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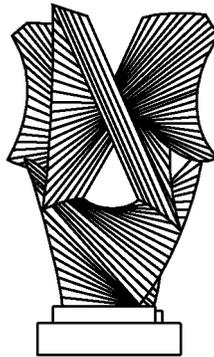
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Antitrust in the New Economy

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ANTITRUST IN THE NEW ECONOMY

Richard A. Posner¹

Concern has been expressed recently that U.S. antitrust law may not be well suited to regulating the “new economy.” Doctrines developed to deal with competition and monopoly in smokestack industries is not well adapted, it is argued, to dealing with the dynamic economy of the twenty-first century. What I shall argue is that there is indeed a problem with the application of antitrust law to the new economy, but that it is not a doctrinal problem; antitrust doctrine is supple enough, and its commitment to economic rationality strong enough, to take in stride the competitive issues presented by the new economy. The real problem lies on the institutional side: the enforcement agencies and the courts do not have adequate technical resources, and do not move fast enough, to cope effectively with a very complex business sector that changes very rapidly. This problem will be extremely difficult to solve; indeed, I cannot even glimpse the solution.

I.

I shall use the term the “new economy” to denote three distinct though related industries. The first is the manufacture of computer software. The second consists of the Internet-based businesses (Internet access providers, Internet service providers, Internet content providers), such as AOL and Amazon. And the third consists of communications services and equipment designed to support the first two markets. There are other candidates for inclusion in the new economy, but these three will do for my purposes.

These industries differ markedly from most of the industries in which modern antitrust doctrine emerged, and particularly from industries that manufacture traditional physical goods such as steel, automobiles, pipe, wire, aluminum, railroad cars, roadbuilding materials, and cigarettes. The traditional industries are characterized by multiplant and multifirm production (indicating that economies of scale are limited at both the plant level and the firm level, or in other words that average total costs are rising at relatively modest output levels), stable markets, heavy capital investment, modest rates of innovation, and slow and infrequent entry and exit. The new-economy industries that I’ll be discussing tend to lack these features. They are characterized instead by falling average costs (on a product, not firm, basis) over a broad range of output, modest capital requirements relative to what is available for new enterprises from the modern capital market, very high rates of innovation, quick and frequent entry and exit, and economies of scale in consumption (also known as “network externalities”), the realization of which may require either monopoly or interfirm cooperation in standards setting. And while vertical integration is a common feature of the old economy, it tends to be even more common in the new one, precipitating an unusually large number of firms into customer or supplier relations with other firms that are also its competitors. Let me elaborate on these features of the new economy a bit and indicate their relation to one another and to antitrust doctrine.

The principal output of these industries (with the partial exception of communications equipment) is intellectual property, namely computer code, rather than physical goods; although the intellectual prop-

¹ Judge, U.S. Court of Appeals for the Seventh Circuit; Senior Lecturer, University of Chicago Law School. Previous versions of this paper were given as talks in New York City on September 14, 2000, at a conference on antitrust sponsored by the American Bar Association and the American Law Institute, and the next day at a meeting of the Council of Foreign Relations; at DePaul University in Chicago on September 21, 2000, as a lecture in the Distinguished Lecture Series in Finance; and as a presentation at the Law and Economics Workshop of the University of Chicago Law School. I thank Dennis Carlton, Frank Easterbrook, Eric Posner, William Landes, and participants at the various sessions at which the paper was given for their very helpful comments.

erty may be shipped on a disk, this is incidental, and anyway software is increasingly shipped to the purchaser over the Internet. The character of the product as intellectual property is only slightly less obviously true of the Internet-based businesses, even those that sell physical products such as groceries and books. Their ability to take and fill orders and carry out the other operations (such as marketing, billing, handling returns, responding to customer questions and complaints, and allaying the customer's privacy and security concerns) required to give their customers whatever goods or services the business provides is a function to a large extent both of the sophistication of the business's computer software and also of its trademarks and copyrights.

Intellectual property is characterized by heavy fixed costs relative to marginal costs. It is often very expensive to create, but once it is 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.² Without legal protection, the creator of intellectual property may be unable to recoup his investment, because competitors can free ride on it; and so legal protection can expand output rather than, as in the usual case of monopoly, reduce it. At the same time, legal protection of intellectual property may operate to deflect consumers to more costly substitutes. The owner of the patent or copyright will charge a positive price for copying, even though the marginal cost may be zero; the positive price will deflect some consumers to substitutes. To prevent these defections would require perfect price discrimination, which is infeasible because (administrative costs to one side) it would require the seller to have complete information about the elasticity of the demand for his product by all his customers and potential customers.

The patent and copyright laws try to strike the output-maximizing balance by giving the creator of intellectual property some but not complete protection from competition. A copyright confers protection for a longer period than a patent does because, traditionally, less was protected—just the form in which the composer, painter, writer, etc. had chosen to express his ideas, and just copying, not independent discovery. The extension of copyright to software has been controversial. Many observers believe that it confers excessive protection, in the sense either of restricting rather than expanding the amount of intellectual property or of attracting excessive resources into the production of that property relative to investment in markets that do not yield a monopoly return (or both), because of difficulties in inventing around an innovative code. Even worse, it is argued, the methods of distributing software often enable the creator to obtain by contract even more protection than copyright law gives him. Copyright gives the holder a property right in his intellectual property even when it is in the hands of a person with whom he has no contract, such as the purchaser of a copyrighted book from a bookseller. To the extent that the creator of software contracts directly with the ultimate purchaser, he can impose via contract more restrictions than the copyright law would allow him to do in the absence of contract; for example, he can forbid the purchaser to make an extra copy for his own use, as copyright law permits. It is true that a contract is unlikely to have the same duration as copyright protection, but length of protection is academic in the case of software, which becomes obsolete long before the copyright on it expires. When discrimination is less than perfect, the effect on output is indeterminate, as I'll explain shortly.

The possibility that the combination of copyright and contract gives software manufacturers too much monopoly power in the economic sense, that is, either causes a lessening rather than an increase in the output of the intellectual property in question or distorts the allocation of resources between industries that produce intellectual property and industries that do not, or has both bad effects, creates a natural concern with any further practice or circumstance that might increase the manufacturer's power over the price of his software. It is at this point that another feature of the new economy that I mentioned, economies of scale in consumption, becomes troublesome. Economies of scale in manufacture are familiar; up to a point, the longer the production run, the lower average cost is. Economies of scale in consumption refer to the situation in which the larger the firm's output is (up to some point), the more valuable that output is to its customers. The traditional example was the telephone. Telephone service is worthless if there is only one subscriber; he has no one to talk to. The more subscribers, the more valuable the service is to each one, or at least to many of them. Interactive services, such as email and online auctions, are similar. Likewise the sharing of computer programs, as where two or more academics collabo-

² But still an overstatement, because there are selling and servicing costs associated with each sale or rental of software.

rate on writing a scholarly article by means of word processing and spreadsheet programs. Literal networking or sharing to one side, computer programs tend to be more valuable the more people use them because training, support by IT personnel, and standardization of equipment and procedures are facilitated. It is the same reason that the typewriter keyboard is standardized. We might call this “figurative” networking, by analogy to the distinction between literal and figurative queuing (for example, standing in line to buy a ticket versus waiting for one’s case to be called for trial).

These economies of consumption presuppose uniformity rather than common source. The international telephone system is a single network, but its components are owned by a vast number of separate firms and individuals. The components have, however, been standardized to assure interoperability, in the same way that the gauge of the railroad track has been standardized throughout the nation. A firm that manufactures one of the essential components of a network (a term I shall use to denote any situation in which there are economies of scale in consumption) would prefer to be the exclusive source of that component rather than be required to disclose the information that would enable competitors to duplicate it. If the component is subject to intellectual-property protection through patent, copyright, or contract (or can be held as a trade secret), then the requisite uniformity may be more readily achievable by monopoly provision than by standardization.

Networks are not valuable to the consumer in themselves; they are conduits for the services that the consumer values. This is one point at which vertical integration enters the new economy. An operating system is a platform for software applications, and so the writer of operating-system software may decide to write software applications to ride on it, in much the same way that AT&T manufactured the terminal equipment attached to its telephone lines. Modern operating systems are themselves composites of separate programs which may be provided by separate companies or by one company; in the latter case there is an analogy to AT&T’s practice of manufacturing the switching equipment for its telephone system as well as the telephone lines themselves. Firms that provide dial-up connections and other facilities for accessing and browsing the World Wide Web can integrate forward into the provision of Web-based services such as shopping and video.

The features of the new economy that I have been describing, all but the last (vertical integration, of which more later), tug it toward monopoly yet also, oddly, toward competition. The paradox dissolves by a reminder that competition to *obtain* a monopoly is an important form of competition. The more protection from competition the firm that succeeds in obtaining a monopoly will enjoy, the more competition there will be to become that monopolist; and provided that the only feasible or permitted means of obtaining the monopoly are socially productive, this competition may be wholly desirable. A firm that will have the protection both of intellectual-property law and of economies of scale in consumption if it is the first to come up with an essential component of a new-economy product or service will have a lucrative monopoly, and this prospect should accelerate the rate of innovation, in just the same way that, other things being equal, the more valuable a horde of buried treasure is, the more rapidly it will be recovered. What is more, the successful monopolist is likely to be a firm that initially charges a very low price for the new product that it has created. Think back to the telephone. Since every new subscriber increases the value of the service to the existing subscribers, a telephone company has an incentive to provide price inducements to new subscribers, as the money it will lose on them may be more than made up for by the higher price that existing subscribers will pay for access to a larger network. This is especially likely if the network will be a natural monopoly, in the sense that no competitor would find it feasible to duplicate it—then the faster the network reaches maturity the longer the monopolist will be protected from challenges to his monopoly. The prospect of a network monopoly should thus induce not only a high rate of innovation but also a low-price strategy that induces early joining and compensates the early joiners for the fact that eventually the network entrepreneur may be able to charge a monopoly price.

I emphasize “may be able” in the preceding sentence. Traditional networks such as the telephone system and the railroads required enormous capital investments and were therefore difficult to duplicate. If you owned such a network, or an important part of it, you had a pretty secure monopoly. The less capital investment the creation of a substitute network involves, the less secure the network monopolist’s monopoly is. Because of the extraordinary rate of innovation not only in computer software but also in communications technology, the extraordinary amount of capital that is available worldwide for investment in new enterprises, and the rapidity with which new networks that are primarily electronic can be put into service, the networks that have emerged in the new economy do not seem particularly secure

against competition. We have seen all manner of firms rise and fall in this industry—falling sometimes from what had seemed a secure monopoly position. The gale of creative destruction that Schumpeter described, in which a sequence of temporary monopolies operates to maximize innovation that confers social benefits far in excess of the social costs of the short-lived monopoly prices that the process also gives rise to, may be the reality of the new economy.

The feasibility of challenging an existing network monopolist is critical, however. Even if the only way to become a network monopolist in the new economy is to be the first to come up with a new technology that benefits consumers, the existence of the monopoly may discourage subsequent technological innovation by other firms. If network externalities are large, they may give the monopolist a cost advantage that exceeds the benefit of a superior new technology. This is the issue of “path dependence”: an industry may be stuck with an inferior technology because of the cost advantage of the existing network.

Appearances to the contrary notwithstanding, the antitrust laws are not much concerned with monopoly as such.³ It is not a violation of those laws to acquire a monopoly by lawful means, and those means include innovations protected from competition by the intellectual-property laws. If copyright protection of computer software is too broad, that is a matter to take up with Congress. Nor is it a violation of antitrust law to charge a monopoly price, or to price discriminate in an effort to maximize monopoly profits. And now that the *Alcoa* doctrine⁴ is discredited, it is understood that a monopolist is free to compete, whether against the competitive fringe in its monopoly market or against potential competitors, as vigorously as a firm in an ordinary competitive market would be, provided it doesn't employ tactics calculated to drive an equally or more efficient firm from the market.⁵ The fact that a monopolist buttressed by network externalities may be hard to dislodge even by a firm with a superior technology has no antitrust significance in itself. What is true is that a firm is forbidden to enter into a price-fixing agreement with its competitors, or to acquire a competitor if the acquisition will alter the structure of the market to make it much more conducive to price fixing, but these rules do not require any modification to deal with mergers and price fixing in new-economy industries. Nor is there a flat rule against communication among competitors on matters such as standards setting where consumers may benefit from a degree of interfirm cooperation.

The focus of concern with the application of antitrust law to the new economy is on the methods by which a firm that has a monopoly share of some market in a new-economy industry might seek to ward off new entrants. The lawyers and economists who express this concern are fearful lest a “Chicago school” approach to antitrust deny the possibility that a single firm, without collaborating with competitors or potential competitors (thus inviting application of the rules against price-fixing and large horizontal mergers), can, at least under new-economy conditions though probably more generally as well, prevent efficient challenges to its monopoly. If the Chicago-school approach so understood is law, these critics want it modified to do service in new-economy antitrust cases.

This is a misunderstanding of the Chicago school, at least if I can be considered a member of the school in good standing.⁶ The approach is skeptical—but no stronger word would be correct—about the danger to competition that is posed by unilateral firm action, unilateral in the special sense that it does not require cooperation with competitors (it usually requires cooperation with customers or suppliers). The approach emphasizes both the difficulty of squashing competition by such means and the danger that heavy-handed antitrust enforcement may suppress a practice that may seem anticompetitive but actually is efficient, or at least neutral, from the broader social standpoint. A classic example is the tying agreement, which used to be thought a means by which a firm having a monopoly of one market (the market for the

³ This is what makes *Eastman Kodak Co. v. Image Technical Services, Inc.*, 504 U.S. 451 (1992), involving the tying of repair services to the purchase of the product, along with most other tying cases, so questionable, as it was plain that, at worst, Eastman Kodak was merely exploiting its customers, not excluding or discouraging equally or more efficient competitors. Benjamin Klein, “Market Power in Antitrust: Economic Analysis after *Kodak*,” 3 *Supreme Court Economic Review* 43 (1994).

⁴ *United States v. Aluminum Co. of America*, 148 F.2d 416 (2d Cir. 1945) (L. Hand, J.).

⁵ See, for example, *Olympia Equipment Leasing Co. v. Western Union Telegraph Co.*, 797 F.2d 370, 375 (7th Cir. 1986).

⁶ See Richard A. Posner, *Antitrust Law: An Economic Perspective*, ch. 8 (1976).

tying product) could obtain a second monopoly (over the market for the tied product). Overlooked was the fact that the cases involved complementary products (hammers and nails, for example), so that, by definition of complementarity, an attempt to increase the price of one would reduce the demand for the other. Owning both monopolies would produce a net increase in the monopolist's profits only if the second monopoly enabled him to engage in price discrimination more easily, with sales of the tied product being used to monitor the intensity of the consumer's demand for the service (such as hammering nails) that the products jointly produce. Although price discrimination has no general tendency to increase efficiency,⁷ banning one form is unlikely to do any good, since there is no general antitrust prohibition against price discrimination.

Or consider exclusive dealing. A manufacturer of some consumer product requires its distributors to agree not to carry any potential competitor's products, thus increasing (he hopes) the cost of distribution to potential competitors. With an important exception noted below for the case where there are economies of scale in distribution, the manufacturer will have to compensate its distributors for agreeing to the restriction, and this will increase its costs, making entry more attractive. If a potential competitor has a promising product, other distributors will be delighted to carry it; if there are no other distributors, new ones will appear. Even if the potential competitor has to do its own distribution, and thus enter on two levels, manufacturing and distribution, the fact that the capital requirements for entry are now greater should not be an obstacle to entry, since there is no shortage of capital for promising new ventures. For these reasons, exclusive dealing is unlikely to be an effective means of forestalling entry. At the same time, it is easy to see how exclusive dealing might promote efficiency by increasing the likelihood that a distributor will use his best efforts to promote the manufacturer's goods. Exclusive dealing may also help a seller of intellectual property to prevent piracy, a serious concern in intellectual-property markets.

But skepticism about unilateral monopolizing actions is not the same as denial. The *Standard Fashion* case⁸ has long been used by some members of the Chicago school to illustrate a unilateral action that might well have increased the defendant's monopoly power.⁹ The defendant manufactured a line of women's dress patterns that was very popular. Retailers thought it essential to be able to sell the line. The defendant required retailers to agree not to carry competing lines. Competing manufacturers could in principle create their own retail outlets, but who would shop there if the most popular brand could not be found? Competing manufacturers would have to create a line as long and as popular as Standard Fashion's line, and that would be difficult, maybe impossible, to do.

What distinguished *Standard Fashion* from a garden-variety exclusive-dealing case was the existence of economies of scale at the distribution level. Consumers didn't want to traipse from store to store. They wanted a full line in each store, so anyone entering the women's clothing business had to provide the full line if it was excluded from stores that carried the dominant firm's line. Restricting its retailers no doubt cost Standard Fashion something. But it is plausible that the cost was less than the increase in its expected monopoly profits from forestalling new entry by compelling any prospective entrant to enter on a full-line basis.

The point is not that the new entrant would have to invest more capital, as in the previous example. The point is that it would have to embark on a riskier undertaking, that of creating not a single successful product but a whole line of such products. It's as if one couldn't make commercial aircraft without making military aircraft as well. In such a case, as in *Standard Fashion* itself, exclusive dealing, while it would increase the defendant's net costs of distribution (if it were indeed adopted for anticompetitive purposes and

⁷ Perfect price discrimination would bring about the same output as under competition, because, as noted earlier, no customer willing to pay the seller's marginal cost would be turned away. But perfect price discrimination is infeasible, and imperfect price discrimination can result in a lower or higher output than under competition, or the same output. See Richard A. Posner, *Economic Analysis of Law* 306 (5th ed. 1998). And it is very difficult to determine which.

⁸ *Standard Fashion Co. v. Magrane-Houston Co.*, 258 U.S. 346 (1922).

⁹ Aaron Director and Edward H. Levi, "Law and the Future: Trade Regulation," 51 *Northwestern University Law Review* 281, 293 (1956); Posner, note 3 above, at 202 n. 48. For an important later contribution, see Eric B. Rasmusen, J. Mark Ramseyer, and John S. Wiley, Jr., "Naked Exclusion," 81 *American Economic Review* 1137 (1991).

had no efficiency rationale), might increase the costs (not the capital requirements) of new entrants much more.

The analogy to a new-economy network externality should be plain. The network corresponds to the full-line retail store in *Standard Fashion*. A firm may wish to enter the market by producing one component of the network or one value-added service, but if a competitor by virtue of owning or having an exclusive-dealing contract with the network refuses to cooperate with the firm, the firm won't be able to duplicate the network in order to get distribution of its component or service.

It is true that piecemeal entry is the norm in many industries. A department store carries the products of many producers, many of which do not offer a full line of products. One can imagine a number of designers of women's dress patterns, each specializing in one pattern, and the department store assembling them into a full line to compete with *Standard Fashion's* full line. The risk of entry to each designer would be minimized. The case was decided in 1922, however, and many towns may not have had department stores. We may be in a similar stage in the development of the new economy, where distribution facilities may be sufficiently limited to create bottlenecks that monopolists can exploit to perpetuate monopoly.

It is important to note that the monopolist would have no incentive to engage in exclusionary conduct unless his monopoly were fragile, that is, vulnerable to new entry. The more vulnerable it is, however, the less likely it is to endure even if the monopolist does resort to such conduct. This point is missed in Robert Bork's criticism of the decision.¹⁰ He argues that *Standard* couldn't extract a monopoly price from its dealers twice, once by charging them what the market would bear and then by forcing them to enter into exclusive-dealing contracts. That's true, but what *Standard* may have been able to do was to increase the duration of its monopoly.

The likelihood that the monopoly profits obtained during the extension period (as we may call the period for which a monopoly is extended by means of exclusionary practices) will exceed the costs of the exclusionary practice to the monopolist is enhanced by the fact that, both in *Standard Fashion* and even more dramatically in parallel new-economy cases, the monopoly is of intellectual property. Intellectual property is characterized as we know by a large difference between total and marginal cost. In the extreme case, which is approximated in some software markets, marginal cost is close to zero, meaning that almost all the revenues earned by a firm that monopolizes the market go directly to the bottom line. This makes it plausible that the profit from extending the monopoly another year or two will exceed the cost of the exclusionary practices required to achieve the extension. To put this differently, there is no reason to think that the cost of an exclusionary practice in such markets will exceed the additional monopoly profits that the practice makes possible, even though the cost may be incurred earlier, which requires that any future profits be discounted to present value before being compared to the cost.

A complicating factor in both *Standard Fashion* and new-economy cases is the utility of exclusive dealing as a means of dealing with piracy. *Standard Fashion* may have been worrying about the piracy of its patterns by competing manufacturers, and attempting to prevent this by denying outlets to the pirates. (This concern was explicit in a later case, *Fashion Originators' Guild of America v. FTC*.¹¹) To anticipate the second part of my discussion, whenever an antitrust court is called on to balance efficiency against monopoly, there is trouble; legal uncertainty, and the likelihood of error, soar.

Exclusive dealing, by the way, is analytically the same as tying. Exclusive dealing ties distribution to manufacture; equivalently, tying is exclusive dealing in the tied product. All you need is sensible law on exclusive dealing to deal sensibly with tying cases. If there are economies of scale in the tied product, a firm that must in order to enter the market for the tying product produce the tied product as well will have higher costs than the monopolist and this will reduce the expected gain to him of entering the market for the tying product. Notice, finally, that exclusive dealing and tying can be accomplished in a variety

¹⁰ Robert H. Bork, *The Antitrust Paradox: A Policy at War with Itself* 305–307 (2d ed. 1993). Bork also argues that *Standard Fashion's* market share, 40 percent, was too small to enable it to foreclose rivals. But that was its nationwide market share, and in many towns and smaller cities it had a monopoly. It should probably be regarded therefore as a case involving a series of local monopolies rather than a national monopoly.

¹¹ 312 U.S. 457 (1941).

of different ways, including vertical integration, contract, product design (in the case of tying), and bundling (charging a zero price for the tied product, and so in effect paying the consumer to buy it from the supplier of the tying product). And, speaking of bundling, while documented cases of predatory pricing are rare, it is not always an irrational method of deterring entry. Especially when it takes the form of area price discrimination or “fighting brands,” so that the predator does not have to lose more money than the new entrant by lowering prices throughout his market, a monopolist may maximize his profits by “investing” in a reputation for predatory response to threatened entry.

II.

Well, the plaintiff won in *Standard Fashion*, and the decision remains good law; likewise the illegality of predatory pricing is settled antitrust doctrine. I conclude that, as I said at the outset, existing antitrust doctrine is sufficiently supple, and sufficiently informed by economic theory, to cope effectively with the distinctive-seeming antitrust problems that the new economy presents.

What is troublesome is the institutional structure of antitrust enforcement. To begin with, cases in the new economy present unusually difficult questions of fact because of the technical complexity of the products and services produced by new-economy industries. Such questions can be central rather than peripheral to the antitrust issues, as where a plaintiff complains that the defendant has altered a technical protocol or interface to make it more difficult for the plaintiff's product to work with the network, or a defendant contends that disclosure of a protocol would enable its competitors by reverse engineering to deprive it of a valuable trade secret that it cannot feasibly protect by means of copyright or patent law. The second example is an aspect of two broader questions, both also very technical and very difficult—the relative merits of monopoly provision and standardization as methods of optimizing a network, and the adequacy in fact of copyright or patent law relative to trade-secret law to protect investments in software and other new-economy products. Similar questions have arisen in other antitrust network settings, notably in the telephone industry, but they simply are much more difficult for a lay person to understand in the new-economy context.

A further complication is that it is difficult to find truly neutral competent experts to advise the lawyers, judges, and enforcement agencies on technical questions in the new economy. There aren't that many competent experts, and almost all of them are employed by or have other financial ties to firms involved in or potentially affected by antitrust litigation in this sector. The Antitrust Division does not employ *any* computer scientists or electrical engineers, but is wholly dependent on consultants, as are also, I believe, all the state antitrust offices; and, as I say, it is difficult to find a consultant in the new economy who is both competent and disinterested.

We deal with technical questions in the judiciary not by having judges or jurors who have the requisite technical knowledge or by giving them technical assistants but by having technical experts present evidence which the judge and jury (if it is a jury case) is expected somehow to assimilate. This system does not work as badly as its critics maintain; but the more technical the area of litigation and the fewer experts are reasonably disinterested, the worse it is apt to work. Computer science and communications technology are much more difficult areas than the average body of scientific or engineering knowledge that lay judges and jurors are asked to absorb en route to rendering a decision.

One possible measure would be to borrow from arbitration procedure, as follows: In a technically complex case, the judge could direct each party to nominate a technical expert, and the two experts selected in this way would then agree upon a third, a neutral, expert, whom the judge would appoint as a court-appointed expert¹² in confidence that he would not be misled by a partisan. The problem, as I mentioned earlier, is that there may be very few genuine neutrals in the high-technology with the expertise required for a particular case, and they may be reluctant to become involved in a litigation. Setting that problem aside, a technical committee composed of two party-nominated and one neutral technical expert might assist the judge or special master in the administration of a consent or litigated decree if one were entered in an antitrust case against a new-economy company. This is more needful than in the case of warring economic experts, because the economic principles that bear on antitrust can be explained in intuitive terms; technical principles often cannot be.

¹² As expressly authorized by Fed. R. Evid. 706.

The difficult factual questions presented by new-economy antitrust cases are not limited to technical areas, unfortunately. The combination of intellectual property, network externalities, and rapid growth in consumer demand creates difficult questions involving the ascertainment and measurement of monopoly. Suppose a firm has 100 percent of some new-economy product market and charges a price for it that is greatly in excess of marginal cost. Suppose also that the product is one that involves economies of scale in consumption (that is, it is a network market) and the demand for it is growing very rapidly. This is a common new-economy scenario. Does the firm have a monopoly in an economically relevant sense? The ratio of price to marginal cost is meaningless, since pricing intellectual property at marginal cost is non-remunerative and leads to bankruptcy. What about the market share? But one characteristic of intellectual property is its durability, and the more durable a product is, the fewer repeat sales the manufacturer will have. (It is different if the firm leases rather than sells its product.) New-economy firms that don't lease get around this problem with frequent upgrades, but the installed base acts as a drag on the price that can be charged for an upgrade, since the prospective customer for the upgrade has the option of sticking with the existing product. If demand is growing rapidly, moreover, the firm in deciding on a price must trade off current against future profits, since a higher price today will slow the growth in demand. And by the assumption that it is a network market, the firm will have a strong incentive to charge a very low price in order to increase usage because that will enable it to charge a much higher price in the future—unless rapidity of innovation makes the future wholly uncertain, in which event it may abandon the hope of a network monopoly and charge a high price now. Still another factor is that a vertically integrated firm competes against itself: a firm that owns a network but also sells value-added services may want to keep the price of network access low to increase sales of those services. This is the other side of the tying coin: holding down the price of the tied product will keep up the demand for the tying product. The result may be that a firm has a monopoly market share only because it is not charging a monopoly price.

And while it is possible to argue that monopoly can have other bad effects besides the limitation of output over the competitive level that monopoly pricing brings about, namely a reduction in the rate or distortion in the direction of innovation, economic theory and empirical evidence have yet to generate a consensus on whether monopoly is on balance good or bad for innovation. The possible effect of network externalities in discouraging subsequent innovation (the “path dependence” problem) not only is speculative, but is operative even if the monopolist is passive, in which event there would be no arguable antitrust violation.

The peculiarities of new-economy markets that I have been describing are apt to make the trial of a new-economy case a daunting challenge to the factfinding capacity of the judiciary. Nor are the economic issues that I have identified issues that can be left to a neutral expert to resolve, given the many inponderables they involve; they are not problems simply to be solved by the application of the relevant economic principles.

The rapidity of innovation in the new economy has another very important institutional implication. Federal courts are highly efficient by the standards of the American legal system. The federal court queue is short, and strong district judges can move even complex cases along briskly. But this is speaking relatively. Antitrust litigation moves very slowly relative to the new economy. Law time is not real time. The law is committed to principles of due process that limit the scope for summary proceedings, and the fact that litigation is conducted by lawyers before tribunals that are not technically trained or experienced inevitably slows the process.

The mismatch between law time and new-economy real time is troubling in two respects. First, an antitrust case involving a new-economy firm may drag on for so long relative to the changing conditions of the industry as to become irrelevant, ineffectual. That was a problem even in the old economy. One recalls for example that by the time the monopolization case against Alcoa completed its journey through the courts, Alcoa had lost its monopoly for reasons unrelated to the litigation; as a result, the decree finally entered against Alcoa offered little more than nominal relief (the divestiture of Alcoa's Canadian subsidiary). This type of problem is likely to be more frequent in the new economy.

Second, even if the case is not obsoleted by passage of time, its pendency may cast a pall over parties to and affected by the litigation, making investment riskier and complicating business planning.

These problems are aggravated by the tendency of antitrust litigation to create multiple lawsuits out of a single dispute; call this the cluster-bomb effect. No sooner does the Antitrust Division bring a case, but the states and now the European Union are likely to join the fray, followed at a distance by the anti-

trust plaintiffs' class-action bar. The effect is to lengthen out the original lawsuit, complicate settlement, magnify and protract the uncertainty engendered by the litigation, and increase litigation costs.

I wish I had a good solution to these problems, or at least some of them, but I don't. As minor palliatives, I would like to see greater use of neutral experts, as I have explained, and I would also like the Antitrust Division and the Federal Trade Commission to be given the necessary appropriations to enable each of these agencies to hire a competent technical staff.¹³ That won't be easy, given the salaries that competent new-economy scientists and engineers command in the private market. But there is a more serious problem, and that is the rapid obsolescence of technical knowledge, which combined with tenure practices in government agencies may prevent the agencies from maintaining a technical staff that is actually abreast of current technology. This is an objection, by the way, to an alternative that I consider distinctly unpromising, which is to have a specialized, technical court composed of judges with technical training. Their training is likely to become out of date before they become judges, unless we are to have a system in which the regulation of the new economy is entrusted to 25 year old judges, lawyers, and engineers.

I would like to see the states stripped of their authority to bring antitrust suits, federal or state,¹⁴ except under circumstances in which a private firm would be able to sue, as where the state is suing firms that are fixing the prices of goods or services that they sell to the state. (In other words, only their power to bring *parens patriae* suits would be abrogated.) States do not have the resources to do more than free ride on federal antitrust litigation, complicating its resolution; in addition they are too subject to influence by interest groups that may represent a potential antitrust defendant's competitors. This is a particular concern when the defendant is located in one state and one of its competitors in another, and the competitor, who is pressing his state's attorney general to bring suit, is a major political force in that state. A situation in which the benefits of government action are concentrated in one state and the costs in other states is a recipe for irresponsible state action. This is a genuine downside of federalism. The federal government, having a larger and more diverse constituency, is, as James Madison recognized in arguing for the benefits of a large republic, less subject to takeover by a faction. I am not myself inclined to make a fetish of federalism.

When I was a law clerk at the Supreme Court, almost 40 years ago, I was struck by the poor quality of the briefs and arguments of the lawyers in the offices of the state attorneys general. Since becoming a judge almost 20 years ago, I have been struck by the poor quality of the briefs and arguments of most though not all of the lawyers in the offices of the state attorneys general of my circuit. On several occasions our court has found it necessary in published opinions to criticize the performance of these lawyers. In response to one of these opinions a meeting was arranged between the Attorney General of Illinois and myself (I was still chief judge then), at which he explained that the very low salary scale of his office makes it difficult to hire competent lawyers.

One of the sources of the quality problem is that in most states the attorney general runs for office independent of the governor and is thus not part of the governor's administration and as a result does not receive much support for the governor in negotiating for appropriations from the legislature. In addition, in a field like antitrust, the offices of the state attorneys general are not able to scale up to anything like the level of specialization and professionalism of the Antitrust Division of the U.S. Department of Justice.

A possible, partial solution to the delay and cluster-bomb problems would be to empower the Justice Department to bring antitrust suits for damages by whomever suffered and to parcel out the proceeds of the suit among the victims. If the Department decided to bring a suit, private suits (and state suits, if they were still permitted) would be preempted. In effect the Department would have a right of first refusal, which it presumably would exercise in major cases in order to consolidate and thus simplify and expedite the litigation. This is not an original suggestion, as it is a power already enjoyed by government agencies

¹³ I am not proposing a net increase in the appropriations for these agencies, just that they be authorized to allocate a portion of their existing appropriations to hiring technical experts.

¹⁴ That is, Congress should enact a statute that would make antitrust law, like patent, copyright, and bankruptcy law, an exclusively federal body of law enforceable only in federal courts.

such as the Department of Labor and the Equal Employment Opportunities Commission in the field of employment law.¹⁵

Any suggestion for streamlining antitrust enforcement is likely to be met, from the conservative side of the policy-analysis spectrum, by the argument that it is a mistake to make government more efficient, when efficiency connotes the better matching of means to ends and the ends may be bad ones. I raised this possibility in discussing antitrust enforcement by the states. I must confront it with regard to the federal agencies as well. The essential question is the degree to which these agencies are buffeted by interest-group pressures, as I believe the state antitrust enforcers are. I think that, today, only to a small degree. There is a history of efforts to explain antitrust enforcement as just another example of interest-group politics, an approach that has worked for a number of government agencies and programs. But the efforts have not been successful, and the reasons may be that the agencies are dominated by lawyers most of whom go on to service in the private sector and that antitrust law itself is dominated by federal judges exercising a broad discretion because of the open-endedness of the major federal antitrust statutes. To land good berths in the private practice of law the antitrust enforcers must demonstrate their professionalism, which means keeping within the boundaries fixed by the courts. Federal judges with their secure tenure seem largely insulated from the interest-group pressures that play on the other branches of government. Looking over the entire history of U.S. antitrust law, I conclude that the most powerful explanatory variable is simply the state of economic opinion. Antitrust doctrine has changed more or less in tandem with changes in economic theory, albeit with a lag. As a result, I am not fearful of making antitrust enforcement more efficient.

Unfortunately, the measures that I have suggested, even in the unlikely event that they are adopted, would probably not do a great deal to correct what seems to me a serious mismatch between the conditions of the new economy and the institutional structure of antitrust enforcement. That brings me to the final question I address, which is society's proper response to a situation of at least temporarily ineradicable uncertainty concerning the effect of governmental intervention in the economy. We really don't know what the effect of applying antitrust principles to the new economy will be, except when they are applied just to stop horizontal price-fixing or mergers of major competitors in highly concentrated markets. I think a policy of zero enforcement against alleged exclusionary practices in the new economy would be a mistake, because there is a pretty solid theoretical basis for concern both that some new-economy firms would find it in their rational self-interest to employ such practices and that natural market forces would not undo those practices in time to avoid significant social costs. A policy of zero enforcement would also deprive us of important information about competition and monopoly in this vital sector of the national economy. Clearly, though, the byword of a prudent enforcement agency and a sensible court will be: caution.

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¹⁵ See, for example, 29 U.S.C. § 626(c)(1); *EEOC v. G-K-G, Inc.*, 39 F.3d 740, 744–745 (7th Cir. 1994).