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Antitrust and Intellectual Property: Unresolved Issues at the Heart of the New Economy

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ANTITRUST AND INTELLECTUAL PROPERTY:
UNRESOLVED ISSUES AT THE HEART OF THE NEW
ECONOMY

By Robert Pitofsky[†]

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† Chairman of the United States Federal Trade Commission. This is the slightly revised text of my Keynote Address at the “Beyond Microsoft: Antitrust, Technology, and Intellectual Property” Conference held at the Boalt Hall School of Law, University of California, Berkeley on March 2 and 3, 2001. The views expressed are my own and do not necessarily reflect the views of the Commission or other Commissioners. I want to thank Thomas Leary, Debra Valentine, Joseph Brodley, Steven Salop, Simon Steel, and Gregg Vicinanza, for invaluable help on this Address.

I. INTRODUCTION

The essential feature that is new about the “New Economy” is its increased dependence on products and services that are the embodiment of ideas. Examples include such diverse products as computer software, Internet services, biotechnology, and new forms of communications—generally, the fastest growing segments of the present economy. In each of these areas, the “product” or “service” is a piece of intellectual property such as a line of computer code, a new connecting device to make routers and servers more efficient, or new knowledge about genetic profiling that facilitates the use of gene therapy products to treat disease. A major challenge over the next decade will be to identify policies that will allow a market economy to thrive in the context of this intellectual property revolution. More narrowly, questions abound concerning the role of conventional antitrust enforcement policy in these new areas.

In my view, it is unduly simplistic to assert that intellectual property is just another form of property.¹ There are important differences. But it is also rather naive to conclude, as some have urged, that antitrust enforcement has little or no role to play when it comes to market power based on intellectual property.² In the remainder of this discussion it will be assumed—as almost all commentators have assumed—that antitrust is sufficiently flexible that it can play a useful role in the New Economy.³

1. In the U.S. Dep’t of Justice & FTC, Antitrust Guidelines for the Licensing of Intellectual Property § 2.1 (1995), <http://www.usdoj/0s/2000/04/ftcdojguidelines.pdf>, there are statements to the effect that the same general antitrust principles that apply to any form of tangible or intangible property should apply to conduct involving intellectual property. But the Guidelines then go on to note that “[i]ntellectual property has important characteristics, such as ease of misappropriation, that distinguish it from many other forms of property.” See also Sheila F. Anthony, *Antitrust and Intellectual Property Law: From Adversaries to Partners*, 28 AM. INTEL. PROP. LAW ASS’N Q.J. 1, 7-8 (2000) (discussing interplay between antitrust and intellectual property law and the genesis and principles of the Guidelines’ approach). As this discussion will develop, the antitrust laws should apply fully to intellectual property—certainly no broad exemption is justified—but in application must take important special characteristics of intellectual property into account.

2. David J. Teece and Mary Coleman, *The Meaning of Monopoly: Antitrust Analysis in High-Technology Industries*, 43 ANTITRUST BULL. 801, 843, 846 (1998); Robert J. Barro, *Why the Antitrust Cops Should Lay Off High-Tech*, BUS. WK., Aug. 17, 1998, at 20.

3. See, e.g., Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting*, in 1 INNOVATION POLICY AND THE ECONOMY (Joshua Lerner & Scott Stern eds., forthcoming 2001), at <http://haas.berkeley.edu/~shapiro/thicket.pdf>; David A. Balto & James F. Mongoven, *Antitrust Remedies in High Technology Industries*, ANTITRUST REP. 22 (Jan. 1999); Robert Pitofsky, *Challenges of the New*

The New Economy differs in degree rather than kind from the “old” economy. Part II of this discussion examines the key differences that define the New Economy. Part III turns to several implications of those differences as they pertain to antitrust enforcement. I argue that the differences do not justify sweeping generalizations that antitrust enforcement has no place in the New Economy, but do require antitrust enforcement to make adjustments and exercise sensitivity towards intellectual property issues on a case-by-case basis. The goal of a coherent overall competition policy, in deciding both what conduct to enforce against and what remedies to require, should be to achieve an appropriate balance between the complementary legal regimes of intellectual property and antitrust. Part IV examines several examples of recent antitrust enforcement decisions involving intellectual property. Without addressing the ultimate merits of individual decisions, I find that antitrust enforcement has generally evolved in recent years in a way that pays heed to the distinctive characteristics of the New Economy. These decisions demonstrate a concerted attempt to give reasonable, fact-specific consideration to both incentives and opportunities to innovate. Finally, to supplement the preceding review of substantive issues, Part V examines the institutional challenges posed to antitrust enforcement by the New Economy.

II. WHAT IS NEW ABOUT THE NEW ECONOMY?

There are three differences relating to the New Economy that any sensible competition policy must take into account.

A. Differences in Fundamental Economics

Products and services based on intellectual property are usually characterized by large initial investments (“fixed costs”) and low costs to reproduce individual items (“variable costs”). For example, once a new line of computer code is developed and introduced, the cost to the seller of duplicating that code and making it available to others approaches zero; once

Economy: Issues at the Intersection of Antitrust and Intellectual Property, Speech Delivered Before the American Antitrust Institute Conference: An Agenda for Antitrust in the 21st Century (June 15, 2000), <http://www.ftc.gov/speeches/pitofsky/000615speech.htm>; Richard A. Posner, Antitrust in the New Economy, Speech Delivered at the ALI-ABA Conference (Sept. 14, 2000), http://www.ali-aba.org/aliaba/Posner_101100.htm; Daniel L. Rubinfeld, Competition, Innovation, and Antitrust Enforcement in Dynamic Network Industries, Speech Delivered Before the Software Publishers Ass’n Spring Symposium (Mar. 24, 1998), <http://www.usdoj.gov:80/atr/public/speeches/1611.htm>; Lawrence H. Summers, The New Wealth of Nations, Remarks at the Hambrecht & Quist Technology Conference (May 10, 2000), <http://www.treasury.gov/press/releases/ps617.htm>.

a new discovery is made about a biotechnology treatment for a disease, the cost of producing the pharmaceutical product is very little compared to the investment in research. Because the cost of producing additional items is so low, sellers find it to their advantage to add purchasers and users; hence price in the short-run often declines in an effort by the seller to expand sales.⁴ It logically follows that competition to be the first to generate products and services covered by intellectual property protection is therefore beneficial for consumers and should be encouraged and preserved.

There is, however, bad news. Because of the nature of competition in markets characterized by intellectual property, there is a tendency to drift toward single-firm dominance and even monopoly for two reasons. First, in order to encourage initial investments, the law provides intellectual property protection (primarily via patent and copyright law)⁵ and, in effect, precludes competition within the scope of the intellectual property for a period of time. Second, products and services based on intellectual prop-

4. See CARL SHAPIRO & HAL R. VARIAN, INFORMATION RULES 28 (1999) (“With information goods, unit costs of production are negligible and supply chain management and related techniques usually don’t help much with the first-copy costs. The key to reducing average cost in information markets is to increase sales *volume*.”). As Judge Posner explains:

Intellectual property is characterized by heavy fixed costs relative to marginal costs. It is expensive to create but once created the cost of making additional copies is low, dramatically so in the case of software, where it is only a slight overstatement to speak of marginal cost as zero. Without legal protection, the creator of IP may be unable to recoup his investment, because competitors can free ride on it; and so legal protection can expand, rather than as the usual case with monopoly contract, output.

Posner, *supra* note 3, at 2.

5. In addition to patent and copyright law, various other intellectual property laws or quasi-intellectual property laws, including trade secret law and statutory proposals for database protection, serve the economic function of rewarding creative or inventive effort with competitive exclusivity, thus trading off the benefit to customers of competition against the benefits of encouraging innovation. See, e.g., William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325 (1989); *The Consumer and Investor Access to Information Act of 1999: Hearing on H.R. 1858 Before the Subcomm. On Telecommunications, Trade, and Consumer Protection of the House Comm. On Commerce*, 106th Cong. 78 (1999) (statement of the FTC). Trademarks are better dealt with separately, however, because while some common issues arise, they involve an economic tradeoff with different implications for antitrust law. The economic purpose of trademark law is not in general to encourage innovation and creativity, but instead to reduce consumer search costs by identifying the source of goods, and thereby incidentally to encourage quality by protecting reputation. See William M. Landes & Richard A. Posner, *Trademark Law: An Economic Perspective*, 30 J.L. & ECON. 265, 269-270 (1987).

erty frequently exhibit “network effects,” i.e., each individual’s demand for a particular company’s product or service is positively related to its widespread use by others. This phenomenon can most clearly be seen with respect to communications equipment (local telephone, fax, and e-mail), which becomes more valuable to users as more people use the service. These network effects can also be indirect—situations in which producers of complementary goods design and manufacture those complements to work with the goods of the single dominant firm. This leaves potential challengers of that dominant firm without access to the complementary goods or with the burden of producing the complementary goods themselves. The exclusionary rights granted by intellectual property protection, coupled with trends toward standardization due to network effects, threaten to diminish market competition. Where this results in monopoly or near-monopoly, there can be negative effects not only on price and output, but also on innovation, as the diversity of competing research and development programs and the pressure on the incumbent to innovate and stay ahead of competition are lost.⁶

It is important to recognize these characteristics, but they should not be exaggerated. There are numerous non-intellectual property products with high fixed and low variable costs (e.g., incinerators and transport industries)⁷ and pronounced network effects (e.g., credit cards). On average and across the economy, however, these trends appear more frequently in markets characterized by intellectual property.

In sum, incentives to innovate must be protected in intellectual property markets and innovation competition can yield great consumer benefits. On the other hand, threats to competition can be substantial. For example, the combination of intellectual property protection and network effects will almost inevitably lead to monopoly and the monopoly can diminish or eliminate future innovation. The challenge for antitrust is to deal with these economic conditions by preserving competition without unreasonably undermining incentives to innovate.

6. See, e.g., *In re Silicon Graphics, Inc.*, 120 F.T.C. 928 (1995). As explained *infra*, the *Silicon Graphics* vertical merger case involved an acquisition of software providers by the dominant entertainment graphics workstation provider. Standard vertical foreclosure concerns were exacerbated in the circumstances by indirect network effects—the entrenchment of its workstation dominance by the production by various software firms of software dedicated to its workstation—and innovation competition was threatened by Silicon Graphics’ monopoly power.

7. As SHAPIRO & VARIAN, *supra* note 4, at 22, point out, “It costs United a huge amount to purchase and operate a 747, but the incremental cost of an additional passenger is tiny, so long as the plane is not full.”

B. Importance of Innovation in a Dynamic Economy

Traditionally, antitrust has focused primarily, though not exclusively, on price and output effects.⁸ Antitrust enforcers ask whether a particular transaction is likely to allow the parties to raise price to the disadvantage of consumers, lower price drastically so as to drive out competitors and eventually injure consumers, or achieve comparable effects from other exclusionary conduct.⁹

In the New Economy, however, the success of competition is frequently based on qualitative rather than quantitative factors: the key is not so much who can produce the most widgets at the lowest cost, but rather who can be the first to design, protect with intellectual property rights, and bring to market a new and improved widget.¹⁰ Because market participants' incentives and opportunities to innovate are increasingly important in the intellectual property-intensive new economy, a rational competition policy will pay more heed to the effects of market structure, competitive conduct, and enforcement on innovation than it paid in industries where cost minimization was the most significant dimension of efficient competition.

In markets where innovation is important, it has been suggested that larger firms may enjoy advantages in innovation, thereby producing consumer benefits that dwarf any loss of price competition due to increased market concentration. The seminal (though still controversial) statement of the general argument that concentration may favor innovation appears in Joseph Schumpeter's book *Capitalism, Socialism and Democracy*, and emphasizes economies of scale which assist large companies to be efficient in research and development.¹¹ Others have argued that innovation may be spurred by corporate size because firms are able to spread the cost

8. See, e.g., U.S. Dep't of Justice & FTC, Horizontal Merger Guidelines § 0.1 (1992), http://www.usdoj.gov/atr/public/guidelines/horiz_book/hmg1.htm [hereinafter Horizontal Merger Guidelines] (describing the Guidelines' fundamental concern with "market power" in terms of price and output); RICHARD A. POSNER, *ANTITRUST LAW: AN ECONOMIC PERSPECTIVE* 13 (1976) (describing the "costs of monopoly" by reference to a demand curve charting the relationship between output and price).

9. See, e.g., Horizontal Merger Guidelines, *supra* note 8, § 0.1 (mergers allowing parties to raise price); *Brooke Group v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993) (predatory pricing); *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447 (1993) (monopolization).

10. See, e.g., SHAPIRO & VARIAN, *supra* note 4 (emphasizing the importance of the "first-mover advantage" in the New Economy).

11. JOSEPH A. SCHUMPETER, *CAPITALISM, SOCIALISM AND DEMOCRACY* chs. 5-8 (1950).

of innovation across a larger output base, accelerate implementation of innovations, and diversify risks.¹²

While concentration may increase the dominant firm's ability to innovate, the lack of competition may weaken its incentives, and may deprive the market of smaller firms who may have other innovations to offer. As discussed in the next section, the issue is not so much whether the incentives and abilities of market participants to innovate should be protected—all agree on that—but how best to do so while at the same time preserving the ability of other firms to challenge the technological incumbent and promote both price and innovation competition.

C. Uncertain Durability of Market Power

While comprehensive empirical data is lacking, there is a widely held view that markets in the New Economy are characterized by an increased rate of innovation, relative ease of entry, and instability of market shares. As a result, the argument proceeds, cartels and monopoly power in intellectual property markets will necessarily be short-lived, and in any event, will be defeated more quickly and efficiently by market forces such as new entry and innovation than by any band of bureaucrats.¹³

By and large, these claims have some merit. On average, market power is probably less durable in the high-technology sector of the economy. As a result, it is unlikely that any dominant firm will eclipse competition for fifty years to the extent and in the way that Alcoa dominated the aluminum market in the first half of the twentieth century.¹⁴

Nevertheless, these concerns have not vanished entirely from the face of the economy due to the intellectual property revolution. We have already seen that systems designed to encourage and protect innovation such as patents and copyrights can be—and often are—used to barricade a market against entry by new rivals. Furthermore, it appears that network effects occur more frequently in sectors of the economy characterized by intellectual property. Such factors as brand name recognition and reputa-

12. See, e.g., FTC Hearings on Global and Innovation-Based Competition (Nov. 2, 1995) (statement of Steven C. Salop, *Efficiencies in Dynamic Merger Analysis*), <http://www.ftc.gov/opp/global/saloptst.htm>. In recent years, it appears that *growth* in R&D investment has been concentrated in smaller firms. "Between 1993 and 1998, real spending on R&D by firms with more than 25,000 employees increased by 8 percent, but R&D conducted by firms with fewer than 500 employees nearly doubled." ECONOMIC REPORT OF THE PRESIDENT, H.R. DOC. NO. 107-2, at 112 (2001).

13. Cf. SHAPIRO & VARIAN, *supra* note 4, at 305 ("certain high-tech industries are highly dynamic, making any monopoly power transitory").

14. For a description of Alcoa's dominance, see *United States v. Aluminum Co. of Am.*, 148 F.2d 416 (2d Cir. 1945).

tion for reliability can create substantial advantages for incumbents, further impeding market entry by new competitors. Finally, practices illegal under the antitrust laws such as exclusionary conduct or intimidation tactics available to only very large firms can themselves impede entry by more efficient challengers. Market dominance for “only” fifteen or twenty years can take enormous resources out of the economy and, by excluding innovative new entrants, foreclose alternative paths of technical development.

In the end, the question of whether market power is durable or ephemeral is fact-specific and needs to be addressed on a market-by-market and product-by-product basis. At a minimum, however, casual, across-the-board views that antitrust has no role to play in the New Economy since market power is weak and ephemeral are unfounded.

III. STRIKING THE BALANCE: HOW SHOULD ANTITRUST ENFORCEMENT RESPOND TO THESE DIFFERENCES?

Both reasonable intellectual property protection and effective antitrust enforcement will encourage innovation. Intellectual property rights subsidize investments in innovation by granting substantial, but time-limited, market power. Antitrust ensures that firms compete, and by competing, seek new roads to innovation. It also prevents dominant firms from harming or retarding innovation. Balance in the substantive rules of intellectual property and antitrust law, as well as sensitivity to innovation issues at the remedial stage, are the two essential ingredients of a rational legal response to the realities of the New Economy.

A. Protecting (Without Overprotecting) Incentives to Innovate

Virtually all agree that some level of intellectual property protection, specifically involving a patent and copyright system, is justified. But almost all further recognize that such protection is a double-edged sword.¹⁵ On the one hand, it properly encourages and rewards innovation, and prevents misappropriation. On the other hand, it prevents competition for a period of time within the zone of the intellectual property grant.¹⁶ A legal

15. See, e.g., 1 NIMMER ON COPYRIGHT § 1.03[A] (2000) (noting the general “assumption that in the absence of . . . public benefit [in the form of promoting creativity], the grant of a copyright monopoly to individuals would be unjustified.”).

16. For example, since much innovation consists of improvement on basic ideas, patent protection of the basic idea may preclude the very improvements that it is designed to encourage. See, e.g., 1 FTC, ANTICIPATING THE 21ST CENTURY: COMPETITION POLICY IN THE NEW HIGH-TECH, GLOBAL MARKETPLACE ch. 6 (1996) (emphasizing the importance of preserving opportunities for follow-on innovation).

system that overprotects intellectual property and underenforces antitrust law thus poses dangers to competition and ultimately to innovation, just as one that underprotects intellectual property and overenforces antitrust principles can harm incentives to innovate. The central challenge posed by the New Economy is to strike an appropriate balance. In doing so, two difficult questions need to be addressed. First, in the context of the New Economy, is the present level of intellectual property protection roughly adequate or does it under or overcompensate innovation? Second, has antitrust enforcement adequately acknowledged the importance of protecting incentives to innovate?

With respect to the level of intellectual property protection, much work needs to be done to evaluate how intellectual property protection operates today. Many suspect that the present system is seriously flawed.¹⁷ It should be a matter of concern that patent applications and patent grants in the United States are at an all-time high, and the patent rate per dollar of

17. See, e.g., Robert P. Merges, *As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 BERKELEY TECH. L.J. 577 (1999) (arguing that the growing volume of patents and the emergence of new types of patents such as business method patents reinforce a general need for new procedures, such as a European-style patent opposition system, and a reform of patent examiners' training and incentives, to minimize the granting of invalid patents); Lawrence Lessig, *The Problem with Patents*, THE STANDARD, Apr. 23, 1999, at <http://www.thestandard.com/article/display/0,1151,4296,00.html> (describing workloads and incentives at the U.S. Patent and Trademark Office ("PTO") as a significant contributor, along with the high cost of litigating against invalid patents, to the growing problem of "bad patents," especially bad business method patents, which become "the space debris of cyberspace"); Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U.L. REV. (forthcoming Sept. 2001) (arguing that litigation is more cost-effective than increasing examination of patent applications and that the presumption of patent validity should be relaxed); MARK A. LEMLEY ET AL., SOFTWARE AND INTERNET LAW 333-34 (2000) (discussing specific weaknesses in the PTO's scrutiny of software patents in the 1990s); Jeff Bezos, *An Open Letter on the Subject of Patents*, at <http://www.amazon.com/exec/obidos/subst/misc/patents.html> (last visited Apr. 10, 2001) (arguing that business method and software patents should be limited to three to five years' duration and subjected to public comment before issuance); see also COMMITTEE ON INTELLECTUAL PROPERTY RIGHTS AND THE EMERGING INFORMATION INFRASTRUCTURE & COMPUTER SCIENCE AND TELECOMMUNICATIONS BOARD COMMISSION ON PHYSICAL SCIENCES, MATHEMATICS, AND APPLICATIONS, NATIONAL RESOURCE COUNCIL, THE DIGITAL DILEMMA: INTELLECTUAL PROPERTY IN THE INFORMATION AGE 228 (2000) ("The past decade has seen a substantial de facto broadening of items for which patents can be obtained, including information inventions such as computer programming, information design, and business methods. The long-term effects of this trend are as yet unclear, although the near-term consequences are worrisome.").

research and development (“R&D”) is the highest since 1977.¹⁸ Perhaps there are innocent explanations, or it may be that the “system” drives companies to seek—and the government to grant—more flimsy intellectual property rights than are justified.

For example, take patent policy. An evaluation of levels of protection is beyond the scope of this discussion, but any resolution of the relationship between antitrust and intellectual property must address some or all of the following questions: (1) Does the patent office have the resources to conduct a rigorous review of patent applications? (2) Are patent grants justified in terms of utility, novelty, and invention, or is the scope of patents that are granted unnecessarily broad? (3) Is the duration of patent protection always—or even usually—essential to stimulate and reward innovation, or would lead time to the innovator and secrecy adequately reward much innovation, and if the latter is true, what policy justifies granting as many broad patents as are issued today? (4) Is private litigation a sensible way to work out patent controversies, especially with respect to the scope of the patent? and (5) Are patents abused (e.g., are many patent applications designed to create a thicket of uncertain scope primarily to preclude competitive challenges)?¹⁹

Without reliable answers to these questions, it will be difficult to decide whether the balance between antitrust and intellectual property protection is roughly correct. Even if our government grants more patents than are essential to encourage innovation, and protects patent rights to an undue extent—and I tend to agree with those who are skeptical about the advantages of current patent policy²⁰—there is a still more difficult issue to address: namely, the possibility that generous compensation via broad patent grants in computer software and pharmaceuticals is a sensible price to pay in order to drive the economy to higher levels of productivity and generate higher levels of consumer welfare.

With respect to antitrust’s overall acknowledgement of the need for innovation, antitrust historically has often, if not always, been sensitive to the value of innovation. For example, since the passage of the Sherman Act in 1890, there has been only one federal government challenge to a research and development joint venture—a classic example of innovative

18. See Linda Cohen & Roger Noll, *Is U.S. Science Policy at Risk?*, BROOKINGS REV., Jan. 1, 2001, at 10. This per dollar rate increase also comes at a time when private sector investment in R&D has increased at an impressive 8 percent per year in 1995-99. ECONOMIC REPORT OF THE PRESIDENT, H.R. DOC. NO. 107-2, at 111 (2001).

19. On this last question, see Shapiro, *supra* note 3, at 3.

20. See SCHUMPETER, *supra* note 11.

arrangements.²¹ It would be difficult to imagine a more lenient record. When competitors control patents that include legitimate conflicting claims so that neither can reach the market, the courts have consistently allowed cross-licenses, even where such licenses incorporated agreements on price.²² Access to information about a monopolist's product may be essential for manufacturers of complementary products or services to compete. A leading court decision concluded, however, that there is no obligation to pre-disclose, even for a monopolist, because any such duty would tend to discourage aggressive competition and innovation.²³ Finally, evidence of an intent on the part of antitrust enforcers to avoid unnecessary interference with incentives to innovate is found throughout the recently issued Federal Trade Commission ("FTC")/Department of Justice Antitrust Guidelines for Collaboration Among Competitors.²⁴ Part IV of this discussion will examine further whether antitrust law enforcement (and nonenforcement), including consent orders, has paid adequate attention in the last half-dozen years to the preservation of legitimate incentives to innovate. For the purposes of this part of the discussion, however, it is clear that antitrust certainly values innovation as a policy goal.

While antitrust enforcement's general sensitivity to the value of innovation is certainly appropriate, it should not be taken too far. An approach that grants broad exceptions to antitrust principles in favor of intellectual property holders distorts the balance too far in the direction of incentives to innovate by sacrificing too much in the way of competition and opportunities for follow-on innovation. A striking example of an approach that gives undue weight to intellectual property rights is the recent Federal Cir-

21. See *Auto. Mfrs. Ass'n v. United States*, 307 F. Supp. 617, 621 (C.D. Cal. 1969), *aff'd sub nom.*, *City of New York v. United States*, 397 U.S. 248 (1970). Even here, the case went beyond a simple R&D joint venture. The case ended in a consent agreement resolving charges that the Auto Manufacturers Association, General Motors, Ford, Chrysler, and American Motors Corp. had conspired with other motor vehicle manufacturers to eliminate competition in the research, development, manufacture and installation of motor vehicle air pollution control equipment, and in the purchase from others of related patent rights.

22. The leading case is *Standard Oil Co. (Indiana) v. United States*, 283 U.S. 163 (1931).

23. See *Berkey Photo, Inc. v. Eastman Kodak Co.*, 603 F.2d 263, 281 (2d Cir. 1979).

24. See U.S. Dep't of Justice & FTC, *Antitrust Guidelines for Collaboration Among Competitors* § 3.31(a) (2000), <http://www.ftc.gov/os/2000/04/ftcdojguidelines.pdf> (concluding that R&D agreements are usually procompetitive).

cuit decision in *CSU v. Xerox Corp.*,²⁵ which concluded that a legitimate holder of a patent or copyright can refuse to license anyone, regardless of intent or effect on competition. The court held that the refusal is exempt from the antitrust laws unless the intellectual property was obtained by fraud, the infringement suit is a sham to cover an intent to injure a competitor, or the refusal is part of a tie-in sale strategy.²⁶ In effect, the Federal Circuit has leapt from the undeniable premise that an intellectual property holder does not have to license anyone in the first instance to the unjustifiable conclusions that it can select among licensees or can condition a license to achieve an anticompetitive effect. For example, you receive a license only if you agree not to do business with my competitor. That approach to the tradeoff between intellectual property and antitrust gives intellectual property an inappropriate weight in the traditional balancing process,²⁷ allowing intellectual property holders to extend their market power beyond the scope of the intellectual property right itself and sacrificing more competition than is necessary to provide appropriate incentives to innovate.

B. Designing Remedies for the New Economy

As in other areas of antitrust, most antitrust cases involving intellectual property are settled outside of court. Because areas of the economy characterized by intellectual property are usually dynamic rather than static, reliable predictions are difficult, thereby making effective remedies hard to formulate. From the point of view of antitrust enforcement, remedial questions are a particular challenge in addressing intellectual

25. Now renamed as *In re Indep. Serv. Orgs. Antitrust Litig.*, 203 F.3d 1322, 1329 (Fed. Cir. 2000).

26. *Id.* at 1326.

27. See *Townshend v. Rockwell Int'l Corp.*, No. C99-0400, 2000 U.S. Dist. LEXIS 5070 (N.D. Cal. Mar. 28, 2000) (illustrating the way *CSU v. Xerox* may be misused). In that case, the owners of basic patents underlying the 56k modem technology sued for patent infringement. The co-defendant, Rockwell, asserted antitrust counterclaims alleging that the patents on which the suit was based were invalid, the technology under the patents had been adopted as part of an industry standard through fraud on a trade association and its members, and the patents were made available to competitors only on the condition that they cross-license their technology to the patent holder. The district court dismissed the antitrust counterclaims, "[b]ecause a patent owner has the legal right to refuse to license his or her patent on any terms, [and therefore] the existence of a predicate condition to a license agreement cannot state the antitrust violation." *Id.* at *26. To the same effect, see *Intergraph Corp. v. Intel Corp.*, 88 F. Supp. 2d 1288, 1292-93 (N.D. Ala. 2000) (supporting the proposition that it is not an antitrust violation to refuse to license a patent).

property issues in a way that alleviates competitive problems without unduly interfering with innovation incentives. Among the issues that need to be addressed are the following: (1) enforcement officials and the courts must be cautious when imposing remedial conditions so as not to undermine innovation; (2) special attention needs to be given to the duration of orders, with duration often curtailed because market changes in high-technology markets with much intellectual property are likely to make those long-term orders obsolete, if not downright harmful; and (3) where network effects are present or pose a threat, there must be special attention given to designing a remedy that ensures reasonable access to the bottleneck product or service.²⁸

Any effective remedial structure should take all of these factors into account. These issues are discussed more fully below in connection with actual cases settled or litigated by the FTC in the last several years.

IV. APPLICATION OF PRINCIPLES: HAS ANTITRUST ENFORCEMENT ADJUSTED WHEN INTELLECTUAL PROPERTY IS INVOLVED?

To recapitulate, in markets characterized by the presence of intellectual property, antitrust must face the following special, though not unique, market characteristics: particular importance of incentives to innovate; critical importance of competition at the research and development level; dynamic markets and often, though not always, unstable market shares; and uncertainty about the way markets will develop. A rational response to these characteristics does not involve sweeping generalizations or a wholesale abandonment of antitrust principles, but does require sensitivity to the balance between intellectual property and antitrust and careful tailoring of remedies to the particular facts of the case in order to preserve incentives to innovate.

28. Perhaps the most perplexing question about how the antitrust laws should apply to intellectual property concerns entrenched market power achieved as a result of network effects. That issue deserves an entire paper of its own and is beyond the scope of this discussion. I have attempted to address those issues elsewhere. Robert Pitofsky, *Antitrust Analysis in High-Tech Industries: A 19th Century Discipline Addresses 21st Century Problems*, Remarks at the Am. Bar Ass'n Antitrust Section's Antitrust Issues in High-Tech Industries Workshop (Feb. 1999), <http://www.ftc.gov/speeches/pitofsky/hitch.htm>. My tentative conclusion there was that antitrust should be cautious in challenging legally achieved market power based on network effects, and with rare exceptions, should concentrate on its traditional role of ensuring that companies achieve market power through legitimate competitive conduct, and that they maintain their network dominance only through superior skill, foresight, and industry—not by exclusionary conduct.

How has antitrust enforcement responded in practice? In reviewing a sample of FTC enforcement initiatives over the last half-dozen years, my goal is not to demonstrate that the Commission was always correct. Cases that go to litigation or involve lengthy settlement negotiations usually involve close calls, and any individual enforcement decision could be debated. My goal rather is to determine whether enforcement and nonenforcement decisions took into account the special characteristics of intellectual property markets that I have addressed in the first half of this discussion.

A. Agreements That Have the Effect of Extending Patent Duration – *Hoechst-Andrx*²⁹ and *Abbott-Geneva*³⁰

In the past year, the FTC brought two actions that raised similar issues involving settlements of patent disputes between brand name and generic companies. Under federal law, the first company to file an application with the Food and Drug Administration to market a generic bio-equivalent to a brand name drug is given a 180-day period of exclusivity after the patent expires or is declared invalid in a patent suit.³¹ The 180-day period does not begin to run until the generic comes to market.³² During this time, other generic competitors are prohibited from coming to market.³³ In both *Abbott-Geneva* and *Hoechst-Andrx*, the branded pharmaceutical company paid the first-to-file generic company a large sum of money, exceeding the amount of money the generic company might otherwise have earned by independently marketing the product, to keep the generic version off the market.³⁴ The agreements thus acted as corks in a bottle, precluding competition not only by the generic company paid not to challenge the branded pharmaceutical, but also by other potential generic competitors because the 180-day period would not begin to run until the generic came to market. Each agreement contained additional terms, including provisions that the generic company would not transfer or relin-

29. *In re Hoechst Marion Roussel, Inc.*, No. 9293, 2000 F.T.C. LEXIS 16 (Mar. 16, 2000).

30. *In re Abbott Labs. & Geneva Pharmaceuticals, Inc.*, Nos. C-3945 & C-3946, 2000 F.T.C. LEXIS 65 (Mar. 16, 2000).

31. Drug Price Competition and Patent Term Restoration (Hatch-Waxman) Act, 21 U.S.C. § 355 (1994).

32. *Id.*

33. *Id.*

34. See *Abbott Labs.*, 2000 F.T.C. LEXIS 65, at *14; *Hoechst Marion Roussel*, 2000 F.T.C. LEXIS 16, at *12-17.

quish its 180-day exclusivity period, or would not even market noninfringing generic forms of the branded company's drugs.³⁵

Absent the agreements, the branded pharmaceutical house and the generic house would likely have engaged in extended patent litigation as to whether the patent was invalid and/or infringed by the generic. In general, encouraging settlements of patent litigation facilitates innovation. In these cases, however, the key provision effectively paying the generic to stay off the market and thereby precluding others from entering the market, along with ancillary provisions blocking competing sales, led the Commission to conclude that the primary purpose and effect of the arrangement was to extend the de facto duration of the patent by private agreement.³⁶ At least to my mind, these arrangements did little to encourage innovation.

B. Refusals to License by a Monopolist—*In re Intel Corp.*³⁷

In one of the most widely noted antitrust enforcement actions involving intellectual property, the Commission in 1998 issued a complaint against the Intel Corporation. The complaint alleged that Intel was a monopolist in the microprocessor market and that it had sought to maintain its dominance by denying essential technical information and product samples of new microprocessors to companies that, because of intellectual property disputes, had initiated or threatened to initiate litigation against Intel or Intel's customers.³⁸ Intel's goal, according to the complaint, was to coerce other companies to license their intellectual property on terms favorable to Intel, rather than to resort to the courts.³⁹ Intel had previously provided the information and samples to many of its customers and customer-competitors, but withdrew these advantages from those who found themselves in intellectual property disputes with Intel.⁴⁰ The Commission alleged that anticompetitive effects included discouraging innovation efforts by potential challengers in microprocessor technology.⁴¹

In settling the case, Intel agreed that it would not withhold or threaten to withhold product or technical information for reasons relating to an in-

35. See *Abbott Labs.*, 2000 F.T.C. LEXIS 65, at *10; *Hoechst Marion Roussel*, 2000 F.T.C. LEXIS 16, at *12-17.

36. See *Abbott Labs.*, 2000 FTC LEXIS 65; *Hoechst Marion Roussel*, 2000 F.T.C. LEXIS 16.

37. *In re Intel Corp.*, No. 9288, 1999 F.T.C. LEXIS 145 (Aug. 3, 1999). For further discussion of *Intel*, and of the *Dell* and *Ciba-Geigy/Sandoz* cases discussed *infra*, see Anthony, *supra* note 1.

38. *Intel*, 1999 F.T.C. LEXIS 145.

39. *Id.*

40. *Id.*

41. *Id.*

tellectual property dispute.⁴² The Commission agreed to qualify this provision by acknowledging that an intellectual property holder, including a monopolist like the Commission alleged Intel to be, would be free to withhold licenses of its product or information in the first instance, but would not to be able to curtail its supply when the customer sought to vindicate *its* intellectual property rights through a range of legal and equitable remedies.⁴³ Intel would also be free to discontinue a license when a customer or competitor sought an injunction against Intel's sale of its microprocessors.⁴⁴ The order thus gave the challenger a choice of waiving that remedy. If the challenger refused to waive, then Intel would be allowed to discontinue providing information or the product.

The goal of the order was to avoid a "compulsory licensing" regime, even by an alleged monopolist, because of the adverse effects of such regimes on innovation. The order was designed to allow Intel and its challengers to vindicate their rights in court before an independent adjudicator, rather than to resort either to self-help, by Intel, in which case the strong would almost always vanquish the weak, or to the kind of injunction, by Intel's challenger, that would threaten Intel's ability to conduct its business.

In my view, the order in *Intel* is the prime example of the effort by the FTC to pursue conventional antitrust enforcement,⁴⁵ while at the same time tailoring its complaint and order so as not to undermine incentives to innovate in the first place.

C. Standard Setting by Private Agreement – *Dell Computer*⁴⁶

Standard setting, often under the auspices of a trade association, can facilitate innovation. On the other hand, private standard setting, precisely because it is private, is subject to abuse.⁴⁷

42. *Id.*

43. *Id.*

44. *Id.*

45. For similar enforcement efforts in non-intellectual property contexts, see, for example, *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585 (1985); *Lorain Journal Co. v. United States*, 342 U.S. 143 (1951). For a discussion of significant factual and legal differences between the Commission's *Intel* case and the separate private antitrust case brought against Intel by Intergraph, see Debra A. Valentine, Abuse of Dominance in Relation to Intellectual Property: U.S. Perspectives and the *Intel* Cases, Speech Delivered at the Israel International Antitrust Conference (Nov. 15, 1999), <http://www.ftc.gov/speeches/other/dvisraelin.htm>.

46. *Dell Computer Corp.*, 121 F.T.C. 616 (1996).

47. *See Allied Tube & Conduit Corp. v. Indian Head Inc.*, 486 U.S. 492, 496 (1988) (finding that the nation's largest producer of steel conduit packed an annual meeting with

In *Dell Computer*, the Commission alleged that Dell had abused the power conferred by its patent by failing to disclose its patent rights during a standard-setting process and then threatening to enforce those rights against others involved in that process.⁴⁸ Dell was a member of the Video Electronics Standards Association (“VESA”), a nonprofit standard-setting organization composed of virtually all major U.S. computer hardware and software manufacturers.⁴⁹ VESA had been in the process of setting a design standard for a computer part (“VL-Bus”) that carried information or instructions between a computer’s central processing unit and peripheral devices.⁵⁰ A Dell representative certified in writing that “this proposal does not infringe on any trademarks, copyrights, or patents” possessed by Dell.⁵¹ After VESA adopted a standard, Dell informed several VESA members that implementation of the VL-Bus would be a violation of Dell’s intellectual property rights.⁵²

The Commission’s complaint alleged that the “bait-and-switch tactics” adopted by Dell threatened to retard the development and adoption of standards in this particular matter and to discourage efficient standard-setting efforts in the future.⁵³ In a consent agreement, Dell agreed not to enforce its patent against computer manufacturers incorporating VL-Bus design, nor to enforce in the future any patent rights that it intentionally failed to disclose upon request of any standard-setting organization during the standard-setting process.⁵⁴ The remedy was designed to maintain incentives to innovate created by patent law by leaving in place Dell’s patent rights for all purposes other than enforcement against competitors who had relied on the apparently open industry standard.

The enforcement action and the order aimed to protect the integrity of the private standard-setting process, itself an essential device to help introduce new products, without punitive action against Dell’s patent.

new association members whose only function was to vote against approval of a standard that would allow a potential competitor into the market).

48. *Dell Computer*, 121 F.T.C., at 616.

49. *Id.*

50. *Id.*

51. *Id.*

52. *Id.*

53. *Id.*

54. *Id.*

D. Horizontal Mergers and Claims of Efficiency – *Lilly/Sepracor*,⁵⁵ *Ciba-Geigy/Sandoz*⁵⁶ and *Glaxo/Smith-Kline*⁵⁷

It has become commonplace for companies that control overlapping or complementary intellectual property to defend proposed horizontal mergers or joint ventures on grounds that the combined entity will be able to innovate or introduce innovative products more promptly and efficiently. Where levels of concentration or entry barriers are low, the Commission routinely allows such mergers or joint ventures. One example among many, *Lilly/Sepracor*, epitomizes the technical and predictive difficulties that antitrust enforcers face in an intellectual property context. In that case, Lilly, a manufacturer of the block-buster drug Prozac, sought an exclusive license to the rights to a follow-on and allegedly superior product. It was uncertain whether the follow-on drug would be approved by the FDA, how soon it would come to market, whether and to what extent Lilly's patent on Prozac would have blocked marketing of the follow-on drug, and whether it represented a meaningful advance over Prozac. Speaking for myself, I chose not to challenge the arrangement. Prozac faced several other competitors, and there was a range of other generic manufacturers ready to challenge Prozac when it went off patent. Also, Lilly's distribution resources and scientific expertise made it likely that Lilly would bring this new drug to the market much more promptly than would otherwise be the case.

On the other hand, where market shares and concentration are high and the merger is likely to leave only one or two sources of a product, efficiencies, including effects on innovation, should almost never justify the merger. For example, in December 1996, the Commission issued a consent order restricting a proposed merger between Ciba-Geigy and Sandoz, the two leading commercial developers of gene therapy products.⁵⁸ At that time, the two firms were engaged in rival research, development and testing efforts that were expected to yield significant improvements in the treatment of cancer and other diseases and medical conditions by the year 2000. In order to ensure that the merger would not slow R&D or raise prices for gene therapy products closest to market, the consent order required, among other things, the licensing of a package of gene therapy technology, know-how, and patent rights to a third party so that it would

55. There is no public record of *Lilly/Sepracor*.

56. *In re Ciba-Geigy Ltd.*, No. 961-0055, 1996 F.T.C. LEXIS 701 (Dec. 15, 1996).

57. *In re Glaxo Wellcome PLC*, No. C-3990, 2000 F.T.C. LEXIS 172 (Dec. 18, 2000).

58. *Ciba-Geigy*, 1996 F.T.C. LEXIS 701.

be in a position to compete against the combined firm.⁵⁹ The Commission faced a similar situation in the merger of Glaxo and Smith-Kline Beecham, where the Commission required the parties to assign intellectual property rights to an acquirer to prevent extreme concentration in the market.⁶⁰

Mergers to monopoly or near-monopoly, especially when the product has already been developed and is near the marketing stage, threaten to cause short-term anticonsumer effects in intellectual property markets just as they would in markets generally. Requiring that a second firm be set up in the market, thus restoring the competition lost as a result of the merger, is designed to ensure that competition at least plays some role in future developments in the market.

E. Vertical Mergers and Claims of Efficiency – *Silicon Graphics*⁶¹

In 1995, the Commission reached a consent with Silicon Graphics, Inc. (“SGI”) that allowed two acquisitions to proceed while at the same time addressing vertical foreclosure concerns that threatened to eliminate innovation competition. According to the Commission’s complaint, SGI, the dominant provider of entertainment graphics workstations with a 90 percent market share, had proposed to acquire Alias and Wavefront, two of the three dominant developers of Unix-based entertainment graphics and animation software that operate on those workstations.⁶² The Commission was concerned about vertical foreclosure in both directions. Rival workstation manufacturers would not be able to compete effectively if Alias and Wavefront were to design their software to be compatible only with SGI’s workstations.⁶³ At the same time, rival entertainment graphics software manufacturers would be foreclosed from 90 percent of a market if SGI were to close its previously open software interface so that only Alias and Wavefront would be able to design compatible software.⁶⁴ The Commission also was concerned that if SGI were to allow Alias and Wavefront to continue to work with rival workstation manufacturers to develop complementary products, SGI would be able to use proprietary information received in the course of those efforts to obtain an unfair competitive advantage over workstation competitors.⁶⁵

59. *Id.*

60. *Glaxo Wellcome*, 2000 F.T.C. LEXIS 172.

61. *In re Silicon Graphics, Inc.*, 120 F.T.C. 928 (1995).

62. *Id.*

63. *Id.*

64. *Id.*

65. *Id.*

On the other hand, there were strong indications that the combination of SGI, Alias, and Wavefront's complementary capacities would lead to important innovation. In order to maintain competition, while at the same time allowing the achievement of these potential efficiencies, the Commission negotiated a consent order that allowed the merger to proceed subject to three main conditions.⁶⁶ First, in order to preserve workstation competition, the Commission required the merged entity to enter into a Commission-approved porting agreement with a workstation competitor under which SGI would be required to use best efforts to ensure optimal interoperation of Alias' leading software programs with the competitor's workstations.⁶⁷ Second, in order to keep competition fair, the order included a firewall provision prohibiting the transfer to SGI of the workstation competitor's proprietary information.⁶⁸ Finally, in order to maintain software competition, the order required SGI to maintain an open architecture and publish its application programming interfaces for its workstations, and to refrain from discriminating against outside software rivals of Alias and Wavefront.⁶⁹

The order was admittedly "regulatory," including an on-going supervisory role for the Commission, which is usually best avoided. The alternative, however, would have been to block a vertical merger in a dynamic sector of the economy that offered exceptionally strong prospects for innovation.

F. Duration of Orders – *Intel*⁷⁰ and *AOL/Time Warner*⁷¹

As noted earlier in this discussion, because areas of the economy characterized by intellectual property usually are dynamic and fast-changing, predictions are not always reliable. On the other hand, it is often the case that antitrust enforcers must intervene at an early point in order to be effective, because once mergers or other transactions lead to a dominant market position, restoration of competition may be very difficult, or even impossible, to achieve. Since prompt intervention is necessary and perfect foresight impossible, a long-term remedy set in stone can be highly counterproductive.

Until six years ago, antitrust orders entered by the FTC were permanent and were vacated only if a party covered by the order could show

66. *Id.*

67. *Id.*

68. *Id.*

69. *Id.*

70. *In re Intel*, No. 9288, 1999 F.T.C. LEXIS 145 (Aug. 6, 1999).

71. *In re Am. Online, Inc.*, No. C-3989, 2000 FTC LEXIS 170 (Dec. 14, 2000).

changed circumstances of fact or law.⁷² In 1995 the Commission changed its policy and adopted a twenty-year cap on all antitrust orders.⁷³

Even twenty years can be an unacceptably long duration for an order when high technology is concerned. As a result, the Commission, largely on its own initiative, has curtailed the duration of several of its orders in the high-technology sector to less than twenty years. For example, the Commission settlement in *Intel*, discussed earlier, limited the duration to ten years because of the fast-changing nature of competition in microprocessor design.⁷⁴

A more striking example can be found in the recent settlement of the proposed merger of America Online and Time Warner. There, the product markets alleged to be likely affected by the merger included broadband Internet connections over cable (the way most residential broadband subscribers currently access the Internet) and “interactive television” - a new technology that will permit expanded viewer choice of the forms of entertainment and information received over cable.⁷⁵ AOL and Time Warner argued to the Commission that broadband connections over cable were already challenged competitively and would increasingly be challenged by broadband connections over digital subscriber lines (“DSL”), by satellite, and through wireless devices.⁷⁶ As to interactive television, the parties noted that though widely regarded as an important innovation, interactive television was largely in the developmental stage.⁷⁷ Given the uncertainty of developments in these areas and the dynamic quality of innovation, the Commission elected to limit the duration of all provisions of its order to five years⁷⁸ - the shortest duration of a competition order of which I am aware.

Of course, it is possible that the market will develop in unexpected ways such that competition problems would become more, rather than less, serious five or ten years after an order is entered. If those problems are created by illegal competitive behavior, there are other provisions of the antitrust laws that will come into play.⁷⁹ On the other hand, if dominance is achieved solely as a result of the superior skill and energy of the

72. 16 C.F.R. § 3.72 (2000).

73. 16 C.F.R. § 3.72 (b)(3) (2000).

74. *Intel*, 1999 F.T.C. LEXIS 145.

75. *Am. Online*, 2000 F.T.C. LEXIS 170.

76. *Id.*

77. *Id.*

78. *Id.* at *56.

79. *See, e.g.*, section 2 of the Sherman Act, 15 U.S.C. § 2 (1994) (monopolization).

merged entity, then neither the antitrust authorities nor consumers would have much about which to complain.

G. Conclusions to Be Drawn from the above Cases

Obviously I am not objective since every one of the enforcement and nonenforcement decisions described in this section was voted upon by the FTC in the past six years,⁸⁰ most unanimously. Nevertheless, as exemplified by the above cases, there is a good deal of evidence that in fashioning complaints and orders in cases that involve intellectual property, the FTC has tried to ensure that conventional antitrust enforcement is sensitive to incentives to innovate. In some instances the enforcement action itself was designed to discourage behavior alleged to suppress other people's intellectual property rights (e.g., *Intel*). In others it was designed to pursue conventional enforcement, but with attention to avoid overreaching that would undermine incentives to innovate (e.g., *AOL/Time Warner*).

V. SOME INSTITUTIONAL ISSUES

In a recent paper Judge Richard Posner raised, in his usual thoughtful way, questions about whether the institutional structure of antitrust enforcement is adequate to deal with the pace of development and type of issues likely to be encountered in the New Economy.⁸¹ In addressing such institutional questions, one cannot help but think of the debacle of the U.S. government monopolization case against IBM, in which IBM at the time represented the cutting edge of high-technology innovation. After several years of investigation, the government filed its lawsuit in 1969. After seven years of discovery and six years of trial, including a trial presentation that covered 104,000 pages of transcript, the government in 1982 dismissed the case - almost certainly correctly - on grounds, among others, that by that time IBM was no longer a monopolist.⁸²

In addition to raising the issue of speed of review, antitrust enforcement actions involving high technology raise questions that are unusually complicated and highly technical: for example, whether new technologies

80. I have been the Chairman of the FTC since April 1995.

81. Posner, *supra* note 3.

82. See *Post-Mortem on IBM Case Provides Forum for Conflicting Perspectives*, 1051 *Antitrust & Trade Reg. Rep. (BNA)*, 310, 310-11 (Feb. 19, 1982); *United States v. IBM*, 52 Civ. 72-344, U.S. Dist. LEXIS 5829 (S.D.N.Y. Apr. 30, 1997) ("It has been established beyond any real question that, whereas IBM formerly had a great deal of market power in an antitrust sense, that market power has been substantially diminished, and is continuing to diminish, to the point of its disappearance in the sense of a threat of antitrust violation."), *aff'd*, 163 F.3d 737 (2d Cir. 1998).

are likely to persist in the face of future competition, or whether a highly technical chip was designed to preclude a particular form of competition. As the *IBM* example illustrates, investigations and cases tend to be long compared to other forms of civil litigation because questions of cause and competitive effect are exceptionally complicated. Is antitrust up to the challenge?

A. Speed of Review

It is usually in everyone's interest - producers, consumers, and government - to review and resolve cases promptly. On the other hand, law enforcement can rarely equal the speed of economic change in high-technology sectors. Fact-finding, especially when developed through an adversarial process before decision makers who are not technically trained, is bound to be slow. All the government can hope to do is reduce delay to the maximum extent possible without short-changing consumers or undermining the rights of respondents.

In terms of efficient review, much progress has been achieved in recent years in the area of merger enforcement. Ninety-seven percent of mergers filed with the Department of Justice and the FTC are cleared without a "second request" (i.e., without extensive factual inquiry),⁸³ and of transactions where a second request is issued, the parties are in court or the investigation is closed in the vast majority of instances within 120 days.⁸⁴

If the Commission decides to challenge a transaction in court, it usually proceeds by preliminary injunction so that the initial trial is completed within a matter of months after a complaint issues. If the Commission thereafter elects to proceed along the administrative route and litigate the case within the agency, it may adopt a "fast track" procedure, to which the parties must consent, with the result that the elapsed time from complaint to Commission decision does not exceed thirteen months.⁸⁵

A comparable improvement in the speed of review and litigation needs to occur in the non-merger area. My impression is that the enforcement agencies and the courts are aware that it is essential to move things along, and improvement is occurring.

83. FTC BUREAU OF COMPETITION & U.S. DEP'T OF JUSTICE ANTITRUST DIVISION, ANNUAL REPORT TO CONGRESS, FISCAL YEAR 1999, PURSUANT TO SUBSECTION(J) OF SECTION 7A OF THE CLAYTON ACT, app. A, <http://www.ftc.gov/os/2000/08/hsrapp99.pdf>.

84. This is not available in any public record.

85. 16 C.F.R. § 3.11A(c)(1), (3) (2000).

B. Technology Challenges

Antitrust enforcement has often faced the challenge of dealing with complicated technological questions - for example in patent litigation or review of standard-setting results. I can testify better than most that there has never been a time when so many highly technical questions, best addressed by people with advanced training in chemistry, biology, and engineering, needed to be resolved in order to deal with antitrust issues.

Few government enforcement officials, administrators, or judges have sufficient technical competence to deal directly with those issues, so it is necessary to turn to experts. As Judge Posner notes, relatively few lawyers and economists have scientific training and those who do can command vastly better levels of income in the private sector than in the government.⁸⁶ There are competent experts in the private sector, but many are either on the payroll of high-technology companies or they hope to be in the future and so avoid government connections. I fully acknowledge the problem identified by Judge Posner.

The situation is not entirely bleak, however. Government lawyers and economists, after exposure to the technology of a particular sector, learn in the process of doing and are better equipped to handle a later, similar case. Also, some technically sophisticated lawyers and economists, blind to the virtues of wealth maximization, remain with the government for extended periods, and even an entire career, because they prefer service in the public sector. In addition, some technical experts from outside government do commonly serve as consultants and expert witnesses on government litigation teams, or as trustees appointed to oversee compliance with consent decrees. Finally, and perhaps most important, the FTC has turned to other agencies in government - the National Institute of Health with respect to biotechnology, the Federal Communications Commission for communications expertise, and the Food and Drug Administration for help on pharmaceutical mergers - and has in that way found invaluable assistance.

VI. CONCLUSION

This discussion is primarily about the need to adjust competition policies to the realities of the "New Economy." I have argued that the New Economy is not so new as to render obsolete the sound principles of competition that have guided antitrust over the years, but new enough to pose some substantial challenges. While much remains to be done, both substantively and institutionally, my contention is that antitrust has made sig-

86. Posner, *supra* note 3, at 7.

nificant progress in understanding the New Economy, and adjusting its policies and procedures to take more fully into account the need to protect both incentives and opportunities to innovate, and the need to keep up with a dynamic marketplace. At least as important, there is a need, touched upon only briefly here, to revisit intellectual property policy to assess whether intellectual property protection has expanded in a way that threatens the appropriate balance between property rights and competition.