Information and Antitrust

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The function of a keynote address is to present both an overview and an agenda for the conference to come. I think that I can do both in short compass.

Antitrust law is an interesting regulatory project only when it has clear targets; otherwise it becomes random interference with competition and undermines its stated goals. Thus the central question of antitrust: When do business practices, including agreements among producers, become economic problems? Only when the parties can prevent competition from springing up. Cartels have trouble with cheaters and fringe firms. Mergers, even mergers to monopoly, are undermined by new entry that is prompted by higher prices. Exclusionary practices fail when rivals are resilient and can roll with the punches, returning to their business after the exclusion has exhausted the predator (which must incur steep expenses itself to raise rivals' costs).

When productive assets are immobile, easily monitored, and take a long time to build or replace, then producers have some hope of success in raising consumers' prices. Think of oil refineries, which are visible and take years to construct. Agreement to stop building refineries, even as demand for refined oil grows, would yield an effective and easily monitored cartel. But the
characteristic of an "information age" is that both the valuable productive input and the output for consumers is knowledge. Information can be created in secret and move around the globe instantly. It can be used without being used up, so that any new sale exceeds the producer's marginal cost. These properties make information highly resistant to the standard devices that worry antitrust enforcers, for they are incompatible with the delay and other barriers to entry that protect monopoly profits. The rate of new entry in the information business is high and increasing. These days it seems that you can sell stock of your new firm even before deciding what it will make or do. Prices are everywhere falling. This is not good ground for a cartel.

Some years back William Baumol and two collaborators formally proved that even a single-firm market will behave as if perfectly competitive, provided that there is a threat of instantaneous entry. A single hit-and-run entrant moving from place to place could force prices down to marginal cost all over the world.1 Baumol's critics replied that this may be true in theory, but what significance has it in practice? Even highly mobile assets such as airplanes require ground support, and there may be scarcities such as landing rights at hubs. Some of these scarcities are created and enforced by the government, defeating free entry and allowing cartels, mergers, and exclusionary practices to do their work. That's true of physical assets, in most cases, but not of information. In an information age the economy is becoming closer to free and quick responses to any elevation in price. The closer it gets, the less important the rule of law. Ronald Coase showed that when transactions are costless, the rule of law does not matter.2 Will Baumol proved the antitrust subset of that proposition: when the particular transaction of entry is costless, the rule of antitrust law does not matter.

Of course transactions are never costless; there is enough friction in the economy to support law, and thus law schools. Likewise there is enough friction in the economy to support some monopolizing behavior.3 But as we move from physical to knowledge goods the friction declines, and the period of adjustment needed to overcome some monopolistic move likewise declines. Fewer governmental barriers to entry impede entry into informa-

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tion markets than impede markets in physical goods. Simultaneously, the geographic scope of the market has become global, raising the question whether any one nation's antitrust law can have much effect, other than to hobble domestic producers.

How much has the need for antitrust law declined? I'll venture the proposition that any practice in an information industry that survives long enough to be challenged in court, and for the court to reach a decision after a trial, must be efficient. If it were otherwise, there would have been a swift market response. Entry may be tardy, but courts are glacial. Thus we are doomed to a world in which efficient practices are selected out for judicial review, and any error rate in adjudication—there is, alas, a substantial one—will lead to the inappropriate condemnation of pro-consumer practices.

That's a capsule version of my views. A longer version comes out much the same way. The problem with a longer version is that judges can't talk about pending cases, such as the Microsoft litigation that everyone here is eager to debate. Nor can I discuss phone mergers, one of which is subject to a suit that I may have to adjudicate, and many other of the juicy subjects of this Symposium. But I do think that a bit of background from the world of telecommunications is useful to show how what we call the "Information Age" affects even large firms with substantial physical assets, such as land lines, switches, and satellites that can't readily be moved to different orbits (or changed, after launch, to work with a different part of the spectrum).

Until the AT&T consent decree of 1982, a giant firm dominated most aspects of the telecommunications business in the United States, other than telegraph and telex services, which had its own monopolist (Western Union). This structure was not a market creation. Initially the work of the Bell patents, it was later protected by governmental regulation. By the 1970s this structure was under competitive pressure from MCI and other

4 See South Austin Coalition Community Council v SBC Communications Inc, 191 F3d 842 (7th Cir 1999).
long distance carriers, which had figured out how to evade some of the regulatory barriers and provide long-distance service to large customers who could bypass the local AT&T switches for their internal traffic. The consent decree broke AT&T apart, into a competitive long-lines segment and monopolistic local switches. A fundamental assumption behind the reorganization was that local phone service is a natural monopoly because average total costs of both land lines and call switching decline through the entire range of demand. Thus the Baby Bells were left as monopolies, with prices constrained by state public utilities commissions, while the national and international segments of the business became competitive.

But technology has not allowed this to endure. It is not clear whether the local switch and local lines ever were natural monopolies, but they certainly aren't today. Communications now do not necessarily depend on costly land lines. In Chicago there are three local service carriers: one Baby Bell (which offers both land lines and cellular) and two cellular carriers (one of which is AT&T itself). Meanwhile three sets of satellites whirl overhead, each capable of transmitting calls from handheld units to anywhere in the world, bypassing the local service providers. Two of these are in bankruptcy reorganization—not something we would expect if they were facing local service and cellular carriers charging monopoly prices. One company, Iridium, is in bankruptcy because the alternatives are so cheap that it can't make a profit even disregarding the sunk costs of the satellites! It can't recover even the recurring costs of sales and service.

The local switching service also has changed. Formerly done by expensive electromechanical solenoids and relays, switching now is handled by computer. Many customers have found it economical to install private branch exchanges in order to bypass the Baby Bells, something that would not be feasible if local switching still were a natural monopoly. Some private branch exchanges (PBXs) may have been responses to high prices set or condoned by state regulators to produce cross-subsidies; these PBXs were inefficient entries. But even after the subsidies were whittled away and prices dropped, customers continued to install private switches. The internet shows how local switches can be bypassed; a packet-switching network now works alongside (and

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6 Iridium LLC and ICO Global Communications are in bankruptcy reorganization; Globalstar is financially healthy. See generally Datacomm Research Company, Satellites in Cyberspace: Opportunities for Internet-based Satellite Ventures (December 1999).
in competition to) the circuit-switching network of traditional phone companies.\textsuperscript{7}

The regional phone companies have built a great deal of new infrastructure, much of it optical fiber that can carry more traffic than does copper; cable TV firms and internet service providers likewise have installed high-capacity circuits, producing at least potential competition between cable and phone companies to supply the same services. At least three more methods are on the horizon.\textsuperscript{8} Some new entrants offer fiber optic connections; others offer broadband home-to-satellite links, similar to direct TV but working both ways. The third new method is LMDS, which stands for local multipoint distribution service. This offers a radio-frequency connection at a rate of roughly 19 megabytes per second between a base station and a transceiver in a home or office. This is faster than 100 base-T Ethernet, carrying more than a thousand times the data of a digital cell phone connection. Each of these new technologies can have multiple providers in a single metropolitan area. The premise of the Baumol approach seems close to fulfillment in telecommunications.

To say that technological changes contract the field of opportunities for monopolization is not to say that none remain. Regulatory entry barriers exist, and these barriers may create opportunities for collusive conduct under what amounts to governmental protection. But antitrust litigation cannot undo statutes creating these barriers, so where should we direct judicial attention?

To cartels? There is nothing special about cartels in the information age—though I will suggest later that information creates some structures that can be \textit{confused} with cartels, so that the Supreme Court’s warning in \textit{Broadcast Music, Inc v CBS}\textsuperscript{9} to be wary of treating horizontal price agreements as cartels remains important.

To mergers? Again there is nothing special here. The essential point was established long ago: with easy entry, big mergers don’t cause problems even if demand is inelastic. That leaves the factual question whether entry \textit{is} easy and the elasticity of supply high. One suspects that the answer is “yes” for most information products, unless the government throws barriers in the way, but still there is nothing distinctive in the field.

\textsuperscript{7} See generally Lee W. McKnight & Joseph Bailey, eds, \textit{Internet Economics} (MIT 1997).
\textsuperscript{9} 441 US 1, 16 (1979).
Perhaps, then, we should direct our attention to exclusionary practices—efforts by incumbents to reduce their rivals' elasticity of supply, and thus to provide room for higher prices (if the aggressors can suppress competition among themselves). Most of the litigation and administrative inquiry these days seems to concern exclusionary practices. "Network externalities" is the buzzphrase. This phrase does not have much history in antitrust, which implies that the problems are novel and require special scrutiny. But I don't think that the problems are novel. "Network externalities" is a gussied-up phrase denoting old ideas such as tie-ins, predatory pricing, and the like, that do not need amendment but do require good old-fashioned skepticism. What may seem to be novel claims about networks (and thus about information) fall into three categories.

First, there is a question whether some element of the network is a bottleneck—perhaps because it is a natural monopoly like the local telephone switches in 1982, or perhaps because the bottleneck has been created artificially. Information flows most freely if there is an agreed protocol, and these are many, from standards such as the definition of HDTV and DVD to the rules for instant messaging on the internet. Operating systems, instruction sets for CPUs, and many others can be characterized as bottlenecks. If one or more of these standards turns out to be a natural monopoly, then we must answer the usual question whether public rate regulation is desirable. But it is hard to conceive of these as natural monopolies when we see competing technologies flourish. I'll come back to this issue.

Second, there is a question whether it is possible to coordinate to avoid overcharges when two bottlenecks occur in the same path. If, to take a wild example, a computer operating system is tailored to a processor's instruction set, then the two will flourish or fall together. They will face competition from systems that span the range of processors (Linux at the moment), from unitary enterprises (such as Sun Microsystems, which makes both hardware and software), and from other tied pairs (Apple and the IBM–Motorola PowerPC coalition). But assume that one pair has the lion's share. May they cooperate to avoid sequential monopoly and, if so, how?

Third, there is a question whether firms can exploit, or will be defeated by, complementarities. A computer is just a doorstop unless it has useful software. A word processing program is worthless without hardware. Both computer and word processor
are more valuable if there are spreadsheets and modems and formats such as Acrobat to transmit and display the information they produce. An improvement in any one of these products affects the value, and hence the price, of others. By devising the PDF format underlying Acrobat, Adobe conferred substantial external benefits on producers and users of complementary products. This implies that without coordination too little will be produced, the price will be too high, or both. Does antitrust allow coordination? And of course to say that the answer is yes implies that firms also may choose not to coordinate—that AOL may decide that it does not want to have a common instant message system with Yahoo, because it does not want to confer value on a third party without being paid (or because it wants to keep a unique feature for itself, the better to compete against Microsoft).

What I want to do is look at these three areas. Time is too short to examine them in depth; whole papers and books could be devoted to small aspects of each. Instead I want to say just enough to sound a cautionary note. For each of these subjects is in the field of exclusionary practices, and antitrust handles these very poorly. They require predictions. Cartels reduce output and raise price now, without offsetting efficiencies. Mergers to monopoly also reduce output now; and although they may produce efficiencies, these lie in the future—and are generally ignored by courts because judges sensibly think that they can’t make reliable determinations. But exclusionary practices as a rule reduce prices today (predatory pricing and “free” tie-ins are vivid examples), and may well produce efficiencies tomorrow. Exclusion also may produce concentration and monopoly, depending on the ease of entry in the future. It is always very risky to forego lower prices and greater output today because of fears about tomorrow, fears that may never come to pass because we misunderstand the practice (low prices may just reflect low costs) or because technology changes the conditions tomorrow so that the excluders can’t recoup. Cases such as Matsushita and Brooke Group warn about the dangers of turning judges into prophets.

My agenda, then, is to look briefly at each of the three subjects that gets lumped into “network externalities” and ask whether the legal process (agencies and courts together) is likely

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to be astute at separating pro-consumer from anti-consumer practices. Then I will wrap up by asking whether the legal system has ways to reduce the costs of error when evaluating novel practices.

First, let us think about bottleneck issues. The old story is one of natural monopoly in the telephone switch, or of unnatural monopoly via merger (as when Jay Gould bought the two bridges and the ferry system in St. Louis and thus acquired a chokehold over train traffic across the Mississippi River).12

The political response to real natural monopolies has been to create common-carrier obligations, coupled with rate regulation. George Stigler thought these steps ineffectual13 or even perverse—the regulated firms used them to stifle new entry.

The antitrust response has been to create either joint ownership or a must-carry duty (for example, to “wheel” power or information over land lines).14 Joint ownership, the approach taken to the Mississippi River bottleneck and seats on the New York Stock Exchange, proved to be monopoly fortified by law: the bridge company made its monopoly profit, as did the stock exchange (until Congress finally busted that cartel in 1975). A duty to “wheel” leaves the price term open, so it fails to handle monopoly unless the court becomes a rate regulator—and few think that the isolated examples of judicial rate regulation, such as the blanket license decree in New York,15 or review of the Copyright Royalty Tribunal,16 have been sterling successes. The only other apparent judicial solution is disestablishment—but that is a loser if the reason for the bottleneck is either natural monopoly or efficiency, for then the cost savings are squandered.

If handling claims of bottlenecks is not something that antitrust has traditionally done well, it has done even worse when the bottleneck concerns information and developing technology. Do any of you remember the IBM case than ran from 1969 to 1982? The Antitrust Division’s fundamental claim was that IBM had become a monopolist in computing services, and that its plat-

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13 See, for example, George J. Stigler & Clare Friedland, What Can Regulators Regulate? The Case of Electricity, 5 J L & Econ 1 (1962).

14 See, for example, Otter Tail Power Co v United States, 410 US 366 (1973).

15 I refer to the consent decree to which the performing rights societies are subject. This decree is discussed by the Supreme Court’s decision in BMI, 441 US at 10–16.

form was a bottleneck to vendors of complementary products, such as disk drives. The bottleneck was not only IBM’s mainframe computers, but also the devices used to move information in and out of them—devices (and protocols) called interfaces. A central claim in both the government’s suit and a cloud of private litigation was that IBM monopolized the market for peripherals, such as disk drives and printers, by continually changing its interfaces. Peripherals vendors no sooner figured out how to connect their disk drives to IBM’s mainframes than IBM changed the interface specification and made the vendors start all over again. The supposed consequence was that IBM maintained a huge share of both mainframes and peripherals. Plaintiffs sought judicial decrees that would produce stability in the interface, so that third-party vendors could keep up with IBM in selling peripherals. Suits lasted until it became clear that IBM mainframes were no longer a large share of any interesting market; and of course IBM’s share was eroded by technological developments, not legal rules.

But the claim of “interface predation” (today it would be called “raising rivals’ costs” or “network externalities”) never identified a monopoly. What the Antitrust Division had wanted the court to enjoin was progress. Newer protocols were faster or had other benefits. Most of you observe the process with your own computers. Five years ago computers came with RS-232c serial and SCSI interfaces; some also came with older parallel connectors. The serial port could transfer data at a blazing 256 kilobits per second. The SCSI interface, about 100 times faster, could support up to 5 megabytes per second. Later generations of SCSI have increased that speed by a factor of 16 (the fastest is called Ultra Wide SCSI 2, in case you like technospeak). But SCSI operates at the rate of the slowest connected peripheral, requires each to have an ID, is limited to 7 devices, and often encounters problems with termination. Newer machines are likely to come with USB (universal serial bus) and 1394 (FireWire) connectors. The USB is slower, at 1.5 megabytes per second, while FireWire goes now to 60 megabytes per second. Both allow longer chains and cheaper cables than their predecessors; both avoid device IDs and termination. FireWire provides some power to attachments, so

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many peripherals can omit plugs and power bricks. Improvements to both protocols are in the works; almost before the installed base of first generation devices becomes substantial, faster versions of each are in prospect. Such restless change is exactly what IBM was accused of; that competitive markets are revising interfaces even faster than the bad old “monopolist” shows the danger of believing that we can identify exclusionary practices. IBM’s problem may have been that it did not change fast enough and thus could not keep up with the competition!

By the way, these new interfaces also show that cooperation may facilitate competition. The SCSI, USB, and FireWire protocols were developed by industry consortiums—standard-setting organizations that don’t use their position to exclude competition, but have to struggle to stay ahead of a tsunami that always threatens to overtake them.

One other story about the ability of antitrust to identify bottleneck monopolies in information technologies. I know of only one case in which such a monopoly has finally been identified in litigation. The offender was an operating system, which the court concluded was a monopoly. No one software or hardware manufacturer could compete, the court held, without access to that operating system, which the owner therefore had to open to general use without regard to its copyrights and contracts. And who is that vicious monopolist that bestrides the information age? Why, it is the Data General Corporation, and the bottleneck monopoly operating system is DG’s RDOS, an operating system for the Nova chip that DG included in a line of mini-computers! Yes, you heard me right. The court of appeals was confident that nova chips were a separate market, that DG was a monopolist, and that it therefore had to license its operating system for use on chips made by Fairchild Instruments. I must confess bias because I was involved in that case as a lawyer, but this seemed fantastic to me even in 1984, when the decision was made. If anyone had market power in mini-computers, it was DEC, not DG. But from the perspective of hindsight the court’s decision seems merely quaint. DG soon went into bankruptcy; the segment of the market in which both DG and DEC competed was overtaken by workstations such as those now made by Sun, if it ever was a distinct segment. Perhaps the court’s decision contributed to that demise; perhaps the demise was inevitable. Confident conclusions about who is a monopolist, and what is a bottle-

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18 *Digidyne Corp v Data General Corp*, 734 F2d 1336 (9th Cir 1984).
neck in operating systems, were converted to a source of humor in a few years. As Santayana observed, those who fail to learn from the past are condemned to repeat it. We need to learn from IBM and DG just how acute are the legal system’s senses in detecting technological monopolies.

Let me come now to the second subject, the question whether owners of intellectual property may coordinate their activities to avoid monopoly overcharges (and perhaps for other reasons, such as improving that intellectual property). Suppose that nova chips and RDOS were indeed monopolies, as the court of appeals held, but that they were owned by separate firms. A single monopolist wants to set \( MC = MR \), to maximize its profit. If nova chips are sold to a manufacturer who buys a copy of RDOS to produce a computer, there is a problem. The maker of chips tries to set price so that \( MC = MR \), to engross all of the monopoly profit; the owner of RDOS tries to do the same thing; but this double monopoly profit means that the product sold to the consumer will be above the profit-maximizing price. There will be two welfare loss triangles. Society would be better off if the firms merged, or if they agreed with each other to lower their prices (maybe even down to something like the competitive level, just in case the Nova-RDOS pair turns out not to be a monopoly at all).

As I understand the draft joint venture guidelines from the Department of Justice and the Federal Trade Commission,\(^19\) either the merger or the agreement would be looked at with grave suspicion, indeed might be condemned as illegal per se, because the merger or agreement would not be essential to produce a computer with a Nova chip and RDOS operating system. If a firm starts out creating everything internally—if Apple comes up with the Macintosh hardware and the Macintosh Operating System all by itself, and tailors them to work with Motorola chips—that is lawful because there is no merger or joint venture. But if it is necessary to make adjustments in the market ex post, then we are staring at a monopoly. The guidelines imply that maybe, just maybe, the antitrust enforcers would listen to claims of efficiency. But we know that they are very hard to evaluate in the abstract. Let me give you another case from my own experience, this time as a judge.

Fishman v Estate of Wirtz\(^\text{20}\) arose out of a fight to buy the Chicago Bulls. You may have heard of them. They are a pro basketball team. But at the time, in 1972, Michael Jordan was in third grade, and the price for the team lock stock and barrel was $3.3 million, which these days will get you one year's play from a third-string center. In the 1970s the Bulls played their games in the Chicago Stadium, the largest arena in Chicago. The owners of the Stadium wanted to acquire the Bulls, converting a tenancy to a vertically integrated firm. They persuaded the NBA to turn down a bid by a rival group and so grabbed the brass ring. The plaintiffs, the rival bidders, treated this as exclusionary conduct by an “essential facility”—the Stadium—which had not played fair and had converted its monopoly of arenas into a double monopoly. An alternative view is that both Stadium and Bulls were “natural monopolies”—that Chicago could not support more than one pro basketball team and jumbo stadium—and therefore ought to be merged. Owned separately, each would try to engross the profit in the basketball business, the Stadium through monopoly rents and the Bulls through monopoly ticket and TV prices; such “sequential monopolies” injure consumers even more than single-stage monopolies do, and the injury could be alleviated by merger.\(^\text{21}\)

How could a court decide between these competing hypotheses? It might accept the logic of one or the other, but if it tried to measure the facts of the case against economic theory it would come up short. The parties had not gathered data about how the merger in 1972 affected ticket prices, gate, TV and radio audience, and other elements of price and output. If they had the data in hand, what could they have done with them to settle the antitrust question? Changes in the quality of the product dominate the effects of a sequential monopoly. A winning team will generate more revenues without any implication of monopoly. Changes in the popularity of basketball compared with other sports (such as hockey or indoor soccer) also would confound attempts to draw inferences from the data. This is not to say it can't be done, but that the inferences drawn from the attempt will be open to debate. Economic study of a single case, even long after the fact (the parties had fourteen years before the final decision), cannot de-

\(^{20}\) 807 F2d 520 (7th Cir 1986).

\(^{21}\) See Roger D. Blair & David L. Kaserman, Law and Economics of Vertical Integration and Control 31–36 (Academic 1983); Frederick R. Warren-Boulton, Vertical Control of Markets 51–63, 80–82 nn 1–9 (Ballinger 1978). Contrast the majority opinion in Fishman, 807 F2d at 537 n 15, with the dissent, id at 563–64.
definitively answer questions concerning efficiency and consumers' welfare. In this case later developments were uninformative. The Stadium was torn down, and the United Center built, but this tells us little about whether either the stadium or team had monopoly power. There has been more litigation about the Bulls, who in the 1990s claimed that the NBA was abusing its market power by curtailing teams' access to national TV. That case, too, ended without definitive resolution.22 Our inability to resolve complex questions of this kind should give pause for an approach that proposes either instant condemnation or an anything-goes inquiry, as the Joint Venture Guidelines do.

Now for a few words about the third flavor of "network externalities"—complementarities among products. This too is an old subject. Think of shopping centers as shopping networks. The presence of a classy department store in a mall makes the fast food outlets more valuable; lots of parking makes all the stores more attractive; and so on. Some coordination is essential if the mall is to appear at all; individual stores would not find it worthwhile to open unless assured of the others' presence. The fast food operator may be inclined to engross some of the profit by raising its own prices; this makes the mall less attractive to consumers and department stores. Cooperation to deal with the issue is apt to be called a lawful ancillary restraint, even if it deals with price and output.23

What happens when the subject is more esoteric—when instead of a mall we have a computer system or web gateway and instead of stores we have software or peripherals? I think that the problem is the same. Just as Apple can coordinate by doing more internally, it should be okay for AOL to strike a deal with authors of chat software about price and usage, and for groups of manufacturers to agree on specifics of, say, the FireWire protocol, that affects the price or availability of hardware and software that works with it. Otherwise external effects are being missed, and either prices will be too high or entry will be retarded. Douglas Lichtman made this point recently in an interesting piece on coordination in emerging platform technologies.24 But

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23 Polk Brothers, Inc v Forest City Enterprises, Inc, 776 F.2d 185 (7th Cir 1985).
24 See Douglas G. Lichtman, Property Rights in Emerging Platform Technologies, 29 J Legal Stud 615 (June 2000). But see Dennis W. Carlton & Michael Waldman, The Strate-
again the Guidelines may not see things this way; they evince a
tendency to say that anything smacking of price or access regu-
lation is a per se offense. That fails to learn the lesson of \textit{CBS v
BMI}, which recognized that the blanket license to copyrighted
songs can improve consumers’ welfare, even though the authors
coordinate nothing except their price. Just so, one would think,
with other forms of intellectual property.

Enforcement agencies tend to see cooperation that does not
produce a “new product” either as a cartel or as a means of rais-
ing rivals’ costs. They tend to think that all exclusion is bad. Let
me ask once again whether antitrust has a history of success in
evaluating such arguments about exclusionary practices. Because
I’m trying to avoid comments about ongoing cases, I’ll use two
examples of older networks—a skiing network in Aspen,\textsuperscript{25} and the
network of service providers in a hospital.

The larger of two firms in the ski business in Aspen, Color-
adonna, refused to cooperate with its rival in offering joint lift tick-
ets. The firms had offered joint tickets for many years, charging a
single price and allowing use of lifts on any mountain for zero
marginal price. How were revenues from the joint tickets to be
divided? The parties came to loggerheads about this, and the
larger firm then withdrew from the joint venture.

Perhaps this raised its rival’s costs of doing business, allow-
ing the larger firm to raise its own prices (if Aspen is a market).
This is equivalent to booting someone off of a software “platform”
for not cooperating with respect to prices or specifications. Per-
haps, however, this prevented its rival from taking a free ride on
customers lured to Aspen by the larger firm’s services and ads.
No one has offered an attractive way to organize observations
about such conduct, and the parties did not collect the data
needed to test conflicting hypotheses about the conduct. Long af-
ter the litigation ended, we cannot reject the possibility that the
\textit{joint} ticket was a cartel price, and that by withdrawing the larger
firm had at last restored competition.

\textit{Aspen} is the rule, not the exception. Try to think of any sub-
ject in the domain of antitrust—other than cartels and mergers to
monopoly—in which you are confident that the decision of a law-
ner-judge and six jurors with high school educations, guided by
the economic analysis of two lawyers and some economic wit-

\textsuperscript{25} \textit{Aspen Skiing Corp v Aspen Highlands Skiing Corp}, 472 US 585 (1985).
nesses, will systematically beat the market in coming up with "good" results. Where are the triumphs of the judicial process in preceding the economic profession to an understanding of the effects of business practices? Consider this: every scholar working in antitrust and industrial organization believes that a majority of other scholars do not understand—even hold perverse views on—the topics about which he knows the most. I need not draw out implications for the ability of generalist judges to give correct answers to knotty questions arising out of novel business practices.

The hospital "network" led to *Jefferson Parish Hospital District No 2 v Hyde*, a tie-in case. A hospital granted to a group of anesthesiologists the exclusive right to that medical specialty within its walls. An anesthesiologist based at another hospital sued, contending that this contract monopolized by tying anesthesia to such services as recovery rooms and bedpans. Here the hospital is like an operating system or protocol that has granted preferred access to some other complementary piece of software. Hyde, the plaintiff, contended that he could furnish better anesthesia to his patients more cheaply than the hospital's group could. The hospital replied that the exclusive contract eliminated free riding on the emergency, training, and supervisory services of the resident group (which furnished anesthesia 24 hours a day and ran the hospital's department, including making the choice between physicians and nurse-anesthetists as providers of services). If there was market power vis-à-vis patients, the hospital said, it possessed that power and had no reason to cede profits to the resident anesthesiologists but would instead buy those services as cheaply as it could (per unit of quality).

The dispute between the parties about the consequences of the practice may have been important to the Court's decision to moderate the per se rule that it formerly applied to tie-ins. After *Hyde* the plaintiff must establish market power in the tying and tied products and must show "forcing," which seems to require inquiry into whether informed consumers would approve of the practice—which they would if it is efficient. Yet how can a court tell? One cannot measure "efficiency" with a barometer. The tale of monopoly implies that hospitals with exclusive contracts for anesthesiology (and other services such as radiology and pathology) charge higher prices for these services than those who do not. The defendants' reply that the exclusion is efficient does not

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necessarily imply lower prices (efficiency could lie in higher quality for the same price), and anyway what price serves as the benchmark? It would be hard to address the question without nationwide data on the market shares and exclusive contracts of hospitals, plus the price and effectiveness of anesthesiology at each. These are hard to come by—the duration of the litigation in Hyde was not nearly long enough, and some of the information (such as the quality of services rendered) is not available.

Hyde reached the Supreme Court long before data had been assembled. Three years after the Court's decision, the first useful information was published, by an economist who got a head start as a consulting expert in the case.27 William Lynk obtained data on market shares and hospitals' use of exclusive contracts, but not on price or quality, and formulated hypotheses to tease answers from these limited data. He reasoned that if exclusive contracts create or exploit market power, they should be used more often as concentration in the market increases; if they increase efficiency in production, there should be no relation with market concentration, but larger hospitals (holding aggregate concentration constant) would be more likely to use exclusives, because hospitals using efficient methods of production would grow relative to others. The data Lynk assembled show that exclusives are somewhat less likely to be used as market concentration increases, but, holding concentration constant, are somewhat more likely to be used in the larger hospitals. Lynk concluded that these data refute the monopoly hypothesis, without necessarily confirming the efficiency (or any particular) hypothesis. So some years after Hyde, the economics profession took a step toward understanding the phenomenon, but too late to help in the litigation and still too uncertain to be a firm basis for deciding tomorrow's cases.

Well, you may ask, can antitrust enforcers and courts ever get things right? Surely yes, but it is not clear that they will do so at a rate much higher than random, or at costs lower than the allocative loss of the processes sought to be suppressed. I am no fan of consider-everything cases such as California Dental,28 which told the FTC and the court of appeals to consider "more" in dealing with restrictions on advertising. The Court said that such


restrictions *might* be beneficial—but this does not seem likely, and pursuit of wills-o'-the wisp produces high litigation and high error costs. (*California Dental* is also indicative that at least a majority of the Justices thinks that we don’t know enough to deal confidently with even *simple* agreements about information.) Professor Hovenkamp believes that *California Dental* overturns *Topco*, and I’m sure this is right; agreements about information (including territories to advertise) now require analysis, and getting rid of *Topco* reduces false positives. But it also causes a miasma in which uncertainty and litigation costs go through the roof.

Back to the costs of false positives—that is, the condemnation of efficient conduct, coupled with the *in terrorem* effect of inducing firms to avoid such conduct, lest costly litigation and remedies ensue. If as I suggested at the outset most practices that survive long enough to be the subject of full-fledged litigation are apt to be efficient, then many of the ultimate decisions will reflect false positives.

What is to be done? Let me make a few suggestions for your consideration.

First, we should use more widely the method we apply to cartels: per se rules based on ordinary effects, disdaining the search for the rare counterexamples. Ditch all attempts to domesticate a novel practice through the tools of litigation; redouble efforts to understand the *category* of similar practices of which the case is an example, and to devise a simple rule for adjudicating claims concerning the category. Decide whether the category is allowed or not at the level of rules, not of cases.

In other words, we must jettison the “never” fallacy. Judges and scholars often say that unless a practice is “never” inefficient, “never” costly to consumers, juries must determine whether it was deleterious in the case at hand. Would anyone take such an approach seriously in a cartel case? Should we say that unless cartels are “never” efficient, we must rummage through the facts case by case to determine the consequences of every price-fixing arrangement? Not on your tintype. Courts started applying per se rules to cartels and other practices early in the history of anti-

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trust. These rules are based on probabilities over the run of cases, on the belief that a category of practices is so likely to be undesirable that it is not worth the costs (litigation, uncertainty, and error) of sifting through instances to separate beneficent from baleful. Even proof that a practice saves consumers “millions of dollars” every year does not justify case-by-case inquiry, once the practice is located in a group deemed likely to be harmful. If this is the right way to deal with cartels, it is the right way to deal with other practices. Society can’t endure an antitrust law in which “Heads the plaintiff wins, tails it’s a jury question.”

Per se rules conserve on information and on the costs of litigation. They hold down the sum of excusing conduct that is harmful, condemning conduct that is beneficial, and inducing firms to steer clear of potentially beneficial practices that create risks of condemnation (or costly litigation). We apply per se rules of illegality to cartels and mergers to monopoly. We apply per se rules of legality in fact if not in name to the introduction of new products (although that may destroy desirable substitutes), to the redesign of old products (same potential effects), to price competition (provided price exceeds cost of manufacture), to charging what the traffic will bear (although that may extract monopoly profits), to expanding capacity (even though new plants may discourage entry), and to non-price vertical restraints. All of this we do on a categorical basis, for to examine the practice at hand in any detail is to abandon per se treatment.

Second, we should make greater use of market power as a threshold requirement. The draft Joint Venture Guidelines grant safe harbor when the cooperating firms have less than 20 percent of the market, or there are four rivals (including the joint venture). The “rule of four” makes a good deal of sense. Students

31 Arizona v Maricopa County Medical Society, 457 US 332, 342 (1982). See also FTC v Superior Court Trial Lawyers Association, 493 US 411 (1990). It is not clear whether Maricopa survived State Oil Co v Khan, 522 US 3 (1997), but this is yet another source of uncertainty.

32 The alternative is a “trade policy” directed almost exclusively by the executive branch of the national government, the norm in the rest of the world.

33 See generally Frank H. Easterbrook, The Limits of Antitrust, 63 Tex L Rev 1 (1984). I do not pursue the question how to define market power, an independent debate. For current purposes I accept the caution of Thomas G. Krattenmaker, Robert H. Lande & Steven C. Salop, Monopoly Power and Market Power in Antitrust Law, 76 Geo L J 241 (1987), that market power consists in either the ability to cut output in the market (significantly) by reducing one’s own output, or the ability to cut market output (significantly) by diminishing one’s rivals’ output (equivalently, by diminishing rivals’ elasticity of supply). The power to diminish a rival’s production is not market power, though, unless other rivals are unable to fill the gap.
of industrial organization often say that there are only four interesting numbers: one, two, three, and every other number. Three appears to be the maximum number of firms that can coordinate a cartel; after that, competition busts out. So four effective rivals ought to make us forget our worries.

But the Guidelines limit this to joint ventures that create new products and say that the principle does not apply to "naked" agreements or to price agreements; these, the enforcers insist, are illegal per se. I think that this is a mistake. If a given firm or set of firms lacks market power, why apply a per se rule? If market power is missing, and thus monopoly prices are not possible, then you must confront the possibility that the arrangement creates real efficiencies, even if the antitrust enforcers can't understand them (and the proponents can't prove their existence). Courts are beginning to introduce a market power threshold into the domain of per se rules. That's what happened in *Hyde* for tie-ins, *Northwest Stationery* for boycotts, and *State Oil* for one variety of resale price maintenance. When firms without market power employ devices that cannot injure consumers by creating monopoly prices, their conduct may well be beneficial—and if there are no benefits, the conduct will die out without the need for judicial condemnation. Courts won't be able to see the benefits in many cases, but they will be there just the same. Treating the lack of market power as a trap door out of antitrust law not only saves parties and courts the costs of inquiry but also dramatically reduces the likelihood of mistaken condemnation of beneficial practices.

A firm without market power could of course injure the plaintiff, perhaps in ways we do not want to approve. The McCoys can injure the Hatfields by opening a rival shop next door, wounding their enemies without injuring consumers in the slightest; so too the Hatfields can shoot the McCoys without possessing market power. Sponsors of yet another flavor of DVD can injure both their rivals and themselves by selling products that can cannibalize other firms' sales, ensuring that neither will be able to obtain the economies of scale necessary to produce efficiently. Per-

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34 *NCAA v Board of Regents of the University of Oklahoma*, 468 US 85 (1984), asked a market power question in a suit attacking a horizontal agreement. *Jefferson Parish Hospital District No 2 v Hyde*, 466 US 2 (1984), holds that market power is the first question in every tie-in case even though a per se analysis may be used after power has been demonstrated. *Northwest Wholesale Stationers, Inc v Pacific Stationery & Printing Co*, 472 US 284, 296 (1985), adds a market power hurdle to the law of boycotts.

35 *Hyde*, 466 US 2; *Northwest Wholesale Stationers*, 472 US 284; *State Oil*, 522 US 3.
haps that will be the fate of Sony's "super audio DVD" and its rivals. But injuries of this kind we ignore, just as antitrust ignores the injuries created by murder, because there is nothing distinctive about them. It would be folly to start drawing demand curves to decide whether murder should be unlawful. To say that the lack of market power is a trap door out of antitrust is not to say that it is a trap door out of the legal system.

Antitrust is a complex body of law requiring exceedingly expensive tools, with great potential to injure the economy by misunderstanding and condemning complex practices. Legal problems that would not benefit from the application of these tools should be addressed by bodies of law that are more streamlined, such as contract. If no monopoly overcharge looms, that should be enough of an indicator that some other fount of law is appropriate.36

To say that a market share too small to support an overcharge is no worry of antitrust sets the stage for the question: what happens if the plan succeeds and the product or method grows until it possesses market power? Does the shield drop away, and do we now condemn what we formerly encouraged? This is not just a potential problem under Learned Hand's maxim from Alcoa that the law should not turn on the winners.37 The very fact that a platform or technology wins may demonstrate that it has net benefits for consumers and must not be disestablished, despite its large share. What is more, or perhaps what is confounding, is that even if the large share is accompanied by some market power and monopoly profits, this may be the reward for the new technology. This is clear enough for a patent owned by a single firm. Most patents have low or no rewards; a very few have huge rewards, and the desire to be such a big winner drives the process of innovation.38 You can't turn on the winner and take away the profits without destroying the incentive to innovate in the first place.

36 FTC v Superior Court Trial Lawyers Association, 493 US at 432–36, rejects the invitation to search for market power in standard cartel cases. Atlantic Richfield Co v USA Petroleum Co, 495 US 328, 334–35 (1990), adds that even if the defendants' conduct is price fixing illegal per se, a private plaintiff may recover only if it establishes that it paid higher prices as a result of a monopoly overcharge (or was a victim of predatory pricing); such a demonstration will be impossible in the absence of market power. The net effect is that market power is a threshold requirement in private litigation but not in suits led by the federal government. (States are treated as "private" antitrust plaintiffs, see California v American Stores Co, 495 US 271 (1990)).


What this leads to is my third proposal: that we not worry about winners—at least, not while they are winners. When a firm’s or group’s market share is growing, they can’t be restricting output and causing problems for consumers. Only when the share starts to shrink is there reason to worry that output is being curtailed. And even when the share starts to shrink, if the market output continues to rise, there is little cause for concern.

This is a variant of a proposal that William Landes and I have long advocated for predatory pricing cases—indeed, for exclusionary practices cases as a whole. The proposal is to do nothing during the period of supposed predation or exclusion. Wait and see. If we see a low price or novel practice, there are three hypotheses: efficiency, raising rivals’ costs, and error. A firm that makes an error is penalized by the market. A firm that builds a better mousetrap or figures out how to cut costs should not be penalized. Only real exclusion is worrisome. But the only reliable way to differentiate exclusion from efficiency is to see what happens. Exclusion implies a period of aggression or clever tactics, followed by a period of recoupment. If you don’t see recoupment, then you had efficiency (or error). Wait until the recoupment period to find out. Then collect damages so large that the project is sure to be negative present value at the outset. Threaten to take away the profits from the recoupment period, and people won’t engage in exclusionary behavior at the outset.

Matsushita and Brooke Group essentially adopt this approach for predatory pricing, and it should be extended to other claims of exclusionary practices. I anticipate the response that agencies and courts will have a devil of a time determining whether the recoupment period has arrived. I cheerfully concede this point. But consider the consequences. If we think that we can’t identify a monopolistic practice even during the recoupment period, when prices are elevated and output is being curtailed, then what chance do we have of knowing ex ante whether a given practice is efficient or exclusionary? We will have more information about that issue in five years; and if, by hypothesis, we won’t be able to make a good decision then, we most assuredly won’t be able to make a good decision now. Better to withdraw and avoid false positives.

Fourth, and finally, we need to think about false positives in devising remedies. Markets deal differently with false positives and false negatives. Suppose the legal process errs and fails to condemn an inefficient, exclusionary practice. That's a false negative. But there will be large private profits to be made by breaking the monopoly and offering consumers an alternative. False negatives thus are self-correcting. Correction may take time, but it occurs—and, as I have stressed, the characteristic of the information age is that things happen faster than they used to, so correction takes less time.

False positives, however, come with the force of law. The court rearranges the market. Anyone who tries to put it back together again in pursuit of profit will be packed off to jail.

The best response is to define the prohibited acts as narrowly as can be. If a given platform is deemed a bottleneck monopoly, define only the core elements of the platform as the bottleneck and allow variations. The court in Data General could have, say, put RDOS as it existed in 1982 in the public domain, while allowing Fairchild, Data General, and all other comers to make proprietary changes. Then we would find out if there was a real problem with Data General's exclusion of others, or if instead customers benefited from Data General's value added. The 1982 consent decree in telecommunications essentially took this approach—only the local switch was treated as a natural monopoly, and people who made improvements to bypass or replicate the switch were allowed to do so.

Antitrust is today a body of common law, always in evolution, subject to different interpretation in thirteen federal circuits and the courts of fifty states. A single practice may be challenged in a dozen forums, by private plaintiffs and state attorneys general, each convinced that litigation advances the nation's welfare. No matter how well-intentioned the plaintiffs, no matter how astute the judges, the process of common-law litigation is one of uncertainty. Until the last case is over, no one knows whether the practice can survive—indeed, no one knows whether its practitioners can survive (given the prospect of stupendous damages). Common-law antitrust litigation is high-risk litigation, high-delay litigation. By the time the other shoe drops, the moment for this generation of products is past. That problem is especially acute for information markets. Antitrust must recognize this and adjust. There is no other option.