

# WHAT TO DO ABOUT UNILATERAL REFUSALS TO LICENSE?

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ABSTRACT. There are well-known circumstances under which unilateral refusals to license will cause harm to competition, that is, will lower consumer welfare. However, when the strategy is profitable, refusals to license also increase the returns to intellectual property, and thus limitations on them will reduce the incentives for firms to invest in innovation. The optimal balance between innovation incentives and protection against static monopoly harm is not knowable to any reasonable degree of precision. Economists may be able to identify some special cases in which the desired rule is unambiguously knowable, but these cases will be few.

Given a policy or legal rule, economists can help interpret and apply the rule. Analysis of recent legal statements on the treatment of refusals to license shows that some of the current confusion and frustration in this area can be attributed to failure to formulate the rules in terms of the economic purposes of the underlying statutes. Some attempts to delineate a boundary between cases in which intellectual property protection is absolute and those in which antitrust restrictions may be imposed are based on logical or semantic distinctions that are not related to the economic issues. These attempts will fail to resolve the confusion.

## 1. INTRODUCTION

It is probably an exaggeration to say that there is no situation more frustrating to more antitrust practitioners today — both economists and lawyers — than the conflict between antitrust and intellectual property law swirling around refusals to license intellectual property. Probably an exaggeration, but perhaps not. This confusion over the current state of the law, and the disagreement about what the law should be for this problem, is certainly very prominent in the minds of those who practice antitrust analysis in high tech industries, and high tech antitrust in turn has grabbed a dominant share of recent attention.

In this paper I argue that the conflict is inevitable: the two policies are designed to further two different instruments toward a common economic objective, and those instruments necessarily come into conflict. Intellectual property policy is intended to create incentives to invest in further invention and authorship, which are expected to raise consumer welfare. But the form of these incentives tends to induce short-term allocative inefficiencies, which in turn lowers consumer welfare. Resolving the two policies in order to achieve their common goal of maximizing consumer welfare is not feasible because it requires theoretical and empirical knowledge that are well beyond our capabilities.

The optimal balance between enhancing innovation incentives by permitting some refusals to license, and protecting consumers from allocative inefficiency by

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*Date:* April 22, 2002.

The author has testified as an expert economist in several of the cases discussed in this article.

prohibiting other refusals is not likely to be found, but that is not the end of the story. It is relatively uncontroversial that some refusals to license can cause sufficient harm to competition that they should be restricted. Although any particular policy specifying the boundary between permissible and impermissible refusals will be somewhat arbitrary, there is still much positive work for economists and lawyers to do. First, we can provide some limited guidance on those situations in which the correct boundary is reasonably clear cut. Second, we can develop an economic and legal framework in which to effectively interpret and implement the current law, whatever it may be.

There is much work to be done: the current situation is very unsettled, resulting in inconsistent decisions and a high degree of uncertainty for investors, which is likely to chill innovation efforts. In sections 3 and 4 below I discuss some of the problems that exist for coherent economic interpretation of recent case law. Throughout, I argue that satisfactory resolution of these challenges requires adherence to the centrality of the economic purposes of the antitrust and intellectual property laws.

## 2. THE (NOT SO) SIMPLE WELFARE ECONOMICS OF REFUSALS TO LICENSE

The economic effects of a refusal to license can be divided between two general types: direct effects on current consumers, and indirect effects on future consumers. Without much loss these may be thought of as the antitrust and innovation effects, respectively; they can also be loosely thought of as the static and dynamic effects. I will discuss each in turn, then discuss how taken together they determine the net economic welfare impact of a refusal to license.

**2.1. Direct effects on end consumers.** Direct effects on end consumers are the purview of traditional antitrust analysis. As a consequence of a refusal to license, consumers may face higher prices than they would absent the refusal. Under other circumstances, a license refusal might result in a restricted range of product varieties, or lower product quality than would obtain absent the refusal. Each of these results in a reduction of consumer welfare, and raises the possibility that there might be antitrust injury.

Of course, there may be pro-competitive effects of the refusal, and generally both economists and courts believe that pro-competitive and anti-competitive effects should be weighed against each other to determine whether the net effect on consumers is harmful. For example, a single refusal might lead to higher product quality, but also higher prices than in the alternative. In this situation it would not be obvious *a priori* whether consumer welfare has been increased or decreased.

For example, in *In re: Independent Service Organizations* (CSU v. Xerox), Xerox refused to sell its patented high-speed copier repair parts to independent service organizations (ISOs), a policy it defended as a refusal to license the embedded intellectual property. The ISOs complained that they were unable to effectively compete in the provision of repair service without access to Xerox parts. They alleged that end consumers were harmed because service prices were higher, and the variety of service contracts available was diminished. Xerox countered that its strategy was pro-competitive because it could ensure higher quality service as both the manufacturer and the service provider.

It is by now well-understood that not all refusals to license are harmful to consumers on balance, even when implemented by a firm that has monopoly power in a

meaningful market. This is an example of the ambiguity associated more generally with the consumer welfare consequences of vertical restrictions, of which refusals to license are but one example. However, there is substantial agreement that under certain circumstances a net harm to consumer welfare is possible.

Limiting ourselves for the moment to traditional antitrust analysis of direct effects on consumers, it is helpful to note that a refusal to license is economically equivalent to a refusal to deal by a firm that does not have intellectual property rights over the good or process. Certainly, without intellectual property right protections, the firm may find that there are good substitutes for its product. However, the same may be true for protected intellectual property as well: there may be alternative processes or products that are desirable substitutes for the protected process or good.<sup>1</sup>

Carlton [3] recently provided a useful summary of some circumstances under which a refusal to deal (or license) could create a net anticompetitive harm. In one situation a dominant firm forecloses enough of the distribution channel that a competitor cannot achieve necessary economies of scale. In another situation, treated by Whinston [8], a monopolist offers one product that is sometimes but not always a complement to a different product in which the monopolist competes for sales with a second firm. If the second firm needs to achieve scale economies, the monopolist may be able to exclude its competitor by denying it customers from the group who want the monopolist's first product as a complement. Borenstein, MacKie-Mason and Netz [2] show that a refusal by a monopolist to sell a complement could harm consumer welfare even without the ancillary conditions required by Whinston, as long as the same result cannot be implemented by a price discrimination scheme.<sup>2</sup>

In short, there is general agreement that there are various circumstances under which a unilateral refusal to license can harm consumer welfare, and thus raise anticompetitive concerns. For the purpose of building up the conceptual roadmap, a simplification will be useful: refusals to license can have adverse effects on static allocative efficiency. Although the effect of a refusal in one market may be felt in another market, the bottom line is the same: consumers will face higher prices, less variety or lower quality than they would absent the refusal.

**2.2. Indirect effects on future consumption.** Refusals to license may also have indirect effects on the welfare of consumers in the future, through affecting the incentives to invest in risky innovation projects. I find it useful to distinguish between two effects on innovation incentives, which I call "local" and "global". Local effects are those on the firm or firms active in the particular market of interest. Global effects are those on the innovation activities of firms in general.

Global effects on innovation incentives are more readily familiar, because these are the core concern of intellectual property policy. Article I, Section 8 of the Constitution delegates to Congress the power to grant authors and inventors exclusive rights "to promote the progress of science and useful arts". The logic is simple:

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<sup>1</sup>As an example, witnesses in the proceedings of *ITS et al. v. Kodak* testified that Kodak "image loops" functioned as a highly effective substitute for Xerox's patented "photoreceptor belts".

<sup>2</sup>Kodak maintained in *ITS et al. v. Kodak* that it could have achieved the same outcome as its refusal to deal policy by raising the price on parts sufficiently. However, Kodak wanted to sell parts to self-servicers at lower prices, and thus the Robinson-Patman Act likely prohibited this alternative policy.

an exclusive right to make, use or vend a patented good or process (or to copy a copyrighted work) will tend to secure some rents for the right holder. Anticipation of such rents will induce investment in new creation.

To the extent that refusal to license is a valuable strategy to some firms, in some circumstances, the option to exercise this strategy raises the expected rents from successful innovation. Thus, each individual case in which a refusal to license is permitted has a global effect, by raising the expected rents from innovation generally (albeit perhaps not by very much).

Local effects are the dynamic consequence of the static allocative effects I discussed in the previous subsection. A firm that employs refusal to license as a strategy, if it succeeds, will sometimes reduce the competition it faces in one or more markets. One consequence of reduced competition is that there may be either *more* or *less* subsequent innovative effort in that market. There is a long economic literature on the question of whether there is more incentive to innovate in monopolized or competitive markets. On the one hand, a monopoly gets to capture more of the gains from the innovations it develops, and thus might seem to have a greater incentive to invest. On the other hand, competitive firms may need to try harder to innovate in order to differentiate themselves, deliver greater customer value, and ultimately survive. Although the theories are more complicated than this, the basic ambiguity should be evident: permitting greater consolidation of market power in a market may increase or decrease innovative activity in that market.

As an aside, I believe that there is a notable asymmetry in how antitrust law treats the local innovation effects. It is common for a court to view *harm* to innovation as a form of antitrust injury, and thus as one of the necessary elements for a violation.<sup>3</sup> However, I am aware of very few cases in which greater innovative effort by a monopolist was valued sufficiently to excuse exclusionary conduct.<sup>4</sup>

### 2.3. What is the economically optimal policy towards refusals to license?

Refusals to license in some situations will lower the welfare of consumers in the market or markets at issue through higher prices, less variety or lower quality. When this happens, the corresponding increase in market power of the intellectual property owner may lead to greater or lesser innovative effort by that firm and its actual or potential competitors. Consumers, of course, often benefit from greater innovative effort.<sup>5</sup> Further, a regime which is permissive of refusals to license will lead investors in general to expect higher average returns to risky investments in innovation, and thus the overall level of innovation may increase (not just in the markets directly involved).

From the preceding summary, the answer to the title of this subsection should be obvious: the optimal policy towards refusals to license depends on the balance of hard-to-measure benefits and hard-to-measure costs. Thus, *the answer necessarily is empirical*. The tightness of the rule on refusals to license should, apparently, depend on quantitative assessments of such questions as: How much static allocative

<sup>3</sup>Arguably, this was the *only* harm to consumers found by the court in *U.S. v. Microsoft*.

<sup>4</sup>As we observe the twilight years of the offspring of the once astonishing Bell Labs, do we think it may have been a mistake to force the breakup of AT&T?

<sup>5</sup>It is important to remember, however, that more innovative effort is not always a good thing. First, there is a socially optimal rate of innovative effort, and it is possible to overinvest in innovation just as in anything else. Second, some firms with market power might distort the *direction* of innovative effort, focusing on innovations that increase their power and profits without necessarily increasing consumer welfare.

inefficiency results across firms, across industries, across time? How much additional return on investment will be expected on average for a given loosening of restrictions on refusals to license, and how much additional innovation effort will that incremental expected return induce, and how much future consumer welfare will that incremental investment induce?

I will be blunt: economic science is not even close to being able to do the measurements necessary to assert with any meaningful specificity what the optimal refusal to license policy should be. The problem is especially acute because it is both *ex ante* and global in nature. That is, a significant part of the benefit from broadly permitting refusals to license is indirect: the innovative effort induced across all industries from increased expectations of future reward. Thus, we cannot merely examine the data for a single industry after a refusal to license and try to assess whether consumers were better or worse off in that instance. Rather, we must estimate the relationship between different refusal to license policy variations and the expected incremental rents to innovation investment, on average.

This is not a new problem. The same problem has festered for many years in a related context: what is the optimal life for a patent? The tradeoff is essentially the same: more years of allocative inefficiency in exchange for higher incentives to invest in innovation. Nordhaus [5] tried valiantly to estimate the number of years that optimally balances the two, but his work, in the end, was not much more than illustrative. I had a similar experience in related work with Jerry Hausman [4], in which we tried to calculate how the optimal patent life would respond to a more or less restrictive rule on price discrimination.

This somewhat dismal assessment leaves economists with two primary roles to play. First, we can try to nibble away at the problem, even if we cannot do sufficient measurement to determine the policy that is optimal (on economic grounds). In particular, we can try to delineate situations in which the anticompetitive costs of a refusal to license unambiguously exceed, or unambiguously do not exceed, the pro-competitive benefits from greater returns to intellectual property. Second, we can try to clarify how to correctly analyze a given case given a particular rule as found in the law. That is, we can try to suggest economically sensible improvements to legal rules and their applications, or we can try to suggest economically sensible interpretations or applications of existing rules.

Economists regularly try to carve out parts of a problem for which the policy prescription is unambiguous. This is the tack that Carlton [3] takes in his analysis of refusals to deal. Such analyses can be quite helpful to our understanding, and to the design and enforcement of policy. Caution is needed, however. Most research on competition issues by applied industrial organization economists is theoretical, and yet many, perhaps most, of the hard questions to be resolved in specific cases are empirical. In addition, in order to be tractable and elegant, theoretical analyses necessarily abstract from the complexities of real cases.

One thread running through the modern history of antitrust economics has been the pronouncement of simple, elegant, strong theoretical results that have later fallen. For example, one of the defining pronouncements of the “Chicago School” was that it is only possible to extract one monopoly profit, and thus that firms could gain no more profit, nor do more harm to consumer welfare, through tying. In the ensuing years economists have realized that there are realistic circumstances under which tying is anticompetitive; [8] is a leading example.

The controversy over the implications of a refusal to deal for aftermarkets is another example of the risk of relying on seductively simple theories pronouncing the “impossibility” of anticompetitive consequences from certain strategies. Economists argued that foremarket or “systems” competition for durable goods would necessarily protect aftermarket consumers, a theory that was relied on by Justice Scalia in his *Kodak* dissent. However, [1], [2] demonstrated that this theory was simply incorrect on its face, and even Kodak’s expert economist acknowledged in a scholarly publication that in this and at least three other situations aftermarkets can be profitably monopolized [7]. The argument thenceforth, by Kodak’s experts and by Kodak in its appeal, was that the issue was empirical. Consistent with the Supreme Court’s holding on summary judgment, the court needed to assess whether the case-specific facts indicated that the likely net harm was sufficient to justify antitrust intervention.

Thus, simple proscriptions against intervention in refusal to license situations should be viewed skeptically. Of course, there are some easy boundary cases. I think nearly all economists would agree that a firm without market power should not be required to license. More generally, it may be that most refusals to license by firms with market power are harmless, or at least that the harm is less than the benefits due to increased incentives for innovation. But simple theoretical models cannot alone determine the truth of this proposition.

The second feasible task for economists that I described above is to help make sense of the law as it is written, and to develop tests and principles for applying it coherently to economic conduct. I will now pursue this goal, although within the confines of this paper I continue to maintain a skeptical position in order to emphasize the unhappily unsettled state of this nexus of antitrust and intellectual property law.

### 3. MAKING ECONOMIC SENSE OF THE LEGAL BOUNDARY BETWEEN IP PROTECTION AND ANTITRUST

To say that the current case law on refusals to license intellectual property is confusing would be a kindness. As an economist, I leave it to the lawyers to characterize the problem in detail; see, e.g., [6]. The apparently irreconcilable decisions of the Ninth Circuit in *Kodak v. ITS et al.* and the Federal Circuit in *CSU v. Xerox* alone have left practitioners wringing their hands. In this section I limit myself to some specific guidance recent courts have offered on a boundary between legal and potentially illegal licence refusals, and raise some economic concerns with this proposed boundary.

In 1988 Congress amended the patent law and declared that “no patent owner shall be deemed guilty of misuse or illegal extension of the patent right by reason of having refused to license or use any rights to the patent” (35 USC 271(d)(4)). On its face, this language appears to be clear and unambiguous: at least for patented intellectual property, owners may refuse to license without limit. However, this section of the act is concerned with conduct that might invalidate a patent (“misuse”), and the courts have been clear that Congress did not intend to overturn prior case law that found patent rights to be *limited* rights, circumscribed in part by the antitrust laws.

This issue was recently addressed head-on by the DC Court of Appeals in *U.S. v. Microsoft*. Microsoft argued for an unlimited right to license and refuse to license its intellectual property at will. The Court wrote:

The company claims an absolute and unfettered right to use its intellectual property as it wishes: “If intellectual property rights have been lawfully acquired,” it says, then “their subsequent exercise cannot give rise to antitrust liability.” Appellant’s Opening Br. at 105. That is no more correct than the proposition that use of one’s personal property, such as a baseball bat, cannot give rise to tort liability. As the Federal Circuit succinctly stated: “Intellectual property rights do not confer a privilege to violate the antitrust laws.” *In re Indep. Serv. Orgs. Antitrust Litig.*, 203 F.3d 1322, 1325 (Fed. Cir. 2000).

Although the courts agree that antitrust law does impose some restrictions on the use (or non-use) of protected intellectual property, it is much less clear when those restrictions apply. Indeed, the Federal Circuit, cited above as succinctly stating that the antitrust laws restrict intellectual property rights is widely believed to have held that Xerox’s intellectual property rights could not be limited by antitrust claims.

The courts have frequently proposed that the boundary between legal exercise of intellectual property rights and conduct that might violate the antitrust laws should coincide with the “scope of the patent”. For example, the Ninth Circuit quoted the Supreme Court when it wrote in *Kodak* that “This basic right of exclusion does have limits... [T]he right of exclusion [does not] protect an attempt to extend a lawful monopoly beyond the grant of a patent. See *Mercoid*, 320 U.S. at 665.”

There seems to be some disagreement about what the scope or extent of the patent grant means when it comes to antitrust restrictions, but in its recent decision the Ninth Circuit went on to write that “Section 2 of the Sherman Act condemns exclusionary conduct that extends natural monopolies into separate markets. Much depends, therefore, on the definition of the patent grant and the relevant market.” This is consistent with the Supreme Court’s earlier statement in the *Kodak* summary judgment proceeding: “[We have] held many times that power gained through some natural advantage such as a patent, copyright, or business acumen can give rise to liability if ‘a seller exploits his dominant position in one market to expand his empire into the next.’” (504 U.S. at 480 n.29, quoting *Times-Picayune Publishing Co. v. United States*, 345 U.S. 594, 611, 97 L. Ed. 1277, 73 S. Ct. 872 (1953).)

The boundary implies that refusals to license find a safe harbor when exercised within the scope of the patent grant, or within the market relevant for the patented good or process. In *Kodak* the Ninth Circuit states this (albeit in language that might permit more expansive interpretation): “We find no reported case in which a court has imposed antitrust liability for a unilateral refusal to sell or license a patent or copyright. Courts do not generally view a monopolist’s unilateral refusal to license a patent as ‘exclusionary conduct.’ See *Data General*, 36 F.3d at 1186 (citing *Miller Insituform, Inc. v. Insituform of North America*, 830 F.2d 606, 609 (6th Cir. 1987) (‘A patent holder who lawfully acquires a patent cannot be held liable under Section 2 of the Sherman Act for maintaining the monopoly power he lawfully acquired by refusing to license the patent to others’)” (125 F.3d 1195 at 1216).

It might seem from these cases that we now have clear guidance that economists can implement. We know how to define relevant markets for antitrust analysis; indeed, there is perhaps more agreement on the principles of market definition than on any other issue in the field. The economist can determine the boundaries of the markets, and then, if the refusal to license is having an effect on competition in a market other than its own, it will be a candidate for antitrust intervention.

In fact, I do not think the matter is so simple. Consider the following hypothetical, which does not correspond to the facts of the major aftermarket refusal to license (or deal) cases, but is close enough to be interesting: A durable equipment manufacturer also offers service on its equipment. In order to compete better in the market for service it innovates on some parts to make them less costly to replace, and it also develops some innovative tools (say, diagnostic software) to assist its service technicians. All of these innovations are protected by patents and/or copyright.<sup>6</sup> The courts have generally found that replacement parts and service labor constitute separate markets. Does that mean a refusal to license or sell these parts and tools would be illegal if it had an adverse effect on competition in the service market, since the intellectual property protection does not extend beyond the boundaries of the service market?

The Federal Circuit does not think so: It found in *Xerox* that because the diagnostics at issue were developed for use in providing service, refusing to license them to competing service providers was within the scope of the patent grant.

Economist can breathe a sigh of relief if the boundary is defined in terms of the market for the protected intellectual property and other markets, because we know how to define these.<sup>7</sup> However, there does not seem to be universal agreement that Congress meant the scope of patent or other intellectual property protection to be identical with antitrust market boundaries. If the correct boundary for antitrust concern is some other definition of the “scope” of the intellectual property grant, I think we are in trouble. I am aware of no coherent economic analysis that gives precise operational meaning to the concept of scope.

Clearly it does not make sense to say that the scope is determined by the purpose for which the intellectual property was developed. In commercial settings, it generally will be fair to say that the purpose is to make as much money as possible through the use of the innovation!

Patterson [6] suggests a distinction on which to base a determination of patent scope: protection against use versus use to accumulate power. He argues that the purpose of intellectual property *protection* is to protect innovators against the use of their intellectual property by others, which would reduce the returns to the innovator. But, he further argues, *protection* does not extend to using the intellectual property to coerce or otherwise obtain power in another market. Thus, for the case of refusals to license, a refusal that serves the purpose of protecting the firm against use of its intellectual property would be permissible, but a refusal in order to leverage power would not.

Patterson argues this principle prohibits the refusals to license or sell parts by Kodak, Xerox and others. The service firms, he believes, did not have any use for

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<sup>6</sup>A similar example appears in [3].

<sup>7</sup>The definitions may not be easy or devoid of controversy, of course! For example, though the courts seem persuaded that parts and service for durable equipment are separate markets, this conclusion is quite controversial among economists.

the intellectual property embodied in parts – they merely needed the parts that their customers wanted, in order to provide *service* to the customers. The only party using the intellectual property is the end customer (who gains the advantages of better-functioning or lower cost parts), but the equipment manufacturers are not trying to prevent end customers from using the intellectual property. Rather, they are trying to gain power in a market that distributes the parts to end customers.

I am not convinced that this principle is very workable. First, I do not see that it adequately resolves the hypothetical above, in which parts innovations are developed precisely to improve the quality or lower the cost of service. In this case it would seem that the independent service companies *would* be using the embodied intellectual property if they obtained the parts, and thus would fall into Patterson’s safe harbor for a refusal to license. But once these two very similar examples fall on opposite sides of the boundary, there is a slippery slope, and it would seem impossible to find a sufficiently operational dividing line.

More important, at least to an economist, is that neither Patterson’s proposal, nor the notion of patent scope as it is used by the courts, has any economic rationale. This brings us back to the initial problem discussed in section 2. The *purpose* of the intellectual property laws is to secure rents for innovators and authors, as encouragement to undertake costly and risky investments. I am aware of no economic argument that the correct amount of expected rent is provided if the property right is unlimited only within the “scope” of the grant, but is limited outside the scope. The economically optimal amount of incentive to innovate depends on many things: the average likelihood of success, the average value to end consumers that flows from new innovations, the average cost in the form of allocative inefficiencies that flows from the legal monopoly that is granted, and so forth. There is simply no reason that a logically (or worse yet, semantically) constructed “scope” for an unlimited right to refuse a license will even approximate the socially optimal amount of innovation incentives.

#### 4. CASE STUDY: MAKING SENSE OF *Intel*

I will illustrate the issues discussed above with a discussion of issues two recent refusal to license cases against Intel: *U.S. v. Intel* (the FTC case) and *Intergraph v. Intel*. These cases were largely identical on the facts and allegations. The FTC brought its case on behalf of the government, seeking injunctive relief. Among its allegations were that Intel had refused to license some of its intellectual property to Intergraph, a leading manufacturer of high-end graphic workstations for use in computer-aided design work.<sup>8</sup> The FTC settled its case and entered a consent decree with Intel. Intergraph alleged the same illegal conduct, sought additional injunctive restrictions, and monetary damages for lost profits.

The central allegation was that Intel refused to license or make available some of its intellectual property unless Intergraph gave Intel a zero-royalty license to some of its intellectual property. Intergraph believed that Intel was infringing its “Clipper” microprocessor patents, and had sought royalties. When Intel refused to pay royalties, Intergraph filed a patent infringement suit. Intel allegedly retaliated by

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<sup>8</sup>The FTC also alleged that Intel made very similar refusals to Digital Equipment (DEC) and to Compaq.

refusing to supply crucial technical information it typically provided to workstation manufacturers, and had previously provided to Intergraph.<sup>9</sup>

Intergraph's antitrust claims were dismissed by the Federal Circuit on procedural grounds. The Federal Circuit held that Intergraph did not have standing to sue Intel for monopolization of a microprocessor market, because Intergraph was not a participant in that market. Quite recently Intel settled with Intergraph on the patent infringement claims, with an agreement to pay between \$300 and \$550 million, along with agreements between the parties to enter various cross-licenses.

Was Intel's refusal within the scope of its various patent grants and other intellectual property protections? The intellectual property, for our purposes, related to the design and manufacture of microprocessors. Intergraph was not in the business of manufacturing microprocessors, and there was no indication that it was contemplating entering that business. Indeed, several years before it had consciously decided not to manufacture its own microprocessors based on the Clipper technology, choosing instead to design its workstations to work exclusively with Intel microprocessors. The antitrust damages alleged by Intergraph were not harm to its ability to manufacture microprocessors or compete with Intel, but profits lost because it could no longer compete effectively in the manufacture of high-end workstations without access to the technical information that Intel provided to Intergraph's competitors.

Suppose we believe the scope of the intellectual property grants is equivalent to the relevant market boundary for antitrust analysis, as suggested by Supreme Court and the Ninth Circuit in the two *Kodak* proceedings. This might give Intel some comfort: the protected intellectual property was clearly relevant to the production of microprocessors, and the FTC and Intergraph were alleging monopolization of microprocessors. Intel's refusal to license seems to fall within the *Insituform* rule: "A patent holder who lawfully acquires a patent cannot be held liable under Section 2 of the Sherman Act for maintaining the monopoly power he lawfully acquired by refusing to license the patent to others" (Miller *Insituform, Inc. v. Insituform of North America*, 830 F.2d 606, 609 (6th Cir. 1987)).

On the other hand, consider the facts of this particular case: Intergraph also had presumptively valid intellectual property, and Intel was allegedly trying to deny Intergraph the right to control its property. It is also important to remember that although Intergraph was not and did not intend to be in the microprocessor business, the Clipper patents did cover microprocessor technology that competed with some of Intel's property (indeed, Intergraph was elsewhere alleging that Intel misappropriated Intergraph's technology because it was superior to Intel's). Can we accept a definition of "scope" that permits one firm to use its intellectual property to coerce another firm to relinquish competing intellectual property?

This conundrum is connected to the issue of the optimal balance between incentives to innovate and allocative inefficiencies. Intel's strategy of refusing to license presumably increased the expected rents to its innovations, which has a positive effect on the general expectation of rents to new innovation. However, its strategy also lowers the expected rents to the innovations of Intergraph (and DEC and Compaq, &c.). I do not believe that as a matter of theory it can be shown that

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<sup>9</sup>This summary is extremely incomplete. Intergraph alleged that Intel was not only monopolizing a market for Windows-compatible microprocessors, but also a market for x86-compatible chipsets. Intergraph also alleged that Intel engaged in various illegal acts that were not refusals to license. These other issues are beyond the scope of this paper.

the private returns to Intel of this strategy will necessarily be such that Intel only implements this kind of refusal to license when the net social welfare effect on innovation (combining the effect of the gain to Intel with the loss to other innovators) is positive.

Suppose we instead adopt Patterson's proposed criterion: that protection against use is permissible, but a refusal in order to accumulate power is not. It appears that Intel's refusal to license was not to protect its intellectual property in the design and production of microprocessors. Rather, it was to accumulate (or at least maintain, which is essentially the same thing for antitrust purposes) power in the microprocessor market. Thus, the Patterson criterion would oppose this refusal to license. I do not find this apparently unambiguous result reassuring, because it is arbitrary with respect to the economic purposes of intellectual property and antitrust policy. That is, this rule may (sometimes) be workable, but it lacks a principled basis.

## 5. CONCLUDING REMARKS

The Intel cases are instructive because the issues seem stark, but their resolution is murky. Intel was previously providing its intellectual property to Intergraph, and never alleged that Intergraph misused that property. Thus, there is no reason to think that Intel's refusal was motivated by a concern for the *safety* of its intellectual property. Further, Intel did not merely refuse to license. It refused to license (allegedly) in order to coerce Intergraph to give away its valuable intellectual property. Despite what at first glance seems to be conduct outside the scope of the patent, and for the purpose of accumulating economic power, not protecting its intellectual property from misuse, it turns out to be very difficult to formulate a coherent boundary between protected and unprotected refusals to license that resolves the issues in this case.

Most important, I believe, is that any of the approaches discussed above for resolving this conflict between intellectual property and antitrust policy, as well as others of which I am aware, share a serious flaw: they are not grounded on the economic purposes of the underlying policies. Intel's strategy allegedly was intended to increase the profitability of its microprocessor business. But this, of course, is precisely what is intended by the intellectual property laws.

Whether the *degree* of enhanced profitability is too great or not simply cannot be answered by the empirical evidence and economic theory we have available to us today. The problem is not that economists are incapable of making a reasonable calculation of the expected benefits to Intel relative to the expected consumer harm. That calculation would be difficult, but within reason for qualified economist. *But it would be irrelevant* to the question at the core of the conflict between intellectual property and antitrust law. The issue is not how much ex post rent Intel receives after it successfully innovates. The issue is the effect that an increase or decrease in this ex post profit would have on the future, ex ante investment decisions of other potential innovators. It is this assessment that I claim we are not able make with any reasonable degree of precision, whether we are concerned with the rule on refusals to license or the length a patent's life, or any number of other issues on at the nexus of of intellectual property and antitrust law.

My general pessimism is about how close we are to getting the rules right. I am not so pessimistic about what we should do in the meanwhile. There is little

disagreement that refusals to license can have sometimes substantial anticompetitive effects, which is to say, cause harm to consumer welfare, if the refusing firm has market power. It is up to Congress to set, and the courts to interpret the restrictions to be imposed on such refusals. Congress and the courts are unlikely to happen upon the optimal degree of restriction (or permissiveness) for the reasons described above. However, whatever the political and judicial process decides, there is reason to be optimistic that economists and lawyers can sensibly interpret and implement the result. The reason is simple: refusals to license are essentially equivalent to refusals to deal, and we have learned much about these strategies in recent years. There are still unresolved questions, but the areas of disagreement have been rapidly shrinking.

There is at least one important further lesson from the analysis above. For the implementation of a refusal to license doctrine to be successful, it is important that the doctrine be developed in economic terms. That is, as with other issues in antitrust — and intellectual property — policy, the focus should be on the net impact on consumer welfare. Further, the rules should be formulated in terms that are amenable to economic analysis. For example, a rule that distinguishes between refusals that have impact within and those that have impact outside the scope of a patent will be more effectively workable if scope is defined in terms of relevant markets. The centrality of economic principles and analysis is justified because the primary values underlying our intellectual property and antitrust policies are economic.

#### REFERENCES

1. Severin Borenstein, Jeffrey K. MacKie-Mason, and Janet S. Netz, *Antitrust policy in aftermarkets*, *Antitrust Law Journal* **63** (1995), no. 2, 455–82.
2. ———, *Exercising market power in proprietary aftermarkets*, *Journal of Economics and Management Strategy* **9** (2000), no. 2.
3. Dennis W. Carlton, *A general analysis of exclusionary conduct and refusal to deal — why aspen and kodak are misguided*, NBER Working Paper 8105, available from <http://www.nber.org/papers/w8105>, February 2001.
4. Jerry Hausman and Jeffrey K. MacKie-Mason, *Price discrimination and patent policy*, *RAND Journal of Economics* **19** (1988), no. 2, 253–265.
5. William D. Nordhaus, *Invention, growth, welfare: A theoretical treatment of technical change*, MIT Press, Cambridge, Mass., 1972.
6. Mark R. Patterson, *When is property intellectual? the leveraging problem*, *Southern California Law Review* **73** (2000), no. 5, 2–1.
7. Carl Shapiro, *Aftermarkets and consumer welfare: Making sense of Kodak*, *Antitrust Law Journal* **63** (1995), no. 2, 483–512.
8. Michael Whinston, *Tying, foreclosure and exclusion*, *American Economic Review* **80** (1990), 837–859.

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