Intellectual Property Rights and Standard Setting Organizations[1]

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"Without standardization there wouldn't be a modern economy."[3]

The standard economic theory of intellectual property is well known. Intellectual creations are public goods, much easier and cheaper to copy than they are to produce in the first place. Absent some form of exclusive right over inventions, no one (or not enough people) will bother to innovate. Intellectual property rights are thus a "solution" to the public goods problem because they privatize the public good, and therefore give potential inventors an incentive to engage in research and development.[4]

In the real world, things aren't so simple. People innovate for lots of reasons, and in many industries the existence of intellectual property rights doesn't appear to be chief among them.[5] Intellectual property rights have different impact on different industries, depending on the nature and cost of innovation, the maturity of the industry, and the relationship

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[3] James Surowiecki, *Turn of the Century,* **Wired**, Jan. 2002, at 85.

[4] For a discussion of the standard theory, see Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 **Tex. L. Rev.** 989 (1997).

[5] *See, e.g.*, Richard C. Levin et al, *Appropriating the Returns from Industrial Research and Development*, 1987 BROOKINGS PAPERS ON ECON. ACTIVITY 783; Wesley M. Cohen, *et al.*, *Appropriability Conditions and Why Firms Patent and Why They Do Not in the American Manufacturing Sector*, presented at the Stanford Workshop on Intellectual Property and Industry Competitive Standards, Stanford Law School, April 17-18, 1998.

between patentable inventions and marketable products.[6] These different characteristics, coupled with uncertainty about how much incentive intellectual property rights actually give, have led to vigorous debates about the wisdom of intellectual property rights in particular contexts, notably software and electronic commerce.[7]

The role of intellectual property is not just a matter of law, however, or even of private licensing deals. There is another sort of organization that mediates between intellectual property owners and users. Standard-setting organizations (SSOs) are industry groups that set common standards in a variety of significant areas. Telephones talk to each other, the Internet works, and hair dryers plug into electrical sockets because private groups have set "interface" standards allowing products made by different manufacturers to be compatible. In such interface standards, it is important that different companies be able to make products that comply with the standard. But SSOs increasingly encounter situations in which one or more companies claim to own proprietary rights that cover a proposed industry standard.[8] The industry cannot adopt the standard without the permission of the intellectual property owner (or owners).

How SSOs respond to those who assert intellectual property rights is critically important. Whether or not private companies retain intellectual property rights in group standards will determine whether a standard is "open" or "closed." It will determine who can

[6] For an empirical demonstration of this, see John R. Allison & Mark A. Lemley, *The Growing Complexity of the U.S. Patent System*, __ **B.U. L. Rev.** __ (forthcoming 2002) (patents are extremely heterogeneous across industries); Levin et al, *supra* note __, at __; Cohen et al., *supra* note __, at __.

[7] *See, e.g.*, Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 **Calif. L. Rev.** 1 (2001); Pamela Samuelson et al., *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 **Colum. L. Rev.** 2431 (1994).

[8] *See, e.g.*, Ken Krechmer, *Communications Standards and Patent Rights: Conflict or Coordination?* [draft at 2] (working paper 2000) ("The cost of patent rights for communications products is expanding . . . patent

sell compliant products, and it may well influence whether the standard adopted in the market is one chosen by a group or one offered by a single company. It may also influence the incentives to develop new technologies in those fields. SSO rules governing intellectual property rights will also affect how standards change as technology improves. To give just one example, the Internet runs on a set of open, non-proprietary protocols in large part because the Internet Engineering Task Force (IETF), the SSO that controls the TCP and IP protocols, had a long-standing policy that it would not adopt proprietary standards. That policy has now changed, and the World Wide Web Consortium (W3C) also recently considering changing its policy to permit proprietary Web standards, prompting a firestorm of criticism.[9] It remains to be seen whether the open nature of the Internet will survive this shift to proprietary standards.[10] But in any event, the magnitude of the stakes should be clear. Whether interface standards are open to closed depends in large part on the rules standard-setting organizations adopt and how those rules are enforced.

Given the importance of SSO rules governing intellectual property rights, there has been surprisingly little treatment of SSO intellectual property rules in the legal literature.[11]

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claims and charges are rising, and negotiations over such matters often create delays in communications standards development worldwide.").

[9] *See, e.g.*, Janice Mueller, *Patent Misuse Through the Capture of Industry Standards*, 17 **Berkeley Tech. L.J.** __, [draft at 5-6] (forthcoming 2002) (describing this debate); Wade Roush, *Web Tolls Ahead?*, **Innovation** 20 (Jan/Feb. 2002). At this writing, the W3C appeared likely to adhere to its royalty-free patent licensing policy. *See* Margaret Kane, *W3C Retreats From Royalty Policy*, News.com, Feb. 26, 2002, http://news.com.com/2100-1023-845023.html

[10] For an argument that the Net is moving in this direction, see **Lawrence Lessig, The Future of Ideas: The Fate of the Commons in a Connected World** (2001).

[11] The literature on antitrust and standard-setting organizations is voluminous, but most of it considers issues unrelated to intellectual property. Among the better sources are James J. Anton & Dennis A. Yao, *Standard-Setting Consortia, Antitrust, and High-Technology Industries*, 64 **Antitrust L.J.** 247, 248, 262-63 (1995); Mark A. Lemley, *Antitrust and the Internet Standardization Problem*, 28 **Conn. L. Rev.** 1041 (1996); Sean P. Gates, *Standards, Innovation, and Antitrust: Integrating Innovation Concerns Into the Analysis of Collaborative Standard Setting*, 47 **Emory L.J.** 583 (1998); H.S. Gerla, *Federal Antitrust Law and Trade and Professional Association Standards and Certification*, 19 **U. Dayton L. Rev.** 471 (1994); Philip J. Weiser, *Internet*

My aim in this article is to fill that void. To do so, I have studied the intellectual property policies of dozens of SSOs, primarily but not exclusively in the computer networking and telecommunications industries. This is no accident; interface standards are much more prevalent in those industries than in other fields. In Part I, I provide some background on SSOs themselves, and discuss the value of group standard setting in network markets. In Part II, I discuss my empirical research, which demonstrates a remarkable diversity among SSOs even within a given industry in how they treat intellectual property. In Part III, I analyze a host of unresolved contract and intellectual property law issues relating to the applicability and enforcement of such intellectual property policies. In Part IV, I consider the constraints the antitrust laws place on SSOs in general, and on their adoption of intellectual property policies in particular. Part V offers a theory of SSO intellectual property rules as a sort of messy private ordering, allowing companies to bargain in the shadow of patent law in those industries in which it is most important that they do so.

Governance, Standard Setting, and Self-Regulation, 28 **N. Ky. L. Rev.** 822 (2001); David Teece, *Information Sharing, Innovation, and Antitrust*, 62 **Antitrust L.J.** 465 (1994); Jack E. Brown, *Technology Joint Ventures to Set Standards or Define Interfaces*, 61 **Antitrust L.J.** 921 (1993); HoI & Badger, *The Antitrust Challenge to Non-Profit Certification Organizations: Conflicts of Interest and a Practical Rule of Reason Approach to Certification Programs as Industry-Wide Builders of Competition and Efficiency*, 60 **Wash. U.L.Q.** 357 (1982) (endorsing fact-specific rule of reason approach); Thomas A. Piraino, Jr., *The Antitrust Analysis of Network Joint Ventures*, 47 **Hastings L.J.** 5 (1995); Thomas M. Jorde & David J. Teece, *Rule of Reason Analysis of Horizontal Arrangements: Agreements Designed to Advance Innovation and Commercialize Technology*, 61 **Antitrust L.J.** 579 (1993); Mark Shurmer & Gary Lea, *Telecommunications Standardization and Intellectual Property Rights: A Fundamental Dilemma?*, in **Standards Policy for Information Infrastructure** 378 (Kahin & Abbate eds. 1995).

There have been a few recent articles that tackle the problem of SSOs and intellectual property rights. Good work to date on intellectual property policies of standard setting organizations includes Janice Mueller, *Patenting Industry Standards*, 34 **J. Marshall L. Rev.** 897 (2001); Carl Shapiro, *Navigating the Patent Thicket: Cross Licensing, Patent Pools, and Standard Setting*, in **Innovation Policy and the Economy** (Adam Jaffe, Joshua Lerner, and Scott Stern, eds., National Bureau of Economics, 2001); Michael J. Schallop, *The IPR Paradox: Leveraging Intellectual Property Rights to Encourage Interoperability in the Network Computing Age*, 28 **AIPLA Q.J.** 195 (2000). For less academic works, see Jason Kipnis, *Beating the System: Abuses of the Standards Adoption Process*, **IEEE Communications**, July 2000, at 102; Robert P. Feldman, Maura L. Rees & Brent Townshend, *The Effect of Industry Standard Setting on Patent Licensing and Enforcement*, **IEEE Communications**, July 2000, at 112.

Finally, in Part VI I offer ideas for how the law can improve the efficiency of this private ordering process.

In the end, I hope to convince the reader of four things. First, SSO rules governing intellectual property fundamentally change the way in which we must approach the study of intellectual property. It is not enough to consider IP rights in a vacuum; we must consider them as they are actually used in practice. And that means considering how SSO rules affect IP incentives in different industries. Second, there is a remarkable diversity among SSOs in how they treat IP rights. This diversity is largely accidental, and does not reflect conscious competition between different policies. Third, the law is not well designed to take account of the modern role of SSOs. Antitrust rules may unduly restrict SSOs even when those organizations are serving procompetitive ends. And enforcement of SSO IP rules presents a number of important but unresolved problems of contract and intellectual property law, issues that will need to be resolved if SSO IP rules are to fulfill their promise of solving patent holdup problems.

My fourth conclusion is an optimistic one. SSOs are a species of private ordering that may help solve one of the fundamental dilemmas of intellectual property law: the fact that intellectual property rights seem to promote innovation in some industries but harm innovation in others. SSOs may serve to ameliorate the problems of overlapping intellectual property rights in those industries in which IP is most problematic for innovation, particularly in the semiconductor, software, and telecommunications fields. The best thing the government can do is to enforce these private ordering agreements and avoid unduly restricting SSOs by overzealous antitrust scrutiny.

I. The Nature and Importance of Standard Setting Organizations

A. The Value of Standardization

Standards (and standard-setting organizations) come in a variety of forms. I define a standard rather broadly, as any set of technical specifications which either does or is intended to provide a common design for a product or process. Some standards are extremely complex and technical in nature. For example, the set of applications programming interfaces that defines compatibility with the Microsoft Windows operating system is an industry standard; those who know and use the proper interfaces are compliant with the standard, and their products will "interoperate" with the Microsoft OS. But standards do not have to be so sophisticated. Ordinary consumers use a wide variety of standardized products in everyday life. In the U.S., electrical plugs and outlets are built to a particular standard for voltage, impedance, and plug shape. Without this standardization, no one could stay in a hotel room and have any confidence that their hair dryer would work in the hotel's outlet. The modern economy has also standardized telephone service, computer modem communication protocols, automobile ignition and transmission systems, and countless other products.

As these examples attest, in many markets standardization has significant consumer benefits. This is especially true in so-called "network markets," where the value of a product to a particular consumer is a function of how many other consumers use the same (or a compatible) product.[12] The paradigm example is the telephone network, in which the value of the product is entirely driven by the number of other people on the same network. Still

[12] For literature on network effects, see, e.g., Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 **Calif. L. Rev.** 479 (1998); Michael Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 **Am. Econ. Rev.** 424 (1985); Joseph Farrell & Garth Saloner, *Standardization, Compatibility, and Innovation*, 16 **Rand J. Econ.** 70 (1985); S.J. Liebowitz & Stephen E. Margolis, *Network Externality: An Uncommon Tragedy*, 8 **J. Econ. Persp.** 133 (1994).

other products -- like computer operating systems – have some intrinsic value regardless of how many people use them, but gain value as more and more consumers adopt them. In these industries, consumers benefit from standardization not only because they can reliably use their product in a remote location, but also because they can exchange information with others who use the same standard. Further, markets for complementary products will often gear their production to work with a product that is an industry standard, rather than a product that has only a small market share. For example, software vendors are more likely to write computer applications programs compatible with Microsoft's operating system than with other operating systems, because there are more consumers for such a product. This in turn reinforces the desire of consumers to buy the product everyone else buys, a phenomenon known as "tipping."[13]

In network markets, then, standardization may well be inevitable, and certainly carries substantial consumer benefits. Even in non-network markets, standard-setting can have a variety of procompetitive and other beneficial effects. Agreeing on a set of standards can facilitate a competitive market for replacement parts or service in durable goods industries, for example. Further, in many industries standards may be valuable for reasons unrelated to or even inimical to competition. Construction products must meet industry standards for fire resistance, for example, and doctors, lawyers and many other professionals must meet minimum licensing standards. These latter standards are not procompetitive in the narrow sense of encouraging price competition; indeed, they may have the opposite effect. But standards of this type can still promote social welfare by ensuring that imperfect

[13] *See* Katz & Shapiro, *supra* note __.

information does not lead consumers to buy dangerous products or hire unqualified doctors simply because they cost less.[14]

While standardization can be beneficial in a wide variety of markets, it is worth distinguishing at the outset between two different types of standards – standards that control interoperability in a network market and those that govern the quality or safety of a product. In the former group, which I will call "network" or "interface" standards, the intrinsic value of the standard selected is only part of the social benefit of standard-setting. Simply agreeing on a standard for two products to interact has value in a network market, whether the interface actually chosen is the best one or not. Indeed, in some cases it may be more important that an industry coalesce around a single standard than which particular standard is chosen.[15] By contrast, standard-setting outside network markets tends to be concerned primarily with the intrinsic value of the product itself. These latter standards may guarantee minimum licensing qualifications for the professions, or specify safety codes that consumer products must meet.[16]

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[14] Whether this sort of justification renders an otherwise anticompetitive agreement legal is a matter of some debate. On the one hand, the Supreme Court seemed to rule out any antitrust defense based along these lines in *National Society of Professional Engineers v. United States*, 435 U.S. 679 (1978) ("the Rule of Reason does not support a defense based on the assumption that competition itself is unreasonable."). On the other hand, many lower courts have recognized such a defense, holding at least that it precludes per se illegality. *See, e.g., Wilk v. American Medical Ass'n*, 719 F.2d 207, 221 (7th Cir. 1982) ("patient care" defense raised by organization required rule of reason treatment); *Kreuzer v. American Academy of Periodontology*, 735 F.2d 1479, 1493-94 (D.C. Cir. 1984) (rule restricting practice outside stated medical specialty subject to rule of reason analysis).

Because it does not directly concern intellectual property cases, resolution of this debate is outside the scope of this article.

[15] For example, there is no intrinsic value to driving on either the left or the right side of the road, but it is critically important that everyone in a particular region pick the same side.

[16] Or they may do stranger things. *See* Jessup v. American Kennel Club, 61 F. Supp. 2d 5, *aff'd per curiam* 210 F.3d 111 (2d Cir. 2000), *cert. denied*, 531 U.S. 1072 (2001) (involving an antitrust challenge to an American Kennel Club standard that set a minimum height requirement for show dogs).

In this paper, I am primarily concerned with compatibility standards. Those standards are more likely than safety standards to be exclusive. There are lots of different medical practices or electrical conduits that may be acceptable, but there generally aren't lots of different protocols that will connect one to the Internet. As a result, intellectual property rights are less important in safety standards than in compatibility standards, because it is easier to "design around" an intellectual property right in a non-network market.[17]

B. The Benefits of Group Standard-Setting

It remains, however, to consider the organizational form standardization may take.[18] One approach to achieving interoperable standards is for a private industry organization open to all members to adopt a single standard. If the members of such a group collectively have a significant market share, their adoption of a standard may produce the "tipping" effect described above, bringing the rest of the industry into line.[19]

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[17] This isn't to say that safety SSOs never have IP rules, or that enforcement of those rules doesn't present interesting issues. *See, e.g.*, In re American Society of Sanitary Engineering, 106 F.T.C. 324, 329 (1985) (SSO couldn't reject standards solely on the basis they were patented). Curiously, Janice Mueller even goes so far as to suggest that patents are necessary for interface standards but not for products that comply with health and safety standards. Mueller, *Misuse, supra* note __, at [draft at 25]. But Mueller seems to be thinking of patents that cover a health and safety standard set by the government that mandates the use of a single product. That is a rare situation indeed.

In any event, most of the disputes concerning SSO IP rules arise in the telecommunications, computer, and semiconductor markets.

[18] On the choice between formal and de facto standardization, see Joseph Farrell & Garth Saloner, *Coordination Through Committees and Markets*, 19 **RAND J. Econ.** 235 (1988).

19 SSOs have the potential to harness network effects while permitting competition within a single standard. *See* **Martin Libicki et al., Scaffolding the New Web: Standards and Standards Policy for the Digital Economy** (RAND 2000); Lemley & McGowan, *Networks, supra* note __, at 516; Marcus Maher, *An Analysis of Internet Standardization*, 3 **Va. J. L. & Tech.** 5 (1998). Of course, not all standard-setting groups have such market control. As Libicki observes, many of the most successful group standards started small and grew to become dominant. *See* Martin C. Libicki, *Standards: The Rough Road to the Common Byte*, *in* **Standards Policy for Information Infrastructure** 35, 75 (Kahin & Abbate eds. 1995); *see also* Jim Isaak, *Information Infrastructure Meta-Architecture and Cross-Industry Standardization*, *in* **Standards Policy for Information Infrastructure** 100, 101 (arguing that group or open standards "must also reach the status of being 'de facto' to be sufficient").

Not all standards are created by private standard-setting organizations, however. Two other organizational forms are worth considering. First, a standard may arise from the operation of the market, as consumers gravitate towards a single product or protocol and reject its competitors.[20] This form of "de facto" standardization is particularly likely in markets characterized by strong network effects, because of the large benefits associated with adopting the same product everyone else does. To take just one example, the Microsoft operating systems are clearly de facto standards. No standard-setting organization "adopted" them as the preferred or official operating systems, but the market clearly chose Microsoft as the winner of a standards competition.

Another possibility is that the government might identify and set the appropriate standards and compel all participants in the market to comply. The government does this from time to time. For example, the Federal Communications Commission sets standards for interconnection between telephone networks and standards governing the use of products that might interfere with broadcast communications.[21] In the 1990s, the United States government stepped into the debate over the proper standard for high definition television (HDTV), selecting a standard that unified U.S. development work but was at odds with other standards adopted in Japan and Europe.[22] And government agencies such as the Advanced Research Projects Agency and the National Science Foundation played a crucial role in the development of the Internet, including the creation of Internet interconnection protocols.

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20 On de facto standards as an alternative to group standards, see Lemley, *Internet Standardization*, *supra* note __, at 1060-65; Maureen A. O'Rourke, *Striking a Delicate Balance: Intellectual Property, Antitrust, Contract, and Standardization in the Computer Industry*, 12 **Harv. J. L. & Tech.** 1, 5 (1998).

21 *See* F.C.C. Rules, 47 C.F.R. § 68.1.

22 *See* Denise Caruso, *Debate Over Advanced TV Gives the F.C.C. a Chance to Be Assertive*, **N.Y. Times**, June 17, 1996, at D5; *F.C.C. Proposes Standards for Digital Television*, **N.Y. Times**, May 10, 1996, at D4.

Indeed, some private Internet standard-setting groups such as InterNIC and the IETF were once government-sponsored standards organizations.

In this article I shall primarily be concerned with the activities of private standard-setting organizations. While de facto standards do raise significant antitrust issues relating to intellectual property, they are analytically distinct from the ones I discuss here.[23] Generally speaking, a de facto standard will be proprietary unless the standard-setter chooses to release it to the public. Government-set standards also present a very different set of issues, in part because of the state action and petitioning immunity doctrines.[24] Government standard-setting is also on the wane, as more and more responsibility for standardization devolves upon the private sector.[25]

C. Competitive Risks From Standardization

Standardization also poses some potential threats to competition. Absent network effects, economists generally presume that consumers fare best when many companies compete to offer different sorts of products. To the extent that standardization on a single product reduces consumer choice, it may be undesirable. Of course, if a market is truly

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[23] For discussion, see Joseph Farrell & Michael L. Katz, *The Effects of Antitrust and Intellectual Property Law on Compatibility and Innovation*, 43 **Antitrust Bull.** 609 (1998); Mark A. Lemley, *Antitrust and the Internet Standardization Problem*, 28 **Conn. L. Rev.** 1041, 1060-62 (1996); John E. Lopatka & William H. Page, *Microsoft, Monopolization, and Network Externalities: Some Uses and Abuses of Economic Theory in Antitrust Decision Making*, 40 **Antitrust Bull.** 317 (1995); David McGowan, *Networks and Intention in Antitrust and Intellectual Property*, 24 **J. Corp. L.** 485 (1999); O'Rourke, *supra* note __; .

[24] For more detail on these doctrines, see I **Philip Areeda & Herbert Hovenkamp, Antitrust Law** ¶200-231.

[25] *See, e.g.*, Christopher T. Marsden, *Cyberlaw and International Political Economy: Towards Regulation of the Global Information Society*, 2 **L. Rev. Mich. St. U.-Det. Coll. L.** 355, 358-59 (2001). For a detailed discussion of government standard-setting in the Internet environment, see Christopher T. Marsden, *The Challenges of Standardization – Towards the Next Generation Internet*, in **Internet TV** (Eli Noam et al. eds. Forthcoming 2002); Jay P. Kesan & Rajiv C. Shah, *FoolUs Once Shame on You, Fool Us Twice Shame on Us: What We Can Learn From the Privatizations of the Internet Backbone Network and the Domain Name System*, 79 **Wash. U.L.Q.** 89 (2001).

competitive, unnecessary standardization should eventually be competed away by new entrants offering different sorts of products. But standard-setting organizations may be able to impede such competition, in effect acting as a cartel with the power to reduce output by excluding certain kinds of products.[26] Thus, courts must balance the procompetitive virtues of SSOs against the risks that they will facilitate collusion.[27] The general nature of this problem is discussed in more detail below.[28] But it would be a mistake to generalize from the competitive risks of group standard-setting to a conclusion that SSOs themselves ought normally to be suspect. Rather, courts should give some deference to the legitimate aim of standardizing products, particularly in network markets.[29]

D. Relationship to Intellectual Property

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[26] *See* Anton & Yao, *supra* note __, at 249-51; Thomas A. Piraino, Jr., *A Proposed Antitrust Approach to Collaborations Among Competitors*, 86 **Iowa L. Rev.** 1137, 1204 (2001); Elbert L. Robertson, *A Corrective Justice Theory of Antirust Regulation,* 49 **Cath. U. L. Rev.** 741, 760-63 (2000) (making this argument). Sometimes this power is economic, and results from the participation in the standard-setting organization of the largest companies in the industry. But some standard-setting organizations may wield direct legal control over a market, either directly (as where the courts delegate to bar associations the power to control entry into the profession) or indirectly (where a private standard-setting organization adopts standards that are routinely enacted into law by legislatures or city councils).

For an argument that the risk of price coordination has increased as the Internet makes it easier for competitors to discover each other's product and price information, see Jonathan B. Baker, *Identifying Horizontal Price Fixing in the Electronic Marketplace*, 65 **Antitrust L.J.** 41 (1996).

[27] *Cf.* Robert Pitofsky, *Antitrust and Intellectual Property: Unresolved Issues at the Heart of the New Economy*, 16 **Berkeley Tech. L.J.** 535, 550 (2001) (SSOs can facilitate innovation, but are also subject to abuse).

[28] *See infra* notes __-__ and accompanying text. For more detail, see XIII Hovenkamp, *supra* note __, at ¶ 2231b; II **Herbert Hovenkamp et al., IP and Antitrust** ch. 35.

[29] For a more detailed argument along these lines, see Mark A. Lemley, *Antitrust and the Internet Standardization Problem,* 28 **Conn. L. Rev.** 1041 (1996); Phil Weiser, *Networks Unplugged: Towards a Model of Compatibility Regulation Between Information Platforms* [draft at 12] (working paper 2001). A recent Supreme Court decision suggests that the law is moving in this direction. *See* California Dental Association v. Federal Trade Commission, 119 S.Ct. 1604, 1609 (1999) ("quick look" rule of reason inappropriate when applied to the rules of a standard-setting organization).

Briefly stated, the issues in this article arise when a standard-setting organization adopts (or fails to adopt) a standard that is covered in whole or in part by an intellectual property right, generally but not necessarily an intellectual property right owned by a party that has some dealings with the organization.[30] Prior work by Joe Farrell has found that intellectual property rights create divergent vested interests among particiants in SSOs, and therefore delay formal standard-setting and make consensus less likely.[31] Standard-setting organizations frequently use formal or informal mechanisms such as rules governing the ownership of intellectual property or joint defense arrangements to lessen the control an intellectual property owner has over a standard they adopt. These arrangements may themselves be challenged as anticompetitive, but they may also be necessary to ensure that competition in a network market is not disrupted by owners of intellectual property.

Whether and how an SSO regulates intellectual property rights will determine whether the standards it sets are "open" or "closed." Group standards set by organizations that do not restrict intellectual property rights at all are likely to be closed. Because one or more members of the group likely owns a patent covering the standard, that company will effectively control the standard. Its patent gives it the right to enjoin anyone else from using the standard.[32] Because many SSOs want the public to be free to use their standard, they will

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[30] If a standard-setting organization adopts as a standard a technical design covered by a patent owned by a non-member, only a more limited set of antitrust issues arise. The intellectual property owner is entitled to enforce its patent against those who use the standard. By contrast, refusal to adopt a standard covered by a patent owned by a third party could present antitrust issues, which I discuss *infra* notes __-__ and accompanying text.

[31] *See, e.g.*, Joseph Farrell, *Standardization and Intellectual Property*, 30 **Jurimetrics J.** 35, 44 (1989); Joseph Farrell, *Choosing the Rules for Formal Standardization* 15-16 (working paper 1996).

[32] *See* 35 U.S.C. §283 (authorizing injunctive relief). Patents are protected by a "property rule" regime, in which an injunction is the expected remedy. *See* **Robert P. Merges et al., Intellectual Property in the New Technological Age** 321-23 (2d ed. 2000).

often require members to give up any intellectual property protection at all for the standard. The resulting standard is "open" – anyone is free to use it.[33] There is a voluminous literature on the relative value of open and closed standards, especially in network industries.[34] In the next section, I study a number of SSO IP policies and find both open and closed groups.

Importantly, however, most groups I study fall into neither category.[35] Rather, these groups occupy a middle ground between open and closed standards. They permit their members to own intellectual property rights, but require those members to commit in advance to licensing those rights on specified terms, foregoing injunctive relief altogether. These standards are "open" in the sense that no one can be prohibited from using them.[36] But they are also proprietary – those who would use the standard must pay royalties to the intellectual property owner. This intermediate approach is a way of valuing intellectual

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[33] Technically, the standard is open only in the sense that members of the SSO have waived any claims of intellectual property ownership. There is no way to prevent non-members from later appearing to assert intellectual property rights.

[34] Among others on both sides, see David Friedman, *Standards as Intellectual Property: An Economic Approach*, 19 **U. Dayton L. Rev.** 1109, 1122 (1994); Mark A. Lemley, *Standardizing Government Standard-Setting Policy for Electronic* Commerce, 14 **Berkeley Tech. L.J.** 745, 751-52 (1999); Mark A. Lemley & David McGowan, *Could Java Change Everything? The Competitive Propriety of a Proprietary Standard*, 43 **Antitrust Bull.** 715 (1998); Marsden, *supra* note __, at 382-83; David McGowan, *The Problems of the Third Way: A Java Case Study*, in **Regulating the Global Information Society** 243 (Christopher Marsden ed. 2000); Janice Mueller, *Patenting Industry Standards*, 34 **J. Marshall L. Rev.** 897 (2001); Mueller, *Misuse*, *supra* note __, at [draft at 23-25]; Schallop, *supra* note __, at 195; Molly van Houweling, *Cultivating Open Information Platforms: A Land Trust Model* (working paper 2002); Weiser, *Internet Governance*, *supra* note __, at 825-32; Philip J. Weiser, *Law and Information Platforms* [draft at 19-21] (working paper 2002) (documenting the problem of forking of open standards).

The relative value of open and closed standards in what Phil Weiser calls "information platforms" may differ depending on the layer of technology the standard would cover. There is a reasonable argument for open platforms at the lower or infrastructure layers even if the higher software and content layers are proprietary. For a discussion of the layered model of the Internet, see Kevin Werbach, *A Layered Model for Internet Policy* (working paper 2000); *cf.* Mark A. Lemley & Lawrence Lessig, *The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era*, 48 **UCLA L. Rev.** 925, 939-940 (2001) (discussing the related but distinct question of whether technology should be located in the higher or lower layers).

[35] *See infra* notes __-__ and accompanying text.

[36] Virtually all of these intermediate approaches require that licenses be granted on nondiscriminatory terms, preventing an intellectual property owner from closing the standard to particular competitors.

property while at the same time reducing the risk that intellectual property rights will impede standardization and hold up innovation.[37] Studying this approach and its implications will be my central task in the balance of this paper.[38]

II. How Standard Setting Organizations Treat Intellectual Property Rights

A. Organizations Studied

To see how standard-setting organizations treat intellectual property rights, I surveyed the rules and by-laws of 29 different standard-setting organizations. The organizations I chose were ones likely to be encountered by companies in the telecommunications and computer networking industries, where many of the most contentious intellectual property issues arise. They include both large national or international groups such as ANSI (the American National Standards Institute) and the ISO (the International Organization for Standardization), smaller groups centered within particular industries, and consortia that form around specific standards. However, the collection of organizations here is by no means comprehensive, even within the telecommunications and computer networking industries.

I sought to identify several pieces of information with respect to an organization's policy on intellectual property rights. The first question was whether the organization had any policy at all regarding intellectual property. If they did, I then sought to determine whether the policy covered only patents, or whether it covered other forms of IP rights as well. For those organizations that had policies governing IP, I sought to categorize the

[37] *See* Shapiro, *supra* note __.

policy according to several factors. First, I determined whether the policy required disclosure of an IP right (as well as certain subsidiary questions, such as the nature of the obligation (if any) to search a firm's own inventory for relevant patents, and whether disclosure extended to pending as well as issued patents). Second, I determined the effect of an IP disclosure on the standard-setting process under the policy: chiefly whether the organization would refuse to adopt a standard covered by a patent or whether it would apply different procedural rules. Finally, I determined whether the organization imposed a licensing requirement on intellectual property owners, and if so the nature of that requirement.

B. Results

1. Summary of Organization Policies

The full data from this survey are reprinted in Table 1.

[38] As a result, I take no sides here in the debate over open vs. closed standards.

Table 1[39]
Standard Setting Organization IP Policies

SSO	Policy?	Disclosure?	Search?	Can Standard Include IP?	Licensing Provisions
W3C[40]	P,TM,©	Yes	No	Yes	RAND requested but not required
I2O SIG[41]	P, TM	No	No	Yes[42]	royalty-free license required
Wired for Management[43]	P	No	No	Yes[44]	royalty-free license required for necessary claims only
IETF[45]	P,©	Yes	No	Yes[46]	RAND to all users; terms must be specified
IEEE[47]	P	Yes	No	Yes	RAND; terms must be specified
RosettaNet IMC[49]	P,© None	No	No	No[48]	patents assigned to RosettaNet
OMG[50]	all IP	Yes	No	Yes	RAND
ISC[51]	None				

[39] In this table, P means patent, TM means trademark, © means copyright, RAND means "reasonable and nondiscriminatory licensing."

[40] World Wide Web Consortium. *See* http://www.w3.org/Consortium/Legal/

[41] Intelligent Input/Output Specification

[42] Subject to the royalty-free license.

[43] http://developer.intel.com/ial/wfm/wfmspecs.htm

[44] Subject to the royalty-free license.

[45] Internet Engineering Task Force. *See* RFC 1958, § 5.1; http://www.ietf.org/ipr.html. Some groups (such as the Organization for the Advancement of Structured Information Standards) adopt the IETF standards.

[46] *See id.* ("prefer unpatented technology, but if the best technology is patented and is available to all at reasonable terms, then incorporation of patented technology is acceptable.").

[47] Institute of Electrical and Electronics Engineers.

[48] All intellectual property rights covered in a RosettaNet standard become the property of RosettaNet. Cargill email § 13.

[49] Internet Mail Consortium

[50] Object Management Group; http://www.omg.org

ITU[52]	P	Yes; includes pending patents	No	Yes	RAND; no "monpolistic abuse"
ISO[53]	P,TM,©	Yes	No	TM and © yes; patent no	patents must be given up or RAND required; nonexclusive copyright license to ISO; no trademark rule
FSTC[54]	None				
NIST[55]	P	Yes	Yes	Yes	incorporates ANSI rules
ANSI[56]	P	Yes	No	Maybe [57]	RAND; ANSI will review claims of unreasonableness
ETSI[58]	P, utility model, designs	Yes	Depends [59]	Maybe [60]	RAND; irrevocable; but standard may be adopted even if patentee refuses to license
BSI[61]	P	No	No	Yes	users licensed as of right; British patent office to settle disputes as to terms [62]

[51] Internet Software Consortium, http://www.isc.org

[52] International Telecommunications Union; http://www.itu.int/ITU-T/patent/Readme.html

[53] International Organization for Standardization; http://www.iso.ch. For a detailed discussion of the ISO standard-setting process, see Mark A. Lemley & David McGowan, *Could Java Change Everything? The Competitive Propriety of a Proprietary Standard*, 43 **Antitrust Bull.** 715 (1998). A number of smaller groups (such as the UNICODE Consortium) explicitly adopt ISO/IEC rules.

[54] Financial Services Technology Consortium; http://www.fstc.org

[55] National Institute of Standards and Technology; http://www.nist.gov

[56] American National Standards Institute; for a discussion of the ANSI policy, see Robert P. Feldman & Maura L. Rees, *The Effect of Industry Standard Setting on Patent Licensing and Enforcement*, **IEEE Communications**, July 2000, at 112, 113. A number of smaller technical groups (VITA Standards Organization covering the VME Bus standard) explicitly adopt the ANSI approach.

[57] ANSI permits patented standards only if "technical reasons justify this approach." ANSI, *Procedures for the Development and Coordination of American National Standards*, §1.2.11.1.

[58] European Telecommunications Standards Institute. For a discussion of ETSI policy, see Johan Verbruggen & Anna Lorincz, *Patents and Technical Standards* §3.1.B (working paper 2001).

[59] EC policy requires that the patent owner conduct a search unless the standard-setting body commits to do the search itself. *See* European Commission, *Communication on IPRs*, ¶¶4.5.1, 4.5.2.

[60] ETSI policy provides that the General Assembly shall refer cases of patent ownership to the EC and EFTA "for their consideration" if the patentee refuses to license on reasonable and nondiscriminatory terms. *Id* at 15.

[61] British Standards Institute. *See* Verbruggen & Lorincz, *supra* note __, at 16.

ATM Forum	P,TM,©	Yes; includes only published applications	No	Yes[63]	royalty-free license as to copyrights; RAND licensing of patents or a written refusal to do so
CEN/CENELEC	P	Yes	No	Maybe[64]	RAND to entire world required or standard is withdrawn
Parlay Group	None				
OGC	None				
WAP Forum	P,©	Yes; includes some pending apps[65]	No	Unclear[66]	RAND required; possible public domain dedication
DMTF[67]	P	No	No	Yes	RAND required or standard is withdrawn
MWIF[68]	all IP	Yes	No	Yes	royalty free license or RAND automatically compelled
OSGi[69]	all IP	Yes, including pending claims	No	Yes	RAND required by agreement to join group
Open Group[70]	P,©	Yes	De facto[71]	Yes	© must be licensed royalty-

[62] This is pursuant to the U.K. Patent Act of 1977, § 46. That Act permits a patent to be endorsed with the phrase "licenses of right." Anyone can license such a patent, and if the parties disagree over the terms of the license, the disagreement is settled by the Comptroller of the Patent Office.

[63] If the patentee has refused to grant a license to patents covering a proposed standard on reasonable and nondiscriminatory terms, a ¾ vote of the membership is required to approve the standard. If the standard has already been issued when the problem arises, 1/3 of the members may vote to revoke the standard. ATM Forum Bylaws, Article 3.12.2.d.

[64] A standard may include patented technology "in exceptional cases" only. CEN/CENELEC Memorandum No. 8, *Standardization and Intellectual Property Rights* § 1 (1992).

[65] Proponents of a standard must notify WAP when an application is filed; other members need not do so, but if intellectual property is put into a standard it is "in public domain" and should not be subsequently patented. Cargill email ¶5.

[66] On the one hand the WAP Forum standard says intellectual property included in a standard that is accepted is "in the public domain," but on the other hand it also speaks of licensing on reasonable and nondiscriminatory terms. *Id*.

[67] Distributed Management Task Force. *See* Cargill email ¶6.

[68] Mobile Wireless Internet Forum. *See* Cargill email ¶14.

[69] Open Services Gateway Initiative. *See* Cargill email ¶16.

					free; RAND for patents
CommerceNet	None				
Frame Relay Forum	P	Yes; standards may be revoked for non-disclosure	"Reason-able" search required	Yes	RAND
AMI2[72]	None				
JEITA[73]	In progress[74]				

What is most striking about this data is the significant variation in policies among the different organizations. Of the 29 organizations I studied, 21 have written policies governing the ownership of intellectual property rights, 7 have no policy,[75] and one had a policy that was still in development.[76] Most groups without a policy are small, industry-specific groups; all of the large standard-setting organizations I studied have well-developed policies in this area. These rules tend to be set in the by-laws of the standard-setting organization, though

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[70] http://archive.opengroup.org/itdialtone/architecture/procedures/iac.htm.

[71] While the Open Group rules do not require a search, they do require patentees to agree not to sue users of the standard for any patents that were not disclosed during the process. This has an effect analogous to a search requirement.

[72] Advanced Memory Int'l, Inc., http://www.ami2.org/

[73] Japan Electronics and Information Technology Industries Association. http://www.eiaj.or.jp/english/index.htm.

[74] Site viewed Jan. 9, 2001.

[75] At least, no policy that either I or my research assistant could find. Some organizations may make their policy available only to members.

[76] The policies were collected in early 2001.

the organizational diversity of standard-setting organizations means that arrangements in any given case may be more or less formal.[77]

The subject matter of those policies varies significantly from group to group. Virtually all groups that have a policy impose either an express or implied obligation that members disclose intellectual property rights of which they were aware. Those groups that do not require disclosure generally impose other conditions that obviated the need for disclosure. For example, some groups require royalty-free licensing of *all* member intellectual property rights that cover a group standard, whether or not it was disclosed to the organization.[78]

There is greater variation, however, with respect to *what* must be disclosed. While virtually all the policies I studied cover patents, a smaller (but still significant) number also cover copyright and trademark rights, or refer globally to "intellectual property rights" subject to the policy.[79] Where patents are concerned, most organizations consider only issued patents. There is rarely discussion of the problem of pending patent applications.[80] A few organizations consider the issue, but do not require the disclosure of pending applications, which are ordinarily kept confidential. Two organizations, the ITU and OSGi, require disclosure of all pending patent applications. Two other organizations have an

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[77] With respect to mandatory disclosure policies, for example, some policies are merely stated in by-laws, while others require members to affirmatively sign a statement indicating that they do not own intellectual property rights in a particular proposed standard.

[78] This was the policy of I20 SIG and Wired for Management. Similarly, RosettaNet required *assignment* of intellectual property rights to the organization itself, and the British Standards Institute relied on a provision of British patent law that gave licenses to members as of right. Only one group, the Distributed Management Task Force, had a policy that neither required disclosure nor included some automatic provision for intellectual property owners giving up their rights.

[79] 10 of the 21 organizations with policies applied the policy only to patents.

[80] As we will see, this is a significant problem.

intermediate policy. The ATM Forum requires disclosure of published patent applications, but not unpublished ones.[81] And the WAP Forum requires disclosure even of unpublished patent applications, but only from a member who is also the proponent of a standard.

Curiously, virtually none of the organization rules I studied require a member to search either its own files or the broader literature to identify relevant intellectual property rights. Only three groups – the National Institute for Standards and Technology, the European Telecommunications Standards Institute, and the Frame Relay Forum – required such a search. ETSI's requirement is subject to waiver; it provides that either ETSI or the member will be required to conduct a search. Only the Frame Relay Forum specifies the sort of search that must be conducted, and even that is done in broad terms (a "reasonable" search). The failure of organizations to require searches, while understandable given the time and resource constraints under which members operate, gives rise to serious problems, as I discuss below.[82]

Most organizations permit members to own intellectual property rights in a standard, though they often discourage it. Only RosettaNet, which requires members to assign their intellectual property rights to the group, appears to flatly prohibit ownership of IP rights by a private party.[83] In addition, two groups studied (I2O SIG and Wired for Management) permit a member of own intellectual property, but only if they will license it to other members on a royalty-free basis. The patent still retains some value, since it can be asserted against

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[81] In most of the world, patent applications are published 18 months after filing. In the United States, patent applications were until recently kept secret unless and until a patent issued. Beginning in 1999, most U.S. patent applications will be published 18 months after filing, though some patentees can maintain their application as a secret beyond that point. *See* 35 U.S.C. § 122.

[82] *See infra* notes __-__ and accompanying text.

products that do not embody the standard, but it is essentially worthless against other members of the organization. ISO requires members to give up patent rights, though not other sorts of IP rights. Other groups discourage ownership of intellectual property without actually forbidding it, however. ETSI will reconsider its decision to approve a standard if the standard turns out to be controlled by an intellectual property right. The ATM Forum requires a ¾ majority to approve a standard governed by an intellectual property right, and similarly makes it easier to revoke a standard if it is found to be covered by an intellectual property right. Several organizations expressly discourage the ownership of intellectual property in standards, but will permit them in exceptional cases.[84] And at least one organization (the WAP Forum) appears to take inconsistent positions on the ownership of intellectual property.[85]

Even those groups that permit members to own intellectual property rights covering a standard generally impose some conditions on the use of that intellectual property. The most common condition is that intellectual property rights be licensed on "reasonable and nondiscriminatory terms"; 14 of the 21 organizations with policies required members to license their patent rights on such terms. Another organization required outright assignment of patent rights, and two more required royalty-free licensing of patents.[86] Three organizations have a looser standard, requesting that members agree to license their patents on reasonable and nondiscriminatory terms, but not requiring that they do so.

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[83] RosettaNet's policy permits members to use the standard without paying a royalty free, but leaves open the policy that the group itself will enforce the assigned patent rights against third parties.

[84] *See* CEN/CENELEC (ownership of standards permissible "in exceptional cases" only); ANSI (patented standards acceptable only if "technical reasons justify this approach"); IETF ("prefers" unpatented technology).

[85] *See supra* note __.

While "reasonable and nondiscriminatory licensing" thus appears to be the majority rule among organizations with a patent policy, relatively few organizations give much explanation of what those terms mean or how licensing disputes will be resolved. Only two organizations specifically provide that the licensing obligation compels a member to license to everyone in the world using the standard, not just to license to other members. It does not necessarily follow that the remaining organizations intend to restrict the licensing obligation;[87] rather, it appears they simply haven't addressed the issue in their policies. Four organizations either give content to the obligation by specifying what a "reasonable" term means, or provide a mechanism for the organization to resolve disputes about license terms and fees. And one organization requires not only that a license term be reasonable and nondiscriminatory, but also that it not constitute "monopolistic abuse" of a patent. In short, while intellectual property owners at many organizations must license their rights on reasonable and nondiscriminatory terms, it is not clear what those obligations mean in practice.

2. Implications of Diversity

The fact that different organizations have different rules governing intellectual property rights (or no rules at all) means that it is very difficult for intellectual property owners to know ex ante what rules will govern their rights. Because there is no standard set of rules, companies must investigate the by-laws of each organization they join in order to understand the implications of joining. While this doesn't seem that onerous a burden in the

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[86] Two organizations, the Open Group and the ATM Forum, required royalty-free licensing of copyrights but permitted royalty-based licensing of patents. Thus, for copyrights the numbers in the text should read 12 of 21 policies requiring reasonable and nondiscriminatory licensing, and 4 of 21 requiring royalty-free licensing.

[87] Such a restriction would pose serious antitrust concerns. *See infra* notes __-__ and accompanying text.

abstract, a number of practical considerations mean that companies are unlikely to be fully informed about their intellectual property position.

First, most companies in technology industries participate in more than one standard-setting organization. To take just one example, in 1998 Sun Microsystems participated in 87 different standards groups.[88]

Figure 1. *Standards Organization List by Function*

General
- Accredited Standards Committee (ASC) X3
- ANSI
- ECMA
- IEEE/POSIX
- International Organization for Standardization (ISO)
- International Telecommunication Union (ITU)
- ISO/IEC Joint Technical Committee 1 (JTC1)
- Open Group
  - Open Software Foundation (OSF)
  - X/Open
- X3

OS and Architecture-Specific
- ABI groups
- Large File Summit
- Power PC Group
- SPARC International
- Unicode Consortium
- UNIX International

Communications and Networking
- Asynchronous Transfer Mode (ATM) Forum
- CommerceNet
- Financial Services Technology Consortium (FSTC)
- Frame Relay Forum (FRF)
- Internet Society
  - Internet Engineering Tax Force (IETF)
  - Internet RFC's

Communications and Networking, Cont.
- Information Infrastructure Standards Panel (IISP)
- Network Management Forum (NMF)
- World Wide Web Consortium (W3C)

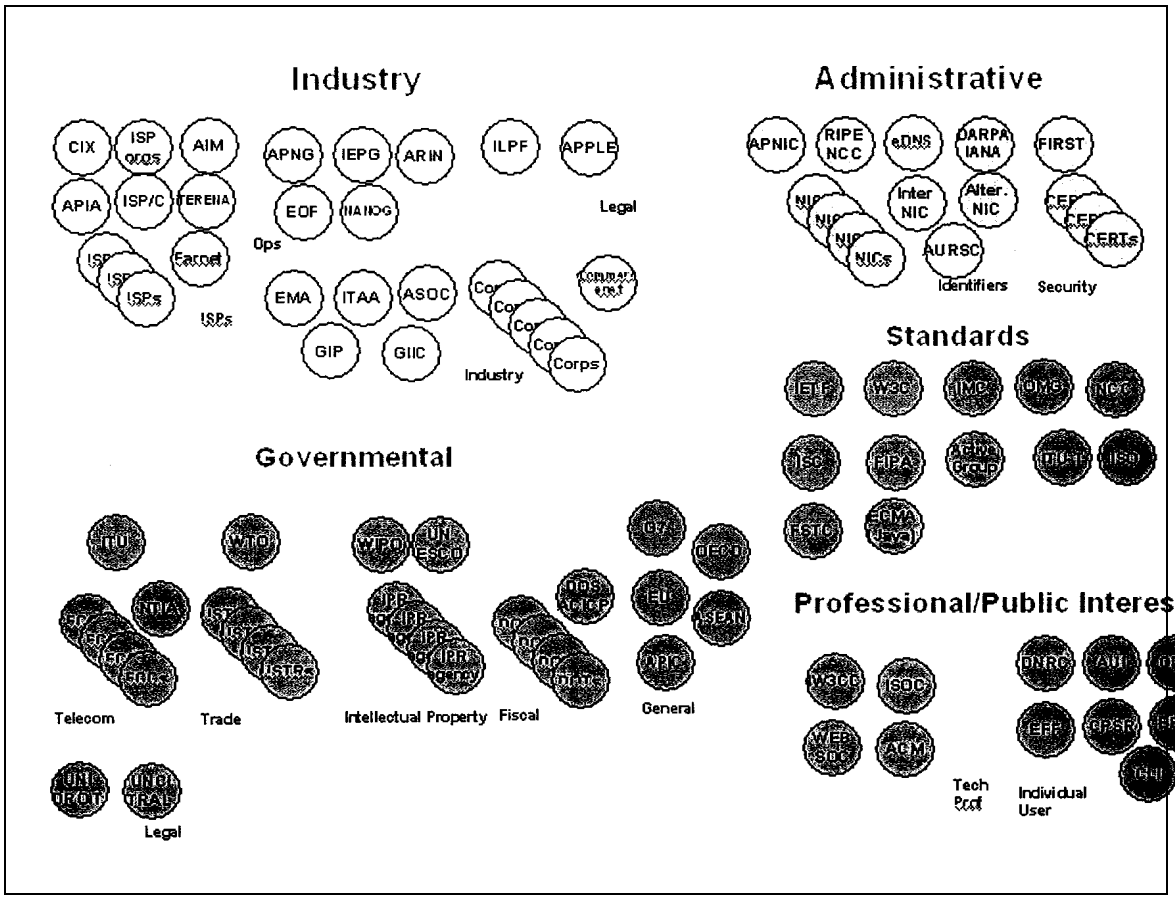
Desktop and Graphics
- Component Integration Laboratories (CIL)
- Desktop Management Task Force (DMTF)
- International Color Consortium (ICC)
- Interactive Multimedia Association (IMA)
- Moving Pictures Experts Group (MPEG)
- Multimedia and Hypermedia Information Coding Experts Group (MHEG)
- Open GL
- X Consortium

US Government and Other Nations
- Asia Oceanic Workshop (AOW)
- Chinese Open Systems Association (COSA)
- Defense Information Systems Agency (DISA)
- DoD Specifications and Standards
- European Commission DGXIII/E Open Information Interchange (OII) Initiative
- European Workshop for Open Systems (EWOS)
- Federal Information Processing Standards (FIPS)
- Japanese Industrial Standards Committee (JISC)
- National Institute of Standards & Technology (NIST)
- Open Systems Environment Implementors Workshop (OIW)

[88] *See* Figure 1.

Similarly, there are dozens of different groups associated with Internet technical standards alone.[89]

Figure 2. *Roadmap to the Communities and Parties of the Internet.*[90]



Thus, technology companies don't merely have to figure out what rules apply to them, but they face a labyrinth of different groups with overlapping subject matter concerns, each with its own set of rules. Because standard-setting organizations are concerned only with intellectual property rights that affect their particular standards, the likely result will

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89 *See* Figure 2.

90 Taken from http://www.wia.org/roadmap.htm.

be that some of a company's intellectual property rights will be subject to effective forfeiture, more will be subject to disclosure and licensing requirements, and some will not be restricted. Lawyers would have to examine each group, each standard, and each patent carefully to know for sure which is which.

This brings us to the second practical problem. Lawyers are rarely the ones to participate in standard-setting meetings. A company's representative to such a group is likely to be an engineer with little or no understanding of patent law. Indeed, in many cases the decision whether or not to join an organization is made at a fairly low level within a company, without the involvement of senior businesspeople, much less lawyers. If the organization in question is one of the few that compels assignment or royalty-free licensing, or requires a search for intellectual property, the decision to join may inadvertently commit the company to give up major intellectual property rights.

Because of these practical limitations, most technology companies today face a hodgepodge of rules and obligations of which they are only dimly aware. In the sections that follow, I explore some of the legal rules that bear on standard-setting organizations, identify some of the problems that arise in articulating and enforcing intellectual property policies, and offer some suggestions to all the players involved (members, organizations, courts, and scholars) for how to think about the intellectual property rules of standard-setting organizations.

The increased cost and uncertainty associated with the diversity of SSO approaches might be justified if there were some evidence that the different approaches taken by different organizations in fact reflected considered policy judgments as to the proper role of intellectual property in standard-setting. But there is no reason to believe

that that is the case.[91] Many organizations have no policy at all. Among those that do, some of the policies are internally inconsistent. Even among the set of groups with consistent policies, it is not clear that the policies differ from organization to organization because of any affirmative judgment in favor of a particular policy.

III. Enforceability of SSO Rules Restricting Intellectual Property

In order to understand the full import of SSO IP rules, we must consider whether and to what extent those rules are binding on members of the SSO. Unfortunately, there is virtually no case law on this subject. But even a cursory review of the contract and patent law issues such rules raise suggests that the problem is a complicated one.

A. SSO IP Rules as Creatures of Contract Law

1. Are By-Laws Binding Contracts?

SSO IP rules have legal significance only to the extent they are enforceable.[92] Because the IP policies are at base agreements by members of the SSO to abide by certain rules regarding intellectual property ownership, their enforceability is initially a question of contract law.

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[91] *But see* Schallop, *supra* note __, at 234 (suggesting that the variance in IP policies creates a sort of competition, with the most efficient IP rule likely to prevail). Schallop offers no evidence to believe there is effective competition between different types of SSO IP rules, and my strong suspicion is that the success or failure of any given SSO has far more to do with its membership and the technical merits of the standards it selects than with its IP policies.

[92] They may have some effect even as non-binding norms as well. I do not consider those effects in this article.

At the outset, it is worth emphasizing that a standard-setting organization by-law at most can bind only those companies who are members of the standard-setting organization. Non-members aren't party to the contract, and will not be held to have agreed to the by-laws.[93] So SSO IP rules do not guarantee that a standard is free of intellectual property claims altogether, or that all intellectual property owners have agreed to license their rights on reasonable and nondiscriminatory terms. At most, they clear rights associated with the subset of intellectual property owners who are members of the organization.

One possible exception to this limitation might take the form of a "viral" approach to standard-setting. A standard-setting organization may seek to impose its rules not just on members, but on anyone who uses the standard. It might do this either by purporting to create a contract accepted by performance -- the act of using the standard, or by copyrighting the specifications of the standard and conditioning a license to the copyright on agreement to comply with the IP rules. Such a viral approach – binding anyone who comes into contact with the standard – has parallels in both the "shrinkwrap license" cases[94] and in open source contracting.[95]

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[93] A possible exception to this general rule – the viral application of IP rules to those who use a standard – is discussed below.

[94] Peggy Radin has referred to shrinkwrap licenses as "covenants that run with" software, because even those who are not part of any express agreement are purportedly bound by a contract that is attached to the program itself, and which provides that using the software constitutes agreement to its terms. Margaret Jane Radin & R. Polk Wagner, *The Myth of Private Ordering: Rediscovering Legal Realism in Cyberspace*, 73 **Chi.-Kent L. Rev.** 1295, 1312 (1998).

[95] On the viral contract nature of open source licenses, see Robert W. Gomulkiewicz, *How Copyleft Uses License Rights to Succeed in the Open Software Revolution and the Implications for Article 2B*, 36 **Hous. L. Rev.** 179 (1999); David McGowan, *Legal Implications of Open-Source Software*, 2001 **U. Ill. L. Rev.** 241; Ira V. Heffan, Note, *Copyleft: Licensing Collaborative Works in the Digital Age*, 49 **Stan. L. Rev.** 1487 (1997).

There are a number of potential problems with such a viral approach. First, it is far from clear that courts would enforce an "agreement" merely attached to a description of an interface standard. In the analogous case of shrinkwrap licenses, courts are sharply divided as to the enforceability of such novel agreements, with a slight majority holding them unenforceable.[96] While this is not the place for a detailed discussion of the shrinkwrap cases,[97] the reluctance of many courts to infer assent to a variety of terms

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[96] For courts rejecting shrinkwrap licenses as unenforceable on various grounds, see Step-Saver Data Systems v. Wyse Tech., 939 F.2d 91 (3d Cir. 1991); Vault Corp. v. Quaid Software Ltd., 847 F.2d 255 (5th Cir. 1988); Softman Prods. v. Adobe Sys., 171 F. Supp. 2d 1075 (C.D. Cal. 2001); Specht v. Netscape Communications Corp. and America Online, Inc., 150 F. Supp. 2d 585 (S.D.N.Y. 2001); Klocek v. Gateway, Inc., 104 F. Supp. 2d 1332, 1341 (D. Kan. 2000); Novell v. Network Trade Ctr., 25 F. Supp. 2d 1218 (D. Utah 1997); Morgan Labs., Inc. v. Micro Data Base Systems, 41 U.S.P.Q.2d 1850 (N.D. Cal. 1997); Arizona Retail Sys. v. The Software Link, Inc., 831 F. Supp. 759 (D. Ariz. 1993); Foresight Resources Corp. v. Pfortmiller, 719 F. Supp. 1006, 1010 (D. Kan. 1989); *see also* **L. Ray Patterson & Stanley W. Lindberg, The Nature of Copyright: A Law of Users' Rights** 220 (1991) (concluding that shrinkwrap licenses were almost certainly unenforceable); Mark A. Lemley, *Beyond Preemption: The Law and Policy of Intellectual Property Licensing*, 87 **Calif. L. Rev.** 111 (1999). *Cf.* Microstar v. Formgen, Inc., 942 F. Supp. 1312, 1317 (S.D. Cal. 1996) (noting but not resolving the issue), *rev'd on other grounds*, 154 F.3d 1107 (9th Cir. 1998); Ward v. Cross Sound Ferry, __ F.3d __ (2d Cir. Dec. 10, 2001) (ticket that passenger held for only three minutes could not constitute binding contract because passenger didn't have adequate opportunity to review; not a shrinkwrap case). These decisions were rendered on various grounds, but a typical conclusion is that the contract was formed when the software was exchanged for money, and that the terms of the contract do not include a shrinkwrap license that was only brought to the attention of the buyer after the exchange. *See Step-Saver*, *supra*.

By contrast, an increasing number of courts – though still a minority – enforce shrinkwrap licenses. *See* ProCD, Inc. v. Zeidenberg, 86 F.3d 1447 (7th Cir. 1996) (Easterbrook, J.); M.A. Mortenson Co. v. Timberline Software Corp., 998 P.2d 305 (Wash. 2000); Rinaldi v. Iomega Corp., 1999 WL 1442014, at *5 (Del. Super. Ct. Sept. 3, 1999); *cf.* Hill v. Gateway 2000, 105 F.3d 1147 (7th Cir. 1997) (Easterbrook, J.) (extending *ProCD* in a non-shrinkwrap case), *cert. denied*, 118 S.Ct. 47 (1997). In addition, two states – Virginia and Maryland – have adopted the Uniform Computer Information Transactions Act, which enforces shrinkwrap licenses. But three states have not only rejected UCITA but gone so far as to enact "bomb shelter" statutes protecting their citizens from the effects of UCITA.

Contrast shrinkwrap licenses with their Internet cousin, the "clickwrap" license. In a clickwrap license, the buyer can see the license terms before entering into the contract. Such licenses are more likely to be enforceable under traditional contract doctrine. *See, e.g.*, I. Lan Systems v. Netscout Serv. Level Corp., 2002 WL 15592 (D. Mass. 2002); Hotmail Corp. v. Van Money Pie Inc., 47 U.S.P.Q.2d 1020 (N.D. Cal. 1998). But viral SSO agreements, unlike clickwrap licenses, do not give the user the prospect of assenting before being bound.

[97] The literature is voluminous. For criticism of shrinkwrap licenses, *see, e.g.*, Lemley, *supra* note __; Michael J. Madison, *"Legal Ware": Contract and Copyright in the Digital Age*, 67 **Fordham L. Rev.** 1025 (1998)**;** Apik Minassian, *The Death of Copyright: Enforceability of Shrinkwrap Licensing Agreements*, 45 **UCLA L. Rev.** 569 (1997); Jason Kuchmay, Note, *ProCD, Inc. v. Zeidenberg: Section 301 Copyright Preemption of Shrinkwrap Licenses -- A Real Bargain for Consumers?*, 29 **U. Tol. L. Rev.** 117 (1997); Kell Corrigan Mercer, Note, *Consumer Shrink-Wrap Licenses and Public Domain Materials: Copyright Preemption and Uniform Commercial Code Validity in ProCD v. Zeidenberg*, 30 **Creighton L. Rev.** 1287

from the mere act of using a program suggests that a viral approach to standards will be problematic as well. Similarly, the open source licenses depend on the existence of a core of copyrightable material that the user can't do without; the theory is that if you don't agree to the terms of the open source license, you don't get any right to use the original copyrighted material.[98] But the copyright status of industry standards is far more

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(1997); Robert J. Morrill, Comment, *Contract Formation and the Shrink Wrap License: A Case Comment on ProCD, Inc. v. Zeidenberg*, 32 **New Eng. L. Rev.** 513, 537-550 (1998); Christopher L. Pitet, Comment, *The Problem With "Money Now, Terms Later": ProCD, Inc. v. Zeidenberg and the Enforceability of "Shrinkwrap" Software Licenses*, 31 **Loyola (LA) L. Rev.** 325 (1997); Stephen P. Tarolli, Comment, *The Future of Information Commerce Under Contemporary Contract and Copyright Principles*, 46 **Am. U. L. Rev.** 1639 (1997); Niva Elkin-Koren, *Copyright Policy and the Limits of Freedom of Contract*, 12 **Berkeley Tech. L.J.** 93, 106-13 (1997); David Nimmer et al, *The Metamorphosis of Contract into Expand*, 87 **Cal. L. Rev.** 17 (1999); J.H. Reichman & Jonathan A. Franklin, *Privately Legislated Intellectual Property Rights: Reconciling Freedom of Contract With Public Good Uses of Information*, 147 **U. Pa. L. Rev.** 875 (1999); ., Dennis S. Karjala, *Federal Preemption of Shrinkwrap and On-Line Licenses*, 22 **U. Dayton L. Rev.** 511 (1997); Ramona L. Paetzold, *Contracts Enlarging a Copyright Owner's Rights: A Framework for Determining Unenforceability*, 68 **Neb. L. Rev.** 816 (1989); David A. Rice, *Public Goods, Private Contract, and Public Policy: Federal Preemption of Software License Prohibitions Against Reverse Engineering*, 53 **U. Pitt. L. Rev.** 543, 602-04 (1992); Charles R. McManis, *The Privatisation (or "Shrinkwrapping") of American Copyright Law*, 87 **Cal. L. Rev.** 173 (1999); Maureen A. O'Rourke, *Copyright Preemption After the ProCD Case: A Market-Based Approach*, 12 **Berkeley Tech. L.J.** 53 (1997); Brian Covotta & Pamela Sergeeff, Note, *ProCD, Inc. v. Zeidenberg*, 13 **Berkeley Tech. L.J.** 35 (1998); Thomas Finkelstein & Douglas C. Wyatt, Note, *Shrinkwrap Licenses: Consequences of Breaking the Seal*, 71 **St. John's L. Rev.** 839, 868-69 (1997); Jeannett M. Hill, Note, *The State of Copyright Protection for Electronic Databases Beyond ProCD v. Zeidenberg: Are Shrinkwrap Licenses a Viable Alternative for Database Protection?*, 31 **Ind. L. Rev.** 143, 165-72 (1998); Note, *Seventh Circuit Holds That Shrinkwrap Licenses Are Enforceable*, 110 **Harv. L. Rev.** 1946 (1997); Brett L Tolman, Note, *ProCD, Inc. v. Zeidenberg: The End Does Not Justify the Means in Federal Copyright Analysis*, 1998 **B.Y.U. L. Rev.** 303.

For arguments endorsing shrinkwrap licenses, see, e.g., Joel Rothstein Wolfson, *Contract and Copyright Are Not at War*, 87 **Calif. L. Rev.** 79 (1999); Raymond T. Nimmer, *Through the Looking Glass: What Courts and UCITA Say About the Scope of Contracts in the Information Age*, 38 **Duquesne L. Rev.** 255 (2000); Lorin Brennan, *Through the Telescope: UCITA and the Future of E-commerce*, 20 **Miss. Coll. L. Rev.** 27 (1999); Michael A. Jaccard, *Securing Copyright in Transnational Cyberspace: The Case for Contracting With Potential Infringers*, 35 **Colum. J. Transnat'l L.** 619 (1997); Darren C. Baker, Note, *ProCD v. Zeidenberg: Commercial Reality, Flexibility in Contract Formation, and Notions of Manifested Assent in the Arena of Shrinkwrap Licenses*, 92 **Nw. U.L. Rev.** 379 (1997); Brandon L. Grusd, Note, *Contracting Beyond Copyright: ProCD, Inc. v. Zeidenberg*, 10 **Harv. J.L. & Tech.** 353 (1997); Jerry David Monroe, Comment, *ProCD, Inc. v. Zeidenberg: An Emerging Trend in Shrinkwrap Licensing?*, 1 **Marquette Intell. Prop. L. Rev.** 143 (1997); Joseph C. Wang, Casenote, *ProCD, Inc. v. Aeidenberg and Article 2B: Finally, the Validation of Shrinkwrap Licenses*, 16 **J. Marshall J. Comp. & Info. L.** 439, 442 (1997).

[98] *See* Free Software Foundation, *GNU General Public License* (version 1.7), at http://www.fsf.org/copyleft/gpl.html; McGowan, *supra* note __, at 255; Gomulkiewicz, *supra* note __.

precarious. Copyright doesn't protect functional attributes of a work.[99] The only potentially copyrightable portion of an industry standard will be the descriptive language of a specification, and intellectual property owners who want to avoid assigning their IP rights remain free to copy the functional aspects of the standard itself. In any event, I am not aware of any SSO that has imposed such a viral approach to its IP rules. As a practical matter, therefore, the principle stated above is correct: SSO IP rules only bind members of the organization.

Even members of the organization will be bound by an SSO by-law only if that by-law is an enforceable contract. Whether and how a particular company is bound to obey a by-law may depend on the form of the representation: did the company sign a document agreeing to give up rights, or is waiver merely inferred from membership in the standard-setting organization? Obviously, the strongest case for enforcement of an IP by-law is one in which members of the SSO sign contracts committing themselves to comply with the by-law. Such agreements can be case-specific, as where members sign agreements to license patents covering particular standards on reasonable and nondiscriminatory terms, or they can be general agreements to comply with the rules. There is no reason to think such a signed agreement would not be enforceable. But relatively few organizations actually include IP policies in a written contract with their members. Indeed, some groups don't have membership contracts at all.

A second way in which the by-laws might be presented is incorporation by reference. SSO contracts might contain a general statement requiring members to read

[99] 17 U.S.C. § 102(b); *Computer Assocs. v. Altai, Inc.*, 982 F.2d 693 (2d Cir. 1992); Lotus Dev. Corp. v. Borland Int'l, 49 F.3d 807 (1st Cir. 1995). For a discussion of the copyrightability of protocols, which are often the subject of industry standard-setting, see **Mark A. Lemley et al., Software and Internet Law** 167-70 (2000).

and comply with organization by-laws. Such agreements are relatively common, and should not present significant enforceability problems. So long as the member is on notice of the rules with which it must comply, those rules can properly be deemed part of the contract.[100] The issue is somewhat more problematic if the by-laws change from time to time; presumably notice of some sort should be given of the changes. This is likely to be an issue with respect to IP rules, since many organizations adopted or changed their IP rules relatively recently, and those rules may bind preexisting members of the organization. More problematic will be cases in which the by-law is never agreed to by or brought to the attention of a member, and in which the SSO claims that mere membership in the organization constitutes agreement to the terms of the rule. Even here, however, the case law strongly suggests that merely joining an organization is sufficient to constitute consent to be governed by the organization's by-laws.[101]

Finally, in some circumstances an organization's rule regarding intellectual property may not be written at all. In at least one case, the *Rambus v. Infineon* litigation discussed below,[102] the complainant argued that the intellectual property owner should be

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[100] *See, e.g.*, Koefoot v. American College of Surgeons, 692 F.Supp. 843, 860 (N.D. Ill. 1988) ("Under Illinois law the members of voluntary associations and the associations themselves are contractually bound to follow the bylaws, rules, and regulations of the association. By joining the association, a member accepts this obligation as a condition of membership. By accepting the member into the association, the association accepts this obligation as a limitation on its ability to impair the member's status.").

[101] *See, e.g.* Imel v. Zohn Mfg. Co., 481 F.2d 181, 183 (10th Cir. 1973) ("The plaintiffs are members of Local 263. As such they are bound by the constitution and by-laws of the Joint Board and Amalgamated, under which Local 263 is an affiliated and subordinate body."); (Nelson v. Belle Fourche Irr. Dist., 845 F.Supp. 1361, 1366 (D.S.D. 1994) ("As a member and elector of the irrigation district, plaintiff is bound by the district board's bylaws, rules and regulations which dictate the conditions under which plaintiff has a right to receive and use water."); Laguna Royale Owners Assn. v. Darger, 119 Cal.App.3d 670, 674, 174 Cal. Rptr. 136 (1981) ("As owner of a unit in the project, the Dargers automatically became members of the Association and were bound by the Association's bylaws.")

[102] *See infra* notes __-__ and accompanying text.

bound not only to JEDEC's express IP policy, which covered only issued patents, but to the unwritten understanding of all members that pending patent applications should also be disclosed. It is obviously preferable for an SSO to set out in writing the obligations of its members. But contracts do not have to be in writing to be binding. Indeed, even an express oral agreement is not always required. Courts will (and regularly do) imply contracts from sufficient factual circumstances.[103] Further, the meaning of written or oral contracts will be informed by the norms of an industry and by the particular course of dealing of the parties to the agreement.[104] Thus, if members of an organization regularly treat a rule requiring disclosure of patents as also requiring disclosure of patent applications, they may be held impliedly to have agreed to disclose applications as well as issued patents. Whether such an agreement will be implied depends on the factual circumstances of any given case, and in particular on the state of mind of the parties.

2. Withdrawal

If an intellectual property owner has entered into a binding contract regarding its IP rights by joining an SSO, under what circumstances may it terminate that contract? SSO by-laws don't generally have termination dates; the contract thus formed is presumably in force as long as the intellectual property owner is a member of the SSO. The normal rule of contract law is that contracts without a specified term are terminable

[103] *See, e.g.,* **E. Allen Farnsworth, Contracts** §3.10, at 135 (2d ed. 1990) (contract may be formed "by spoken or written words or by other conduct"; the latter category are sometimes called "implied-in-fact" contracts).

[104] *See, e.g.*, UCC §1-205 (contracts may be interpreted by reference the course of dealing between parties or within an industry as a whole); **Restatement (Second) of Contracts** §§219-222; **Farnsworth**, *supra* note __, at §7.13.

at will upon reasonable notice to the other party.[105] So members can presumably withdraw from an SSO at any time upon reasonable notice. But until they do, they will likely be bound by the organization's IP rules.

Once a member decides to withdraw from the SSO, it may argue that its obligations to license its intellectual property rights terminate immediately. Such a result would be unsatisfactory, however, for at least two reasons. First, it may permit unscrupulous members to "game the system," resigning and rejoining an organization in order to avoid having their IP covered by the SSO's rule. To take an extreme example, a member should not be able to propose a standard, resign from the SSO shortly before the meeting adopting that standard (thereby avoiding any disclosure or licensing obligation), and then rejoin the organization after the standard is adopted. Second, an agreement to license intellectual property rights is presumably an ongoing commitment; indeed, in the absence of an express contractual termination date most courts construe patent licenses to extend until the expiration of the patent.[106] A member that has agreed to license its intellectual property rights covering a standard on reasonable and nondiscriminatory terms has presumably committed to an ongoing license, not a temporary one. For that member to be able to revoke licenses already granted for existing standards once it leaves the organization would leave users of existing standards with debilitating uncertainty. It

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[105] **Farnsworth**, *supra* note __, at §2.14.

[106] *See, e.g.*, Bettis Rubber Co. v. Kleaver, 104 Cal. App. 2d 821, 824-25, 233 P.2d 82 (1951). In copyright cases, the issue is more complex. The circuits are split, with some courts finding that a copyright license with no termination provision runs for 35 years, and others concluding that such a license is terminable at will. *Compare* Korman v. HBC Florida, Inc., 182 F.3d 1291 (11th Cir. 1999) *and* Walthal v. Rusk, 172 F.3d 481, 484-85 (7th Cir.1999) (section 203 does not create a minimum term of 35 years for licenses of indefinite duration), *with* Rano v. Sipa Press, Inc., 987 F.2d 580, 585 (9th Cir.1993) (section 203 does create a minimum term of 35 years for licenses of indefinite duration).

would also encourage strategic behavior by firms that promise to license their patents, only to revoke that promise once the standard was widely adopted.[107]

A better approach is to bind members to disclose or license patents covering any standard that was adopted or in process while the intellectual property owner was a member of the group. The disclosure obligation is satisfied at the time of disclosure, but the licensing obligation would in some circumstances continue beyond the termination of the member's relationship with the SSO. This fact shouldn't worry us too much, however; contract law frequently enforces particular terms in an agreement even after the relationship has expired. To take just one example, employees and licensees of trade secrets are bound to keep the secret confidential even after their relationship with the trade secret owner terminates.[108] It seems fair to impose a similar obligation here. Indeed, without such an obligation, a company could effectively revoke its commitment to an SSO IP rule by withdrawing strategically during the standardization process and then suing other members for infringement once the standard had been set.

3. Parsing the Terms of SSO By-Laws

Assuming that a member is bound to the terms of an SSO IP rule, the courts will have to determine exactly what those terms require. As we have seen, there is tremendous diversity among standard-setting organizations in what their by-laws actually require.[109] The by-laws differ along at least two dimensions: what intellectual property is

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[107] Indeed, this sort of behavior was precisely what the FTC alleged occurred in the *Dell* case. *See infra* notes __-__ and accompanying text.

[108] *See, e.g.*, Uniform Trade Secrets Act §1(2)(ii)(B)(II), *codified at, e.g.*, Cal. Civil Code §3426.1.

[109] *See supra* notes __-__ and accompanying text (discussing this diversity in detail).

covered, and what is required of intellectual property owners. While many of the policies are easy enough to interpret – a policy either covers copyrights or it doesn't, for instance – others are more problematic. In *Intel v. VIA Technologies*,[110] for example, the court had to decide whether a license of a patent covering a standard covered only the basic features of the standard or included optional ones as well.

One of the most common requirements imposed is an obligation to license intellectual property rights on "reasonable and nondiscriminatory terms." But virtually no SSO policies specify what that phrase means, leaving courts to decide what terms are "reasonable." There are presumably easier ways of determining whether a license is "nondiscriminatory," at least in circumstances in which the intellectual property owner has already licensed others. But even here questions will arise. The IEEE has taken the position that a refusal to license is not discriminatory if it is made in response to a lawsuit by the putative licensee.[111] But whether such an antagonistic situation really justifies a refusal to license patents covering an industry standard is open to question.[112]

One might argue that the absence of any definition of reasonable terms renders the IP rule hopelessly vague and therefore unenforceable as a contract. After all, if the parties have agreed to license, but have not agreed on the terms of the license, is there

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[110] 174 F. Supp. 2d 1038 (N.D. Cal. 2001).

[111] IEEE Policy § __. Even the meaning of this policy term is open to interpretation. Some have read the IEEE policy to permit intellectual property owners to avoid licensing anyone with whom they are in a dispute, *including a dispute over the fee for the license itself*. This is a rather strained reading, as the policy would effectively amount to a promise to license the patent only if the parties can agree on terms. Such a "promise" is no different than the right the intellectual property owner would have had in the absence of the policy.

[112] In the antitrust context, compare Intel Corp. v. Intergraph Corp., 195 F.3d 1346 (Fed. Cir. 1999) (intellectual property owner was free to terminate licensee who sued it for infringement of licensee's own intellectual property) *with* In re Intel Corp., Dock. NO. 9288 (FTC 1999), *available at* http://www.ftc.gov/os/1999/9903/d09288intelagreement.htm. *See also* I **Hovenkamp et al.**, *supra* note __, at §13.4d.

really a meeting of the minds? But it is a well-established principle of contract law that the parties need not specify a price in order to create a binding agreement. In the absence of a price, courts will supply a reasonable and customary term for them.[113] While there is more than just price missing from SSO IP rules – they do not specify the duration of the license, for example – those terms too may be filled in by operation of law.[114] Application of these contract principles to SSO IP rules suggests that an unspecified "reasonable" royalty term does not leave unbridled discretion with the intellectual property owner to set the terms. Rather, courts will determine what royalty is reasonable based on industry custom – here, the treatment of patents of similar scope in related industries.[115]

4. Enforcement of By-Laws as Contracts

If a company's nondisclosure of or refusal to license its patent violates a rule of the standard-setting organization requiring disclosure of intellectual property rights, and the SSO rule constitutes a binding agreement, that rule will be enforceable by a claim for breach of contract. There are some limitations on the enforceability of such a contract, however. First, not all of the parties who might be accused of infringing the patent are

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[113] *See, e.g.*, UCC 2-305.

[114] Thus, courts regularly conclude that a patent license with no specified term expires when the patent does. *See supra* note __. For a more general discussion of terms omitted from contracts that are filled in by operation of law, see **Farnsworth**, *supra* note __, at §7.17.

[115] Courts already make a similar determination in patent infringement cases when the patentee cannot demonstrate lost profits. 35 U.S.C. §284. The courts rely on a multi-factor test to determine what royalty is reasonable. *See, e.g.*, Georgia-Pacific Corp. v. U.S. Plywood Corp., 318 F. Supp. 1116 (N.D.N.Y. 1970), *judgement modified by* Georgia-Pacific Corp. v. U. S. Plywood-Champion Papers, Inc., 446 F.2d 295 (2nd Cir. 1971). The fifteen *Georgia-Pacific* factors have become a standard measure of reasonable royalties in patent cases. *See, e.g.*, Smithkline Diagnostics v. Helena Laboratories, 926 F.2d 1161 (Fed. Cir. 1991).

likely to be members of the standard-setting organization, and non-members presumably lack standing to sue for breach of contract. Even within an organization, it is not altogether clear that *members* of the organization, rather than the organization itself, have standing to enforce the agreement.

Contract law distinguishes between parties to the contract and intended non-party beneficiaries, both of whom may enforce contracts, and incidental beneficiaries, who generally may not.[116] Non-members of standard-setting organizations presumably fall within the latter category, at least absent some express undertaking in the SSO by-laws to the contrary.[117] Contracts are not generally interpreted to render the public at large a beneficiary, as a contrary reading would require.[118] As a result, even if an intellectual property owner has contractually committed herself to license intellectual property, members of the public cannot sue to enforce that contract. This is a somewhat troubling result, particularly in the (small) subset of cases in which SSO members agree to license everyone on reasonable and nondiscriminatory terms, and not just other members. But it seems to be compelled by the limited nature of the legal rules regarding third party beneficiaries.[119]

Members of the SSO can make a more compelling case that they are the intended beneficiaries of SSO policies. While most contracts involving by-laws will be

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[116] *See, e.g.*, **Farnsworth**, *supra* note __, at § 10.3.

[117] **Restatement (Second) Contracts** § 302.

[118] Intended beneficiaries must be specifically identifiable at the time of performance of the contractual obligation, *see* **Farnsworth,** *supra* note __, §10.3, at 750, a rule which might be satisfied by waiting until each member of the public comes forward to demand a license. But it arguable whether the parties to SSO IP rules in fact intend to bring an unknowable class of people within the scope of the contract.

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[119] The problem may be ameliorated somewhat by the doctrines of estoppel and implied license in intellectual property law. For a discussion of those doctrines, see *infra* notes __-__ and accompanying text.

agreements between a member and the SSO itself, the SSO is merely an association that is in turn composed of other members. It would seem anomalous to permit only the SSO to enforce those by-laws, particularly when the issue will almost always arise in the course of intellectual property litigation between members, not in litigation to which the SSO is a party.

Non-members may also be able to seek relief under the doctrine of promissory estoppel. While the law of contracts traditionally would not enforce a promisee's unsolicited reliance on a gratuitous promise,[120] more modern cases following the Restatement (Second) of Contracts permit third parties to recover their reliance interest in certain circumstances. Specifically, the Restatement provides:

> A promise which the promisor should reasonably expect to induce action or forbearance on the part of the promise or a third person and which does induce such action or forbearance is binding if injustice can be avoided only by enforcement of the promise.[121]

To take advantage of this provision, non-members would have to demonstrate that they actually relied on the intellectual property owner's promise to license its patents. Of necessity, therefore, they must be aware of the promise. The intellectual property owner must also have reason to know that non-members will expect to benefit from the SSO IP rule. Assuming both conditions are met, it does seem just to permit both members and non-members to benefit from the SSO-driven license.

Even once the proper plaintiff to sue for breach of such a contract has been identified, it is not clear what the remedy would be, or that it would be adequate to

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[120] *See, e.g.*, **Farnsworth**, *supra* note __, at §2.19.

[121] **Restatement (Second) of Contracts** §90.

compensate members or society for the full value of the competitive harm they have incurred. Contractual obligations are generally not enforced by injunctive relief – here, compelling the intellectual property owner to grant licenses. Rather, the ordinary measure of contract damages is what the party injured by breach expected to gain from performance of the contract.[122] In the case of agreements to license on reasonable and nondiscriminatory terms, that expectation is presumably a right to use the patented standard upon payment of a reasonable royalty. If a patentee breaches such a contract, it may retain the right to enforce its intellectual property rights, but the injured members would be entitled to recover the value of the use they would have made of the standard, less the royalty they would have paid.[123] Such a remedy does not fully compensate society for the harm caused by the intellectual property owner's breach, however. Other members may still be enjoined from using the patented standard, which may create deadweight losses in the market for goods embodying the standard. Further, unless non-members can sue to enforce the contract on a promissory estoppel theory, non-members who relied on a member's agreement to license on reasonable terms may be hurt by the member's breach but have no remedy under contract law.[124]

The problem of contract enforcement is even greater for breach of the disclosure obligation. Injunctive relief compelling disclosure is meaningless; a failure to disclose the existence of an IP right is a problem only if people aren't aware of the IP right, and if they aren't aware of it they can hardly know to sue. Injured SSOs or members will be

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[122] *See, e.g.*, **Farnsworth,** *supra* note __, at §§ 12.7-12.8.

[123] This assumes that members have standing to enforce the by-law; *see supra* notes __-__ and accompanying text.

[124] I discuss their possible remedies under intellectual property and antitrust theories below.

able to sue for breach only after they find out about the existence of the right, presumably when the intellectual property owner asserts that right against someone using the standard. Expectation damages will be hard to establish in that situation. They will depend on a court's ability to reconstruct what would have happened in the SSO meeting had the organization been aware of the IP right, a difficult task under the best of circumstances. Measuring damages is particularly difficult for those SSOs that compel disclosure but do not compel licensing, since it is not clear that disclosure of a patent would have changed the organization's decision to adopt a standard. Further, the real harm from nondisclosure – the possibility that an organization adopted a proprietary standard when it thought it was adopting an open standard, and so helped the intellectual property owner control a market – is not one that contract law can easily remedy. If inefficient breaches of SSO by-laws are to be discouraged, the remedy will have to come elsewhere.

One possibility is for the organization itself to specify the sanction for breach. For example, the old ETSI policy provided that members must agree to license their patents on "fair, reasonable, and non-exclusive" terms to other ETSI members. If a member refuses to do so, the sanction was a loss of IP rights from all other members.[125] Other SSOs might try to remedy social harms by raising the sanction for breach. But such provisions will likely run afoul of the general rule of contract law that prohibits penalty damages.[126]

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[125] For a description of this policy, see Rudi Bekkers & Isabelle Liotard, *European Standards for Mobile Communications: The Tense Relationship Between Standards and Intellectual Property Rights*, 21 **Eur. Intell. Prop. Rev.** 110, 121 (1999). ETSI changed its standard to a weaker nondisclosure requirement under pressure from the U.S. *See id.* at 122.

[126] *See, e.g.*, UCC 2-718; **Farnsworth,** *supra* note __, at §12.18.

B. Intellectual Property Law

As we saw in the previous section, even if SSO IP rules are enforceable contracts, the law of contracts has loopholes. Intellectual property owners who agree to an SSO by-law and then breach that agreement are unlikely to internalize the full costs of that breach. They may induce reliance by third parties that have no right to enforce the contract. They may enforce their intellectual property rights against a marketplace that adopted a standard with the expectation that it was not proprietary, enjoining competitors and recovering supracompetitive profits but being forced to pay only expectation damages. The possibility of breach without serious consequences is even greater when the obligation breached involves only disclosure and not licensing. In such cases, it is not clear that contract law provides any effective remedy for the injury such a breach causes the SSO, its members, and the general public.

As a result, those injured by an intellectual property owner have turned to intellectual property law itself to "enforce" standard-setting organization by-laws. At least two related patent law doctrines may apply where a patentee has failed to comply with standard-setting organization rules: equitable estoppel and implied license.

1. Disclosure Obligations

a. Application to SSO Rules

The most likely candidate for dealing with a failure to disclose is the doctrine of equitable estoppel. Equitable estoppel applies where "a patentee, through misleading conduct, leads the alleged infringer to reasonably infer that the patentee does not intend

to enforce its patent against the alleged infringer. Conduct may include specific statements, action, inaction, or silence where there was an obligation to speak."[127] To use equitable estoppel as a defense to infringement, the infringer must show that it relied on the misleading conduct and will be materially prejudiced if the patent is enforced.[128]

The equitable estoppel doctrine is particularly well-suited to dealing with intellectual property owners who fail to disclose their IP rights, for several reasons.[129] First, the doctrine does not require affirmatively misleading statements, but applies to silence in circumstances where there "was a clear duty to speak."[130] Thus, assuming that members of an SSO take on a disclosure obligation as a contractual matter, violating that duty may give rise to estoppel. Second, the estoppel cases do not require proof of intent to mislead. Rather, the only question is whether the patentee's "course of conduct reasonably gave rise to an inference" that the patentee would not enforce the patent. Thus, estoppel may apply even in the relatively common case in which a patentee's failure to disclose was inadvertent or merely negligent, and not part of a scheme to deceive the SSO.[131] Finally, unlike the limited remedies available in contract cases, proof of equitable estoppel will equitably bar the intellectual property owner from any relief.[132] As a result, intellectual property owners who violate a disclosure obligation – thereby

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[127] A.C. Aukerman Co. v. R.L. Chaides Construction Co., 960 F.2d 1020, __ (Fed. Cir. 1992) (en banc).

[128] *Id.*

[129] For a discussion of equitable estoppel as applied to nondisclosure of patents to SSOs, see David M. Schneck, *Setting the Standard: Problems Presented to Patent Holders Participating in the Creation of Industry Uniformity Standards*, 20 **Hastings Comm/Ent. L.J.** 641, 649-51 (1998).

[130] *Aukerman*, 960 F.2d at __.

[131] Contrast this with the rule in antitrust cases, which at least nominally requires proof of intent to monopolize. *See infra* notes __-__ and accompanying text (discussing this requirement).

[132] *Aukerman*, 960 F.2d at __.

inducing members of an SSO to believe they have no patents covering the standard or will not enforce them – may be precluded from obtaining damages or injunctive relief against those members.

There are a number of cases suggesting that companies who fail to disclose a known patent to a standard-setting group may be estopped from later asserting that patent against members of the group once they have adopted the patented technology as a standard.[133] None are Federal Circuit cases, but there is good reason to believe that the courts will be willing to apply equitable estoppel where an intellectual property owner has made a material omission or misrepresentation to a standards body. In *Stambler v. Diebold, Inc.*, the court found estoppel on the basis of conduct before a standard-setting organization even in the absence of an SSO rule requiring disclosure:

> Ten years before this suit was filed, plaintiff concluded that the proposed Thrift or MINTS standard infringed his patent. It was well known to plaintiff and throughout the industry that the same provisions the plaintiff is relying on for infringement were being contemplated as national and international standards. Moreover, in the mid- 1970's plaintiff sat on an American National Standard Institute standards committee after concluding that the proposed thrift and MINTS standards infringed his patent. Plaintiff subsequently left the committee without notifying it of the alleged infringement of his patent. Under these circumstances, plaintiff had a duty to speak out and call attention to his patent. Plaintiff contacted defendant only once, ten years before this suit was filed. In 1975, plaintiff testified that he believed defendant as infringing his patent. However, plaintiff failed to bring suit until ten years later. Plaintiff had a duty to speak out and his silence was affirmatively misleading. Plaintiff could not remain silent while an entire industry implemented the proposed standard and then when the standards

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[133] *See* Stambler v. Diebold, Inc., 11 U.S.P.Q.2d 1709, 1714-15 (E.D.N.Y. 1988), *aff'd* 878 F.2d 1445 (Fed. Cir. 1989) (unpublished); Potter Instrument Co. v. Storage Technology Corp., 207 U.S.P.Q. 763, 766 (E.D. Va. 1980), *aff'd* 641 F.2d 190 (4th Cir. 1981); *see also* Wang Lab, Inc. v. Mitsubishi Elec. Am. Inc., 29 U.S.P.Q.2d 1481, 1495-96 (C.D. Cal. 1993) (equitable estoppel claim raised triable issue of fact). The Fourth Circuit did not reach the equitable estoppel issue in *Potter*, but indicated in dictum that it would be inclined to find such an estoppel. 641 F.2d at 192. Estoppel from misleading silence is possible, but rare, under Federal Circuit precedent. *See* Jamesbury Corp. v. Litton Indus. Prods., 839 F.2d 1544, 1553 (Fed. Cir. 1988) (minority opinion).

> were adopted assert that his patent covered what manufacturers believed to be an open and available standard.[134]

Stambler is arguably too sweeping, since it applies estoppel from silence even in the absence of an express duty to speak. But it certainly suggests that a party who breaches such an express duty may be estopped from later enforcing the patent. Similarly, even in the absence of an express duty to disclose, affirmatively misleading statements about intellectual property to an SSO should be actionable. For example, if a company consistently represents to an SSO that its proposed standards are "open" or "non-proprietary," it may be estopped from later asserting intellectual property rights covering those standards even if the SSO had no policy on the subject.[135]

One limit on the application of equitable estoppel in the SSO context concerns its use by non-members of the organization. Because equitable estoppel requires reliance by the defendant to its detriment, accused infringers can invoke estoppel only if they in fact relied on the intellectual property owner's statements (or silence) in determining their course of conduct. At a minimum, reliance requires that the accused infringer be aware of the statements. But the Federal Circuit's treatment of the issue seems to require more:

> Reliance is not the same as prejudice or harm, though frequently confused. An infringer can build a plant being entirely unaware of the patent. As a result of infringement, the infringer may be unable to use the facility. Although harmed, the infringer could not show reliance on the patentee's conduct. To show reliance, the infringer must have had a relationship or communication with the plaintiff which lulls the infringer into a sense of security . . .[136]

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[134] *Stambler*, 11 U.S.P.Q.2d at __.

[135] Something similar occurred with Sun Microsystems and the Java standard. These issues are discussed in more detail in Mark A. Lemley & David McGowan, *Could Java Change Everything? The Competitive Propriety of a Proprietary Standard*, 43 **Antitrust Bull.** 715, 770-72 (1998) (suggesting that Sun be bound by a sort of open systems estoppel). *Cf.* Wang Computer v. Mitsubishi, Inc., 103 F.3d 1571 (Fed. Cir. 1997) (representations of openness to the marketplace could bind patentee; discussed below).

[136] *See Aukerman*, 960 F.2d at __

While one might read this to suggest that the patentee must communicate directly with the accused infringer,[137] in the context of standard-setting such a reading is too narrow. Where the patentee has made a representation to the SSO about its intellectual property rights, and that representation is publicly available,[138] non-members may reasonably rely on those representations. Similarly, where a patent owner has told the SSO that it has no patents that cover a proposed standard, it doesn't seem reasonable to require knowledge of the patent itself. Accused infringers know of the statement that they are free to use a standard, and it is that statement on which they will rely.

Reliance on an affirmative statement that a company doesn't own patents covering a standard may be problematic if an accused infringer is in fact aware of the patent. It may therefore be useful to distinguish two situations. Where the party in question possesses an unpublished patent application, it would be virtually impossible for competitors to acquire information about this potential intellectual property right, except from the patent applicant herself. Where a patent has been issued or the patent application published, on the other hand, it is possible for the standards group to search the patent literature themselves to ensure that no patents cover the proposed standard. I do not believe reliance is inappropriate even here, however. Such a search is costly and imperfect, and will therefore not necessarily prevent the patent owner from using lack of information to her advantage. In either case, therefore, the standard-setting organization may lack relevant information if the patentee fails to disclose the existence of a patent.

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[137] *See, e.g.*, Mueller, *Misuse, supra* note __, at [draft at 31] ("Third parties who did not participate in the standards-setting activity and had no contact with the patentee would be unable to establish detrimental reliance.").

Further, even if an accused infringer is aware of the *existence* of a patent, it might reasonably rely on the patent owner's disclosure statement as evidence that the patent owner doesn't consider the patent relevant to the standard, or is willing to abandon its rights.

Of course, the mere fact of such a public statement won't always prove reliance. If there is no evidence that the accused infringer was aware of the statement, or if the evidence suggests they expected the patent to be enforced but thought a lawsuit was an acceptable business risk, estoppel should not apply.[139]

b. Application Outside of SSOs

Application of equitable estoppel may not be limited to standard-setting organizations. Rather, a number of cases (including *Stambler*) have applied estoppel to statements made to the marketplace. Thus, in *Wang v. Mitsubishi*,[140] the court held that the defendant could maintain an estoppel defense by alleging that Wang had represented to customers that its standard would remain open. This is important because de facto standard-setting can also be influenced by misleading statements about the open nature of a standard.

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[138] *See, e.g.*, http://www.ietf.org/ipr.html (collecting notices by intellectual property owners of rights that are claimed in IETF standards).

[139] *See* Winbond Elec. Corp. v. Int'l Trade Comm'n, 275 F.3d 1344 (Fed. Cir. 2001) (estoppel claim failed where defendant conceded it had no knowledge of patentee's statements to SSO); Hemstreet v. Computer Entry Systems, 972 F.2d 1290 (Fed. Cir. 1992) (no estoppel where accused infringer didn't rely on Hemstreet's actions, but rather its own business judgment about the risk of being sued); Hall v. Aqua Queen Mfg., Inc., 93 F.3d 1548 (Fed. Cir. 1996) (no estoppel where accused infringer acted on belief that patent was invalid, not on basis of representations by patentee); *cf.* Gasser Chair Co. v. Infanti Chair Mfg. Co., 60 F.3d 770 (Fed. Cir. 1995) (conclusory evidence of reliance insufficient).

[140] 103 F.3d 1571 (Fed. Cir. 1997).

Wang is a fairly easy case because of the affirmative nature of the representations that were later used to bind the company. But a number of claims have involved silence and failure to sue during the critical formation period of a de facto standard. For example, one significant dispute involves the most common standard for file exchange of graphics over the Internet during the early 1990s -- the "GIF" standard.[141] No official group set GIF as a standard; rather, after GIF was released by Compuserve in 1987, it was apparently free for all to use and was gradually adopted by a number of Internet users (as well as developers of extension programs) during the late 1980s and early 1990s. Unisys Corporation obtained a patent in 1986 that arguably covers the compression algorithm used by the GIF standard (the LZW patent). Unisys kept silent about the patent while the GIF standard gained market share -- whether intentionally or because they were unaware of the GIF-LZW overlap is unclear. Beginning in 1994, it asserted the patent against Compuserve and other companies that transferred graphics over the Internet using the standard – a group that included virtually every major company on the Internet at one point in time. Unisys' actions with respect to the LZW patent were allegedly intended to have an effect similar to Dell's.[142] Though Unisys made no affirmative representation that the standard was not proprietary, its silence

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[141] Competitors to GIF at the time included a standard called JPEG, but it suffered from certain disadvantages relative to GIF. More recently, a number of developers have come up with a variant of GIF called PNG which does not use the compression technology covered by the Unisys patent.

[142] Efforts to enforce the patent continue today. *See* Evan Hansen, *Patent Demands May Spur Unisys Rivals in Graphics Market*, CNET News.com, April 18, 2000, http://news.cnet.com/newes/0-1005-200-1713278.html

during the crucial period of standards competition allowed it to take a more mature industry by surprise.[143]

Some cases have held that silence in the face of known infringement can rise to the level of estoppel. For example, in *Stryker v. Zimmer*,[144] the court held that a delay of four years after discovery of infringement not only barred damages claims under the principle of laches but also estopped any prospective relief against the defendant.[145] The Federal Circuit has been somewhat more dubious of such claims, however, and recent Federal Circuit cases are divided in their treatment of claims based solely on silence in the marketplace.[146] One of the difficulties with such a claim is proof of reliance. It is not sufficient that an accused infringer benefit from nonenforcement of a patent; they must reasonably rely on the patentee's silence as an indication that the patent will not be enforced.[147] Where (as in the GIF case) it is likely that those using the GIF standard had no relationship with Unisys at all and knew nothing of the LZW patent, it is hard to see how they could have relied on Unisys not to enforce that patent. More generally, estoppel by silence in the marketplace – unlike silence in the face of an SSO IP rule –

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[143] For a discussion of this case, see Lemley, *Internet Standardization, supra* note __, at 1087.

[144] 741 F. Supp. 509 (D.N.J. 1990).

[145] The doctrine of laches is based on unreasonable delay, and bars only retrospective relief. By contrast, the doctrine of estoppel completely bars enforcement of the patent. For a discussion of the two doctrines, which are frequently intertwined, see *Aukerman*, 960 F.2d at __.

[146] *See, e.g.*, Hemstreet v. Computer Entry Sys., 972 F.2d 1290 (Fed. Cir. 1992); B. Braun Med. v. Abbott Labs., 124 F.3d 1419 (Fed. Cir. 1997) (both rejecting liability based merely on silence in the marketplace); *but see* ABB Robotics v. GMFanuc Robotics Corp., 52 F.3d 1062 (Fed. Cir. 1995); Scholle v. Blackhawk Molding Co., 133 F.3d 1469 (Fed. Cir. 1998) (both finding liability in such a circumstance).

[147] *See* Sony Electronics v. Soundview Technologies, 157 F. Supp. 2d 172, 178-79 (D. Conn. 2001) (rejecting estoppel claim based on silence before the FCC, since Sony could not prove it relied on that silence). *Sony* expressly distinguished silence in the face of an SSO IP rule requiring disclosure. *Id.*

effectively creates an affirmative duty to "police" patent infringement. This may not be wise as a policy matter.[148]

2. Reasonable and Nondiscriminatory Licensing Obligations

Equitable estoppel will not likely apply to a situation where an intellectual property owner has disclosed the existence of a patent but promised to license it on reasonable and nondiscriminatory terms. A patentee who has made such a promise has not induced others to believe it will not enforce the patent; far from it. The patentee has made an affirmative statement that it intends to enforce the patent, putting the world on notice that they must expect to pay royalties if they are to use the proposed standard.[149] As a result, even if the intellectual property owner breaches the agreement to license on reasonable and nondiscriminatory terms, traditional equitable estoppel doctrine seems unlikely to apply.[150]

Nonetheless, intellectual property law may well limit the ability of a patent owner to ignore SSO IP rules requiring licensing on reasonable and nondiscriminatory terms. A more likely theory is a license implied from the patentee's conduct, which I will here call an "implied license."[151] Implied license is a doctrine of quasi-contract, and depends on

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[148] *See* Wanlass v. General Elec. Co., 148 F.3d 1334 (Fed. Cir. 1998) (estoppel doctrine creates a duty to police patent rights); *compare id.* at __ (Rader, J., dissenting) (objecting to the creation of this duty).

[149] Some cases find estoppel from a threat of enforcement followed by a period of silence. *See, e.g.*, ABB Robotics v. GMFanuc Robotics Corp., 52 F.3d 1062 (Fed. Cir. 1995); Scholle v. Blackhawk Molding Co., 133 F.3d 1469 (Fed. Cir. 1998). As a result, estoppel may apply to those who identify patents they intend to license but then do nothing about licensing them for an extended period of time.

[150] A stronger equitable estoppel case may be made in those few SSOs that require royalty-free licensing. An intellectual property owner who discloses a patent to such an organization may reasonably be thought to be representing that the patent is available royalty-free, inducing reliance by accused infringers.

[151] In *Wang v. Mitsubishi*, 103 F.3d 1571, 1580 (Fed. Cir. 1997), the Federal Circuit announced that acquiescence, implied license by conduct, equitable estoppel, and legal estoppel were all part of the same

the beliefs and expectations of the parties to the sales transaction.[152] It is most commonly applied in cases where the product sold by the patentee is not itself patented, but is necessary for use in a patented process. The courts conclude that the sale of a product by the patentee necessarily carries with it the right to use the patented process for which the product is adapted. Other uses of implied license in intellectual property law include cases in which the plaintiff develops a product for use by the defendant, but retains the copyright. In such a case the courts will permit reasonable uses by the defendant.[153] Implied license is also likely where an intellectual property owner invites a use that would otherwise infringe, for example by posting their copyrighted work on the Internet for free download.[154]

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legal doctrine of implied license. This conclusion is certainly questionable as an historical matter. For an excellent discussion of implied license in historical context, see Mark D. Janis, *A Tale of the Apocryphal Axe: Repair, Reconstruction, and the Implied License in Intellectual Property Law*, 58 **Md. L. Rev.** 423 (1999); **Donald S. Chisum, Patents** § 16.03. But as a practical matter, it makes little difference what label we put on the doctrine. The fact of the matter is that a license implied from a patentee's conduct in the marketplace is a "different category of conduct" from equitable estoppel. *Wang*, 103 F.3d at 1580. For ease of use, I will refer to a license implied from market conduct as an "implied license."

There is some question as to whether implied licenses in intellectual property are creatures of state or federal law. Patent licenses are normally construed as a matter of state contract law. But *Wang* seemed to treat the implied license question as one of federal law, and the Federal Circuit has increasingly treated contractual questions surrounding patent licenses as matters of federal common law. *See, e.g.*, Rhone-Poulenc Agro v. DeKalb Genetics Corp., 271 F.3d 1081 (Fed. Cir. 2001) (bona fide purchaser defense for licenses was question of federal common law); Everex v. Cadtrak, 89 F.3d 673 (9th Cir. 1996) (assignability of nonexclusive patent licenses presented question of federal law); *cf.* Mark A. Lemley, *Beyond Preemption: The Law and Policy of Intellectual Property Licensing*, 89 **Calif. L. Rev.** 111 (1999) (noting tendency to treat licensing policy questions under federal common law). By contrast, courts treat questions of implied copyright license under state law. *See, e.g.*, Foad Consulting Group v. Musil Govan Azzalino, 270 F.3d 821 (9th Cir. 2001).

[152] *E.g.*, Withington-Cooley Mfg. Co. v. Kinney, 68 F. 500, 506 (6th Cir. 1895) ("The duration and scope of a license must depend upon the nature of the invention and the circumstances out of which an implied license is presumed, and both must at last depend upon the intention of the parties."). *But cf.* Carborundum Co. v. Molten Metal Equip. Innovations, Inc., 72 F.3d 872, 877 (Fed. Cir. 1995) ("Whether there existed an implied license is a question of law."); Janis, *supra* note __, at 502-505 (noting the critical role intent of the parties plays in determining the scope of an implied license).

[153] *See, e.g.*, Effects Assoc. v. Cohen, 908 F.2d 555 (9th Cir. 1990).

[154] *See* David Nimmer, *Brains and Other Paraphernalia of the Digital Age*, 10 **Harv. J. L. & Tech.** 1, 39-41 (1996). For an argument that implied license has some troubling limits in the Internet context, see Mark A. Lemley, *Dealing With Overlapping Copyrights on the Internet*, 22 **U. Dayton L. Rev.** 547, 567 (1997).

The last situation is perhaps most analogous to standard-setting. If a patent owner agrees to license its patents covering a standard on reasonable and non-discriminatory terms, others will assume that they are free to use that standard so long as they pay a reasonable royalty. There may be no express license between the patent owner and any of the users of the standard, but it seems perfectly reasonable to imply one from the conduct of the patent owner.[155] Indeed, *Wang* itself involved not only representations in the marketplace, but also Wang's efforts to persuade JEDEC to adopt its proposed industry standard.[156]

While an implied license of this sort may seem superfluous in view of the intellectual property owner's contractual obligations described in the previous section, there is an important difference between a license under intellectual property law and a contractual obligation to license. That difference concerns remedy. As we have seen, the remedy for breach of a contractual obligation to license is not judicial imposition of a license, but merely expectation damages resulting from the breach. Those damages are likely to be insufficient to compensate accused infringers and society at large for the losses they will suffer if they are enjoined from using standards once thought open to all.[157] By contrast, if an intellectual property owner is determined to have granted a

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[155] In *Sony Electronics v. Soundview Technologies*, 157 F. Supp. 2d 172 (D. Conn. 2001), the court concluded that Soundview had not impliedly licensed its patents covering V-chip television filtering technology merely because the government required the installation of V-chips. In that case, Sony had argued that it was entitled to a *royalty-free* license because the government required the technology to be used. The court disagreed, finding both that the government did not mandate the choice of Soundview's particular technology as the implementing standard and that in any event the government could compel the use of patented technology so long as the royalties charged were reasonable. *Id*. at 177. Nothing in *Sony* suggests that conduct before an SSO cannot give rise to an implied license.

[156] *Wang*, 103 F.3d at 1575.

[157] *See supra* notes __-__ and accompanying text.

license by virtue of agreeing to be bound by an SSO IP rule, the only remaining questions concern the scope of the license and the royalty rate. The intellectual property owner in that case has only a contractual claim for a royalty, not a cause of action for patent infringement that might garner them an injunction, treble damages, and attorneys' fees. The practical difference is dramatic.

I am aware of no cases treating this issue. I think it is preferable as a policy matter to construe an intellectual property owner's agreement to an SSO IP rule requiring licensing as the grant of a license itself, rather than merely a contract with the SSO. Such an approach has several advantages. First, it ensures that all users of the standard benefit from the license, even if they would be unable to sue for breach of the SSO contract itself. This is what the SSO rules almost certainly intend to happen. Second, it sharply narrows the scope of the issues that must be litigated in these cases, and (relatedly) makes it possible for the SSO to try to resolve those issues ex ante. SSO rules might try to set standards for determining a reasonable royalty in a license agreement; they would presumably have no power to do so if the intellectual property owner retained a right to sue for patent infringement. Third, and most important, the implied license approach will reduce opportunism by intellectual property owners. Under the contract approach, intellectual property owners have an incentive to assert claims for patent infringement against users of well-established standards, even if they previously agreed to license those patents on reasonable and nondiscriminatory terms. By threatening to enjoin the use of the standard, they can coerce significantly more than a reasonable royalty from users. Determining that patent owners have already licensed their patents will prevent

such opportunism. It may also reduce the need for the courts to rely on mechanisms like antitrust and fraud, discussed below, to deal with such opportunism.

The license approach may have one rather unfortunate jurisdictional consequence. Because disputes over the terms of a license are questions of state contract law, they will be decided in state rather than federal court.[158] Even if there is an independent basis for federal jurisdiction – diversity or another federal question – contractual disputes over license terms do not arise under 28 U.S.C. §1338[159] and so will not go to the Federal Circuit on appeal.[160] This may be troubling, especially to those who see the Federal Circuit as a force for uniformity not only in patent law but in related cases.[161] But it has never been the case that all questions involving patent law were decided by the Federal Circuit or indeed any federal court. Some cases always have gone to state court because

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[158] *See, e.g.,* Mark J. Henry, *State Courts Hearing Patent Cases: A Cry for Help to the Federal Circuit,* 101 **Dick. L. Rev.** 41, 44-49 (1996) (explaining the basis for "arising under" federal jurisdiction, and how it is limited to suits for patent infringement or declaratory judgment, but does not cover other disputes that involve a patent).

[159] 28 U.S.C. §1338 (providing for federal jurisdiction over cases arising under the patent laws).

[160] *See* 28 U.S.C. §129_ (Federal Circuit jurisdiction extends to cases that arise under section 1338 in whole or in part).

[161] The Federal Circuit has increasingly asserted its authority outside of traditional patent law to encompass related state and federal law questions). *See, e.g.,* Nobelpharma v. Implant Innovations, Inc., 141 F.3d 1059 (Fed. Cir. 1998) (antitrust questions will be decided under Federal Circuit law); Midwest Indus. v. Karavan Trailers, 175 F.3d 1356 (Fed. Cir. 1999) (state laws that relate to patent conduct will be interpreted under Federal Circuit law); University of Colorado Found. v. American Cyanamid, 196 F.3d 1366 (Fed. Cir. 1999) (inventorship under state tort law will be decided under Federal Circuit standards); Semiconductor Energy Labs. v. Samsung Electronics, 204 F.3d 1368, 1379 (Fed. Cir. 2000) (predicate acts for RICO claims will be decided as a matter of Federal Circuit law); Deirdre L. Conley, *Nobelpharma AB v. Implant Innovations Inc.,* 14 **Berkeley Tech. L.J.** 209 (1999) (discussing the expansion of Federal Circuit jurisdiction).

The stated goal of this increase in control is to establish uniformity in patent-related doctrines. Whether the Federal Circuit has increased uniformity in patent law is itself a matter of some dispute. *See, e.g.,* Matthew F. Weil & William C. Rooklidge, *Stare Un-Decisis: The Sometimes Rough Treatment of Precedent in Federal Circuit Decision-Making*, 80 **J. Pat. & Trademark Ofc. Soc'y** 791 (1998).

the underlying dispute was about an agreement rather than about patent infringement;[162] perhaps standard-setting cases should be no different.

If the jurisdictional question does present a serious problem, one possible solution is for the Federal Circuit to decide that *implied* as opposed to express licenses are questions of federal patent law. This would presumably entail deciding that the licenses in question were implied in law rather than implied in fact.[163] Certainly the cases are likely to arise, at least initially, as defenses to patent infringement suits which the Federal Circuit would likely hear anyway.[164] The court may be able to expand its authority to decide such questions as a matter of Federal Circuit law.[165] Whether it can or not, the number of cases is likely to be fairly modest, and the primary issue those cases present – what is a reasonable royalty – one that is fact-specific and not terribly dependent on general legal principles.

IV. Antitrust Implications of SSO IP Rules

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[162] *See* Henry, *supra* note __, at 48 ("a suit for damages on a patent license or patent assignment is not considered to be a federal remedy" and so is heard by state courts).

[163] *Cf.* F. Jay Dougherty, *Not a Spike Lee Joint? Issues in the Authorship of Motion Pictures Under U.S. Copyright Law*, 49 **UCLA L. Rev.** 225, 332 (2001) (suggesting that licenses be implied in copyright law).

[164] Even if the putative licensee is the plaintiff, federal courts normally still have jurisdiction under the Declaratory Judgments Act as long as the licensee is under imminent threat of suit and seeks a declaration that the patent is invalid or not infringed. *See* Foster v. Hallco Mfg. Co., 947 F.2d 469 (Fed. Cir. 1991); C.R. Bard, Inc. v. Schwartz, 716 F.2d 874 (Fed. Cir. 1983).

[165] The Supreme Court has so far put few constraints on the jurisdictional reach of the Federal Circuit. The lone exception is Cardinal Chemical v. Morton Int'l, 508 U.S. 83 (1993) (holding that Federal Circuit may not vacate invalidity judgment as moot merely because it finds no infringement). *Cf.* Mark D. Janis, *Patent Law in the Age of the Invisible Supreme Court*, 2001 **U. Ill. L. Rev.** 387 (lamenting the reluctance of the Supreme Court to intervene in patent cases). But a pending case interpreting section 1338 may change that. Holmes Group v. Vornado Air Circulation Sys., 122 S. Ct. 510 (2001) (granting certiorari on the question of whether cases that once included a patent law question but no longer do should be appealed to the Federal Circuit).

SSO rules regarding the ownership of intellectual property present a number of antitrust issues. In this article, I will focus on two issues specific to intellectual property: the possible antitrust liability of an intellectual property owner for violating an organization's rules and attempting to assert ownership over a standard, and the possible liability of the organization and its members for collaborating to compel a license from an intellectual property owner. These two issues are in some sense mirror images; one assumes that the SSO IP rule is procompetitive and punishes efforts to avoid it, while the other views the rule itself as anticompetitive because it reduces incentives to innovate.

In focusing on these two issues, which are specific to intellectual property rules, I have chosen not to discuss a variety of other interesting legal issues relating to standard-setting organizations. For example, some cases have suggested that SSOs themselves may violate section 1 of the Sherman Act as a cartel.[166] Other cases challenge efforts to exclude certain competitors from participating in an organization altogether, or from using the standard set by the organization.[167] A large number of cases challenge the selection of a standard itself on the merits;[168] still others challenge the process by which the standard was selected.[169] There are also cases that focus on the special problems of immunity associated with government-set standards,[170] and the liability of the SSO itself

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[166] *See, e.g.*, Addamax v. Open Software Found., 888 F. Supp. 274, 281, 284 (D. Mass. 1995), *aff'd* 152 F.3d 48 (1st Cir. 1998) (finding that antitrust challenge to SSO could proceed to trial under the rule of reason, but ultimately finding no liability). For a discussion of these cases, see **Herbert Hovenkamp et al., IP and Antitrust** §35.2 (2001).

[167] For a discussion of these cases, see *id.* §35.3.

[168] For a discussion of these cases, see *id.* §35.4.

[169] *See id*. §35.5.

[170] *See id*. §35.7.

for the acts of its members.[171] These issues have been discussed in detail elsewhere,[172] and I do not revisit those issues except to the extent they relate directly to SSO intellectual property rules.

A. Background on Antitrust Claims

Antitrust law protects competition and the competitive process, by preventing certain types of conduct that threaten a free market. For example, antitrust prohibits competitors from agreeing on the price they will charge consumers. It prohibits certain "predatory" practices designed to exclude competitors from the market, and it places certain limits on the behavior of firms with market power. The guiding principle of modern antitrust law is that competition is generally desirable in order to achieve economic efficiency, though other more "populist" goals are often articulated.[173]

Competition is good for a variety of reasons. Basic economics teaches that firms in competition will produce more and price lower than monopolists. Monopolists not only take money away from consumers by raising prices, but they impose a "deadweight loss" on society by reducing their output below the level which consumers would be willing to purchase at a competitive price. Monopoly has other problems as well. It inherently reduces consumer choice, and monopolists have fewer incentives to innovate than do competitive firms.

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[171] *See id*. §35.8.

[172] *See id*. §35. *See also* Mark A. Lemley, *Antitrust and the Internet Standardization Problem*, 28 **Conn. L. Rev.** 1041 (1996).

[173] On the dominance of efficiency over other rationales for antitrust, see I Areeda & Hovenkamp, **Antitrust Law** ¶¶ 100-113 (2d ed.).

Congress passed the first federal antitrust statute in 1890. The Sherman Act, as the statute is called, was a reaction to populist pressure on Congress to do something about the "trusts" that had come to dominate the American business landscape. The Sherman Act granted broad powers to government to break up trusts and other conspiracies in restraint of trade. The Sherman Act is still in force today.[174]

By their terms, the antitrust laws are broad indeed. In some sense, *every* contract necessarily restrains trade, since it forecloses options that were once open. Under the literal terms of section 1, employment contracts and sales contracts might be considered antitrust violations. In practice, courts quickly gave the Sherman Act a more restrictive interpretation. The Supreme Court read section 1 as prohibiting only *unreasonable* restraints of trade.[175] Much antitrust jurisprudence in the last century has attempted to delineate reasonable and unreasonable restraints of trade.

The courts also limited the reach of section 2, to ensure that successful businesses would not be punished because of their success. Because the antitrust laws provide for felony criminal punishments, private treble-damage actions and injunctions, and plaintiffs' attorneys' fees, the possibility of overdeterring legitimate business conduct is a real concern. To avoid this problem, courts have distinguished between possessing a

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[174] It provides in relevant part:

> **Section 1 [15 U.S.C. § 1]**. Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with a foreign nation, is declared to be illegal. . . .
>
> **Section 2 [15 U.S.C. § 2]**. Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a felony . . .

[175] *See* Standard Oil Co. of New Jersey v. United States, 221 U.S. 1 (1911).

monopoly and actively acquiring or maintaining a monopoly through anticompetitive conduct. Section 2 prohibits only the latter.

Thus, for our purposes the antitrust laws restrict business behavior in two principal ways:

Monopolization. It is not illegal to have a monopoly. However, monopolists and firms in the process of acquiring market power are subject to greater scrutiny of their behavior than other firms. A monopolist violates section 2 if it has "market power" (defined as the power to raise prices or exclude competition in a relevant market) and engages in anticompetitive conduct designed to maintain or extend that power.[176] Over time, courts have identified several anticompetitive practices (and the circumstances in which they are actionable). A company may also be guilty of "attempted monopolization" if it intends to monopolize a market, engages in anticompetitive conduct, and has a "dangerous probability of successful monopolization."[177]

To find that a defendant has "monopolized" a market, the court must first define the relevant market. Specifically, the court must identify a product or set of products and a geographic region in which the product is sold. Controlling such a market will allow a monopolist to raise prices without losing customers to competitors from outside the market. The definition of a relevant market and the analysis of power in that market are both extremely complex questions. A good deal of legal and economic work has gone into the attempt to define exactly what market power is.[178]

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[176] On monopolization generally, see III & IIIA Areeda & Hovenkamp, **Antitrust Law** chs. 6-8 (2d ed.).

[177] *See, e.g.*, Spectrum Sports v. McQuillen, 506 U.S. 447 (1993).

[178] For a more detailed discussion of this issue, see IIA Areeda & Hovenkamp, **Antitrust Law** ch. 5 (2d ed.).

Agreements. Courts have identified two basic types of agreements that may restrain trade -- agreements among competitors (called "horizontal restraints")[179] and agreements between buyers and sellers (called "vertical restraints").[180] Vertical restraints are generally less threatening to competition than horizontal restraints. With the exception of vertical minimum price fixing (or "resale price maintenance"), courts evaluate vertical restraints under the "rule of reason." Under the rule of reason, courts balance the anticompetitive harms of a restraint against its procompetitive benefits. Only those restraints which produce harms in excess of benefits to competition are deemed unreasonable.

Horizontal restraints are more troubling because they may allow the participants to create a cartel, which can then behave anticompetitively, much as a monopolist would. At first, most agreements between competitors were deemed illegal "per se," without any necessity for a weighing of harms and benefits to competition. Today, the Supreme Court has retreated from that position, recognizing that certain agreements among competitors may be efficient and procompetitive. Most horizontal restraints are now judged under the rule of reason. Only certain forms of "naked" agreements to fix prices or divide territories remain illegal per se.

B. Misrepresentations Regarding Intellectual Property

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[179] On horizontal agreements in antitrust law generally, see XI – XIII Hovenkamp, **Antitrust Law** chs. 19-22.

[180] Actually, the term "vertical restraints" refers to a whole class of transactions between companies in a vertical relationship in the chain of distribution, including dealers, franchisors, distributors, resellers, etc. On vertical agreements in antitrust law generally, see VI – XI Areeda et al., **Antitrust Law** chs. 14 (agreement), 16 (intrabrand agreements), 17-18 (tying and exclusive dealing).

1. Antitrust Theories[181]

A series of cases outside the intellectual property context involve efforts to manipulate a standard-setting process to produce a favorable outcome. Some of those cases involve efforts to control the process itself – by stacking meetings, manipulating voting rules, and the like.[182] An alternative form of manipulation involves the interested party lying to the standard-setting organization about a material fact. Of most relevance for our purposes, those misrepresentations often concern the existence or scope of the intellectual property right itself. In several recent cases, antitrust plaintiffs have alleged that defendants persuaded a standard-setting organization to adopt their proposed standard by misrepresenting its status as intellectual property. This misrepresentation sometimes takes the form of an omission (failing to assert ownership in the standard publicly until after it is adopted), and sometimes the form of an affirmative falsehood (signing a statement indicating that the party has no intellectual property rights in the proposed standard).[183] Two examples follow, presenting somewhat different issues.

In 1992, the Video Electronics Standards Association (VESA) adopted a computer hardware standard called the VL-Bus standard, which governs the transmission of information between a computer's CPU and its peripheral devices.[184] Each of the members voting to adopt the standard, including Dell Computer Corporation, was

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[181] Portions of this subsection have been republished in adapted form in **Hovenkamp et al.**, *supra* note __.

[182] *See* Allied Tube & Conduit Corp. v. Indian Head, Inc., 486 U.S. 492 (1988), **Hovenkamp et al.,** *supra* note __, at §35.5a.

[183] For a discussion of the problem of strategic misrepresentations and failures to disclose, see Kipnis, *supra* note __, at 102.

[184] *See* In re Dell Computer Corp., No. 931-0097 (F.T.C. 1995).

required by VESA rules to affirm that they did not own any patent rights that covered the VL-Bus standard.[185] Dell's representative did in fact make such a statement. Nonetheless, Dell had obtained a patent covering the standard, and asserted it against other VESA members using the VL-Bus standard eight months later, after the VL-Bus standard had been widely adopted in the marketplace. By working to adopt as a group standard a technology Dell allegedly knew was proprietary,[186] the FTC argued that Dell could obtain the help of its competitors in establishing a standard that it would ultimately be able to control. Dell and the FTC ultimately entered into a consent decree in which Dell agreed not to assert its intellectual property rights in the VL-Bus.[187]

More recently, Infineon alleged that Rambus had asserted against it a patent that Rambus obtained by fraud. Infineon argued that Rambus had filed patent applications relating to a standard for DRAM devices, waited until the standard was adopted, and then modified its patent applications so that the claims covered the standards.[188] The standard was adopted by JEDEC, the Joint Electronics Devices Engineering Council, a group of which Rambus was originally a member, though it later withdrew.[189] According to

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[185] *Id.* Many standard-setting organizations, including the American National Standards Institute (ANSI) and Semiconductor Equipment and Materials International (SEMI) have similar rules.

[186] Whether Dell in fact knew this is a matter of some dispute. In her dissent to the Commission's proposed consent decree, Commissioner Azcuenaga claimed that there was "no evidence to support such a finding of intentional conduct." *Dell Computer*, (Azcuenaga, Comm., dissenting). Nonetheless, the Commission's findings suggested that Dell's content was at least knowing, if not intentional.

[187] *See Dell Computer*, note 13.

[188] For a discussion of the facts of the case, see Richard H. Stern, *Rambus v. Infineon: The Superior Aptness of Common-law Remedies Than Antitrust for Standardisation Skullduggery,* 2001 **Eur. Intell. Prop. Rev.** 495.

[189] Rambus used a secret informant known as "Secret Squirrel" to keep abreast of JEDEC's standards decisions even after it withdrew from the organization. *See id.* at 495.

Infineon, Rambus' conduct violated JEDEC's rules, which required disclosure of both issued patents and pending patent applications.[190] The district court dismissed Infineon's antitrust claims after trial on the grounds that Infineon had not proven the relevant geographic market it argued that Rambus was attempting to monopolize.[191] Nonetheless, it upheld a jury verdict that Rambus had defrauded Infineon and JEDEC by failing to disclose its patent applications.[192] Further, the Federal Trade Commission is apparently investigating Rambus, Sun Microsystems and Unocal for similar conduct.[193]

A number of commentators have been critical of the FTC's consent decree in *Dell*.[194] Some of these complaints reflect concerns that case might be read broadly to impose liability on intellectual property owners in the absence of proof of intent and ability to monopolize a market. Those concerns are reasonable, and I discuss the proper elements of such a claim in detail below. But others have suggested that antitrust law

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[190] In fact, JEDEC's rule was changed in 1993 to explicitly address pending applications, but the court found that JEDEC members knew even before 1993 that the policy was intended to cover pending applications as well as issued patents. Rambus, Inc. v. Infineon Technologies, No. Civ. A3:00CV524, 2001 WL 913973 at *3 (E.D. Va. Aug. 9, 2001).

[191] *Id.* at *1.

[192] *Id.*

[193] Tony Smith, *Federal Trade Commission Probes Rambus, Sun*, **The Register**, Oct. 9, 2001; Alexei Barrioneuvo, *Exhausting Feud: A Patent Fracas Pits Unocal Corp. Against Big U.S. Oil Producers*, **Wall St. J.,** Aug. 17, 2000, at 1; http://www.nytimes.com/2001/08/15/business/15GAS.html?searchpv=day06 (discussing Unocal).

[194] *See, e.g.*, Teague I. Donahey, *Terminal Railroad Revisited: Using the Essential Facilities Doctrine to Ensure Accessibility to Internet Software Standards*, 25 **AIPLA Q.J.** 277, 322-23 (1997); B. Zorina Kahn, *Federal Antitrust Agencies and Public Policy Towards Antitrust and Intellectual Property*, 9 **Cornell J. L. & Pub.** Pol'y 133 (1999); Schallop, *supra* note __, at 233 (calling decision "infamous"); Schneck, *supra* note __, at 656-57. For somewhat more favorable treatment, see Dana R. Wagner, *The Keepers of the Gates: Intellectual Property, Antitrust, and the Regulatory Implications of Systems Technology*, 51 **Hastings L. Rev.** 1073, 1087-89 (2000); Gates, *supra* note __, at 624.

should not police disclosures to SSOs at all.[195] This absolutist approach strikes me as misguided. It is certainly feasible for an intellectual property owner to gain a market advantage by concealing its IP rights from an SSO long enough for the SSO to adopt a standard. And where adoption of the standard is likely to determine the way the market develops, one wielding the power to control that standard may ultimately control the market.

The most likely avenue of antitrust attack[196] against efforts to control the standard-setting process by failure to disclose an intellectual property right is an attempted monopolization claim under section 2 of the Sherman Act.[197] Attempted monopolization has three elements – a specific intent to monopolize, anticompetitive conduct in furtherance of that intent, and a dangerous probability of successful monopolization.[198] Even a full-blown monopolization claim requires proof of conduct "willfully intended" to further the acquisition or maintenance of monopoly power.[199] As a result, market power, anticompetitive conduct, and intent will all have to be proven to make out an antitrust violation. Even under such broader statutes as the FTC Act only

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[195] *Cf.* Townshend v. Rockwell Int'l Corp., 55 U.S.P.Q.2d 1011 (N.D. Cal. 2000) (rejecting antitrust claim based on patentee's alleged fraud before standards body, reasoning that since "a patent owner has the legal right to refuse to license his or her patent on any terms, the existence of a predicate condiction to a license agreement cannot state an antitrust violation."). The court's legal syllogism is inaccurate, as explained in I **Hovenkamp et al.**, *supra* note __, at §13.4b.

[196] Janice Mueller has suggested an alternative approach – application of the patent misuse doctrine to enforce a disclosure obligation. *See* Mueller, *Misuse*, *supra* note __. I discuss this approach in more detail *infra* notes__-__ and accompanying text.

[197] The FTC's claim against Dell was not for violation of either section of the Sherman Act, but rather was brought under section 5 of the FTC Act, which is enforceable only by the Commission. Section 5 generally tracks the requirements of section 2 of the Sherman Act. *See* FTC v. Sperry & Hutchinson Co., 405 U.S. 233 (1972); II **Antitrust Law** ¶ 302 (2d ed.).

[198] Spectrum Sports v. McQuillen, 506 U.S. 447 (1993). *See* §10.4 and IIIA **Antitrust Law** ¶¶ 804-808.

[199] United States v. Grinnell Corp., 384 U.S. 563 (1966).

intentional misrepresentations should constitute anticompetitive conduct. While an accidental failure to disclose the existence of a patent might have anticompetitive consequences, that sort of mistake is not the kind of conduct that should be punished as an antitrust violation.

Misrepresentations can constitute anticompetitive conduct in appropriate circumstances, though by no means do all or even most misrepresentations by a competitor raise antitrust concerns.[200] In the standard-setting context, the theory is that the patentee has manipulated the standard-setting process in a way that helps it achieve market power. Not only does the capturing party end up with exclusive control over the market standard, converting a group standard-setting process into a de facto one, but the capturing party can use the group standard to achieve a dominant position it could not have attained in an open standards competition. Had Rambus or Dell announced up front that the standards they were backing were proprietary, it is unlikely that the affected industries would have chosen those standards. At the very least, those standards would have faced stiffer competition within the SSO than they did. Put more formally, the competitive risk is that the misrepresentation will cause a standard-setting organization to adopt a standard it otherwise would have rejected, and that the adoption of that standard will in turn confer on the defendant market power it would not otherwise have obtained. This is a rather long chain of inferences, and each step in the chain should be elaborated.

First, an antitrust plaintiff must establish that the standard-setting organization adopted the standard in question, and would not have done so but for the

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[200] For a discussion of misrepresentation as anticompetitive conduct, see IIIA **Philip Areeda & Herbert Hovenkamp, Antitrust Law** ¶ 782b.

misrepresentation or omission. The failure to disclose the existence of a patent to a standard-setting organization will not affect the competitive marketplace if the standard-setting organization would have approved the standard even if it had known about the patent. Some standard-setting organizations have no policy with respect to intellectual property ownership in the standards they promulgate. Other organizations that do have a policy do not require disclosure of intellectual property rights.[201] Misrepresentation before such a standard-setting organization should not raise competitive concerns, even if it violates some other duty, because the misrepresentation did not cause the adoption of the standard, and therefore presumably did not contribute to or create market power. Indeed, in the absence of any affirmative requirement by the standard-setting organization that a party disclose its intellectual property rights, it probably doesn't even make sense to speak of a failure to disclose as a "misrepresentation" at all.[202]

A separate issue is raised by different standard-setting organizations that, notwithstanding their stated policy, have a history of promulgating standards even when they are aware that the proposer owns intellectual property rights in the standard. In that case, the misrepresentation has not necessarily caused the adoption of the standard. Given the standard-setting organization's willingness to consider proprietary standards, it is possible that they would have adopted the proposed standard even if they knew about the patent rights. Nonetheless, in such a case it is possible that the standard-setting organization would have decided differently had they been aware of the patent. This is

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[201] *See supra* notes __-__ and accompanying text.

[202] It is possible, however, that a false affirmative statement could create liability even in such an organization. For example, if a patentee were to falsely claim to own no intellectual property rights governing a proposed standard, such a claim could be the basis for an antitrust claim if organization members relied on it in deciding to adopt the standard, even if the organization had no explicit policy requiring disclosure.

particularly true for an organization like the ATM Forum, which requires supermajority approval of patented standards.[203] Thus, the first step in the causation chain requires factual inquiry in such a case.

Second, the standard-setting organization's decision to adopt the standard must in turn influence the market. Not all or even most standards adopted through a standard-setting organization control their relevant market.[204] Only in a limited number of cases will a standard achieve market dominance (or the "dangerous probability" of successful monopolization needed to sustain an attempted monopolization claim under section 2 of the Sherman Act). Efforts to capture an industry standard in any given case would constitute anticompetitive conduct precisely in the situation where those efforts are likely to threaten monopolization -- that is, where the standard being set is one which will likely dominate the industry.[205] Market power may be the necessary result of patent enforcement in some cases – those few cases in which the patent actually confers an economic monopoly -- while in others the patent owner's control over the market stems from a failure of information in the market, a failure which the patent owner herself has induced.[206] Market control is most likely when the standard-setting organization

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[203] *See supra* note __.

[204] *See* **Hovenkamp et al.,** *supra* note __, at §35.4a2.

[205] While such a market power determination is necessarily fact-specific, the same can be said of any attempted monopolization case. Factors such as the collective market share of members of the standard-setting organization or the past success of group standards may be evidence of likelihood of successful monopolization.

By contrast, consider the situation in which an intellectual property owner merely encourages the adoption of its standard by an independent agency, without any misrepresentations or intent to deceive. Absent such conduct, benefiting from a standard-setting body's decision does not create a section 2 case.

[206] In this sense, one might think of a patent owner who fails to disclose the patent to a standard-setting group as in a position analogous to the defendant in *Eastman Kodak v. Image Technical Servs.*, 504 U.S. 451 (1992). Where information is imperfect, markets based on that information will be imperfect also.

members collectively have a dominant share of the market, past standards the standard-setting organization has promulgated have dominated the market, standard-setting is exclusive (that is, only one standard can be selected), and the intellectual property owner is unwilling to license the undisclosed patent on reasonable and nondiscriminatory terms. In the absence of some these conditions, even if the patentee's nondisclosure convinces the standard-setting organization to accept the proposed standard, the promulgation of that standard is less likely to affect competition. Because of this requirement, nondisclosure is likely to violate the antitrust laws only where interface standards rather than quality or safety standards are at stake. Quality and safety standards are normally nonexclusive, while the selection of an interface standard is more likely to exclude other possible interface protocols. Further, interface standards tend to exist in markets with network effects, and market power is more likely in such an industry.

Even if the standard does achieve market power, that power must be attributable at least in substantial part to the actions of the standard-setting organization. If a standard would have become dominant anyway in a de facto standards competition, its adoption by the standard-setting organization (and thus the patentee's misrepresentation) has not caused the market dominance.[207] For example, if the patent is one that actually confers an economic monopoly because of the absence of feasible noninfringing alternatives, it is the patent itself – not the patentee's failure to disclose it to the standard-setting organization – that restricts competition in the market.

Those in possession of the information can use their knowledge to the advantage of their competitors or consumers. *See* Mark R. Patterson, *Product Definition, Product Information, and Market Power: Kodak in Perspective*, 73 **N.C.L. Rev.** 185 (1994).

[207] On the difficulty of proving causation in the innovation context, see David McGowan, *Innovation, Uncertainty, and Stability in Antitrust Law*, 16 **Berkeley Tech. L.J.** 729 (2001).

Finally, assuming both market power (or a dangerous probability of its acquisition) and anticompetitive conduct helping to acquire or maintain that power can both be proven, an antitrust plaintiff must prove that the defendant's failure to disclose relevant intellectual property rights was intentional and not an oversight. Obviously, such an intentional failure to disclose is relevant only for that subset of organizations that impose a disclosure requirement. Among those groups, one might argue that failure to disclose is problematic whether or not it was intentional. While that argument may have some force when it comes to contract and perhaps even intellectual property law, antitrust law properly requires more. For an intellectual property owner to violate the antitrust laws, and be subject to treble damages, the law requires willful conduct in an effort to monopolize. Inadvertence should not suffice.

An actual intent to monopolize is difficult to prove, and in some cases can be inferred from conduct.[208] In many standard-setting cases, such an inference will be easy to draw. In *Allied Tube,* for example, the conduct the defendant engaged in clearly seemed designed to influence the standard-setting process.[209] And in many cases of misrepresentations concerning intellectual property, an inference might be drawn from facts suggesting that knowledge was likely (for instance, where the inventor of the patent is also the person signing a statement to the standard-setting organization, as has happened in several recent cases). One might also draw an inference of at least reckless indifference from an intellectual property owner's failure to do any investigation,

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[208] *See, e.g.*, Handgards, Inc. v. Ethicon, Inc., 743 F.2d 1282, 1293 (9th Cir. 1984); William Inglis & Sons Baking Co. v. ITT Continental Baking Co., 668 F.2d 1014, 1027-28 (9th Cir. 1981).

[209] *Allied Tube*, 486 U.S. at 492. In that case, the defendant successfully persuaded the National Fire Protection Association not to certify polyvinyl conduit as fire-safe insulation by recruiting new "members" of the NFPA, flying them to the meeting, and instructing them to vote down the proposal.

particularly in that small subset of SSOs that impose an obligation to search one's own patent portfolio. A court should not be too quick to draw an inference of intent, however, because in many cases deciding whether a patent covers a particular standard will require an individual to construe the meaning of the patent claims. Patent claim construction is a complex and uncertain legal inquiry,[210] and courts should be hesitant to impute knowledge of a patent's scope if there is evidence that the defendant believed in good faith that the patent that would not cover the standard.[211] By contrast, where the evidence is indicative of bad faith, courts should be more willing to infer intent. For instance, based on the facts found by the court in *Rambus*, it appears Rambus entered into a course of conduct designed to deceive JEDEC about what patents and pending applications it owned. That course of conduct may constitute evidence from which a court could infer bad intent. Similarly, a court might want to infer bad intent from truthful but misleading conduct, such as failing to fill out the form required by the SSO affirming that all intellectual property rights have been disclosed.

Once the requirements for an antitrust violation through willful failure to disclose have been met, the question becomes whether an intellectual property owner can avoid

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[210] *See* Markman v. Westview Instruments, 517 U.S. 370 (1996).

[211] *Cf.* Mitek Surgical Prods. v. Arthrex, Inc., 230 F.3d 1383 (Fed. Cir. 2000) (suit not objectively baseless where alternative patent claim constructions were both plausible). This will of necessity be a very limited number of cases. By hypothesis, the defendant is now asserting in litigation that the patent *does* cover the standard. Thus, only where the defendant can prove that it legitimately believed one thing, but now legitimately believes the opposite, will this issue be relevant. It is worth noting, however, that in *Rambus v. Infineon* the court ultimately concluded both that Rambus' patent infringement claim was frivolous – that is, that Rambus' patent clearly did not cover the JEDEC standard – and that Rambus committed fraud by intentionally failing to disclose the patent to JEDEC. These findings are in some tension, since if the patent clearly doesn't cover the standard Rambus should have no obligation to disclose it to JEDEC. Rambus was unsuccessful in pressing that argument, however, likely because it *was* claiming that the patent covered the standard.

the disclosure obligation by withdrawing from the SSO.[212] At the outset, it is relatively easy to dismiss some efforts to evade the SSO IP rules. A company should not be permitted to resign from the organization the day before the vote and rejoin the day after, for example. Doing so would make a mockery of the disclosure requirement.

A more serious question is presented when an intellectual property owner decides to withdraw from an SSO altogether rather than disclose its intellectual property interest in a pending standard. Here it is the timing of the withdrawal that is critical. Obviously a company that once joins an SSO is not forever after bound to disclose its IP rights to the organization. At the same time, IP rights that already existed (or for which applications were pending) while the company was a member of the organization and which cover standards under consideration while the company was a member should generally be understood to fall within the disclosure obligation. A company that strategically withdraws from an organization to avoid disclosure may create the same sorts of problems that nondisclosure creates, though sometimes the act of withdrawal itself will serve to draw attention to the company's IP portfolio.

These requirements are fairly stringent. As a result, antitrust liability for failure to disclose will likely be rare, limited to those situations in which nondisclosure is both motivated by a desire to capture market share and likely to do so. Thus, while antitrust can serve as a useful check on such anticompetitive conduct, it cannot substitute for a general enforcement regime for disclosure rules.[213]

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[212] Withdrawal is more likely as part of an effort to avoid reasonable and nondiscriminatory licensing obligations, rather than disclosure obligations. I discuss the consequences of withdrawal for licensing obligations in more detail *supra* notes __-__ and accompanying text.

[213] I therefore disagree with Wagner, who argues that the *Dell* case reflects an implicit shift from a property rule towards a general liability rule in standard-setting. *See* Wagner, *supra* note __, at 1089-93.

2. Common Law Alternatives to Antitrust

Alternatively, it is possible that the failure to comply with a by-law restricting enforceability of intellectual property rights could constitute fraud or misrepresentation. This is most likely where (as in the *Dell* case discussed above) the patentee has an obligation to disclose the existence of an intellectual property right, and knowingly fails to do so or affirmatively states that one does not exist. A fraud theory may be a stronger enforcement mechanism for the standard-setting organization than contract, in that it offers plaintiffs the possibility of recovering their actual damages. And it may be a less cumbersome tool than an antitrust claim, which requires extensive inquiry into market definition and market power. Further, fraud may reach beyond antitrust law, since members of an SSO presumably could be defrauded to their detriment even in circumstances in which it was unlikely the intellectual property owner could exercise control over a relevant economic market.[214] The *Rambus* case discussed above was ultimately decided on fraud and not antitrust grounds, for example.

But there are limitations on the use of fraud as a substitute for antitrust. Most notably, a fraud theory must of necessity be based on some duty to the plaintiff, which would seem to preclude suits by consumers or by non-members of the SSO.

Janice Mueller has recently suggested another alternative: applying the patent misuse doctrine to preclude enforcement of patents that an intellectual property owner willfully failed to disclose to a standards body.[215] Using misuse doctrine has some

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[214] *See* Stern, *supra* note __, at 495 (discussing the relative merits of fraud and antitrust claims in this situation).

[215] Mueller, *Misuse, supra* note __.

advantages, notably avoiding the more ponderous machinery of antitrust.[216] But misuse has problems as well. First, it is not clear how a misuse claim would fare under existing law, since the Patent Misuse Reform Act provides that refusal to license a patent cannot constitute misuse.[217] There may be ways around this – the bad conduct might be the misleading silence, rather than the refusal to license – but the Federal Circuit is likely to be skeptical of misuse claims based on a unilateral refusal to license.[218] Second, the remedy for patent misuse – a judicial refusal to enforce the patent at all[219] – may be overbroad in circumstances in which the patent also covers technologies not included in the standard.

C. Defending Against Intellectual Property as an Antitrust Violation[220]

1. Intellectual Property as Procompetitive

The typical antitrust analysis of intellectual property and standard setting assumes that the existence and enforcement of intellectual property rights poses the potential risk to competition. Courts inquire into whether an intellectual property right confers market power, or alternatively whether that right has been used to restrict competition in an

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[216] On differences between patent misuse and antitrust law, see **Hovenkamp et al.,** *supra* note __, at §3.2c; Mark A. Lemley, Comment, *The Economic Irrationality of the Patent Misuse Doctrine,* 78 **Calif. L. Rev.** 1599 (1990).

[217] 35 U.S.C. § 271(d)(4).

[218] *Cf.* C.R. Bard, Inc. v. M3 Systems, 157 F.3d 1340, 1373 (Fed. Cir. 1998) ("the catalog of practices labelled 'patent misuse' does not include a general notion of 'wrongful' use").

[219] *See* Morton Salt Co. v. G.S. Suppiger & Co., 314 U.S. 488 (1942); I **Hovenkamp et al.,** *supra* note __, at §3.6a.

[220] Portions of this section have been republished in adapted form in **Hovenkamp et al.,** *supra* note __.

industry. This standard approach makes sense in light of the classical conception of the intellectual property-antitrust conflict: that intellectual property rights represent a necessary interference with an otherwise competitive market.[221]

There is an alternate way to think of intellectual property and antitrust, however. In industries in which continual innovation is important to social welfare, intellectual property can be procompetitive on balance insofar as it encourages more innovation than it restrains. On this theory, interfering with the acquisition and enforcement of intellectual property rights, while procompetitive in the short run, actually harms competition in the long run by reducing innovation. This was the FTC's theory in the Intel consent decree, for example.[222] Other examples of procompetitive uses of intellectual property in the standard-setting context are possible in industries in which standards evolve quickly. In several instances, an intellectual property owner has used its intellectual property rights to ensure that developments using a standard were interoperable, and to oppose efforts to "split" the standard.[223]

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[221] *See generally* **Hovenkamp et al.,** *supra* note __, at §1.3. Among the voluminous literature on the overlap between intellectual property and antitrust law, see **Robert D. Anderson & Nancy T. Gallini, Competition Policy and Intellectual Property Rights in the Knowledge-Based Economy** (1998); **Ward Bowman Jr., Patent and Antitrust Law: A Legal and Economic Appraisal** (1973); William Baxter, *Legal Restrictions on Exploitation of the Patent Monopoly: An Economic Analysis*, 76 **Yale L.J.** 267 (1966); Richard Buxbaum, *Restrictions Inherent in the Patent Monopoly: A Comparative Critique,* 113 **U. Pa. L. Rev.** 633 (1965); Louis Kaplow, *The Patent-Antitrust Intersection: A Reappraisal*, 97 **Harv. L. Rev.** 1813 (1984); Tracy R. Lewis & Dennis Yao, *Some Reflections on the Antitrust Treatment of Intellectual Property*, 63 **Antitrust L.J.** 603 (1995); Willard Tom & Josh Newberg, *Antitrust and Intellectual Property: From Separate Spheres to Unified Field,* 66 **Antitrust L.J.** 167 (1997).

[222] For a detailed discussion of the FTC's case against Intel, see *id.* §13.4d. Other government cases premised on threats to future innovation include *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001), and *United States v. Visa U.S.A.*, 163 F. Supp. 2d 322 (S.D.N.Y. 2001).

[223] For example, Eolas Technologies owns a patent which allegedly covers the technology of embedding executable content in the World Wide Web, and which (if valid) would allow it to control the production of "applets" by Sun and others. Eolas has agreed to license the patent royalty-free to any company that will adopt a particular open applications program interface (API). In effect, Eolas is using its potential control

One example of a company making such a use of intellectual property rights is Sun's intellectual property litigation against Microsoft over the compatibility of the "Java" platform. The fundamental issue in the case concerned Microsoft's alleged alteration of certain aspects of the Java technology. Sun contended that Microsoft was attempting to co-opt the Java platform (which is "platform independent," meaning it runs on many different operating systems) by designing a separate, proprietary "version" of Java that runs on Windows, but not on competing operating systems. Sun's concern was that a Windows-specific version of Java could undermine the potential transition to platform-independent competition. Microsoft claimed it altered the Java specifications to "optimize" Java's performance with Windows.

This dispute thus raises some fundamental antitrust and intellectual property issues. If Microsoft could alter the Java technology to disrupt platform-independence, it could short-circuit the promise of Java insofar as operating systems competition is concerned.[224] Indeed, as long as Microsoft's version of Java works *better* with Windows than others, users may gravitate towards that version. Microsoft's historical experience might reasonably give it some confidence that by splitting the standard into incompatible, proprietary versions, Microsoft could engineer a *de facto* standards competition that it stands a good chance of winning. If Java were truly an open platform, owned by no one, it is hard to see how Sun could prevent this. Ironically, Sun's reservation of its intellectual property rights in Java provides the means to prevent

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over the applet market to force the industry to an open rather than a closed set of standards. *See* Michael Doyle, *Proposing a Standard Web API,* **Dr. Dobb's J.**, Feb. 1996.

[224] *See* Sun Microsystems, Inc. v. Microsoft Corp., 999 F. Supp. 1301, 1310 (N.D. Cal. 1998) (noting that Microsoft's argument in the case "would essentially allow Microsoft to destroy the cross-platform compatibility of the JAVA programming environment.").

unauthorized alteration of the standard and therefore preserve the integrity of a cross-platform standard that might otherwise be fragmented.[225]

With the possibility that in certain circumstances intellectual property rights can promote rather than hinder competition firmly in mind, one might look at SSO rules restricting ownership of intellectual property in a new light. If intellectual property is procompetitive, SSOs and their members might violate the antitrust laws by collectively attempting to defend against patent enforcement or compel licensing of those patents.

2. Joint Defense Agreements as Licensee Cartels

It is well established in antitrust law that monopsony and buyers' cartels are just as pernicious to competition as monopoly and sellers' cartels.[226] The risks mirror the risks from seller's cartels – prices will be artificially depressed rather than artificially raised. Legal treatment of monopsony likewise mirrors the treatment of monopoly. Thus, in *National Macaroni Manufacturers Ass'n*, the Federal Trade Commission challenged an agreement by members of a pasta manufacturers' trade association to set standards for the composition of the pasta they would sell. The Commission successfully argued that the standards were intended to artificially depress the price of durum wheat, a traditional input into pasta.[227] The fact that the horizontal agreement injured sellers rather

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[225] For a detailed discussion, see Mark A. Lemley & David McGowan, *Could Java Change Everything? The Competitive Propriety of a Proprietary Standard*, 43 **Antitrust Bull.** 715 (1998).

[226] For detailed discussion, see XII **Herbert Hovenkamp, Antitrust Law** ch. 20B; **Roger D. Blair & Jeffrey L. Harrison, Monopsony: Antitrust Law And Economics** (1993); Roger D. Blair & Jeffrey L. Harrison, *Cooperative Buying, Monopsony Power, and Antitrust Policy*, 86 **Nw. U. L. Rev.** 331, 338 (1992).

[227] 65 F.T.C. 583 (1964), *enforced*, 345 F.2d 421 (7th Cir. 1965).

than buyers, and drove prices down rather than up, did not save it from per se condemnation.

When intellectual property rights are at stake, standard-setting organizations sometimes act as a buyers' cartel (or more precisely, a licensee cartel). Standard-setting organizations regularly serve as a sort of clearinghouse for the defense of infringement suits in which patents are asserted against an entire industry. They may agree to share costs, or to jointly hire lawyers to opine on the validity of the patent. Joint defense agreements also sometimes bind the members not to settle independently of the group as a whole. Because this sort of joint defense against patentees involves concerted action by competitors, it raises many of the same economic concerns as a traditional cartel. By negotiating jointly, the members of an industry may be able to obtain a license at a lower price than if they bargained individually. Indeed, some early industry associations were apparently set up primarily in order to coerce lower licensing fees by preventing the members from settling patent suits independently.[228]

On the procompetitive side of the ledger, joint defense presumably involves substantial efficiencies resulting from reduced legal costs. Further, to the extent that society perceives enforcement of the intellectual property right itself as undesirable – perhaps because the intellectual property owner is holding up an industry that did not in fact benefit from its invention – SSO joint defense agreements may be an effective means of responding to that threat. There are unquestionably circumstances in which IP

[228] *See, e.g.*, **Steven W. Usselman, Regulating Railroad Innovation: Business, Technology, and Politics in America, 1840-1920** (2001) (discussing the Eastern and Western Railroad Presidents' Conference).

litigation is filed for just such a purpose,[229] and a fair bit of academic literature suggests that "clearing" the thicket of overlapping intellectual property rights may be necessary for true innovation to occur.[230] In cases in which different parties hold patents on necessary inputs to a particular standard, solving the double marginalization problem can also be a substantial efficiency.[231]

Defense against an actual lawsuit is protected by *Noerr-Pennington* immunity unless the "petitions" (here, the defensive court filings) amount to a "sham."[232] The same is true of coordinated efforts to defend against a lawsuit.[233] Thus, most such joint defense

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[229] The most infamous "holdup" artist in intellectual property cases was Jerome Lemelson, who enforced his hundreds of patents against companies in a huge variety of industries, but never himself made any products. For a discussion, see M. Scott Carey, *Ford Motor v. Lemelson*, 13 **Berkeley Tech. L.J.** 219 (1998).

[230] Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools and Standard Setting,* in **Innovation Policy and the Economy** (Adam Jaffe, Joshua Lerner, and Scott Stern, eds., National Bureau of Economics, 2001); Michael A Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 **Sci.** 698 (1998); Robert P. Merges, *Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents*, 62 **Tenn. L. Rev.** 75 (1994); Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 **Tex. L. Rev.** 989 (1997); Arti K. Rai, *Fostering Cumulative Innovation in the Biopharmaceutical Industry: The Role of Patents and Antitrust*, 16 **Berkeley Tech. L.J.** 813 (2001).

[231] The double marginalization problem occurs when two monopolists own complementary inputs, and each price at the monopoly level. The resulting systems price is inefficiently high. *See infra* note __. *Cf.* Douglas Lichtman, *Property Rights in Emerging Platform Technologies*, 29 **J. Legal Stud.** 615 (2000) (making a similar argument in favor of vertical integration in computer systems).

[232] For detailed discussion of *Noerr* immunity, see I **Areeda & Hovenkamp, Antitrust Law** ¶ 201-208. On the question of whether concerted agreements qualify for *Noerr* immunity, see *id*. ¶ 203i; XII **Hovenkamp, Antitrust Law** ¶ 2044.

[233] *See* Lemelson v. Bendix Corp., 621 F. Supp. 1122 (D. Del. 1985) (joint defense in patent infringement suit not antitrust violation); XII Hovenkamp, **Antitrust Law** ¶2045. *Cf.* In re Circuit-Breaker Litigation, 984 F. Supp. 1267 (C.D. Cal. 1997) (joint suit by trademark plaintiffs protected by *Noerr*).

In *FTC v. Superior Court Trial Lawyers Ass'n*, 493 U.S. 411 (1990), the Court held illegal per se and unprotected by *Noerr* a group boycott by trial lawyers of indigent counsel appointments. The lawyers were seeking to obtain a higher billable rate for the work. The reason the SCTLA boycott did not qualify may be that the government was the buyer in the market and was therefore the target of the boycott, rather than a decision-making body petitioned in its governmental capacity. Thus, *SCTLA* does not stand for the proposition that joint petitions lose immunity.

agreements will be immune from antitrust scrutiny. In *Gould v. Control Laser Corp.*,[234] the court held that an agreement to share the costs of litigation against a patent was ordinarily legal, and "only in the most egregious circumstances would the Sherman Act proscribe such an agreement."[235] Immunity should also apply to joint petitions in the administrative context, as where the standard-setting organization submits evidence concerning a pending patent application or petitions the PTO for reexamination.

It is less clear, however, whether agreements that contemplate litigation or administrative action but stop short of it trigger petitioning immunity. The Federal Circuit has indirectly suggested that agreements in advance of litigation to defend a competitor if they are sued for patent infringement are not immune under *Noerr* and may violate the antitrust laws.[236] On the other hand, it is surely permissible to agree to indemnify a customer who is sued for patent infringement because they used a supplier's product. Efforts by a standard-setting organization to gather prior art in advance of anticipated litigation occupy a gray area in the law between these two positions. The better rule is to protect such ancillary activity, just as threats to file a lawsuit are protected in most circuits.[237]

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[234] 462 F. Supp. 685 (M.D. Fla. 1978).

[235] *Id*. at 692. *Accord* Jones Knitting Corp. v. Morgan, 361 F.2d 451 (3rd Cir. 1966) (condemning joint defense agreement, but only because it went beyond the sharing of litigation costs and attempted to control the ability of the members to settle the case independently).

[236] *See* Rodime v. Seagate Technology, 174 F.3d 1294 (Fed. Cir. 1999). In that case, the court merely opined that *Noerr* immunity was unlikely and that the facts "give rise to an inference" that the antitrust laws have been violated.

[237] *See* I Areeda & Hovenkamp, **Antitrust Law** ¶ 503e; *Coastal States Marketing, Inc. v.* Hunt, 694 F.2d 1358 (5th Cir. 1983). But *see* Cardtoons, L.C. v. Major League Baseball Players Ass'n, 208 F.3d 885 (10th Cir. 2000) (en banc) (holding threats to sue unprotected by *Noerr* in a non-antitrust case). For further discussion of immunity for threats to sue, see **Hovenkamp et al.,** *supra* note __, at §11.3b5.

A somewhat different problem is presented by concerted decision-making by defendants during litigation. Defendants with common interests who act jointly must retain independent decision-making authority. If they act in concert in deciding not just how to litigate the case, but whether to settle (and on what grounds), they have crossed the line into a conspiracy to restrain trade. In *Prime Time 24 Joint Venture v. NBC*,[238] the Second Circuit held that a conspiracy between copyright owners not to settle (i.e. deal) with an infringement defendant could violate section 1. The court emphasized that "copyright holders may not agree to limit their individual freedom of action in licensing future rights to such an infringer."[239] The same is true in the reverse situation as well – where a group of accused infringers jointly agree not to settle with a plaintiff.[240] This may put a law firm representing each of the defendants in a difficult position, since it must advise each client independently and may not coordinate settlement strategies. Nonetheless, at least one court has rejected an antitrust claim based on joint decision-making notwithstanding the fact that the same firm represented all the defendants.[241]

3. SSO Rules Restricting Intellectual Property As Antitrust Violations

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[238] 219 F.3d 92 (2d Cir. 2000).

[239] *Id.*

[240] *See, e.g.*, Jones Knitting Corp. v. Morgan, 361 F.2d 451 (3rd Cir. 1966) (such an agreement illegal *per se*); Gould v. Control Laser Corp., 462 F. Supp. 685, 691-93 (M.D. Fla. 1978) (such an agreement treated under the rule of reason; granting summary judgment because plaintiffs offered no evidence that joint defense agreement extended to agreement on terms of settlement).

[241] Lemelson v. Bendix Corp., 621 F. Supp. 1122 (D. Del. 1985).

A somewhat more complex issue is presented by standard-setting organization rules regarding ownership or licensing of intellectual property outside the litigation context. If intellectual property rights are procompetitive because they encourage innovation, might a standard-setting organization violate the antitrust laws by requiring intellectual property owners to limit or forfeit their rights as a condition of standardization?[242] The standard-setting organization cannot take shelter under the *Noerr-Pennington* doctrine, as making and enforcing by-laws does not relate directly to petitioning the government.[243] The answer may depend on what the by-laws say.

(a) Disclosure Requirement.

To begin, consider a standard-setting organization like VESA or ANSI, which requires disclosure of an intellectual property right to the organization before the group votes on the standard but does not otherwise interfere with ownership. In such a case, it seems unlikely that a disclosure requirement standing alone would be anticompetitive. The requirement has an information forcing effect, and it is possible in some unusual circumstances that requiring disclosure will interfere with an intellectual property owner's trade secret rights.[244] This is unlikely to be a major concern, however, particularly since

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[242] For an argument that SSO IP rules are used to facilitate cartels, see Peter Grindley et al., *Standards Wars: The Use of Standard Setting as a Means of Facilitating Cartels in Third Generation Wireless Telecommunications Standard Setting*, 3 **Int'l J. Comm. L. & Pol'y** 3 (Summer 1999), http://www.ijclp.org/3_1999/ijclp_webdoc_2_3_1999.html

[243] This is true of private standard-setting organizations. For rules relating to petitioning government-run standard-setting organizations, see **Hovenkamp et al.,** *supra* note __, at §35.7.

[244] Standard-setting organization rules restricting ownership or requiring disclosure of intellectual property normally apply to patents, which are necessarily public documents. Some standard-setting organizations extend the rule to pending patent applications, a logical move since they are worried about pending applications that will issue once the standard is adopted. Because some patent applications can also be trade secrets (specifically, those in their first 18 months of prosecution, or which are filed only in the U.S.,

it is only the existence and scope of the patent or patent application, not the technical know-how of the invention itself, that will normally have to be disclosed. While the very existence of a patent application may sometimes be a valuable secret, in the context of a publicly adopted standard the legitimate value of this particular secret does not seem very high. Withholding the information would be most valuable as a tool for deception, as in the *Dell* case.

The standard-setting organization, on the other hand, has a presumptively legitimate reason for requiring the information: it wishes to make a fully informed decision on whether to adopt a particular standard. Standard-setting organizations should be given significant leeway to adopt reasonable rules necessary to the operation of their business, even if those rules indirectly regulate the circumstances under which competition occurs.[245] Further, it is difficult to see how consumers will be harmed by a disclosure requirement. Presumably the intellectual property owner is free to decide whether to submit its proposal for consideration as a standard, and the SSO is free to decide whether to adopt the standard notwithstanding the existence of the intellectual property right.

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see 35 U.S.C. § 122, and which are not embodied in a product sold on the open market), it is possible that a disclosure rule will require a trade secret owner to disclose its secret to competitors.

[245] In *Chicago Board of Trade v. United States*, 246 U.S. 231 (1918), the Court gave substantial leeway to a commodities exchange to set the rules and conditions for sale in the exchange. The Court explored a number of allegedly beneficial aspects of the rules, though many of those "benefits" in fact seemed to restrict competition.

In *Silver v. New York Stock Exchange*, 373 U.S. 341, 360 (1963), the Court held that regulatory oversight over an industry must be taken into account in an antitrust analysis, and that "under the aegis of the rule of reason, traditional antitrust concepts are flexible enough to permit the [organization] sufficient breathing space within which to carry out the mandate" of the regulating statute. It is not clear that the Court would give the same leeway to organizations not subject to significant government regulation, however.

A different type of challenge to a standard-setting organization disclosure rule might assert that the purpose of requiring disclosure is to permit the standard-setting organization to refuse to adopt any standard covered by an intellectual property right. This is in effect a claim that the standard-setting organization rule is not really just a disclosure rule, but in fact is a no-intellectual-property rule. I discuss such rules below.[246]

(b) Royalty-Free or Compulsory Licensing Requirement.

Where the standard-setting organization requires members to license their intellectual property rights, either to other members or to all comers (as the ISO does), or where it requires members to forego intellectual property protection for a standard altogether (as the IETF used to do), more difficult questions are presented. The fundamental right granted intellectual property owners is the right to exclude others; forcing them to give up that right restricts the value they can get from their intellectual property. Further, while some variants on the compulsory licensing rule permit the intellectual property owner to set the royalty rate, so long as it is not discriminatory, others restrict the royalty that can be charged or require intellectual property owners to forego a royalty altogether.[247] Such rules may reduce the incentive to develop potential new standards, or the incentive to participate in cooperative standard setting rather than "going it alone" in a de-facto standards competition. Both the Antitrust Division and the

[246] *See infra* notes __-__ and accompanying text.

[247] It is not clear into which category we should put a requirement that the intellectual property owner license its patent on "reasonable" terms. If the reasonableness requirement has teeth, it may permit or even require standard-setting organization oversight of the rate charged. If on the other hand it is largely precatory, the intellectual property owner has much more freedom.

Federal Trade Commission have taken the position that a standard-setting organization rule prohibiting members from owning intellectual property rights in a standard may violate the antitrust laws.[248]

In evaluating such a claim, several mitigating circumstances and potential justifications should be taken into account. First, because a standard-setting organization rule should be treated under the rule of reason, rather than the per se rule, a court must inquire into market conditions before condemning any such policy. Standard-setting organizations whose members do not collectively have market power will find it difficult to influence the market in a way that restricts innovation even if that is their goal.

The second issue is the alternatives available to members. Companies who do not want to relinquish rights in their intellectual property have a choice -- they can decline to participate in the standard-setting organization altogether, or withdraw from

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[248] In a series of negotiations regarding rules promulgated by the European Telecommunications Standards Institute (ETSI), the United States put substantial pressure on ETSI to back down from its original rule requiring disclosure and nondiscriminatory licensing of member intellectual property rights embodied in ETSI standards. This approach has precedent in some earlier U.S. cases condemning patent pools and cross licenses. *See* United States v. New Wrinkle, 342 U.S. 371 (1951). Further, there were apparently some legitimate complaints about the reciprocity of the ETSI licensing provisions. *See* Allen N. Dixon, *The ETSI Complaint and the European Commission's Communication on Standardization* (working paper 1995); Prins & Schiessl, *The New Telecommunications Standards Institute Policy: Conflicts Between Standardisation and Intellectual Property Rights*, 8 **Eur. Intell. Prop. Rev.** 263 (1993). For discussions of the evolving ETSI rule on intellectual property rights, see Raymond T. Nimmer, *Standards, Antitrust and Intellectual Property*, in **Intellectual Property Antitrust** (P.L.I. 1995); Bekkers & Liotard, *supra* note __ ,at 122; Mark Shurmer & Gary Lea, *Telecommunications Standardization and Intellectual Property Rights: A Fundamental Dilemma?*, in **Standards Policy for Information Infrastructure** 378, 392-96.

In *In re American Society of Sanitary Engineering*, 106 F.T.C. 324, 329 (1985), the FTC entered into a consent decree with a standard-setting organization that forbade it from rejecting proposed standards solely on the grounds that they were patented. The underlying FTC complaint had alleged that the ASSE policy "had no reasonable basis or justification" and amounted to a concerted refusal to deal. *Id.* It is significant that the standard in question in this case was inclusive rather than exclusive, so that allowing the complaining party's product to be included in the standard would not have restricted the rights of other members to make use of other approved technologies.

consideration of a particular standard in which they have an interest.[249] Because standard-setting organization rules necessarily bind only members of the organization, exit is always an option. The only companies for whom this will not be a realistic choice are ones whose goal is to push for group adoption of a standard they own the rights to. But there is no reason such companies should have it both ways. If the SSO permits licensing on reasonable and nondiscriminatory terms, intellectual property owners do not need to retain any further rights unless their true goal is to hold up members after the standard is adopted. Even if the SSO requires royalty-free licensing, the option of exit is not terribly onerous. If the intrinsic value of the proposed standard is great enough, the SSO may adopt it anyway – or if the group won't, the market may.

Finally, a rule requiring the licensing of intellectual property may actually be more efficient than the alternative. If a standard-setting organization is symmetrical -- that is, if it is not dominated by a single company, and if members are on average equally likely to own intellectual property rights in a proposed standard -- the standard-setting organization does not really have the structure of a buyer's cartel. Instead, the intellectual property policy serves a purpose analogous to a cross-licensing scheme between blocking patents.[250] Particularly when different parties may lay claim to the same standard, a rule requiring licensing expands competition by insuring that all members of the organization are free to build products incorporating that standard. This clearing of the "patent thicket"[251] is particularly important to standardization efforts in industries like

[249] This assumes such a withdrawal will be effective in avoiding a licensing obligation. On this point, *see supra* notes __-__ and accompanying text.

[250] *See* **Hovenkamp et al.,** *supra* note __, at ch. 34 (discussing blocking patents and cross-licensing).

semiconductors, where tens of thousands of patents would, if enforced, make product development all but impossible.

Further, since the SSO by-law is adopted *ex ante*, the parties who belong to the SSO can enter into the agreement not knowing whether they will be the intellectual property licensor or licensee in any given case. Companies who voluntarily agree to license intellectual property on reasonable and nondiscriminatory terms when they are operating under a veil of ignorance[252] – that is, when they don't know whether the rule will help or harm them – may be presumed to do so because they believe the licensing requirement to be the best policy for the organization as a whole. There is no reason in general to believe that the goal of such a by-law is to discriminate against one particular intellectual property owner.[253]

The result is that, subject to two caveats, standard-setting organization rules restricting the exercise of intellectual property rights in a standard should generally be permissible,[254] and certainly where they serve to clear potentially competing claims on a standard. One caveat concerns standard-setting organization rules that require licensing,

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[251] *See* Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools and Standard Setting*, in **Innovation Policy and the Economy** (Adam Jaffe, Joshua Lerner, and Scott Stern, eds., National Bureau of Economics, 2001).

[252] *Cf.* **John Rawls, A Theory of Justice** 11 (rev. ed. 1999) (societies are more likely to make just decisions under a veil of ignorance). For an extended application of Rawls' theory of intergenerational justice under the veil of ignorance to intellectual property law, see Dawn C. Nunziato, *Intergenerational Justice Between Authors in the Digital Age*, 9 **J. Intell. Prop. L. __** (forthcoming 2002).

[253] Of course, in any given case the evidence may demonstrate that that *was* the goal. Where an organization adopts an IP-restrictive rule over the dissenting vote of an intellectual property owner, with the intention of depriving that IP owner of his rights, antitrust law might be more concerned.

[254] In one case Congress has expressly endorsed such a rule. *See* 17 U.S.C. § 512(i)(2)(B) (defining a "standard technical measure" encouraged by the Digital Millenium Copyright Act as one adopted by a standard-setting organization and which is "available to any person on reasonable and nondiscriminatory terms.").

but only to other members of the organization. In certain circumstances, standard-setting organization rules that privilege members over non-members can have the effect of raising rivals costs or even excluding them entirely, and therefore cartelizing the industry.[255] This should not be a problem, however, unless membership in the standard-setting organization is closed, the number of members is relatively small, and the members collectively control a significant share of the market. In those circumstances, the organization may create antitrust problems.[256]

Second, SSOs may seek to specify not only that licensing will occur on reasonable and nondiscriminatory terms, but also to cap the total fees that will be paid to license patents. At least one group is attempting to do precisely this in 3G mobile telephony.[257] Capping the total price to be paid to all intellectual property owners may create monopsony problems because it depresses the total price to be charged for innovation. Those monopsony problems aren't necessarily debilitating, but they are serious enough that organizations should be concerned about the antitrust consequences of adopting such an approach.

4. Conclusions

SSOs must recognize that they are agreements among horizontal competitors, and that their conduct will be subject to scrutiny under section 1 of the Sherman Act. But antitrust courts should recognize that SSOs serve valuable procompetitive purposes, and

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[255] *Cf.* Jaap H. Spoor, *Standardization and Exclusivity in Intellectual Property*, in **Information Law Toward the 21st Century** 374 (Kluwer 1992) (noting asymmetric licenses as creating antitrust problems).

[256] *See, e.g.*, Radiant Burners, Inc. v. Peoples Gas Light & Coke Co., 364 U.S. 656, 659-60 (1961) (per curiam) (requiring that standard set by SSO be made equally available to all competitors).

[257] *See* http://www.3gpatents.com.

that they will not be able to function effectively if paralyzed by fear of antitrust liability.[258] Where an SSO adopts a general rule regarding disclosure or licensing of intellectual property rights that binds only its members, that rule should not normally create antitrust concern. Only where an SSO acts in a specific case to favor one set of members over an intellectual property owner should section 1 liability be an issue. Even then, only certain types of concerted licensee conduct will raise antitrust concerns.

V. SSO IP Rules as Private Ordering in the Shadow of Patent Law

Understanding the role of institutions in mediating the use of intellectual property rights is vitally important to understanding the complex relationship between intellectual property and innovation. Economic scholarship has demonstrated that intellectual property rights sometimes promote innovation, but at other times can actually impede it. This is particularly true in industries where innovation is cumulative, because granting strong intellectual property rights to initial innovators restricts the options available to improvers.[259] Other work has shown that intellectual property rights are rarely enforced

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[258] *See, e.g.*, Lemley, *Internet Standardization*, *supra* note __, at 1080 (making this argument); Jack E. Brown, *Technology Joint Ventures to Set Standards or Define Interfaces*, 61 **Antitrust L.J.** 921 (1993); Jonathan T. Howe & Leland J. Badger, *The Antitrust Challenge to Non-Profit Certification Organizations: Conflicts of Interest and a Practical Rule of Reason Approach to Certification Programs as Industry-Wide Builders of Competition and Efficiency*, 60 **Wash. U.L.Q.** 357 (1982) (endorsing fact-specific rule of reason approach); Thomas A. Piraino, Jr., *The Antitrust Analysis of Network Joint Ventures*, 47 **Hastings L.J.** 5 (1995); David J. Teece, *Information Sharing, Cooperation and Antitrust*, 62 **Antitrust L.J.** 465 (1994).

[259] There are at least three strands to this argument. First, for a variety of reasons, society cannot rely on pioneers to efficiently license to improvers the right to compete with them. *See* Rebecca S. Eisenberg, *Patents and the Progress of Science: Exclusive Rights and Experimental Use*, 56 **U. CHI. L. REV.** 1017, 1072-73 (1989) ("The risk that the parties will be unable to agree on terms for a license is greatest when subsequent researchers want to use prior inventions to make further progress in the same field in competition with the patent holder, especially if the research threatens to render the patented invention technologically obsolete."); Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 **TEX. L. REV.** 989, 1048-72 (1997) (offering a variety of reasons why granting exclusive control to pioneers is inefficient); Robert P. Merges, *Intellectual Property Rights and Bargaining Breakdown: The*

in court or licensed for a royalty, the uses that traditional incentive theory would predict.[260] In a significant number of cases, intellectual property rights are obstacles to the optimal development of technology.

This doesn't necessarily mean that granting intellectual property rights is a bad idea, however. Private parties can sometimes enter into licensing arrangements to avoid those obstacles. Traditional intellectual property licenses grant the right to use the intellectual property right in exchange for a royalty payment. But in many industries, notably semiconductors, intellectual property owners regularly cross-license huge stacks

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Case of Blocking Patents, 62 **TENN. L. REV.** 75 (1994) [hereinafter Merges, *Intellectual Property*]; Merges & Nelson, *supra* note **Error! Bookmark not defined.**. Second, positive "spillovers" from innovation that cannot be appropriated by the innovator actually contribute to further innovation. *See, e.g.*, Wesley M. Cohen & David A. Levinthal, *Innovation and Learning: The Two Faces of R&D*, 99 **ECON. J.** 569 (1989); Zvi Griliches, *The Search for R&D Spillovers*, 94 **SCAND. J. ECON.** S29 (1992); Richard C. Levin, *Appropriability, R&D Spending, and Technological Performance*, 78 **AM. ECON. REV.** 424, 427 (1988); Richard Schmalensee, *R and D Cooperation and Competition: Comments and Discussion*, 1990 **BROOKINGS PAPERS ON ECON. ACTIVITY** 194, 195-96 (1990); *Cf.* Suzanne Scotchmer, *Protecting Early Innovators: Should Second-Generation Products Be Patentable?*, 27 **RAND J. ECON.** 322 (1996) (noting difficulties in the optimal allocation of rights between pioneers and improvers). Third, granting strong intellectual property rights encourages rent-seeking, which may dissipate the social value of the property rights themselves. In the patent context, giving too strong a right to first inventors would encourage wasteful patent races. *See, e.g.*, Jennifer F. Reinganum, *The Timing of Innovation: Research, Development, and Diffusion*, 1 **HANDBOOK OF INDUS. ORG.** 850 (Richard Schmalensee & Robert Willig eds. 1989); Robert P. Merges, *Rent Control in the Patent District: Observations on the Grady-Alexander Thesis*, 78 **VA. L. REV.** 359 (1992). *Cf.* Mark F. Grady & Jay I. Alexander, *Patent Law and Rent Dissipation*, 78 **VA. L. REV**. 305 (1992).

Of course, the operative word here is "balance." Pioneering inventors will emerge only if there are sufficient incentives for them to invent. At the same time, too great a division of rights can impede effective use of technologies. *See* Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 **SCI.** 698 (1998). The fact that the law must also encourage competition to improve such pioneering inventions means that the law must take care to allocate rights between the parties. *See* Craig Allen Nard, *A Theory of Claim Interpretation*, 14 **HARV. J.L. & TECH.** 1, 36-40 (2000).

For discussions of how to optimize that allocation, see, e.g., John H. Barton, *Patents and Antitrust: A Rethinking in Light of Patent Breadth and Sequential Innovation*, 65 **ANTITRUST L.J.** 449, 453 (1997), Howard F. Chang, *Patent Scope, Antitrust Policy, and Cumulative Innovation*, 26 **RAND J. ECON.** 34 (1995), and Jerry R. Green & Suzanne Scotchmer, *On the Division of Profit in Sequential Innovation*, 26 **RAND J. ECON.** 20 (1995).

[260] *See* Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 **Nw. U. L. Rev.** 1495, 1501-07 (2001) (only 1.5% of all patents are ever litigated, and only 5% are ever licensed for a royalty).

of patents on a royalty-free basis.[261] These patents are used defensively rather than offensively; their primary economic value is as a sort of trading card that reduces the risk that their owner will be held up by other patent owners. This is particularly important in the semiconductor industry, where a new microprocessor design may be covered by thousands of different patents on circuit design, layout, materials, manufacturing processes and packaging.

These bilateral, ad hoc cross-licensing arrangements are most effective in avoiding holdups when the stakes are symmetrical. If Intel and Motorola each have 200 patents that they think the other infringes, neither is likely to benefit much from protracted litigation. Indeed, there is some risk that both companies will be enjoined from selling their products. The cross-license is an effective solution in this case. By contrast, parties without much to lose – individual patent owners, or companies like

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[261] *See id.* at 1504-05:

> [M]any patentees engage in "defensive patenting," obtaining patents to stake their claim to an area of technology in hopes of preventing other companies from suing them. Indeed, there is anecdotal evidence that at least among high-technology and start-up companies, the primary purpose of patents is defensive. Licensing patents for royalties is correspondingly uncommon in many industries in which all the major players have large patent portfolios. Patent licensing in such an industry has a very different character from the typical model of licensing for royalties. Large companies tend to come to the table with hundreds of patents on each side, relying on volume rather than quality in a sort of "patent arms race." While some cross-licensing deals in such industries are royalty- bearing, it is more common for companies to agree to royalty-free cross-licenses, in which each party gets the freedom to make products but does not have to pay the other. Similarly, in many high-technology industries patent rights are waived (or licensed on a royalty-free basis, which amounts to the same thing) because the patented technology is adopted as an industry standard.

For detailed empirical evidence of such cross-licensing in the semiconductor industry, see Bronwyn Hall & Rose Marie Ham Ziedonis, *The Patent Paradox Revisited: Determinants of Patenting in the U.S. Semiconductor Industry, 1980-1994*, **32 RAND J. ECON.** 101 (2001). *See also* John H. Barton, *Reforming the Patent System*, 287 **Science** 1933 (2000) (arguing that reducing the number of patents would "help to solve the problem of defensive patent portfolios"); Mark A. Lemley, *Reconceiving Patents in the Age of Venture Capital*, 4 **J. Sm. & Emerging Bus. L.** 137, 143 (2000) ("One of the major reasons that companies get patents is that they're afraid that their competitors have them, and they don't want to be the only one left who doesn't have the ability to play in this game."); Scott Herhold, *Patent War Pending*, **San Jose Mercury News**, July 18, 1999, at 1E (quoting a venture capitalist as saying "None of my companies seek patent protection because they actually think it will protect them from competition.... Rather, they seek patents to protect themselves from other people who have patents.").

Texas Instruments or Rambus with major patent portfolios but either no products or very little market share, are more likely to prosecute suits to completion.[262] The cross-license is not an effective solution in such a circumstance.

Cross-licenses tend to be ad hoc, one time contracts. But intellectual property owners have also developed institutions designed to reduce the holdup risk of intellectual property rights. In a path-breaking work, Rob Merges studied what he calls "collective rights organizations," industry groups that collect intellectual property rights from owners and license them as a package.[263] He finds that these organizations ease some of the tensions created by strong intellectual property rights by allowing industries to bargain from a property rule into a liability rule.[264] Collective rights organizations thus play a valuable role in facilitating transactions in intellectual property rights. They permit commerce in copyrighted content and patented inventions to proceed without being subject to an almost endless string of holdups by intellectual property owners who have the power to enjoin the use of their technology.

Merges discusses two basic sorts of collective rights organizations: patent pools and music licensing collectives.[265] Collective rights organizations of this sort tend to

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[262] *See* Lemley, *Rational Ignorance, supra* note __, at 1505 ("patentees who want to license their patents for royalties are typically parties with asymmetric stakes--they are individuals who don't sell products, "licensing shops" whose primary output is patents, or older companies that are no longer major players in the marketplace.").

[263] Robert P. Merges, *Bargaining Into Liability Rules: Institutions Supporting Transactions in Intellectual Property Rights*, 84 **Calif. L. Rev.** 1293 (1996).

[264] *See, e.g.*, Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 **Harv. L. Rev.** 1089 (1972) (discussing the difference between property rule regimes, in which the owner of a right is entitled to an injunction, and liability rule regimes, in which a right is enforced only by paying damages to compensate for the owner's loss).

[265] Merges, *supra* note __; *see also* Robert P. Merges, *Institutions for Intellectual Property Transactions: The Case of Patent Pools*, in **Expanding the Boundaries of Intellectual Property** 123 (Rochelle C. Dreyfuss et al eds. 2001).

spring up after the core intellectual property rights have been created. Indeed, patent pools in particular are often created as a response to multiple patent infringement suits within an industry. They are most effective when the patent rights in question are blocking, so that no one can make a given product without licenses from at least one other firm.[266] Patent pools have diverse organizational forms, ranging from informal understandings that look like multi-party cross-licensing arrangements to pools that are institutions in their own right, and behave in some respect like joint ventures. Patent pools and other collective rights organizations are found in all sorts of industries, from automobiles to aircraft to music.[267] Because they are almost always organized by industry participants who own patents, and therefore have a stake in how the pool is structured, they present substantial risks of collusion. As a result, patent pools have repeatedly been the subject of antitrust litigation.[268]

Standard-setting organizations behave like patent pools in certain respects. They are frequently – though not always – run by industry participants, and they may ameliorate the problems of overlapping intellectual property rights by requiring licensing on reasonable and nondiscriminatory terms. But there are important differences between

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[266] *See, e.g.*, Carpet Seaming Tape Licensing Corp. v. Best Seam, Inc., 616 F.2d 1133 (9th Cir. 1980) ("A well-recognized legitimate purpose for a pooling agreement is exchange of blocking patents."); United States Department of Justice and Federal Trade Commission, **Antitrust Guidelines for the Licensing of Intellectual Property** §5.5 (1995); Steven C. Carlson, *Patent Pools and the Antitrust Dilemma*, 16 **Yale J. Reg.** 359 (1999) (arguing that the legality of patent pools should depend on whether the patents in fact block).

[267] *See* Merges, *Liability Rules*, *supra* note __ (discussing numerous examples).

[268] *See, e.g.*, **Hovenkamp et al.,** *supra* note __, ch. 34; Josh Lerner & Jean Tirole, *Theoretical and Empirical Perspectives on Patent Pools: A Progress Report* (working paper 2002); Robert P. Merges, *Contracting Into Liability Rules: Institutions Supporting Transactions in Intellectual Property Rights*, 84 **Calif. L. Rev.** 1293 (1996); Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting*, in I **Innovation Policy and the Economy** (Adam Jaffe et al eds. 2001); Richard J. Gilbert, *Antitrust Treatment of Patent Pools – A Study* (working paper 2002).

SSOs and patent pools. First, unlike patent pools, SSOs tend to be organized around technical outcomes. The goal of an SSO is first and foremost to design a standard for the industry to use, not to worry about licensing intellectual property rights. By contrast, patent pools are formed around patents, and often have little technical content beyond that necessary to determine appropriate royalty rates.

Second, SSOs IP rules tend to be set ex ante, while patent pools allocate their rights ex post.[269] SSOs do not design IP rules around particular patents that have been brought to their attention, or even around particular standards they are setting. Rather, SSOs tend to set a uniform intellectual property policy and apply it across the board (at least if the policy is working properly). This ex ante approach has significant advantages. Because the members of the organization generally don't know in advance whether they will be the owner or the licensee of any particular intellectual property right, the policy is more likely to be drafted even-handedly.[270] Indeed, there is significant economic literature suggesting that rules drafted in this way are more likely to have an information forcing effect,[271] inducing members to disclose their real position on intellectual property licensing and perhaps to exit the organization if they disagree with the policy adopted. Further, the organization can make it clear up front whether the standards it adopts will

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[269] *See* Schallop, *supra* note __, at 269.

[270] *See, e.g.*, Farrell, *Choosing*, *supra* note __, at 15-16, 19.

[271] There is a voluminous literature on the design of rules with information-forcing effects. Rules that cause parties to have incentives to accurately disclose private information, such as their valuations, are generally desirable, though they can be hard to achieve. For discussions, see, e.g., Barry E. Adler, *The Questionable Ascent of Hadley v. Baxendale*, 51 **Stan. L. Rev.** 1547 (1999); Ian Ayres & Robert Gertner, *Majoritarian vs. Minoritarian Defaults*, 51 **Stan. L. Rev.** 1591 (1999); Ian Ayres & Robert Gertner, *Strategic Contractual Inefficiency and the Optimal Choice of Legal Rules*, 101 **Yale L.J.** 729 (1992); Jason Scott Johnston, *Strategic Bargaining and the Economic Theory of Contract Default Rules*, 100 **Yale L.J.** 615 (1990).

be fully open (no intellectual property rights allowed), proprietary but with mandatory licensing on reasonable terms, or closed (fully proprietary). This in turn allows the market to evaluate the full costs and benefits of competing standards. Ex ante policy setting also reduces the risk that a particular policy is adopted or used merely as a front for a cartel. As a result, SSO IP policies should generate fewer antitrust problems than patent pools.

Third, interface SSOs of the type I have focused on in this article are not distributed randomly across industries. Rather, they tend to be concentrated in industries like software, Internet, telecommunications, and semiconductors.[272] All of these industries are characterized by at least virtual and sometimes actual network effects,[273] making interoperability between products at both the vertical and horizontal levels particularly important. These are also the industries in which growing economic evidence suggests that patents create the most difficulties.[274] Patents in these industries are easier to obtain and subject to less patent office scrutiny than in industries like

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[272] *See, e.g.,* Anton & Yao, *supra* note __, at 247 ("Interface standards are of primary interest in telecommunications and information technology industries."); Shapiro, *Thicket, supra* note __, at [draft at 1]; Surowiecki, *supra* note __, at 87 ("the really crucial standards govern information technologies"); Mueller, *Misuse, supra* note __, at [draft at 7] ("one or more hardware or software standards govern virtually every aspect of using a computer or connecting to the Internet."). While Mueller also notes the role of standards in biotechnology, *see id.*, those standards are largely limited to bioinformatics – the area of biotechnology that intersects with computing.

[273] On different types of network effects and their strengths, see Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 **Am. Econ. Rev**. 424, 424 (1985); Michael L. Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 J. Econ. Persp. 93, 95 (1994); Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 **Cal. L. Rev.** 479 (1998); S.J. Liebowitz & Stephen E. Margolis, *Network Externality: An Uncommon Tragedy*, 8 **J. Econ. Persp.** 133, 135 (1994).

[274] The arguments in this paragraph are conclusory in nature. For a much more detailed analysis, and more citations, see Dan L. Burk & Mark A. Lemley, *The Spinoff Article With No Title Yet* (working paper 2002).

pharmaceuticals, biotechnology and chemistry.[275] They are more likely to block each other, more likely to interfere with cumulative innovation across multiple product generations, and (because a single product may require licenses from many different patents) may be more amenable to holdups.[276] Even where patent owners do not use injunctive relief to preclude innovation altogether, the costs of licensing such rights from multiple owners at a monopoly rate will be inefficiently high.[277] Patents in these industries also appear to be less valuable to the companies that obtain them than patents

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[275] *See* John R. Allison & Mark A. Lemley, *Who's Patenting What? An Empirical Exploration of Patent Prosecution*, 53 **Vand. L. Rev.** 2099 (2000); John R. Allison & Mark A. Lemley, *The Growing Complexity of the United States Patent System*, __ **B.U. L. Rev.** __ (forthcoming 2002). Allison & Lemley find that semiconductor and electronics inventions have fewer claims, cite less prior art (and especially non-patent prior art), spend less time in the PTO and have a less involved prosecution than patents on average, and in particular than patents in the pharmaceutical and biotechnology industries. *See* 53 **Vand. L. Rev.** at 2134-42.

[276] *See, e.g.*, Shapiro, *Thicket*, *supra* note __, at [draft at 6-8]; Krechmer, *supra* note __, at [draft at 3] ("The increase in patents and claims often results in multiple patent holders claiming rights to the technologies within a single communications standard."). There has been a great deal of discussion about the overlap problem in the particular context of software. *See, e.g.*, Merges, *Bargaining Breakdown*, *supra* note __, at 75; Burk & Lemley, *supra* note __; Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 **Calif. L. Rev.** 1 (2001); James Bessen & Eric Maskin, *Sequential Innovation, Patents, and Imitation* (1999) (working paper, on file with authors); Mark A. Lemley & David W. O'Brien, *Encouraging Software Reuse*, 49 STAN. L. REV. 255 (1997); Peter S. Menell, *An Analysis of the Scope of Copyright Protection for Application Programs*, 41 STAN. L. REV. 1045 (1989); Pamela Samuelson et al., *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308 (1994).

To take just one example, the developing 3G Wireless Internet standard in Europe involves essential technologies patented by at least 100 different companies. *See* The 3G Patent Platform Company, Welcome to the 3G Patent Platform, http://www.3gpatents.com. Bekkers & Liotard argued that the importance of intellectual property rights, and in particular the problem that "standard designers cannot work around existing, protected knowledge," is greater in telecommunications than in other areas. *See* Rudi Bekkers & Isabelle Liotard, *European Standards for Mobile Communications: The Tense Relationship Between Standards and Intellectual Property Rights*, 21 **Eur. Intell. Prop. Rev.** 110, 115 (1999).

[277] This is a result of the double marginalization theorem, which shows that it is inefficient to grant two monopolies in complementary goods to two different entities, because each will price its piece without regard to the efficient pricing of the whole, and the result will be too high a price. For a technical proof of this, see Carl Shapiro, *Setting Compatibility Standards: Cooperation or Collusion?*, in **Expanding the Boundaries of Intellectual Property** 81, 97-101 (Rochelle Dreyfuss et al. eds. 2001). For an description of the problem in practice, see Krechmer, *supra* note __, at [draft at 3] (citing examples in which so many different intellectual property owners claim rights in a standard that the total cost to license those rights exceeds the potential profit from the product); Lichtman, *supra* note __.

in industries like chemistry and pharmaceuticals.[278] And for at least some of these industries – software and the Internet – the fixed costs of innovation are relatively low.[279]

This is not to say that patents in these fields don't serve valuable purposes. But it is striking that SSOs have developed intellectual property policies requiring at least disclosure of intellectual property, and often blanket licenses for either no royalty or a reasonable royalty, in precisely those industries where the unconstrained enforcement of patents could be most damaging to innovation.[280] SSOs appear to be an efficient species of private ordering when it comes to intellectual property, bargaining in the shadow of a general intellectual property law to tailor rules that better meet the needs of the industries in which they exist.[281]

VI. Designing Optimal SSO Policies

There are a couple of important caveats to the conclusion of the last section that SSO IP rules efficiently "contract around" patent rights. Private ordering is efficient only if the contracting parties have the proper information, and if the costs and benefits of the private agreement are internalized by the parties. Externalities should not be a great problem, since SSO IP rules can only affect the intellectual property rights of members who agree to be bound. Perfect information may be more of a problem. As we have

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[278] *See, e.g.,* Levin et al, *supra* note __; Cohen et al., *supra* note __ (both surveying licensing managers in various industries and finding that patents are important only in a few industries, notably pharmaceuticals and chemistry).

[279] *See, e.g.*, Burk & Lemley, *supra* note __.

[280] *Cf.* Shapiro, *Thicket, supra* note __, at [draft at 1] (evaluating cross-licenses and patent pools as possible solutions to these problems).

seen, SSOs are remarkably diverse in their IP rules, and it is not clear that that diversity is thought out. SSO IP rules may not always be clearly communicated to members. Even if they are communicated, the individuals who attend SSO meetings are likely to be engineers who may have little interest in their company's intellectual property. Indeed, anecdotal evidence suggests that the engineers who participate in SSOs may sign disclosure or licensing agreements without reading them, much less consulting with company lawyers to determine what intellectual property may cover the standard.

Thus, it may be fairer to say that SSO IP rules have the *potential* to be an efficient ex ante bargaining solution to excessive or overlapping intellectual property rights. Whether the IP rules are in fact efficient depends on how the rules are designed, implemented, and enforced. In this section, I offer suggestions for optimizing SSO IP rules.

A. Optimizing SSO IP Rules: Implications for Organizations and Members

Intellectual property rules have largely been an afterthought for most SSOs. SSOs are made up of engineers who want to pick the right technical standard, not lawyers who want to clear rights. Indeed, this is one of the things that distinguishes SSO IP rules from the more established patent pools: pools are set up precisely in order to clear intellectual property rights, and so they take account of a variety of important legal issues. SSO IP rules, by contrast, have a tendency to be put together without much

[281] Because SSO IP rules are private, not public, they do not raise any of the standard concerns that would accompany legislative efforts to eliminate or restrict patents in certain industries. *Contra* Mueller, *Misuse*, *supra* note __, at [draft at 24] (raising these concerns).

participation by lawyers, and without much thought to the sorts of disputes that might arise. As a result, SSO IP rules are a "messy" form of private ordering, the result of a decision-making process that – like sausages or legislation – does not always reward close scrutiny.

If SSOs intend their intellectual property rules to be effective, this laxness must change. In this section I offer several suggestions that will help SSOs clarify their rules and make them fairer.

1. *Define the intellectual property rights in question*.

Many SSO policies apply only to issued patents, but do not discuss patent applications.[282] Still other policies cover patents but not copyrights.[283] This might be the result of a deliberate decision, but more likely it reflects sloppy drafting. Proposed standards often find their way to an SSO while the technology is still new. Because patents take almost three years on average to issue,[284] it is quite common for members to have patent applications but no issued patents outstanding at the time the organization votes on the standard. Organizations should deal with this problem up front, by making it clear that their IP rules apply to patent applications as well as to issued patents.[285] Indeed, it probably makes sense to apply those rules to nascent intellectual property that

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[282] *See supra* notes __-__ and accompanying text.

[283] *See supra* notes __-__ and accompanying text.

[284] *See* John R. Allison & Mark A. Lemley, *Who's Patenting What? An Empirical Exploration of Patent Prosecution*, 53 **Vand. L. Rev.** 2099, 2118 (2000) (2.77 years).

[285] *Accord* Kipnis, *supra* note __, at 104.

has not yet even matured into a patent application.[286] In many industries, particularly software and the Internet, it is also advisable to extend the policies to cover copyrights. Failure to do so will leave putative intellectual property owners with the power to shut down a standard at some point after it is adopted. It will also leave the true scope of the policy ambiguous, as the *Rambus* case pointedly shows.[287]

A more difficult question concerns *which* patents fall within the scope of a rule in any given case. Obviously, intellectual property rights that are co-extensive with a standard will be covered by any policy. Similarly, any intellectual property rights that are necessary as a practical matter in order to implement the standard will likely be covered, even if the patent in question only covers a subset or component of the standard.[288] But from there things get murkier.[289] What about patents that are useful but not necessary in implementing a standard?[290] Those that cover the most common commercial embodiment, but which could be designed around with some effort? Further, to what

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[286] While intellectual property owners might object to a rule requiring disclosure of patent applications, which the law permits to be kept secret for at least the first 18 months after filing, 35 U.S.C. § 122, there is no analogous ground to object to a reasonable and nondiscriminatory licensing requirement for such a patent.

[287] *See supra* notes __-__ and accompanying text. In that case, the court ultimately held that JEDEC's policy applied to patent applications, even though on its face it covered only issued patents.

[288] *See* Feldman et al., *supra* note __, at 113 ("The incorporation of a basic patent into a standard is likely to be uncontroversial"); *Cf.* Shapiro, *Thicket, supra* note __ (discussing the definition of essential patents).

[289] *See* Schallop, *supra* note __, at 229 (the meaning of 'essential' patents is "generally ambiguous and can leave plenty of wiggle room for legal negotiating in a dispute").

[290] At least one court has found that both "optional" and "required" features of a software standard were covered within a standards license, where the license did not expressly differentiate the two. Intel Corp. v. VIA Technologies, 174 F. Supp. 2d 1038 (N.D. Cal. 2001).

extent should the policy cover patents that do not literally reach a standard, but which might be extended to encompass it under the "doctrine of equivalents?"[291]

An SSO's first instinct will likely be to bring as many patents as possible within the scope of the policy. This may be a mistake, however. Adding unnecessary patents will complicate the disclosure and licensing process. It may also be exploited by members who own intellectual property rights. It is a common practice among some intellectual property owners to disclose as many patents as possible to an SSO, both in order to avoid possible liability for nondisclosure and to try to obtain royalty payments.[292] Still other members might drop out of an organization altogether rather than risk granting blanket licenses to all their intellectual property. Limiting the scope of the IP rules to necessary intellectual property rights will minimize these problems. It will also help an SSO avoid antitrust scrutiny; in the analogous context of patent pools the Department of Justice has looked more favorably upon pools that were limited to necessary patents, because they presented less risk of industry-wide collusion.[293]

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[291] The patent doctrine of equivalents permits patent owners to argue infringement even though the accused device doesn't fall within the literal scope of the patent claims, if the differences between the patent claims and the accused device are merely insubstantial. *See, e.g.,* Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 36 (1997).

The doctrine of equivalents problem is made even less tractable by the fact that the scope of a patent can actually change over time, expanding to cover equivalents developed after the patent was written. This is a result of the fact that equivalence is tested at the time of infringement, not at the time the invention is made. For a discussion of after-arising technology, see Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 **Colum. L. Rev.** 839 (1990); Matthew Conigliaro et al., *Foreseeability in Patent Law*, 16 **Berkeley Tech. L.J.** 1045 (2001).

[292] *See, e.g.*, **Carl Shapiro & Hal R. Varian, Information Rules** 239 (1999) (describing an example of this in the setting of modem standards); Joanne Taaffe, *3G Patents Initiative Devised to Avoid "Qualcomm-type" Disputes*, **Comm. Wk. INt'l.**, June 19, 2000; conversation with Robert Barr, Cisco Systems, Palo Alto, California Jan. 2002 (similar strategic behavior common in the IEEE).

[293] *See* United States Department of Justice, DVD Patent Pool Business Review Letter, in Mary L. Azcuenaga, *Antitrust Issues*, 1193 **PLI/Corp** 457 (2000).

Once the rights in question are defined, the SSO should endeavor to make it clear to the world what rights are claimed. The easiest way to do this is to post on the Internet all claims of right respecting a particular standard, as the IETF does.[294] Whether the world will search such a list is another matter.[295] But they should at least be given the opportunity to do so.

2. *Take Process Seriously*.

SSO IP rules are worth nothing unless they are enforceable. Indeed, unenforceable rules are probably worse than useless, because they may create false expectations among members and the public. Organizations that go to the trouble of creating rules to control the use of intellectual property rights should make sure that the process is as transparent and as fair as possible.[296] SSOs should treat their IP rules just as they would any other contract. Ideally, members should affirmatively consent to the group's IP rules in writing. While this may not be necessary as a matter of contract law,[297] it will strengthen the legal and moral case for later enforcing the rules, and it may be more important for the intellectual property doctrines of implied license and estoppel. At a bare minimum, the policy should be in writing and should be distributed to all

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[294] *See* http://www.ietf.org/ipr.html.

[295] Under patent law's willfulness doctrine, a company can be held liable for treble damages if it knew of a patent and continued to infringe. As a result, many companies discourage their employees from engaging in any sort of a patent search, because they are afraid of the consequences of discovering a patent. Those companies might similarly be disinclined to search an SSO's Web site for patents. But if the organization requires RAND licensing, treble damages presumably won't be a risk in any event.

[296] On the importance of representation by affected parties and fair processes, see Maher, *supra* note __, at II.C.

[297] *See supra* notes __-__ and accompanying text (discussing the enforceability of organizational bylaws under contract law).

members. Requiring members to certify that they are disclosing and/or licensing any relevant patents each time they vote on a standard is probably also a good idea. Policies should also make their duration clear, and specify what rights a member who wishes to leave the organization will have to assert its intellectual property against existing, pending, and future standards.

Policies should not only be fairly made but also fairly enforced. Not surprisingly, if an organization ignores its policy, members will too.[298] And organizations that enforce their IP rules against some members while giving others a free ride will not only undermine the credibility of those rules, but may also subject themselves to antitrust risks.[299] If an organization plans to treat different members differently – for example, by holding proponents of a standard to a different level of scrutiny than other members – it needs to make such a policy clear at the outset, and make sure that it is applied neutrally. These concerns are particularly great when the organization itself is run by market participants rather than neutral third parties, since market participants have an incentive to discriminate against their competitors.

3. *Eschew disclosure-only policies*

[298] For example, the IETF nominally requires intellectual property owners to specify the terms on which they agree to license their patents, but no one actually does so. Conversation with Robert Barr, Cisco Systems, Jan. 2002. Since the IETF has never sanctioned anyone for noncompliance, there is little incentive to specify terms in the future.

[299] For a discussion of group boycott liability, see Northwest Wholesale Stationers v. Pacific Stationery & Printing, 472 U.S. 284, 296 (1985); XI **Hovenkamp, Antitrust Law** ¶¶ 1901-1908. In the context of SSOs, see Lemley, *Antitrust Standardization*, *supra* note __, at 1083-86.

Similarly, it strikes me as largely futile to require members to disclose their intellectual property rights without requiring any sort of licensing.[300] While disclosure does give SSOs information about what proprietary rights are out there, that information is notably incomplete. It does not include the IP rights of nonmembers. And because most organizations do not require their members to search their files for relevant patents,[301] it doesn't even guarantee that members will actually disclose all their intellectual property rights.[302] Requiring disclosure without licensing also triggers antitrust problems, as cases like *Dell* and *Rambus* demonstrate.[303] These problems largely disappear if the SSO imposes a RAND requirement, since nondisclosure is a successful anticompetitive strategy only if the intellectual property owner can use its IP rights to hold up users of the standard.

Even when intellectual property rights are properly disclosed, requiring disclosure without licensing creates a conundrum for the members of an SSO. Members have two choices in such a case: adopt the standard notwithstanding the patent or reject the standard to avoid the effect of the patent. In the former case, the disclosure obligation hasn't helped the members avoid the effect of patents at all. Indeed, they may actually be worse off, since they are now on notice that the intellectual property owner has a patent that covers a standard they intend to use.[304] In the latter case, the SSO may have left

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[300] A few organizations require disclosure but not licensing. *See supra* notes __-__ and accompanying text. Further, Janice Mueller has advocated just such a system. *See* Mueller, *Misuse*, *supra* note __.

[301] *See supra* notes __-__ and accompanying text (only 2 out of 16 organizations that require disclosure impose a search obligation).

[302] *See* Schallop, *supra* note __, at 232-33 (noting the uncertain scope of disclosure requirements).

[303] *See supra* notes __-__ and accompanying text (discussing these cases).

[304] This notice will likely make them willful infringers should they use the standard without first negotiating a license from the intellectual property owner. *See, e.g.,* Johns Hopkins Univ. v. Cellpro, Inc., 152 F.3d 1342 (Fed. Cir. 1998). Willful infringement can lead to an increased award of damages. 35 U.S.C. § 284.

itself vulnerable to antitrust attack for rejecting a proposed standard solely because it was patented. Whether or not such an antitrust claim is well-grounded,[305] the organization is effectively behaving *ex post* as if it requires royalty-free licensing, and would almost certainly be better off committing to openness at the outset.

Disclosure is much less important if members have already committed to license their intellectual property rights whether or not they are disclosed. Nonetheless, disclosure may be useful insofar as it makes clear to SSOs what the consequences of adopting a standard will be. Even if disclosure is desirable, most SSO IP rules do little to make sure it occurs. A better alternative might be one that gives members incentives to search for and disclose their own IP rights. For example, an SSO might adopt a rule that either requires undisclosed IP rights to be licensed on a royalty-free basis or at least caps the royalties that can be charged on undisclosed patents. There is some economic literature suggesting that such a "penalty default" will efficiently induce members to disclose information of which they are aware or could cheaply become aware.[306] In this

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[305] In *In re* American Soc'y of Sanitary Eng., 106 F.T.C. 324, 328-29 (1985), the FTC concluded that the Association violated the antitrust laws by refusing to consider patented technology as a standard. That case did not involve an exclusive choice of an interface standard, and it is not clear that its reasoning is applicable to standards of the sort we have talked about here. But the U.S. Department of Justice has pursued at least one similar claim in the telecommunications sector. In a series of negotiations regarding rules promulgated by the European Telecommunications Standards Institute (ETSI), the United States put substantial pressure on ETSI to back down from its original rule requiring disclosure and nondiscriminatory licensing of member intellectual property rights embodied in ETSI standards. *See* Lemley, *Antitrust Standardization*, *supra* note __, at 1089 n.202. To be sure, this approach has precedent in some earlier U.S. cases condemning patent pools and cross licenses. See United States v. New Wrinkle, 342 U.S. 371 (1952). Further, there were apparently some legitimate complaints about the reciprocity of the ETSI licensing provisions. See Cortien Prins & Martin Schiessl, The New Telecommunications Standards Institute Policy: Conflicts Between Standardisation and Intellectual Property Rights, 8 **EUR. INTELL. PROP. REV.** 263 (1993). Still, it is surprising that an SSO rule that appears likely to facilitate competition was instead challenged as impeding it.

[306] See, e.g., Ian Ayres & Robert Gertner, *Majoritarian vs. Minoritarian Defaults*, 51 **Stan. L. Rev.** 1591, 1600 (1999); Ian Ayres & Robert Gertner, *Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules,* 99 **Yale L.J.** 87, 91 (1989). For a somewhat more skeptical view, see Thomas W. Merrill & Henry E. Smith, *The Property/Contract Interface*, 101 **Colum. L. Rev.** 773, 800-01 (2001).

case, imposing such a rule will likely induce disclosure, though it may create the opposite problem: overdisclosure.[307]

4. *Decide where your organization fits on the open/closed continuum*

"Open" standards are trendy. Unfortunately, like "open" source code,[308] there are various definitions of open standards. As a result, organizations may be tempted to claim they are open when they are not, to be open for some purposes but closed for others, or even to encourage openness without requiring it.[309] This is almost certainly a mistake. There is little to be gained from wishy-washy IP policies that "prefer" but do not mandate nonproprietary standards. Expectations will be raised, and dashed; problems will ensue.[310] An SSO is either committed to making its standards open and nonproprietary or it isn't. If it is, the only way the SSO can further that goal is by requiring assignment or royalty-free licensing of intellectual property rights that cover the standard.

Only a few organizations in my study actually commit to open their standards.[311] For better or worse,[312] the vast majority of the SSOs I studied permit members to own

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[307] For a discussion of the overdisclosure problem, see supra notes __-__ and accompanying text.

[308] On the different kinds of open source, see McGowan, *supra* note __; Yochai Benkler, *Coase's Penguin* (working paper 2001).

[309] *See supra* notes __-__ and accompanying text (describing organizations that "discourage" but do not prohibit the ownership of intellectual property rights in a standard).

[310] On the other hand, Lisa Bernstein has suggested that unenforceable agreements may serve valuable purposes in close-knit groups in which reputational effects will keep people in line most of the time. *See, e.g.*, Lisa Bernstein, *The Questionable Empirical Basis of Article 2's Incorporation Strategy: A Preliminary Study*, 66 **U. Chi. L. Rev.** 710 (1999); Lisa Bernstein, *Merchant Law in a Merchant Court: Rethinking the Code's Search for Immanent Business Norms*, 144 **U. Pa. L. Rev.** 1765 (1996).

[311] *See supra* notes __-__ and accompanying text.

[312] I do not take a position in this article on whether open or closed standards are better for society. For arguments in favor of open standards, see *supra* note __ (collecting literature).

intellectual property rights in the standards they adopt. This does not mean that SSO IP rules are irrelevant for those groups, however. Rather, those organizations can use IP rules to bargain from a property rule to a liability rule, in Merges' framework.[313] In so doing, they can avoid potential holdups by members of the organization, while at the same time ensuring that intellectual property owners are appropriately rewarded with reasonable royalties. SSO IP rules that require only disclosure will not accomplish this. Only licensing on reasonable and nondiscriminatory terms guarantees that everyone is able to use the standard while still allowing the intellectual property owner to get paid.

4. *Permit Licenses That Control Fragmentation*

One critique of RAND licensing is that it may contribute to fragmentation. Fragmentation is frequently a problem for open standards. If no one owns the standard, users are generally free to modify it in whatever way they see fit. As a result, a single standard may soon "fork" into incompatible versions, defeating the purpose of standardization. This happened with the UNIX operating system, for example.[314] Others have suggested that open source software will fragment unless tightly controlled by a central party.[315] Reserving intellectual property rights is one way to prevent fragmentation, as the intellectual property owner can refuse to license incompatible

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[313] *See* Merges, *Liability Rules, supra* note __.

[314] *See* Weiser, *Information Platforms, supra* note __, at [draft at 19-21].

[315] *See, e.g.*, McGowan, *supra* note __ (noting that successful open source programs such as Linux have been centrally controlled).

versions.[316] Conversely, compulsory licensing on reasonable and nondiscriminatory terms might be thought inimical to unified standards.

In fact, however, there are a number of ways SSOs can compel licensing to anyone who wants to use the standard and still prevent fragmentation. Molly van Houweling has suggested the creation of trusted third parties to hold intellectual property rights in standards, with a mandate to permit anyone to use the standard but to prevent forking.[317] At least one SSO requires that members *assign* their intellectual property rights to the group, permitting the group to in effect serve as the trusted third party.[318] The most obvious solution, however, is by contract. "Reasonable and nondiscriminatory" terms are generally thought to refer to royalty rates, but there is no reason an intellectual property owner can't require compatibility with an existing set of protocols as a condition of the license. RAND licensing with such a term gives an intellectual property owner the best of both worlds: the intellectual property owner can control the technological development of a standard, but can't prevent anyone from implementing that standard in a compliant way.

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[316] Sun did this with Java, and ultimately prevented Microsoft from selling a polluted version of Java. *See* Sun Microsystems v. Microsoft Corp., 87 F. Supp. 2d 992 (N.D. Cal. 2000). To maintain its intellectual property rights, Sun had to withdraw the Java standard from ISO. *See, e.g.*, David P. Hamilton, *Sun Microsystems Makes Plans to Maintain Control of Java*, **Wall St. J.**, May 7, 1999. For an advocate of this approach, see Schallop, *supra* note __, at 262-71.

Indeed, as some have noted, the open source movement itself relies on an implicit reservation of intellectual property rights by a central coordinator. *See* McGowan, *supra* note __; Gomulkiewicz, *supra* note __.

[317] Van Houweling, *supra* note __.

[318] That SSO is RosettaNet. *See supra* notes __-__ and accompanying text. Assignment of intellectual property rights to the SSO may create other problems, however. First, the transfer of the rights is an asset acquisition subject to review under section 7 of the Clayton Act, 15 U.S.C. § 18, and could present antitrust problems if the group's standard is likely to dominate a market. *See, e.g.*, **Hovenkamp et al.,** *supra* note __, at §14.2b. Second, intellectual property owners may be reluctant to assign their rights, particularly where a patent has uses both within and outside a proposed standard.

5. Give content to the "reasonable and nondiscriminatory licensing" requirement.

It is all well and good to propose that SSOs require licensing on reasonable and nondiscriminatory ("RAND") terms. But without some idea of what those terms are, RAND licensing can easily be rendered meaningless. Virtually no SSOs specify the terms on which licenses must be granted beyond the vague requirement that they be "reasonable" and "nondiscriminatory." Indeed, some organizations expressly forbid discussion of such issues when a standard is under consideration![319] And private licenses are normally confidential.[320] The result is uncertainty over the cost and scope of patent licenses that may not prove much better than having no policy at all.[321]

One solution to this problem is to have the SSO specify the license that will be charged for each patent. But if RAND without more is too amorphous, specifying the royalty in advance is likely to be too rigid. Patents differ in their likely validity, their importance to the standard, and in the ease with which they can be designed around. Further, standards differ in their importance and in the price that can be charged for products or components that incorporate the standard. As a result, "one size fits all" is unlikely to work very well for patent licenses. Indeed, it may have the perverse result of encouraging members to list as many patents as possible that are conceivably relevant to

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[319] *See* IEEE, *Understanding Patent Issues During IEEE Standards Development,* http://standards.ieee.org/board/pat/guide.html.

[320] *See* Rudi Bekkers & Isabelle Liotard, *European Standards for Mobile Communications: The Tense Relationship Between Standards and Intellectual Property Rights*, 21 **Eur. Intell. Prop. Rev.** 110, 119 (1999) ("Licensing agreements are usually treated as highly confidential").

[321] Not surprisingly, members have begun to litigate the reasonableness of royalty rates set in the standards context. For an example involving Motorola and the ITU V.34 modem standard, see Shapiro, *Competition or Collusion, supra* note __, at 96-97.

a standard, hoping to increase their royalty rate through sheer quantity without any reference to quality.[322]

I think there is middle ground between complete specification of royalties and abdication of all responsibility for determining them. In particular, there are several things that SSOs can do to help smooth the process of determining what royalties are reasonable and nondiscriminatory. First, SSOs could require members asserting patents to make available to others a copy of all their licenses involving the patent. This would help potential licensees to ensure that the proffered licenses really were nondiscriminatory.[323] Second, SSOs could give some content to the nondiscrimination requirement, for example by specifying whether royalty rates must be identical to all parties, or whether potential licensees in different situations may be treated differently.[324] Third, SSOs might set up some means of dispute resolution within the organization to help resolve royalty disagreements.[325] Resolving reasonable royalty disputes within the organization will almost certainly be quicker and cheaper than resort to the courts. It may also permit the disputants to take advantage of the industry expertise many SSOs have.[326] Finally, organizations will need to develop some mechanism for distinguishing patents

[322] My conversation with the general counsel of one Fortune 500 company suggests that many patent owners are starting to do just this, overdisclosing patents to try to increase their royalty stream.

[323] Requiring a "most favored nation" clause in the licenses could accomplish the same thing.

[324] Two likely circumstances in which licensees might be treated differently are (1) where one licensee also owns intellectual property that could be cross-licensed, and the other does not; and (2) where the licensees compete in different fields of use. *See* Feldman, *supra* note __, at 114-15.

[325] One organization, __, leaves this responsibility to the British patent office, in accordance with U.K. law. *See supra* notes__-__ and accompanying text.

[326] An alternative approach – resort to a standard arbitration agreement with an existing provider – may be simpler to administer, but lacks the benefit of technical expertise. Krechmer suggests an intermediate approach – that WIPO set up an arbitration group specializing in standards conflicts. Krechmer, *supra* note __, at [draft at 5].

that are truly necessary to the operation of the standard from patents that are peripheral, to prevent any dispute resolution mechanism from being overrun by frivolous claims. One possibility is to create an administrative sanction for baseless royalty claims.

In the absence of any private dispute resolution mechanism, the task of determining what royalties are reasonable and nondiscriminatory will fall to the courts. This isn't necessarily a bad thing. Courts have a fair bit of experience with determining reasonable royalties in the patent context, having to do so in a large number of patent damages cases.[327] In making this determination, courts should put some emphasis on the requirement that the royalty be "reasonable" in commercial and technological context.[328] If courts do not impose some limits, intellectual property owners could satisfy their RAND obligation by setting an intentionally outrageous price for a license. This would effectively vitiate the reasonableness obligation. It would also reinstate the double marginalization problem that the SSO IP rule purports to eliminate. Properly applied, the RAND requirement will give greater rewards to more important patents, while making sure that no patents block the implementation of a standard because they are "licensed" only at an exorbitant price.

6. *Compliance by Members*

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[327] The patent statute requires that damages include lost profits if possible, but in no event less than a reasonable royalty. 35 U.S.C. § 284. As a practical matter, however, lost profits are difficult to prove, and many cases involve calculation of a reasonable royalty. *See* 7 **Donald S. Chisum, Patent Law** §20.01. In *Georgia Pacific Corp. v. United States Plywood*, 318 F. Supp. 1116 (S.D.N.Y. 1970), the court developed a multi-factor test for determining a reasonable patent royalty. For a general discussion of patent remedies, see Roger D. Blair & Thomas F. Cotter, *An Economic Analysis of Damages Rules in Intellectual Property Law*, 39 **Wm. & Mary L. Rev.** 1585 (1998).

As this article has made clear, SSO IP rules should not be taken lightly by members. Intellectual property owners who join an SSO are committing themselves to some rather important contractual obligations. In some cases they may have to give up their intellectual property rights altogether. In any event they are generally agreeing to give up their right to injunctive relief and extraordinary damages. And at a bare minimum, they are committing to a policy of disclosure that, if not followed, can leave the intellectual property owner liable for fraud or antitrust violations. Given the gravity of these commitments, members should not join an SSO without thinking about the intellectual property consequences. This is particularly true because of the tendency of companies in the telecommunications and computer fields to join many different SSOs with often-overlapping mandates. Intellectual property owners that belong to many different organizations may find themselves bound to the most restrictive IP policy.

SSO members need an IP compliance policy. This policy should have two different components. First, companies should think long and hard about whether they really want to belong to a particular organization. Part of that calculus must be the effect on the company's IP rights.[329] Companies should have lawyers review the IP policy, determining what IP is covered, what search and disclosure obligations the company must undertake, what licenses they will commit to, and under what circumstances the company can withdraw from the SSO rather than forego its IP rights. In rare circumstances a company might be well-advised to avoid joining the SSO altogether

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[328] Carl Shapiro suggests that the royalty set should be one that is reasonable ex ante, before the standard is selected, not one that might be obtainable after the industry has been locked into the patented standard. Shapiro, *Competition or Collusion*, *supra* note __, at 96; *accord* Feldman et al., *supra* note __, at 114.

[329] This may be balanced by a corresponding benefit: access to the intellectual property of other members, particularly if the organization compels licensing only to members of the group.

because of their IP policies. In other cases the policies may not be fully thought out, and the SSO may be open to changing its policy.[330] Even if the company decides that the benefits of joining the SSO outweigh any loss of intellectual property rights, that decision should be made by people in the company aware of the issues, and not simply by any employee who decides to join a group.

Second, companies must ensure that they comply with the rules of any organizations they do join. This will likely mean disclosure of intellectual property rights covering a standard. The experience of Dell, Sun, Rambus, Unocal, and others strongly suggests that companies bend over backwards to disclose intellectual property rights in doubtful cases. But they can't do so unless someone in a position to know about IP rights – almost certainly a lawyer or IP manager – is involved in the standard-setting process in at least a supervisory capacity. Companies must also ensure that they comply with any other obligations, such as a requirement that they disclose their licenses of covered patents.

It is not at all clear that most companies take participation in SSOs very seriously today. My suggestions might be thought to raise the stakes in an impractical way. After all, who wants to send lawyers to standard-setting meetings? But companies are making serious commitments by joining such organizations, and they may come to regret it if they do not recognize the importance of their participation in these groups. Taking participation more seriously may cause some members to drop out of some SSOs altogether, a result that might seem to impede standardization. But if companies drop out

[330] Two examples of SSOs that have at least considered changing their IP policies in response to member pressure are the IETF and the W3C. *See supra* notes __-__ and accompanying text (discussing these cases).

because they realize the costs as well as the benefits of participation, we should be happy that they have made a rational decision with full information. Those who would rely on a system of private ordering should expect no less from the marketplace.

B. Implications for Policy-Makers

If the stylized model I offered in Part V is accurate, government shouldn't need to do much about it. Rather, it should sit back and enjoy the benefits of efficient private ordering in the shadow of the patent system. In the rather more messy real world, there are some legal and policy implications of my arguments.

First, like most forms of private ordering, SSO IP rules cannot serve their intended purpose unless they are enforceable in court.[331] Courts must be willing to treat

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[331] Peggy Radin has recently emphasized the point the legal realists taught us long ago: even "private" systems of enforcement depend ultimately on the coercive power of the courts. *See* Radin & Wagner, *supra* note __.

There are forms of private ordering that do not depend on state coercion, notably social norms. The economic literature on social norms is voluminous. *See, e.g.*, **ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES** (1991); Lisa Bernstein, *Merchant Law in a Merchant Court: Rethinking the Code's Search for Immanent Business Norms*, 144 **U. PA. L. REV.** 1765 (1996); Lisa Bernstein, *Social Norms and Default Rules Analysis*, 3 **S. CAL. INTERDISC. L.J.** 59 (1993); Lisa Bernstein, *Opting Out of the Legal System: Extralegal Contractual Relations in the Diamond Industry*, 21 **J. LEGAL STUD.** 115 (1992); Robert D. Cooter, *Decentralized Law for a Complex Economy: The Structural Approach to Adjudicating the New Law Merchant*, 144 **U. PA. L. REV.** 1643 (1996); Robert D. Cooter, *The Theory of Market Modernization of Law*, 16 **INT'L REV. L. & ECON.** 141 (1995); Robert D. Cooter, *Structural Adjudication and the New Law Merchant: A Model of Decentralized Law*, 14 **INT'L REV. L. & ECON.** 215 (1994); Robert D. Cooter, *Against Legal Centrism*, 81 **CAL. L. REV.** 417 (1993); Avner Greif, *Reputation Mechanism Among the Magreve Traders*, in **Reputation** (1989); Peter H. Huang & Ho-Mou Wu, *More Order without More Law: A Theory of Social Norms and Organizational Cultures*, 10 **J.L. ECON. & ORG.** 390 (1994); Avery Katz, *Taking Private Ordering Seriously*, 144 **U. PA. L. REV.** 1745 (1996); Jody S. Kraus, *Legal Design and the Evolution of Commercial Norms*, 26 **J. LEGAL STUD.** 377 (1997); Richard H. McAdams, *The Origin, Development, and Regulation of Norms*, 96 **MICH. L. REV.** 338 (1997); Richard H. McAdams, *Comment: Accounting for Norms*, 1997 **WIS. L. REV.** 625; Randal C. Picker, *Simple Games in a Complex World: A Generative Approach to the Adoption of Norms*, 64 **U. CHI. L. REV.** 1225 (1997). For more critical analyses, see David Charny, *Illusions of a Spontaneous Order: "Norms" in Contractual Relationships*, 144 **U. PA. L. REV.** 1841 (1996); Lawrence Lessig, *Social Meaning and Social Norms*, 144 **U. PA. L. REV.** 2181 (1996); Eric A. Posner, *Law, Economics, and Inefficient Norms*, 144 **U. PA. L. REV.** 1697 (1996). A full discussion of social norms as a regulatory system is beyond the scope of this paper. In the context of SSO IP rules, informal social sanctions are unlikely to prevent an intellectual property owner from enforcing its rights. Still, it is possible that the organizational rule itself will, if internalized sufficiently, encourage more reasonable licensing practices by companies.

SSO IP rules as enforceable agreements.[332] As we have seen,[333] though, enforcement as a matter of contract law may not be enough. Courts must also apply the equitable intellectual property doctrines of implied license and estoppel in appropriate circumstances to prevent intellectual property owners from avoiding their contractual obligations. Both contract and intellectual property precedent provide ample support for enforcing these rules; courts should not hesitate to enforce these deals.

Second, law should make sure it does not impede the creation of these private arrangements. I have argued elsewhere that SSOs themselves should generally not be held to violate the antitrust laws.[334] But there are occasional circumstances in which standard-setting organizations act as a front for a cartel.[335] One implication of this article is that courts should be extremely reluctant to condemn SSO IP rules as anticompetitive. It is possible for an SSO to restrict competition in innovative markets by systematically undervaluing intellectual property rights.[336] But SSO IP rules can also serve valuable procompetitive purposes by clearing overlapping intellectual property rights, particularly in network markets where standardization is important. Antitrust law must be careful not to interfere with this process and in so doing chill the creation of private liability rules in the patent system. One way to achieve this is to create a limited safe harbor for SSOs

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[332] *Accord* Maher, *supra* note __, at II.D.

[333] *See supra* notes __-__ and accompanying text (discussing limitations of contract enforcement).

[334] *See* Lemley, *Internet Standardization, supra* note __, at 1080; *accord* Shapiro, *Thicket, supra* note __, at [draft at 28].

[335] For a full discussion, see II **Herbert Hovenkamp et al., IP and Antitrust** ch. 35 (2001).

[336] *See id*. at §35.6 (discussing antitrust problems of this sort). *See also supra* notes __-__ and accompanying text.

that agree on intellectual property rules.[337] Whether under a safe harbor or under the rule of reason, SSOs should generally be protected from liability even if they take an active role in determining what a reasonable and nondiscriminatory royalty should be, so long as they apply a fair process set ex ante.

Finally, contract, intellectual property and antitrust law can all play valuable roles in policing the *process* of private ordering through SSOs. Private agreements to convert patent law's property rules into liability rules are efficient only if the parties to the agreement have accurate information and a full opportunity to decide whether they want to agree. Contract and intellectual property law can help ensure this transparency by enforcing only SSO IP rules that meet certain threshold criteria. Antitrust law does not normally impose a requirement of minimum process for private decisions.[338] But antitrust law can give some teeth to a disclosure obligation by policing efforts to "game" the standard-setting system in order to achieve market dominance.[339]

In short, the role of the law in governing SSO IP rules should be limited to ensuring that those rules are fair and enforcing them when necessary. Beyond that, the best thing courts can do is get out of the way. Thus, the implications of SSO IP rules for policy at one level are quite limited. But at another level, SSO IP rules have important implications for intellectual property policy. Reform of the patent system must take account of both industry-specific variations in how patents affect innovation and how markets respond to patent rights. SSO IP rules dramatically affect both questions. If

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337 Such a bill is in the works at this writing.

338 *See* Northwest Wholesale Stationers v. Pacific Stationery & Printing, 472 U.S. 284, 296 (1985) (antitrust law does not impose a requirement of due process).

339 *See supra* notes __-__ and accompanying text (discussing such situations).

standard-setting organizations provide a way for companies to ameliorate the anticompetitive risks of patents in certain industries, they may make the patent system as a whole much more efficient than it otherwise would be. They may also reduce the need for an industry-specific patent system.[340] In any event, it should be clear that we cannot design an optimal patent policy without paying close attention to how patents are actually used and licensed in practice. SSOs are a large piece in that puzzle.

VII. Conclusions

The interaction between patents and innovation is a complex one. That interaction is not simply a function of the traditional theory of patents as mechanisms for maintaining market exclusivity. Rather, any study of patents and innovation must take account of how patents are used in the real world. Previous work has shown that the effect of patents differs greatly from industry to industry. Patents create the most problems in the telecommunications, computer, and Internet industries, where they are most likely to overlap and to block the development of necessary improvements.

Fortunately, standard-setting organizations – which tend to exist in precisely those industries – provide a way for private parties to contract around the effect of these overlapping intellectual property rights. SSO members are effectively contracting in the shadow of patent law, bargaining from an inefficiently powerful set of property rules to a world in which intellectual property rights are either removed from the picture entirely or are licensed in advance on standardized terms. SSO IP rules are thus a partial market solution to a problem created by overbroad intellectual property protection.

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[340] On the importance of such a system, see Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology-Specific?* (working paper 2002).

SSO IP rules are also an example of what one might call "messy private ordering."[341] Legal theorists too often tend to exalt private ordering as perfect and denigrate public rules as incompetent, corrupt, or both. My empirical exploration does not reveal a perfectly functioning contractual system, a fact that advocates of private ordering will have to come to terms with. But it is a system that may be good enough for the real world. It is also a system that can be improved by increased attention to process concerns, something I recommend in the paper.

My overall conclusion is an optimistic one. Messy private ordering by SSOs may or may not be better for innovation than an optimally designed patent system. But it is almost certainly better than the problematic patent system that we actually have. And by ameliorating some of the threats overbroad and overlapping patents pose for innovation, SSO IP rules help the patent system do what it was originally designed to do: promote innovation.

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[341] The classic treatment of the internal workings of standards bodies is **Suzanne K. Schmidt & Raymund Werle, Coordinating Technology: Studies in the International Standardization of Telecommunications** (MIT Press 1998). *Cf.* Weiser, *supra* note __, at 831 (discussing ways in which SSO private ordering may be imperfect outside the intellectual property context); Robert J. Aiken & John S. Cavallini, *When Are Standards Too Much of A Good Thing? Will They Provide Interoperability For the National Information Infrastructure,* in **Standards Policy for Information Infrastructure** 253, 259 (Brian Kahin & Janet Abbate eds., 1995) (same).