights if it abrogates those promises. Part III of this Note proposes that if a standard holder does abrogate such promises, it should be estopped from asserting its intellectual property rights. In combination with the application of the copyright misuse defense, this remedy will protect innovation, the ideology of intellectual property law, and consumer welfare.

A "copyleft" license provides that any user must agree not to assert copyright to protect any improvements or changes he makes, must distribute any changes subject to the license, and must make publicly available the entire source code for those changes. The term was coined by Richard Stallman as a way of using "the software hoarders' legal system" to protect the public from the copyright holders.[139]

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138. *Id.* at 978.

139. Heffan, *supra* note 38, at 1508 nn.120-21. *See also* GNU Project website, *supra* note 38.

Stallman wanted to perpetuate "free" software, meaning that others may use and improve the software if they adhere to the open source policy.[140] He faced the problem, however, that improvements on public-domain software could be removed from the public domain and copyrighted or patented, thereby limiting use.[141] This result would be antithetical to the purpose of providing free software, much like incompatible changes to Java would be antithetical to its purpose. The solution of copyleft is to copyright the software and distribute it under a license. Such a license should be enforceable under the rubric of a shrink-wrap license,[142] where the purchaser manifests her intent to be bound by downloading the software and distributing derivative works.[143] The copyleft license, however, is not *directly* applicable to the Internet standardization problem addressed by this Note for two

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140. Stallman defines "free" in terms of freedom to use and improve. Charging for the software under a copyleft is acceptable. Heffan, *supra* note 38, at 1508 nn.120-21. *See also* GNU Project website, *supra* note 38.

141. Fundamental copyright principles dictate that an "author" can base her copyright on any works in the public domain, since they would not have the protection of copyright, and she can copyright her work so long as there is at least *some* noticeable difference that is not "merely trivial." *See* Alfred Bell & Co. v. Catalda Fine Arts, Inc., 191 F.2d 99, 102-5 (2d Cir. 1951) ("All that is needed to satisfy both the Constitution and the statute is that the 'author' contributed something more than a 'merely trivial' variation, something recognizably 'his own.' . . . A copyist's bad eyesight or defective musculature, or a shock caused by a clap of thunder, may yield sufficiently distinguishable variations. Having hit upon such a variation unintentionally, the 'author' may adopt it as his and copyright it."). None of this, of course, is true if the work being copied is copyrighted, because then copying is infringement. *Cf. supra* notes 62-67 and accompanying text.

142. *See* Heffan, *supra* note 38, at 1509-14. A shrink-wrap license is the license that accompanies the purchase of most software products, its name derived from the fact that agreement to its terms is presumed by the removal of the "shrink-wrap" around the software box. *See* ProCD, Inc. v. Zeidenberg, 86 F.3d 1447, 1449 (7th Cir. 1996) (defining "shrink-wrap licenses"). Similarly, a "click-wrap" license is formed when, for an Internet purchase of downloaded software, a consumer "clicks" "OK" or "I AGREE" at the end of the license terms. *See* Hotmail Corp. v. Van Money Pie Inc., N.Y.L.J., June 30, 1998, at 1 (N.D. Cal., Apr. 20, 1998) (reporting by Martin H. Samson, *Click-Wrap Agreement Held Enforceable*, describing result in the case that held click-wrap licenses valid); *ProCD*, 86 F.3d at 1450-53 (holding that "shrink-wrap licenses" are enforceable).

143. *See ProCD*, 86 F.3d at 1451-52. Further, recent court decisions and the proposed Article 2B have validated shrink-wrap and click-wrap licenses, wherein it is assumed that both parties have come to a meeting of the minds. Many courts have considered the contract or promise itself to be an "extra element" required to remove the contract right from the domain of the "exclusive rights within the general scope of copyright" and thus not subject to preemption. *See* 17 U.S.C. § 301(a) (1994); Hotmail Corp. v. Van$ Money Pie Inc., No. C-98 JW PVT ENE, C 98-20064 JW, 1998 WL 388389, at *1 (N.D. Cal., Apr. 16, 1998) (reporting by Martin H. Samson, *Click-Wrap Agreement Held Enforceable*, describing result in the case that held click-wrap licenses valid); *ProCD*, 86 F.3d at 1450-53 (holding that "shrink-wrap licenses" are enforceable); National Car Rental Sys. v. Computer Assocs. Int'l, 991 F.2d 426, 430-31 (8th Cir. 1993) (holding that license did not assert any rights equivalent to copyright); Taquino v. Teledine Monarch Rubber, 893 F.2d 1488, 1501 (5th Cir. 1990) (finding contract not preempted); Lemley, *supra* note 37 (outlining the extent to which Article 2B would enforce shrink-wrap and other mass market licenses). *But see* American Movie Classics Co. v. Turner Entertainment Co., 922 F. Supp. 926, 931 (S.D.N.Y. 1996) (finding preemption if contract claims only allege infringement of plaintiff's copyright).

reasons. First, the license forbids the licensee from copyrighting any improvements she makes. This requirement is not needed to balance the interests outlined above, and, in fact, is contrary to the need for appropriate incentives to develop and use standards; without copyright incentives to protect their programs, for example, Java developers might use another program or not develop at all.[144] Second, copyleft traditionally binds the consumer and not the licensor. Thus, some modification to copyleft is necessary to fit the circumstances here.

Hence, one possible avenue through which equity could enforce promises made by standard holders like Sun is through a new type of implied contract, a modified copyleft. At least one commentator has viewed recent trends, such as the enforcement of shrink-wrap licenses, as being favorable enough to the intellectual property owner that he posits that consumers will need a consumer-protection law to counteract those advantages.[145] If the courts will validate shrink-wrap licenses, which are essentially adhesion contracts, even where the customer's intent to be bound by the license is not clear, then they should counterbalance such validation by incorporating into this contract any promises or manifestations made by the software producer. Effectively, courts would be implying a copyleft contract in reverse: the *producer* would be obligated to keep the specifications open as a condition of its standard being accepted by the consumers who rely on the producer's open-source manifestations. Conventional copyleft is concerned with preventing consumers from destroying an open-source policy; a modified copyleft would make this obligation mutual. Although many commentators have argued that shrink-wrap licenses should not be enforceable because there is a disparity of bargaining power between the consumer and software producer, such a modified copyleft license should still bind companies like Sun, who clearly have the power to influence the terms of the contract, because the bargaining-power disparity would be moot and the result of enforcing this type of contract would benefit, not harm, social welfare.[146]

Specifically in Sun's case, the company has made statements to its licensees, to the press, and to the International Organization for Standardization ("ISO") that it would always, at a minimum, fairly license

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144. *See* Farrell & Katz, *supra* note 11 and *supra* Section I.B.

145. *See* Lemley, *supra* note 37, at 185-87. He also notes in passing the possibility of an implied covenant to keep the standard platform independent. *See* Lemley & McGowan, *supra* note 27, at 771.

146. One of the arguments against enforcing such licenses is that they are adhesion contracts, so the consumer has no choice but to agree to the terms if she needs the software — she has no power to bargain with the manufacturer. *See* David L. Hayes, *Shrinkwrap License Agreements: New Light on a Vexing Problem*, 15 HASTINGS COMM. & ENT. L.J. 653 (1993) (discussing the validity of shrink-wrap license agreements).

its technology to anyone interested.[147] Sun has stated that it will pro-
vide free copyright and patent licenses should Java be adopted as the
ISO standard,[148] but will retain its trademark rights in Java.[149] Sun also
promises to license its logo on a nondiscriminatory, fair basis to those
who pass its compatibility tests.[150] Moreover, Alan Baratz, President
of Sun's Javasoft Business Unit, said:

> [t]he process that Sun has been running, is running, and will continue to
> keep running, is that *open industry participative process.* It will *continue*
> to yield *open specifications* for the APIs, it *will continue* to be delivered
> with *free rights* to the intellectual property needed to implement against
> those specifications.[151]

The ISO, legal commentators, and industry representatives want the
guarantee of an open standard that will not be closed if adopted,[152] and
Sun has at least implied, and at most guaranteed them, that Java will
remain open.[153]

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147. *See Sun Response to ISO/IEC JTC1 N4811 and N4833,* § 2.4 (last modified Nov. 10,
1999) <http://java.sun.com/aboutJava/standardization/response1.html>.

148. *See id.* at § 2.2.1-2.

149. *See supra* note 60.

150. Sun "agrees that conformance to International Standards is based on voluntary
declarations by suppliers. In particular, implementors of the specifications will be able to
claim that their products are 'ISO-xxxx conformant' [the name Sun proposed for the Java
ISO standard] without passing any formal external testing by Sun or any certification agency.
Those who wish to claim that their products are explicitly conformant to or compatible with
Sun's Java™ product or platform, however, may do so by entering into a licensing agree-
ment with Sun on a fair and non-discriminatory basis on reasonable terms, as many compa-
nies do." *Sun Response to ISO/IEC JTC1 N4811 and N4833,* § 2.4 (last modified Nov. 10,
1999) <http://java.sun.com/aboutJava/standardization/response1.html>.

Lemley and McGowan, however, worry that the market may require Java logos, in
which case this assurance may not be much help (for example, OS/2 is fairly compatible with
Windows, but Microsoft plays on possible only partially compatible fears). Lemley &
McGowan, *supra* note 27, at 767; *see also* Laurence Zuckerman, *Sun Microsystems Rejects
Suggestions It Give Up Java,* N.Y. TIMES, Sept. 23, 1997, at D7.

151. *Q & A with Sun at Today's Press Teleconference, Sept. 22, 1997* (last modified Mar.
17, 1999) <http://java.sun.com/pr/1997/sept/qa.html> (emphasis added); *see also ISO Mem-
bers Approve Sun's PAS [Publicly Available Specification] Application: Frequently Asked
Questions* (last modified Mar. 17, 1999) <http://java.sun.com/pr/1997/nov/pr971117.qna.
html> (responding to questions about its ISO application, Sun posted the following on its
website: "Q: What is Sun doing that is different from other companies that want their tech-
nologies to be standards? A: Sun is the first for-profit company to be approved as a PAS
[Publicly Available Specification] Submitter. Sun has set the bar very high with our open
Java specifications, our open specification development process and our commitment to
open systems."); *Q & A with Sun at Today's Press Teleconference, Sept. 22, 1997,* (last modi-
fied Mar. 17, 1999) <http://java.sun.com/pr/1997/sept/qa.html> (Jim Mitchell, Vice President
of Technology and Architecture, stating that the process for considering changes is more
open than the normal ISO process and that consensus for changes to Java is necessary:
"That's why we run as open a process as we do . . . . We can no more veto or do something
with just one company — if we do that we have killed that right to run anywhere, so our pro-
cess is open because it has to be.").

152. *See* Lemley & McGowan, *supra* note 27 (outlining such objections).

153. *See Industry Leaders Bring VRML, Java(TM) and JavaScript(TM) To The Web*
(last modified Sept. 15, 1998) <http://java.sun.com/pr/1995/12/pr951204-02.html> ("Silicon

Arguably, in reliance on this promise, developers have made Java the strongest contender for the de jure and/or de facto standard cross-platform and web-based programming language. Developers want a language that will enable them to write programs more efficiently, that is, write them only once.[154] Sun has promised them sophisticated developers' kits and competition within that market,[155] innovation and adaptation of the class libraries to include increasing levels of functionality and compatibility with competition here as well,[156] and a language that will function on each major platform.[157] Consumers want the flexibility and choice of platforms, which Sun vows to deliver through cross-platform compatibility without the same network constraints imposed by Windows' dominance.[158]

Thus, because the distribution of Sun's Java technology is accompanied by a license, part of the formation of the contract between Sun and the consumer would include Sun's manifestations about its intent to keep Java an open standard.[159] In other words, Sun has promised, in essence, to copyleft its technology; it can be deemed to have distributed the technology subject to implied terms similar to those of the

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Graphics, Sun Microsystems and Macromedia have also agreed to work together to jointly define a new set of open, multimedia formats and application programming interfaces (APIs).... Java binaries are available to developers free of charge. The Java Compiler and Java Developer's Kit as well as the HotJava browser and related documentation are available from Sun at http://java.sun.com. In addition, the Java source code can be licensed for a fee.").

154. *See Sun Microsystems Leads Industry Effort to Simplify XML Development* (last modified Dec. 8, 1999) <http://web2.java.sun.com/pr/1999/12/pr991207-06.html> ("Sun also announced the expert group of industry leaders ... that is working to create ... [a] project ... [that] will enable developers to deliver and maintain high-performance XML-enabled applications with a minimum of development effort.... Thus, not only will developers be able to more easily develop and process Java technology-based applications that leverage XML, but enterprises will also lower costs through more productive development.").

155. *See supra* note 147-151 and accompanying text.

156. *See, e.g., TLDA, supra* note 21, which allows Microsoft to develop new class libraries incorporating Windows features (so long as the libraries conformed to naming specifications).

157. *See supra* note 151 and accompanying text.

158. *See* Jon Byous, *Integration and Simplicity XML and the Java™ Platform* (last modified Dec. 9, 1999) <http://web2.java.sun.com/features/1999/12/xml.html> (" 'In today's dotcom world, customers want to build applications with the assurance of both data and business logic interoperability within a heterogeneous environment,' said Sun's George Paolini, vice president, Java Community Development. 'The Java 2 platform and XML provide the open, standards-based technologies that are helping to ensure this interoperability without locking developers into proprietary environments.' ").

159. Sun offers several types of licenses for its different products. Some of its technology is sold in traditional computer software outlets, where it is accompanied by a shrink-wrap license. Developers can download Sun's JDK (for free) from Sun's website *after* clicking "accept," indicating acceptance of the terms of the license agreement (a click-wrap license). For the license accompanying Sun's JDK 1.1, for example, see *Sun Microsystems, Inc., Binary Code License Agreement* (visited Mar. 31, 2000) <http://java.sun.com/products/jdk/1.1/LICENSE>.

copyleft license. The license agreement together with the implied terms would differ in some respects from a copyleft, because a Sun licensee would be able to have some rights in its authorized derivative works.[160] It is similar, though, in that Sun would be using its intellectual property rights in the way that it has promised, ensuring compatibility and innovation, but not securing a monopoly over a standard. The essence of the copyleft license, that the software is to be distributed in such a way that open source can be maintained, would remain, as the now-public Java specifications and libraries would be immune to efforts by Sun or others to close them. In this case, Sun would be subject to the terms of an implied copyleft so that it could not convert that which was open into a closed standard. If it did, it would be subject to a breach of contract suit, perhaps with a specific-performance decree requiring release of the standard.

In order to maintain the benefits to consumer welfare that open standards provide, courts need to place some limits on the enforcement of intellectual property rights. This Part has proposed that the intellectual property rights of standard holders should, by way of a modified copyleft contract, be circumscribed by the public promises they make during the standardization competition.[161] In Sun's case, a modified copyleft contract would be implied because Sun has publicly championed Java's open-standard status in trying to gain its acceptance as a standard. The result would not risk damage to the tenets of copyright law, nor would it be unduly harsh. Sun and other such standard-holders would only be required to honor their pledges.

CONCLUSION

The traditional methods of addressing the concerns of enforcing intellectual property rights in standards by limiting the scope of copyright and antitrust actions are either too severe or too weak. The presumptive de facto standard status of Java, for example, has not yet obviated the need for full intellectual property protection. Sun's dispute with Microsoft is clear evidence of this fact. There are many reasons to be concerned with the implications of granting intellectual property rights to the holder of a standard like Java, many of which have been discussed in this Note.

Sun, for one, appears to be on the way to overcoming what may have been the biggest obstacle to its adoption: the threat that the entrenched market leader, Microsoft, would tip the standard to its own

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160. See *TLDA, supra* note 21, at § 2.10b.

161. It is true that such a standard would involve a degree of uncertainty, just as the copyright misuse defense gives courts wide discretion. As argued at *supra* text accompanying note 119, however, such discretion is preferable to the dangers to innovation and consumer welfare that other options pose.

proprietary product, either an incompatible version of Java or its own ActiveX language. It may soon be that Sun, like other standard holders, will be significantly more powerful, capable of leveraging its standard into other markets, trying to extend its copyright to protect unprotectable technology, or failing to comply with its previous promises. Two other recent developments might affect this situation even more. First, the resolution of the Microsoft antitrust case will likely result in a curtailing of its leveraging power, which could have implications for all competitors for Internet standards. Second, the purchase of Netscape by AOL and Sun may provide further control over the network and opportunity for Sun to expand its market.

A combination of the copyright misuse doctrine and a modified copyleft, if correctly tailored by courts, can adeptly balance the competing consumer welfare and incentive-to-innovate concerns. The unquestioning acceptance of Java's copyright is, at present, unproblematic. The power of establishing a precedent in this matter, however, may be quite threatening. Through the discussion of antitrust, copyright protection, misuse, and modified copyleft, perhaps the courts and commentators will recognize that standard competitors should be given just enough control over the standard to protect it from such threats to its utility. It need not have the full range of rights traditionally granted the owner of intellectual property. The limitations this Note has outlined will help prevent the misalignment of intellectual property rights with broader social interests.