

INTELLECTUAL PROPERTY RIGHTS AND ANTITRUST POLICY: FOUR PRINCIPLES FOR A COMPLEX WORLD

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INTRODUCTION

Intellectual property law and antitrust policy interact in several important ways. Antitrust policy can shape the nature and value of intellectual property rights by placing restrictions on the acquisition of intellectual property, refusals to deal, and the terms adopted in licensing agreements. Moreover, antitrust policy affects the nature of product-market competition, which in turn affects the returns to the acquisition and use of intellectual property. In the other direction, intellectual property policy can have significant effects on product-market competition and innovation—areas that are central concerns of antitrust policy.

Today, it is fashionable to declaim that a historically perceived tension between intellectual property law and antitrust policy was overstated. The old view held that intellectual property rights regimes create monopolies to spur innovation, while competition policy seeks to eliminate monopolies.¹ The modern view holds that both intellectual property law and antitrust policy seek to promote innovation and consumer welfare by creating an economic environment in which innovative activities are stimulated by both competition and the promise of returns to successful innovation.²

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1. *See, e.g.*, *SCM Corp. v. Xerox Corp.*, 645 F.2d 1195, 1203 (2d Cir. 1981) (“While the antitrust laws proscribe unreasonable restraints of competition, the patent laws reward the inventor with a temporary monopoly that insulates him from competitive exploitation of his patented art.”).

2. *See, e.g.*, *Atari Games Corp. v. Nintendo of Am., Inc.*, 897 F.2d 1572, 1576 (Fed. Cir. 1990) (“[T]he aims and objectives of patent and antitrust laws may seem, at first glance, wholly at odds. However, the two bodies of law are actually complementary . . .”).

I agree that the tension between intellectual property law and competition policy is less than some might have thought, but my reason for agreement is somewhat perverse: while the two policies are not necessarily at war with each other, each can at times be at war with itself. Property rights and competition policy both seek to create incentives to innovate, but there are circumstances in which both policies can stifle rather than promote innovation. The relationships between public policy, market structure, and innovation are complex. Indeed, much of the progress made in the last two decades of studying these relationships has been to learn how many things we do not fully understand.

In this essay, I suggest four principles for dealing with the complexity of the relationships between intellectual property rights, competition policy, and innovation:

1. *Keep the big picture in mind.* One must examine equilibrium of the full system of institutions, agents, and actions because partial analyses can be misleading.
2. *Remember the Coase Theorem.* Parties often can bargain to reach privately optimal outcomes, but transactions costs are ever present, and initial allocations of property rights matter.
3. *Look at the facts.* Theory alone is not going to provide simple answers for which one size fits all.
4. *Create a meaningful but-for world.* A realistic benchmark is essential for determining the net effects of a policy.

After discussing these principles in greater detail below, I apply them to the question of the appropriate antitrust treatment of patent licensing. I argue that licensing is an important part of an overall economic system and that the possibility of licensing can fundamentally alter one's views of the linkages among intellectual property rights, competition, and innovation. I also argue that competition policy should seek to avoid creating unnecessary transactions costs or restricting private institutions that develop to avoid or reduce transactions costs. Lastly, I argue that policy analysts should give additional thought to the question of whether the granting of intellectual property rights should be conditioned on industry characteristics, including the state of competition, to a considerably greater extent than is done today.

I. FOUR PRINCIPLES

This section discusses each of the four principles in turn.

A. *Keep the Big Picture in Mind*

The first principle is that proper policy analysis must consider the full set of institutions, actors, and actions. Public policies apply to autonomous agents who can be expected to respond in ways that advance their perceived self-interests, not the interests of policy makers. As a result, policies can have complex and unintended consequences. In some cases, private economic agents will respond to public policies in ways that undermine those policies. In other cases, however, private responses may correct what would otherwise be policy-induced distortions.

The importance of the big-picture principle is best illustrated through an example. Consider the policy analysis of errors made in issuing patents. A narrow analysis would focus on the Patent and Trademark Office and would attempt to assess the costs to society of type I and type II errors.³ But a proper analysis would recognize that while the Patent and Trademark Office can issue or deny patents, there are other parties that also determine the effects of patent policy. Private parties may respond to the frequent grant of patents by engaging in *defensive publishing*, whereby a company publicly discloses an innovation not to obtain intellectual property rights, but to prevent others from doing so.⁴ In this way, the potentially excessive granting of patents may actually lead to more innovations being placed in the public domain. Another response is for private parties to challenge the validity of patents in court.⁵ Lastly, private parties may be able

3. If one takes the null hypothesis to be that a patent should be granted in response to an application, a type I error is made when an application is rejected even though the invention meets all of the criteria for a patent grant, and a type II error occurs when a patent is granted for an innovation that does not, in fact, meet the criteria.

4. For a recent description of this strategy, see Sarah Milstein, *New Economy: Many Midsize Companies Find that 'Defensive Publishing' is a Quick and Easy Way to Protect Intellectual Property*, N.Y. TIMES, Feb. 12, 2002, at C3.

5. In an insightful essay, Mark Lemley makes the point that, because the vast majority of patents are never enforced or litigated, it is in fact efficient to have relatively cheap and, thus, error-prone, examinations by the Patent and Trademark Office, with the courts making corrections in those cases that matter. See Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 Nw. U. L. Rev. 1495 (2001). Recently, Josh Lerner has argued that the courts have become less likely to overturn patents and thus, the Patent and Trademark Office should adjust its issuing behavior. Joshua Lerner, *The Patent System and Competition*, A Statement to the Federal Trade Commission/Department of Justice Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy (Feb. 20, 2002) (unpublished manuscript, on file with author).

to use licensing agreements to work around “bad” patents. A firm accused of infringing what it thinks is an invalid patent may nevertheless take a license in order to get on with its commercial life. While the need to make such royalty payments can have adverse incentive effects, these effects may be less drastic than those of completely shutting down alleged infringers. In sum, the availability of these various private responses suggest that it is socially optimal for the Patent and Trademark Office to err toward issuing what would look like “too many” patents if it were viewed as having the last word.

Of course, one does not want to overstate private parties’ abilities to overturn bad patents through litigation or to bargain their way to efficient outcomes. Attempts to do so are both costly and imperfect. This observation leads to the second principle for dealing with the complexity of the relationship between public policy and innovation.

B. Remember the Coase Theorem

The second principle is to remember the Coase Theorem.⁶ In short, the Coase theorem states that where one starts has no effect on where one ends up if there are no transactions costs. More precisely, the Coase theorem states that, absent transactions costs or significant asymmetric information, *any* assignment of property rights will lead private parties to bargain their way to an efficient outcome.

The lesson of the Coase theorem is *not* that the assignment of property rights does not matter. Rather, there are two important lessons. First, private bargaining is an important determinant of the equilibrium outcome. One should recognize that public institutions, including intellectual property rights and antitrust policy, shape the private bargaining that leads to market outcomes. Public policies need not—and indeed may be unable to—determine market outcomes directly. In this regard, the second principle is closely related to the first.

A second important lesson of the Coase theorem is that it is critical to pay attention to the presence and effects of transactions costs. With transactions costs present, the allocation of property rights matters because parties may fail to bargain their way to efficient outcomes, or the bargaining process may itself be very costly. In a sense, transactions costs create stickiness—where a market begins affects where it ends up.

6. See Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

The reason this second lesson is important is that any market has transactions costs. For example, the hard-core version of the Coase theorem applies only to situations in which there is no significant private information, there are no costs of bargaining, and it is costless to write and enforce tremendously complex contracts.⁷ Clearly, these conditions are not met in practice. For instance, a firm's investment in a new production process may lead to lower prices that raise consumer surplus. If the firm fails to take this surplus increase into account, its private investment incentives will be smaller than is socially optimal. For any situation with more than a very small number of consumers, transactions costs will prevent consumers from signing a contract with the firm under which they partially underwrite the firm's investment. Creating and agreeing to the contracts needed to overcome the potential asymmetric information and free riding problems would be prohibitively costly.

C. *Look at the Facts*

The third principle—look at the facts—should be so obvious as to need no statement. Experience, however, teaches that it does. Fundamentally, this principle follows from the fact that theory alone is insufficient to answer many important questions. Economists are known for saying “on the one hand . . . on the other.” In order to discuss the economics of innovation, an economist may have to be a veritable Durga. Consider the effects of technological spillovers, whereby a firm that has not innovated may be able to make use of technology developed by another entity without obtaining the innovator's permission. On the one hand, spillovers are a form of diffusion that may lead to lower-cost or higher-quality products and increased product-market competition. On the other hand, spillovers may reduce the incentives to innovate because a firm recognizes that its research and development (R&D) may help other firms compete against it. On the *other* other hand, the fact that firms in an industry are able to “share” one another's R&D efforts in the presence of spillovers means that, even if total dollar expenditures on R&D fall, an increase in spillovers may lead to an increase in “effective” R&D. Theory alone is not going to tell us which effect dominates.⁸

7. In the presence of sunk investments, for example, first-best efficiency may require sophisticated contracts with large numbers of contingencies in order to prevent hold-up problems.

8. For a seminal theoretical analysis of spillovers, which provides simulations as guidance, see A. Michael Spence, *Cost Reduction, Competition, and Industry Performance*, 52 *ECONOMETRICA* 101 (1984).

Similarly, to understand the effects of competition policy on innovation and consumer welfare, one must understand a series of linkages from policy to competition, from competition to innovation, and from innovation to economic welfare. There are theoretical complexities and ambiguities at each stage. For the moment, take it on faith that competition policy does in fact promote product-market competition and consider the competition-innovation linkage. Economic theory identifies situations in which large firm size and high market shares are conducive to R&D investment.⁹ For instance, the possibility of sudden and sweeping entry, combined with large up-front investment demands, can necessitate high initial returns to allow costs to be recouped before the next innovator supplants the incumbent investor. A firm with a large market share and significant market power may better amortize the fixed costs of the R&D and appropriate a high percentage of the R&D's benefits. Conversely, it has been said that "[the] best of all monopoly profits is a quiet life."¹⁰ Considerable anecdotal evidence suggests that competition drives organizations to be more innovative than do protected monopoly positions.

The ambiguity in the theory of market structure and innovation leaves one with a situation that is hard, but not hopeless. While it is impossible to make definitive general statements about the linkage between market structure and innovation,¹¹ one often can make reasonable, unambiguous predictions about the effects of specific practices within a particular market structure and set of institutions. Theory alone is not going to get the job done, however. A fact-intensive investigation is needed.

Now consider the innovation-welfare linkage. A large body of economics literature has established that this linkage too is ambiguous in theory.¹² As a matter of theory, firms may invest more than the socially efficient amounts in R&D. This situation can arise, for example, in patent races due to "business stealing" effects. In a patent race, preempting its rivals by a day may allow a firm to obtain intellectual property rights whose value far exceeds the social benefits of having the innovation one day ear-

9. This is a view often associated with the work of Joseph Schumpeter. See JOSEPH A. SCHUMPETER, *CAPITALISM, SOCIALISM, AND DEMOCRACY* (1942).

10. J. R. Hicks, *Annual Survey of Economic Theory: The Theory of Monopoly*, 3 *ECONOMETRICA* 1, 8 (1935).

11. I am fond of saying that there is no general theorem in industrial organization except the theorem stating that there is no other general theorem.

12. For a survey, see Jennifer F. Reinganum, *The Timing of Innovation: Research, Development, and Diffusion*, in 1 *HANDBOOK OF INDUSTRIAL ORGANIZATION* 849 (Richard Schmalensee & Robert Willig eds., 1989).

lier. Moreover, in some cases, an innovation may allow a supplier to increase its share of the economic pie without increasing the total pie (e.g., a product or database innovation may facilitate price discrimination having these effects).

The theoretical possibility of excessive private incentives notwithstanding, as an empirical matter private incentives to invest in R&D typically are too low.¹³ Generally, private firms are unable fully to appropriate the benefits that their R&D generates for the economy.¹⁴ Moreover, consumers almost always benefit from additional R&D. Even in patent race models in which firms engage in more than the socially efficient levels of R&D expenditures, consumers would be better off if firms invested still more and thus brought the fruits of innovation to the market even faster. Finally, there is a specific set of conditions under which firms can have socially excessive incentives, and one can examine any particular market to determine if those conditions are present.

D. Create a Meaningful But-For World

The final principle is that it is important to have a thoughtful and complete but-for world. An inappropriate standard of comparison can lead to very misleading conclusions. For instance, one should be careful not to dismiss a policy solely because it does not induce an ideally efficient outcome if, in fact, no feasible policy can do so. One needs to consider realistic alternatives, and one should form careful predictions of how self-interested economic actors will respond to those alternatives.

II. INTELLECTUAL PROPERTY RIGHTS, LICENSING, AND INNOVATION

The present section and the two sections that follow apply the four principles above to the antitrust treatment of licensing.

13. See, e.g., Zvi Griliches, *The Search for R&D Spillovers*, 94 SCANDANAVIAN J. ECON. 29 (Supp. 1992); Charles I. Jones & John C. Williams, *Measuring the Social Return to R&D*, 113 Q. J. ECON. 1119 (1998).

14. Dennis Carlton and Robert Gertner point out that empirical studies generally compare *average* private and social returns, while the privately and socially optimal R&D levels depend on *marginal* returns. Dennis W. Carlton & Robert H. Gertner, *Intellectual Property, Antitrust and Strategic Behavior* (March, 2002) (unpublished manuscript, on file with author). In settings where R&D investment is driven by preemption incentives, the private marginal returns may deviate from the private average returns by more than the marginal social returns deviate from the average social returns, suggesting that perhaps there is a problem of excessive private incentives. It is far from evident, however, that patent preemption incentives are of empirical significance in many industries.

The present section establishes that, in some circumstances, licensing can have fundamental effects on the relationship between intellectual property policy and the resulting levels of innovation and diffusion. The following section examines at a broad level how antitrust policy should treat specific licensing practices, while the last of these sections briefly addresses the issue of compulsory licensing.

To see how licensing can have wide-reaching effects, consider how the granting of strong intellectual property rights affects innovation. The old view—still subscribed to by many—holds that strong intellectual property rights stimulate innovation by increasing the returns to successful R&D. The assignment of explicit intellectual property rights is seen as essential to allowing potential innovators to appropriate the fruits of their labors and thus is seen as essential to providing incentives to innovate. The new view challenges the old one on at least two grounds. First, the new view asserts that strong intellectual property rights are not needed, either because innovators are not as concerned with direct financial rewards as the old view suggests,¹⁵ or because there are other means of appropriating the fruits of innovation, such as the possession of scarce complementary assets. Second, the new view goes further to suggest that—more than simply being unnecessary—the assignment of strong intellectual property rights can reduce innovation because today’s potential innovators are blocked by the intellectual property rights of past innovators.¹⁶ In this regard, the “new” view is not so new.¹⁷ In response to the potential follow-on innovation

15. The open source movement in the software industry is often held up as an example where some combination of altruism and other forms of reward (e.g., professional recognition or benefits enjoyed as a user of the created property) provides motivation to innovate. For a discussion of labor market forces (e.g., the value of a good reputation) as motivation for open source programmers, see JOSH LERNER & JEAN TIROLE, *THE SIMPLE ECONOMICS OF OPEN SOURCE*, (Nat’l Bureau of Economic Research, Inc., Working Paper 7600 2000). See also Eric Raymond, *Homesteading the Noosphere*, available at <http://www.tuxedo.org/~esr/writings/cathedral-bazaar/homesteading/index.html> (last visited June 9, 2002). Raymond identifies the economic value of reputation, but points to psychic benefits as well (“good reputation among one’s peers is a primary reward”). *Id.* at §8.

16. For an insightful introduction to the issues of follow-on innovation, see Suzanne Scotchmer, *Standing on the Shoulders of Giants: Cumulative Research and the Patent Law*, 5 J. ECON. PERSP. 29 (1991). For several historical case studies of the effects of intellectual property rights on follow-on innovation, see Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839 (1990).

17. Like the old view, the new view generally holds that higher levels of R&D lead to higher levels of economic welfare. As discussed in Section I.C. above, the relationship between economic welfare and R&D is ambiguous in theory, but very likely increasing in practice, subject to a few specific exceptions.

problem, the Austrian patent law of 1897 allowed follow-on innovators to demand licenses in certain circumstances.¹⁸ And writing in 1940, Alfred Kahn warned that “[a] single seventeen-year monopoly of a minor cog in that huge mechanism of interlocking processes and contributions which make up an advancing art can for seventeen years seriously retard continued research.”¹⁹

Let us apply the four principles above to the new view. It is useful to begin with the admonition to consider an appropriate benchmark; that is, to create a meaningful but-for world. A central question is what would happen in the absence of strong intellectual property rights? Would innovations be kept secret? If so, then weaker intellectual property rights might lead to less diffusion of the underlying ideas to potential follow-on innovators than if a patent were granted and the idea formally disclosed. Would the fruits of innovation be enjoyed only by concerns that had complementary assets that allowed for rapid, internal use of the innovations? If so, then the loss of strong intellectual property rights might make it difficult or impossible for small organizations to innovate profitably. Thus, while some commentators argue that patents are a means of freezing out independent innovators, patents can have exactly the opposite effect; as discussed below, strong intellectual property rights can allow independent innovators to develop intellectual property that they can then sell to firms that are capable of making commercial use of the technology.

In setting an appropriate benchmark, it is also important not to set too high a hurdle for policy evaluation. One should not reject patents on the grounds that they cannot promote the optimal balance of rewards between first- and second-generation innovators. If two generations of innovations are complements that must be used together, then the two innovators face a *teams* problem. Each innovator is dependent in part on the efforts of the other. While either innovator’s efforts affect both, each is concerned with only his or her private returns. Consequently, as is well known, there is no balanced-budget solution that provides the fully efficient incentives for both to invest.²⁰

18. Richard Reik, *Compulsory Licensing of Patents*, 36 AM. ECON. REV. 813, 817 (1946).

19. Alfred E. Kahn, *Fundamental Deficiencies of the American Patent Law*, 30 AM. ECON. REV. 475, 482 (1940). Modern claims that an under-funded Patent and Trademark Office generates protracted and costly litigation by granting too many patents and issuing patents of questionable merit also echo Kahn’s complaints. *Id.* at 483-84.

20. See generally Bengt Holmstrom, *Moral Hazard in Teams*, 13 BELL J. ECON. 324 (1982).

Now consider the desirability of examining the big picture. An important observation about equilibrium of the overall economic system is that, even with strong intellectual property rights, an initial innovator can support follow-on innovation. Absent transactions costs, an incumbent rights property holder and potential follow-on innovator will reach a mutually profitable arrangement under which investment in the follow-on innovation is made whenever the investment raises the expected joint profits of the two parties (the Coase theorem again). In this setting, there is no danger that granting strong intellectual property rights to initial innovators will deter later innovation.²¹ Moreover, private parties may also respond in other ways. One is to develop patent portfolios that can then be used to bargain with other rights holders to obtain cross licenses. The result may be both increased incentives to innovate and widespread diffusion.

Of course, the transactions costs associated with licensing and its alternatives can be significant. It does not automatically follow, however, that granting property rights to initial innovators slows follow-on innovation. Indeed, one can argue that patents reduce transactions costs and make licensing feasible by making it possible for an intellectual property owner to show its wares to a potential licensee without fear that the would-be buyer would simply run off with the idea once it was revealed.²² Hence, by facilitating licensing that makes both patented information and, in some cases, associated know-how more widely available, the granting of strong intellectual property rights may promote follow-on innovation rather than stifle it.²³

21. Technically, consumers too must face no transactions costs. See Section I.B. above. See also Alvin K. Klevorick et al., *Appropriating the Returns from Industrial Research and Development*, 3 BROOKINGS PAPERS ON ECON. ACTIVITY 783, 788 (1987) (arguing that patents pose no obstacles to cumulative innovation absent transaction costs).

22. For a discussion of the difficulties of selling information, see Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in *THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS* 609, 614-16 (Richard R. Nelson ed., 1962). Edmund Kitch observed that the patent system generally increases the ability of firms to combine complementary assets through contract by reducing the danger that intellectual property revealed during the contracting process will be misappropriated. Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J. L. & ECON. 265, 277-78 (1977). For a discussion of an alternative mechanism for licensing in the presence of the potential theft of information shown to the prospective buyer, see James J. Anton & Dennis A. Yao, *Expropriation and Inventions: Appropriable Rights in the Absence of Property Rights*, 84 AM. ECON. REV. 190 (1994).

23. Edmund Kitch identifies several other mechanisms through which strong property rights may stimulate and rationalize follow-on innovation. Kitch, *supra* note 22, at 276-79. For a critique of Kitch's view that having an initial innovator

Nevertheless, the picture can be far less rosy. Real-world licensing transactions typically take place between asymmetrically informed parties. The potential licensor will not know the full value of a license to the potential licensee. In attempting to earn the greatest possible revenues from the licensee, the potential licensor may set the price so high that licensing does not take place. In addition to leading to too little licensing, the presence of asymmetric information may shape licensing terms in ways that lead to distortions in product-market competition (e.g., the use of running royalties as a metering device). Moreover, contracting costs can be significant, with the result that either the parties settle for less than first-best outcomes in order to avoid incurring transactions costs, or the parties incur significant costs to get to an efficient allocation.²⁴ Even in these situations, however, one must determine whether alternatives perform better before concluding that granting strong intellectual property rights is an unsound policy.

The discussion so far has been framed in terms of a single incumbent. Transactions costs may be higher with multiple incumbents. But here, too, one must consider the possible reactions of private parties. Patent pools and cross licensing have long been recognized as potential means of reducing transactions costs and ameliorating the stifling of innovation that could otherwise arise when production requires the use of a large number of patents held by different parties.²⁵

The effects of strong patents on incentives to innovate depend on many factors, including: the viability of secrecy; imitation costs; the extent to which there are complementary pieces of intellectual property; the potential for follow-on innovation; the role of complementary productive assets; and competition policy's treatment of licensing, both unilateral and joint. Not sur-

coordinate follow-on innovation is preferable to open competition, see Merges & Nelson, *supra* note 16, at 871-77.

24. See Lerner, *supra* note 5 (arguing that both the strengthening of U.S. patent rights and use of a first-to-invent system lead to adverse effects of this type). The size of contracting costs are magnified because, in order to ensure that follow-on innovation incentives are not inefficiently depressed, the parties would have to engage in contracting before a potential follow-on innovator knew if it had anything of value. If a follow-on innovator were to wait until after it had spent a large amount of money and effort to obtain a valuable innovation before it reached a contract with the original innovator, the sunk nature of the follow-on innovator's costs would put it in a weak bargaining position. The original innovator could be expected to take advantage of this fact, and the follow-on innovator might not be able to reach an agreement in which it recovered its sunk costs even when the joint value of the innovation to the two parties exceeded the costs of the innovation.

25. See, e.g., Reik, *supra* note 18, at 828; see also Kahn, *supra* note 19, at 486-91.

prisingly, to understand the effects in a given market, one must look at the facts. The empirical literature on intellectual property rights and innovation verifies that these factors lead to strong inter-industry differences. In one recent empirical study, for example, Ashish Arora et al. concluded “[a] central result is that the impact of the effectiveness of a firm’s patenting strategy on R&D and innovation is fundamentally different across [different types of industries].”²⁶ Research indicates, for example, that strong patent protection significantly stimulates innovation in some industries (e.g., chemicals and pharmaceuticals) but does less so in others (e.g., machinery and electronics).²⁷ The rationales for patenting may also differ across industries. For example, Wesley Cohen found that firms in some industries, particularly those requiring the use of a large number of complementary technologies to produce a marketable good, often cite using patents as a negotiating tool to obtain cross-licenses.²⁸

Two opposing views of the effects of strong intellectual property rights on innovation have coexisted for a long time. I suspect this continuing coexistence is due, in part, to the fact that each view contains a grain of truth. Indeed, the extent to which one view is correct and the other incorrect varies considerably across industries, one of the factors being differences in industry participants’ incentives and abilities to engage in licensing. The next section examines the antitrust treatment of licensing terms. The section after that examines the implications of inter-industry differences for compulsory licensing policy.

26. ASHISH ARORA, MARCO CECCAGNOLI & WESLEY COHEN, INTELLECTUAL PROPERTY STRATEGIES AND THE RETURNS TO R&D 18, (Carnegie Mellon University, Working Paper, Nov. 2000), available at <http://www.heinz.cmu.edu/wpapers/detail.jsp?id=180> (last visited June 9, 2002).

27. *Id.* at 18-19. See also Klevorick et al., *supra* note 21. Recently, Wesley Cohen reported that patenting has positive effects on R&D levels even in industries such as semiconductors, where other forms of intellectual property protection are more important than patents. Wesley M. Cohen, Address Before the Federal Trade Commission/Department of Justice Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy, *Patents: Their Effectiveness and Role*, at 26-31 (Feb. 20, 2002), available at <http://www.ftc.gov/opp/intellect/cohen.pdf>. Remarkably, writing in 1946, Richard Reik argued that chemicals were a particularly good area in which to *limit* patent rights through compulsory licensing because follow-on innovation would otherwise be dampened. Reik, *supra* note 18, at 823. Moreover, he pointed out that numerous European countries had weaker intellectual property rights for chemicals than other industries, and that Germany’s lead over France in the dye industry “was generally attributed to the condition that the French patent law grants protection to the dye itself.” *Id.*

28. Cohen, *supra* note 27, at 14-17.

III. ANTITRUST TREATMENT OF LICENSE TERMS

Competition policy toward licensing matters because licensing terms can affect both innovation and product-market competition. As discussed above, the availability of licensing can affect innovation by affecting the returns to initial innovation, the returns to follow-on innovation, and the availability of a knowledge base on which to build follow-on innovations. With respect to product-market competition, licensing affects both the extent to which innovations are used and—through the terms of license contracts—the degree and nature of product-market competition.

To evaluate the competitive effects of a licensing agreement, one must predict what would happen if the agreement were disallowed. Would there be a subsequent licensing agreement with less offensive terms, or would there be no licensing at all? Moreover, one must determine whether no licensing agreement at all is preferable to one containing the offending terms.

Consider a license containing terms that restrict competition in some market, say by limiting the licensee's ability to compete for certain customer classes. Depending on its terms, the restrictive license may be better or worse than no license at all. The benefits of the restrictive license compared to no license at all include:

- *The license agreement may allow complementary assets to be combined more fully or at lower cost, with resulting improvements in product cost or quality.* Intellectual property is typically one of many factors that must be combined to produce a valuable good or service, and the creator of intellectual property may not possess the full range of complementary factors of production. A licensing deal may allow the combination of the intellectual property and complementary assets that result in improved products or processes. Moreover, some of these benefits may be passed on to consumers outside of the proscribed classes, and even consumers in the proscribed classes may benefit if they or others can engage in arbitrage.
- *Some product-market competition where there might have been none.* While the licensee cannot compete for all customers in the hypothetical just posed, it may be able to compete for some. Even restrictive licensing can thus increase competition if the non-innovator would be foreclosed from the product-market entirely absent licensing.
- *Increased returns from innovation may stimulate additional R&D.* The possibility of a licensing revenue stream increases

the expected reward to successful innovation and thus increases R&D investment incentives.

- *Increased diffusion of innovation may stimulate additional R&D.* If the alternative to licensing is that the idea is kept secret, then other firms may have less ability to create follow-on innovations absent a license.

As noted earlier, transactions costs associated with patent disputes and licensing can be substantial. Private parties may respond by creating institutions—such as patent pools, joint ventures, and standards-setting organizations—that can serve to reduce these transactions costs. In the light of the potential benefits of licensing, antitrust policy needs to be sensitive to the potential benefits of these institutions. Indeed, in a sense, competition policy can be viewed as a form of transactions costs, making some types of transactions prohibitively costly. The trick is to impose costs on bad transactions, while helping parties minimize the costs of socially beneficial transactions.²⁹

The terms of a restrictive license may diminish competition to such an extent that it is socially preferable to have no license than to have the one in question. The harms to competition and social welfare can come in two areas. First, there may be a loss of innovation competition. For example, there might be a contractual provision requiring the licensee to refrain from creating substitute pieces of intellectual property. It is important to be clear that the antitrust concern is with specific contractual terms, such as this one, that limit competition. The mere existence of a license on terms favorable to the licensee reduces the licensee's incentives to invent around the original patent. But it would be unsound public policy to object to licensing on the grounds that it thus reduces innovation incentives. Such a policy would be suspect on two grounds. First, there would be a loss of diffusion in those situations where licensing on terms acceptable to the rights holder was proscribed and design-around attempts

29. For insights into how the Antitrust Division of the U.S. Department of Justice has recently viewed patent pools, see the December 16, 1998 and June 10, 1999 business review letters for the joint licensing of patents essential for making DVD-video and DVD-ROM discs players, JOEL I. KLEIN, U.S. DEP'T OF JUSTICE, *available at* <http://www.usdoj.gov/atr/public/busreview/2121.htm> and <http://www.usdoj.gov/atr/public/busreview/2485.htm> (last visited Apr. 16, 2002). See also the June 26, 1997 business review letter for the licensing of intellectual property essential to the MPEG-2 compression technology standard, JOEL I. KLEIN, U.S. DEP'T OF JUSTICE, *available at* <http://www.usdoj.gov/atr/public/busreview/1170.htm> (last visited Apr. 16, 2002).

failed or were too costly to be commercially attractive. Second, the policy could result in wasteful duplication of R&D efforts.³⁰

A second area for potential harm from license terms is through the loss of competition among actual or potential product-market competitors. For instance, absent legal prohibitions, product-market rivals might sign a licensing agreement allocating markets between them even though the licensing technology was useless in the production of the affected good or service. The sole effect of such an agreement would be to reduce product-market competition. A similar situation could arise when one firm had a patent and another firm was uniquely positioned to have the patent declared invalid. Left to their own devices, the latter firm might agree not to challenge the patent, and the two firms might allocate markets or make side payments between each other. A final example is one in which there is a valid patent actually used in production in one market, but the licensing agreement restricts competition in another product market.

Here too, the need to look at the facts arises. One could also conclude that it is good to allow firms to monopolize other markets as a reward to innovation. This is part of a more general difficulty: How should policy makers deal with the point that increased market power may increase the rewards to innovation and investment? Consider an extreme example. The production of a new pharmaceutical might generate large amounts of consumer surplus. Hence, the innovating firm's incentives to invest in coming up with the drug might be less than the socially efficient incentives. One way to increase the firm's investment incentives would be to grant the firm a monopoly on the manufacture of pretzels in a handful of mid-western states as part of the reward for patenting the new drug. Of course, there would be efficiency losses, but the theory of Ramsey pricing suggests that it would be more efficient to raise a given amount of profits over a range of products rather than trying to extract it all from one.³¹ The example is manifestly silly, but its logic is not that far removed from some of the claims made in telecommunications and other industries about the need to create vertically integrated closed systems in order to generate incentives for in-

30. In theory, there could be circumstances in which it is socially optimal to have duplicate innovation by two firms rather than licensing by one firm to the other. The reason is that two innovators might compete in the sale of their intellectual property, leading to greater diffusion of the innovation compared to the case in which an innovator licenses to one other producer.

31. See generally William J. Baumol & David F. Bradford, *Optimal Departures from Marginal Cost Pricing*, 60 AM. ECON. REV. 265 (1970).

vestment in broadband infrastructure. In the antitrust—if not regulatory—context, however, U.S. policy rejects the notion that the otherwise illegal maintenance or acquisition of monopoly power in a market can be justified by “good” use of the monopoly profits in that market or another one.

U.S. competition policy typically frames the problem of harmful licensing agreements as those that go outside the bounds of the patent.³² In the case of a non-essential patent, one has some sense of what it means to say that an agreement cannot go beyond the scope of the patent. Market division by firms that could compete absent a license is one example. Exclusive dealing requirements and tying are a second class of examples, which go beyond the patent by affecting third-party suppliers’ or third-party intellectual property owners’ abilities to compete. For each practice, the effects are complex and situation-specific. However, there is a consensus that underlying grants of intellectual property rights do not, and should not, immunize licensing agreements from antitrust scrutiny.³³

Essential patents can raise somewhat different issues. One might even ask whether a policy of “anything goes” would be appropriate with respect to licensing essential patents on the grounds that the patent holder has the right and ability to monopolize the market. In this view, any competition fostered by licensing is icing on the economic cake. This logic suggests that market division concerns are misplaced as long as the division is of markets in which the intellectual property is essential. However, the right to monopolize is not unlimited. First, just as in the case of non-essential patents, licensing may have effects outside of the market in which the patent applies, as can arise with tying or the division of markets in which the patent is not relevant. Second, even within a market, it can be a tricky matter to determine if a patent truly is essential. What is the scope of the patent? Could it be invented around? Is it valid and enforceable?³⁴ Antitrust enforcers can have a very difficult time deter-

32. See generally U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY (Apr. 6, 1995), available at <http://www.usdoj.gov/atr/public/guidelines/ipguide.htm>.

33. See, e.g., CSU L.L.C. v. Xerox Corp., 203 F.3d 1322, 1325 (Fed. Cir. 2000) (“Intellectual property rights do not confer a privilege to violate the antitrust laws.”).

34. The Federal Circuit’s position with respect to intellectual property-based refusals to deal closely fits the structure just described in the text. For example, the court stated, “in the absence of any indication of illegal tying, fraud in the Patent and Trademark Office, or sham litigation, the patent holder may enforce the statutory right to exclude others from making, using, or selling the claimed invention free from liability under the antitrust laws.” *Id.* at 1327.

mining whether firms are actual or potential competitors, either as suppliers of intellectual property or as suppliers of products embodying the intellectual property. Identifying competitors in the supply of intellectual property can be particularly difficult because it often involves issues of potential competition.

These difficulties are part of a broader issue faced by public policy makers. For both innovation and product-market competition, the evaluation of specific licensing terms depends in large part on the validity and scope of the patents involved. Under the current system of intellectual property rights, private litigation challenging validity and claims of infringement is used both to correct errors that may have been committed by the Patent and Trademark Office and to determine the practical scope of patents. These challenges are brought by firms interested in supplying competing intellectual property or goods and services. This institutional structure raises an important question for both antitrust policy and intellectual property law: who represents consumers in challenging patent validity and claims of broad scope?³⁵ Transactions costs may be too high for consumers to mount challenges on their own. And suppliers may not have incentives to protect consumer interests. The divergence of supplier and consumer interests is one reason for antitrust scrutiny of licensing agreements. It is also a reason for government oversight of private agreements arising out of patent litigation.³⁶ Given that they cannot rely on the private parties possessing the technical expertise, what assumptions about patent validity and scope should antitrust enforcers make when analyzing the welfare consequences of license agreements and settlements? And, in the light of the divergence between social and private incentives to challenge validity and scope, should the government bring challenges on behalf of consumers? Economic logic suggests an affirmative answer. But there are difficult issues of institutional competence that must be addressed. This area clearly deserves greater thought.

35. In addition to the neglect of consumer interests, there can also be a second difference between a private party's incentives to challenge patent validity and the social incentives: A validity challenge may give rise to a free-rider problem, whereby each of several potential infringers waits for one of the other potential infringers to bear the costs of challenging validity. The lack of any one potential licensor's concern for the welfare of the others can also affect settlement incentives. In comparing private and social incentives, it is important to keep in mind that efficiency effects, rather than pure monetary transfers, are the social concern.

36. For recent enforcement actions, see, e.g., *In re Abbott Labs and Geneva Pharm., Inc.*, Federal Trade Commission Dkts. C-3945 and C-3946 (March 16, 2000), available at <http://www.ftc.gov/os/2000/03/index.htm#16>.

IV. COMPULSORY LICENSING?

A central concern in evaluating the effects of public policy prohibitions of private licensing terms is that licensing may be deterred entirely. Moreover, under some conditions, even without government restrictions on license terms, an intellectual property owner will refuse to offer meaningful licenses even though it would be efficient to do so.³⁷ So why not mandate the licensing of patents that would otherwise confer market power in order to take the guesswork out of whether banning a restrictive license term would lead to less restrictive terms or no license at all?

Before answering this question, it is useful to distinguish a mandatory duty to deal from two very different rationales for compulsory licensing.³⁸ Under the rationale just described, a refusal to license would itself be a violation of intellectual property or antitrust law.³⁹ Under an alternative rationale for compulsory licensing, an initial refusal to license need not itself be an antitrust violation. Rather, the reason for compelling licensing would be to remedy a separate, previous antitrust violation. For example, when Microsoft was found to have harmed competition through various exclusionary actions, several commentators called for Microsoft to be forced to license the source code of Windows under various terms designed to restore competition.⁴⁰

37. Even absent government licensing restraints, asymmetric information and transactions costs may prevent private firms from fully appropriating the social benefits generated by licensing. Thus, licensing sometimes would lead to private losses in situations where there would be net social benefits.

38. There is also a fourth rationale: Mandatory licensing can be used as a means of preventing a merger from giving rise to adverse competitive effects. This type of licensing requirement is based on fundamentally different considerations—in which the issue is not so much the strength of the right as whether the merged entity is entitled to own the right—than are those in the text.

39. Within this rationale, one may also distinguish an essential facility argument from an intent-based argument. Under an essential facilities doctrine, licensing may be required even if the rights holder has “innocent” reasons for refusing to license to another firm. Under an intent standard, licensing is required only in situations in which licensing would be profitable but for the benefits of preventing a rival from competing. See generally James S. Venit & John J. Kallaughner, *Essential Facilities: A Comparative Law Approach*, 1994 FORDHAM CORP. L. INST. 315, 316-22 (Barry Hawk ed., 1995). For a thorough review of intent-based and essential facilities cases from economic and legal perspectives, see Gregory J. Werden, *The Law and Economics of the Essential Facility Doctrine*, 32 ST. LOUIS U. L.J. 433 (1987).

40. For an analysis of compulsory licensing as a remedy in the Microsoft case, see Remedies Brief of Amici Curiae Robert E. Litan, Roger G. Noll, William D. Nordhaus, and Frederic Scherer at 36-44, *United States v. Microsoft Corp.*, 97 F. Supp. 2d 59 (D.D.C. 2000) (No. 98-1232), available at <http://www.brook.edu/views/papers/litan/20000428.pdf> (last visited June 9, 2002).

It is useful to distinguish between a duty to deal and licensing as a remedy because they may have very different effects on the incentives to innovate. As many critics of a duty to deal have noted, such a duty weakens intellectual property rights and can reduce R&D investment incentives. In contrast, compulsory licensing as a remedy to a separate antitrust injury may actually *increase* innovation incentives. The reason is the following. Suppose that a remedy is imposed to restore competition to what it would have been absent the conduct found to be illegal. Mandatory licensing of intellectual property may be one vehicle for restoring competition. To the extent that licensing is a means of restoring competition that is less costly to the defendant than are alternatives (e.g., breaking up the firm), the defendant benefits from having created intellectual property that can be incorporated into a remedy. While it is far from clear that these positive effects on R&D are significant, the argument does suggest that any negative incentive effects may be insignificant.

Turning to the third potential rationale for compulsory licensing, Richard Reik found that European compulsory licensing laws in the early 1900s were intended as substitutes for compulsory working provisions—rather than force the patent holder to use its intellectual property in production, the patent holder was faced with a choice of use it or lose the exclusive rights to do so.⁴¹ On the surface, such a policy appears to offer a way to deter patenting that would otherwise occur solely for the purpose of blocking competitors (i.e., from developing and patenting new technologies that the inventor had no intention of using to improve its own products or processes, or of licensing to other producers). Such a policy, however, would be extremely difficult to enforce. For some products, it might be very hard to determine whether a firm meaningfully used its intellectual property. More important, firms might be driven to incorporate intellectual property into their products and processes solely to meet the requirements of the policy.⁴² In the extreme, a firm might introduce a product with little or no marketing support and distribution solely to lay claim to the underlying intellectual property. To counter such socially wasteful tactics, policy makers would have to provide detailed definitions of what it means to

41. Reik, *supra* note 18, at 815-16.

42. One might also argue that even purely preemptive patenting is beneficial if it increases the degree to which the original innovator can earn a return on the innovations of which it does make use. This line of argument, however, suggests that patent scope should be increased, not that firms should make real expenditures solely to protect rents and quasi-rents.

work a patent. Such a policy would likely become a regulatory morass.

The remainder of this section will focus on the duty-to-deal rationale for mandatory licensing. Those who oppose compulsory licensing offer at least two objections. The first is the assertion that mandating access to an input is never a sound public policy, for a variety of reasons. One is that there may be negative effects on investment incentives of the original innovator.⁴³ Another reason is that other potential investors' incentives are lowered—rather than come up with the asset on their own, they can rely on compulsory dealing.⁴⁴ Finally, there can be tremendous practical difficulties of determining appropriate prices and terms of exchange.⁴⁵ In fact, the first two incentives problems stem in part from difficulties in setting appropriate prices.

The second challenge rests on the assertion that, while an essential facilities doctrine may make sense for other forms of property, it is specifically inappropriate for intellectual property. But what, if anything, is different about asserting a duty to deal for intellectual property, as opposed to other inputs?

A. *Intellectual Property versus Other Property as a Candidate for Mandatory Dealing*

One can identify several dimensions along which intellectual property tends to be distinguished from other inputs:⁴⁶

43. Interestingly, Klevorick et al., found that compulsory licensing was generally of little consequence, even in industries subject to compulsory licensing decrees. Klevorick et al., *supra* note 21, at 804.

44. In a somewhat different context, these two arguments about effects on the incentives of the initial and follow-on investor are often made in opposition to resale and unbundling requirements imposed on incumbent local exchange telephone carriers. For a general discussion, see Joseph Farrell & Michael L. Katz, *Public Policy and Private Investment in Advanced Telecommunications Infrastructure*, IEEE COMMUNICATIONS MAGAZINE, July 1998, at 87, 89-90.

45. For a brief discussion of these problems, see Werden, note 39, at 472-75.

46. The so-called "MCI factors" provide an alternative but closely related taxonomy. The Seventh Circuit identified the following critical elements: "(1) control of the essential facility by a monopolist; (2) a competitor's inability practically or reasonably to duplicate the essential facility; (3) the denial of the use of the facility to a competitor; and (4) the feasibility of providing the facility." *MCI Communications Corp. v. American Tel. & Tel. Co.*, 708 F.2d 1081, 1132-33 (7th Cir. 1982), *cert. denied*, 464 U.S. 891 (1983). Strong patents that are essential to the production of some good or service would meet conditions (1) and (2), while the satisfaction of (4) should be guaranteed by the patent filing itself.

1. Information Has Low Marginal Costs of Reproduction and is Not Subject to Physical Congestion

As is often noted, the costs of reproducing and disseminating information, such as intellectual property, are usually much lower than the costs of creating it. This feature suggests that there are low costs of granting mandatory access and that compulsory licensing of intellectual property is more likely to be efficient than is mandatory access to other forms of property.

2. Concern for Investment Incentives

Although there is lack of physical congestion, the use of intellectual property by others can give rise to a form of commercial congestion: use of an innovator's intellectual property to compete against it in the product market will, in most instances, lower its economic returns. Moreover, a compulsory licensing policy can weaken a rights holder's ability to collect license revenue. Opponents of compulsory licensing note that, because such licensing almost certainly reduces the financial returns to innovation, it reduces R&D investment incentives.⁴⁷ But how does this factor distinguish intellectual property from any other investment subject to mandatory access? There is a concern for investment incentives with most forms of property. For example, both cable companies and local exchange telephone companies argue that mandatory access to their broadband distribution facilities will inefficiently reduce their investment incentives.⁴⁸ The next two factors have been identified as characteristics that make investment concerns particularly strong for intellectual property.

47. See, e.g., Abbott B. Lipsky, Jr. & J. Gregory Sidak, *Essential Facilities*, 51 STAN. L. REV. 1187, 1219 (1999).

48. See, e.g., Cox Communications, Inc.'s comments filed before the Federal Communications Commission in which Cox quotes Justice Breyer's concurring decision in *AT&T Corp. v. Iowa Utils. Bd.*, 525 U.S. 366 (1999), on the perils of mandatory access and argues that these concerns apply to broadband services. Comments of Cox Communications, Inc. at 16-17, *Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities*, (GN Docket 00-185), December 1, 2000, available at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6512159427. See also, Verizon's comments on the negative effects of mandatory unbundling and collocation, as well as other forms of government intervention, on broadband facilities investment. Comments of Verizon at 5-7, *Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services*, March 1, 2002, available at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6513079788.

3. Ability of Others to Misappropriate

Abbott Lipsky and Gregory Sidak conclude that “the [essential facilities] doctrine should not be applied to intellectual property.”⁴⁹ They appear to identify the ease of misappropriation by others as a distinguishing feature of intellectual property.⁵⁰ As Lipsky and Sidak correctly note, this feature makes it desirable to extend some measure of legal protection to intellectual property owners. But the authors then appear to argue that rewarding investment in intellectual property with strong property rights is uniquely important in comparison with investments in other forms of property.⁵¹ Nothing in their argument establishes why this should be so. The fact that misappropriation would be a problem *absent* property rights (which is true of other forms of property as well) does not establish that there should be an absolute right to exclude once property rights are granted.⁵² Indeed, if intellectual property policy is successful at creating very strong property rights, one might even argue that intellectual property is more likely to be an irreproducible essential facility (which might then be subject to compulsory access) than are most other forms of property.

4. The Degree of Uncertainty

Although Lipsky and Sidak did not attempt to do so, one might look for features of intellectual property investment that make exclusivity particularly desirable. One possibility is the high degree of uncertainty that innovation often entails. In the presence of a high degree of uncertainty, efficient investment incentives can be maintained only if successful innovators are allowed to earn high rates of return as compensation for the risk.⁵³ Put another way, uncertainty makes it very difficult to determine appropriate risk-adjusted rates of return that should be earned under mandatory access. Hence, it is very likely that government intervention will inefficiently distort the market outcome. Whether this factor distinguishes intellectual property

49. Lipsky & Sidak, *supra* note 47, at 1187.

50. *Id.* at 1219.

51. *Id.* at 1219-20.

52. One might attempt to revive Lipsky and Sidak’s argument by asserting that the nature of intellectual property can make it impossible to monitor its use in some circumstances, and that compulsory licensing will thus inevitably lead to misappropriation by the licensee. This argument, however, applies only to intellectual property that is protected through secrecy and whose use is difficult for outsiders (i.e., the intellectual property owner and the courts) to detect.

53. I am assuming that the government does not subsidize innovation.

from other forms of investment is an empirical question.⁵⁴ Certainly, cable companies and local exchange carriers could be expected to argue that their investments in broadband distribution facilities are subject to high degrees of risk and uncertainty as well.

5. Standards and Network Effects

Some commentators have argued that the benefits of imposing a duty are greater and the costs are lower when intellectual property underlies standards in markets subject to network effects.⁵⁵

On the benefits side, one argument is that competition may be impossible without access to the intellectual property needed to achieve product compatibility and interoperability. Absent compatibility, one network may become dominant and consumers may become locked in to that network.⁵⁶ Moreover, even if multiple networks survive, there will be a loss of demand-side economies of scale due to network fragmentation. Network fragmentation can lead to innovation losses as potential developers of complements have smaller potential markets on which to build (or face the prospect of having to bear porting costs). Thus, the argument for weak intellectual property protection is that strong intellectual property rights allow the rights holder to block compatibility and stifle competition and/or the realization of network benefits. But, as always, one has to look at the big picture and consider a realistic but-for world before concluding that strong rights are harmful. Rather than simply looking at what might be seen as an undesirable end state, one has to look at the entire time path of market evolution. While competition between incompatible networks may ultimately lead to tipping and monopoly, firms may compete extremely vigorously to become the

54. Werden argues that natural resources and intellectual property are particularly likely to suffer from pricing that does not sufficiently reward risk. Werden, *supra* note 39, at 475.

55. Mark Lemley and David McGowan provide an insightful summary of the literature examining whether intellectual property rights should be weaker in industries with strong network effects. Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CAL. L. REV. 479, 523-41 (1998). See also Joseph Farrell, *Arguments for Weaker Intellectual Property in Network Industries*, 3 STANDARDVIEW 46 (1995).

56. Joseph Farrell also makes the following argument: through installed base lock-in, network effects may create durable first-mover advantages. Thus, a patent that initially shields its owner from product-market competition can be far more economically powerful in a market subject to network effects than in other industries. Farrell concludes there is a danger of granting excessive intellectual property protection in networks industries. Farrell, *supra* note 55, at 47.

monopolist and may be willing to make large investments in promoting their networks (e.g., engaging in consumer education or penetration pricing). Moreover, firms may go through this cycle of competing to be the dominant supplier for each new generation of technology. In contrast, if various firms' products are compatible at the outset, they may compete less vigorously and be unwilling to subsidize network development.⁵⁷

On the costs side, the argument for compulsory licensing of intellectual property underlying standards is that initial investments in the intellectual property underlying interfaces may be minimal, reducing the concern about diminishing investment incentives.⁵⁸ This argument builds on the notion that an interface may become valuable solely because of network effects. The idea is that anything could have been chosen as a standard and all of the value derives from the act of being a standard (e.g., the specific technical characteristics of a protocol chosen as the standard for communicating among systems components may matter less than the fact that *some* protocol was chosen).⁵⁹ In practice, the ease of designing an interface will be disputed, but presumably courts could make factual determinations and with some success enforce a rule that attempted to distinguish "easy" from "difficult" or costly interface inventions. On its face, a bigger problem is the theoretical ambiguity in whether it is socially beneficial to let a firm keep its network closed or proprietary—doing so may reduce competition along some dimensions but can provide the firm with increased incentives to invest in its network and to compete for the market.⁶⁰ In this sense, allowing a firm to use interface intellectual property rights to limit compatibility may be a backdoor way of creating property rights that encourage net-

57. See Michael L. Katz & Carl Shapiro, *Technology Adoption in the Presence of Network Externalities*, 94 J. POL. ECON. 822 (1986).

58. Farrell, *supra* note 55, at 47.

59. The fact that a technology's inclusion in a standard can create substantial economic power for its owner raises a variety of issues concerning the behavior of intellectual property owners with respect to standards setting bodies. See, e.g., *In re Dell Computer Corp.*, No. 931-0097 (F.T.C. 1996), in which the FTC complained that Dell had participated in the Video Electronics Standards Association's decision to include technology in its VL-bus standard without disclosing that Dell held a patent on that technology. Dell settled with the FTC by agreeing not to enforce its patent rights against computer manufacturers using the standard. These issues are outside the scope of the present essay.

60. Dennis Carlton and Robert Gertner develop a simple model of multi-generation R&D competition by platform providers and find that firms may inefficiently close their systems. Carlton & Gertner, *supra* note 14, at 26-27. However, the authors do not call for mandatory licensing or open standards, apparently because they doubt that the courts could administer such a policy in ways that would improve welfare. *Id.*

work investments for which it is otherwise difficult to ensure that a large proportion of the benefits of an investment accrue to the investor.⁶¹

6. Explicit Property Rights Regime

A final factor—one most often referred to by legal commentators—is that patent policy grants explicit rights to exclude.⁶² An obvious and central flaw in this point as an argument for special treatment of intellectual property is that other forms of property are granted similar rights by statute and common law. This point does, however, raise a very important question: Should there be a division of labor between intellectual property law and competition policy, with competition policy staying out of the way when it comes to compulsory licensing? This question is of sufficient importance that I will return to it in the next subsection.

Summing up, the arguments for special treatment of intellectual property are incomplete.⁶³ Indeed, the arguments for imposing less of a duty to deal on intellectual property than on other forms of property have been disappointingly superficial to date. The arguments for placing a greater duty to deal on intellectual property when used in network standards are perhaps better developed but are still far from complete. This state of affairs may be the result of the fact that mandatory access is problematical for *any* form of property, and—in this regard—intellectual property really is not that different from other forms of property. In any event, more rigorous analysis is needed if one is to take seriously arguments that intellectual property is deserving of unique treatment.

B. *A Need for Fine-Tuning?*

The set of conditions under which an innovator can exclude others from using its intellectual property is a critical dimension of the innovator's property rights. Those rights are defined by the combined effects of intellectual property law and antitrust law. Should there be a division of labor between intellectual property law and competition policy, with antitrust policy deferring to intellectual property law on issues of compulsory licens-

61. Edmund Kitch makes a similar point with respect to the incentives to make investments in complementary assets even in non-network settings. Kitch, *supra* note 22, at 276-77.

62. Lipsky & Sidak, *supra* note 47, at 1219-20.

63. For additional discussion of these issues, see Philip J. Weiser, *Law and Information Platforms*, J. TELECOMMS. & HIGH TECH. L. 1, [13-16 IN TYPESCRIPT] (2002) and the references cited therein.

ing? Many observers have answered “yes” on the grounds that intellectual property policy is based on the explicit recognition that strong property rights may create monopoly power, but that power is granted in order to provide a stimulus to R&D investment.⁶⁴ There remains, however, the question of whether patent policy has gotten the tradeoff between competition and the creation of incentives right. In other words, the argument that the rights granted under intellectual property policy should immunize a patent holder from a duty to deal begs a central question of optimal policy design.

Earlier, it was noted that many technological and market characteristics affect the relationship between the granting of intellectual property rights and the extent of innovation and diffusion. It is notable that, with very few exceptions, current patent and copyright policy apply uniformly across industries and thus generally fail to take any of these industry characteristics into account.⁶⁵ For instance, in its present incarnation, patent policy is oblivious to both competitive conditions and the potential for follow-on innovation. The crude nature of current policies raises the possibility that someone should engage in fine-tuning.

In the light of widespread claims that intellectual property rights are too strong and granted too often, I will frame the discussion in terms of selectively weakening intellectual property protection. There are three sets of fundamental issues that need to be addressed. The first is whether one can identify specific circumstances in which intellectual property rights should be weakened. The difficulty of this task should not be underestimated. In theory, settings with large amounts of potential follow-on innovation would be candidates. But one might argue that innovations that create tools for other innovators are especially in need of intellectual property protection in order to provide sufficient investment incentives. Moreover, conditions affecting the efficacy of licensing would be relevant in assessing whether strong intellectual property rights were beneficial or harmful in such settings. Similarly, one might argue that intellectual property protection should be weaker where the rights holder would otherwise garner significant market power. But

64. See, e.g., Lipsky & Sidak, *supra* note 47, at 1219-20, and Werden, *supra* note 39, at 475, who argue that application of an essential facilities doctrine is likely to harm social welfare by undermining the incentive effects of intellectual property rights.

65. One exception is that there are specific provisions for the semiconductor industry pertaining to mask works fixed in semiconductor chip products. Semiconductor Chip Protection Act of 1984, 17 U.S.C. §§ 901-914 (2000).

one would immediately confront the fundamental logic underlying the patent system: innovations conferring market power are in many circumstances those of the greatest social value and thus are innovations for which private inventors should be provided the greatest protection in order to encourage R&D investment.⁶⁶

The second set of issues concerns the choice of mechanism. There are a variety of ways in which to weaken intellectual property rights in select circumstances. Compulsory licensing is one way, but there are others, such as making it more difficult to obtain patents, changing patent scope through interpretations of the doctrine of equivalents and the doctrine of reverse equivalents,⁶⁷ or modifying application of patent misuse doctrine.⁶⁸

A third, and related, issue is that one must determine which institutions are appropriate for administering such a policy. Even if one concludes that someone should engage in fine-tuning intellectual property rights to reflect competitive conditions or other market characteristics, that someone need not be a competition policy authority. Present antitrust laws and enforcement institutions have not been created with this role in mind.⁶⁹ Moreover, coordination with the Patent and Trademark Office is essential to implementation of a sound overall policy. Absent legislation, using antitrust policy to fine tune intellectual property laws would very likely create more problems than it would solve.

Philip Weiser has touched on all three sets of issues in the area of information platforms or networks. He argues in favor of open access to standards for information platforms and suggests that a mix of intellectual property law and antitrust law provide the vehicle for achieving access.⁷⁰ One element of his proposal is to apply the tools of antitrust analysis to determine when patent policy would allow reverse engineering that enabled parties

66. It is also worth noting that, even if one developed various sets of conditions on which to fine tune, the conditions would have to be defined in ways that limit arbitrage. Faced with differential treatment, patent applicants could be expected to game the system to the extent feasible. For example, if patents for use in a specific industry were accorded particularly favorable treatment, applicants could be expected to argue that their inventions were for use in that industry.

67. Merges & Nelson, *supra* note 16, at 911, 915-16.

68. Lemley & McGowan, *supra* note 55, at 538-39.

69. Werden asserts that courts are unlikely to have the ability to make sound distinctions among industries. Werden, *supra* note 39, at 473-74.

70. See Philip J. Weiser, *The Internet, Innovation, and Intellectual Property Policy*, 102 COLUM. L. REV. (forthcoming 2002) (unpublished manuscript, on file with The Journal on Telecommunications and High Technology Law).

other than the initial intellectual property rights holder to make their products interoperable with the rights holder's platform.⁷¹ As Professor Weiser points out, the threat of reverse engineering may lead to licensing deals—which economize on the resources otherwise needed to reverse engineer—at lower prices than would occur absent the ability to reverse engineer without running afoul of patent law.⁷² In other words, this policy can in some instances replicate a compulsory licensing policy. However, he also notes that transactions costs may prevent the reaching of licensing agreements and reverse engineering may not always work. Hence, Professor Weiser sees a role for competition policy to supplement intellectual property policy in forcing dominant network standards open.⁷³

V. CONCLUSION

Over fifty years ago, Richard Reik observed that “compulsory licensing of patents has been a bitterly controversial issue for a long time.”⁷⁴ His observation is even truer today. And there is every reason to believe that the controversy over access to intellectual property will continue. At the most fundamental level, the debate over compulsory licensing comes down to two opposing claims. One is that initial innovation will be stifled by the loss of incentives. The other is that follow-on innovation will be stifled by the need to buy off initial innovators.

These claims also lie at the center of the overall debate about the socially optimal strength of intellectual property rights. The Coase theorem tells us that, in the presence of transactions costs, the allocation of intellectual property rights matters. Economic theory and practical experience also tell us that there is no simple rule for allocating property rights that will give the best answer in all situations. Sometimes it is most efficient to give initial inventors strong intellectual property rights. In other situations, it is better to give follow-on inventors more bargaining power by weakening the initial inventor's rights.

In many ways the debate between the-first-inventor-is-king faction and the follow-on-innovation-is-the-lifeblood-of-the-economy faction is an unproductive one. Each faction is too ex-

71. *Id.* at 59. For a summary and analysis of arguments concerning whether to allow reverse engineering aimed at achieving compatibility, see Lemley & McGowan, *supra* note 55, at 523-30.

72. Weiser, *supra* note 70, at 58-59.

73. *Id.* at 59.

74. Reik, *supra* note 18, at 814. Reik notes that the issue was brought before Congress as early as 1877. *Id.*

treme.⁷⁵ And each fails to address how public policy can move away from the extremes. As always, more analysis is needed. Beyond that, the analysis needs to move in a different direction. Instead of simply coming up with still more arguments why intellectual property rights should be strong or weak, research should address the important question of whether there is some way to tune public policy to the conditions of specific industries or markets. The answer must include a description of how this tuning should or could be accomplished. In reaching this answer, policy makers should keep in mind the four principles described above. Intellectual property law and competition policy are intricately and inextricably intertwined. In order to achieve an appropriate division of labor, researchers must analyze the combined workings of intellectual property law and antitrust policies while paying careful attention to public and private institutions.

75. In addition, the arguments are more closely linked than their proponents may care to admit. In some settings, today's entrant is tomorrow's incumbent. In making its investment decisions, a firm that currently is a follow-on innovator may take into account later followers as potential revenue streams. Again, there is a need to look at how the effects of a policy work out within the context of the overall economic system.

