

*Do advances in economic theory lead to advances in legal practice?*

# The Legacy of *U.S. v. Microsoft*

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**M**UCH HAS BEEN WRITTEN ABOUT *U.S. v. Microsoft*, as either the last “case of the century” for the 20th century or the first for the 21st. As one might expect for a still-pursued case that has been litigated in the United States and Europe for about five years, and where Microsoft has been subject to antitrust investigation for over a decade, much of the commentary is polarized on the pros and cons of going after the software giant. Those who support the litigation express concerns that the dominant personal computer software provider will extend its power over other software markets. Those who oppose the litigation cite an absence of evidence of present harm and the benefits to consumers of allowing Microsoft to incorporate additional features into its software. Intersecting both positions is a debate regarding the ability of antitrust to keep up with high-tech industries such as computer software. How do we define markets and assess monopolization? Are systems two generations obsolete by the time a trial is over?

Litigants and other commentators have covered this ground *ad infinitum*, if not *ad nauseum*. My interest is not in what the case says about computer software markets and the applicability of antitrust in high-tech industries. Rather, it is about what the case may tell us about the changing role of antitrust in economics. The changes in that role can be marked by three eras: In the first, “pre-Chicago,” era, which lasted until the 1970s, economics took a back seat to impressionistic assessments of harm in which any agreements among firms that reduced independent price and output decisions threatened ostensibly fragile competition. The subsequent “Chicago era” reflected the ascension of basic economics, relying on free entry to limit market power and the efficiencies of mergers and restraints across markets to narrow the focus of antitrust largely to collusion and major “horizontal”

mergers within markets. Then, beginning in the mid-1980s or so, the “post-Chicago” era has relied on a plethora of game theory and asymmetric information models to identify circumstances in which vertical practices may be more troublesome and competition less robust than “Chicago” economics suggested.

Situation-specific, post-Chicago theories should do more than pad the *curriculum vitae* of economics professors. They should improve the accuracy of antitrust — fewer good practices stopped, fewer bad practices allowed. However, if practitioners and courts are unwilling or unable to determine whether any particular theory applies, post-Chicago economics may only provide theoretical cover for reviving impressionistic assessments of the past. In short, post-Chicago economics may lead to pre-Chicago antitrust.

So, does the “post Chicago” movement represent an evolution or devolution in antitrust theory? To answer that, let us look at the post-Chicago theoretical case against Microsoft and contrast it with the case that ultimately went to trial. After looking at why the theory and the trial might have differed, and why that difference matters, we note that antitrust is not the only setting facing the paradox that better economics may lead to worse policy. Ironically, the legacy of *U.S. v. Microsoft* may be that the activists who promote post-Chicago economics may realize that they need to force the courts to get the economics right in order to get the results they want.

Before proceeding, I must offer a caveat: In presenting various visions of the case, I make no claim as to whether the facts support or reject those or any of the other theories one might discuss. This essay is not about whether Microsoft’s practices were good or bad. The lessons I want to draw come from the discordance between the vision of the case and its realization. Among the larger regrets is that we may never get a fair test of whether the vision underlying the case was accurate.

## THE “BAR NAPKIN” THEORY

One of the clichés about economists is that a roomful of them will advance at least as many different opinions on an eco-

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nomics question as there are people in the room. The question “What might an antitrust case against Microsoft be about?” is no different. Many answers, including some that have animated prior continuing litigation against Microsoft, are of the pre-Chicago variety, e.g., leveraging a monopoly in operating systems into other related software markets. Others involve “holistic” theories with no one individually compelling story but a pattern of conduct that could lead to anticompetitive outcomes. Despite this abundance of perspectives, a core conception reflects the most serious and economically intriguing potential case against Microsoft. I imagine that it is as what a few disinterested industrial organization economists — perhaps a rare and endangered species — might come up with on their bar napkins over a couple of beers.

Figure 1 sets out the story, which begins with a future market in “applications platforms” that enable people to perform the

usual tasks on a computer, e.g., word processing, spreadsheets, e-mail, and Internet access. That future market could contain conventional desktop and laptop operating systems (like Microsoft’s Windows) that allow one to use applications that reside in one’s computer. It could contain platforms that allow one’s computer to access and use applications that sit elsewhere, e.g., using the Internet to run a word processing program installed on a remote server. Perhaps other technologies would enable people to run applications they like, or provide a substitute for the ways we currently prepare documents and analyze data.

The concern is that Microsoft might be precluding competition in this future application platform market. To connect that market to present actions, we need to find out how one’s positions in the industry today could give one the ability to compete effectively tomorrow. To understand that link, we move up Figure 1 to identify an input to such ability: a market in getting a strategic advantage in competition among future application platforms. What this admittedly unorthodox market would look like depends on how competition among future application platforms will take place. That future market may support multiple differentiated competitors, particularly if different technologies can support the same applications (e.g., desktop and servers-based systems). The market may be prone to “tipping,” i.e., that the competitor with an initial advantage, real or perceived, might attract the entire market to it, particularly if compatibility across users is a concern.

To see if Microsoft could monopolize strategic advantage in competition for future application platforms, we need to identify who today might be able to have a presence in the “strategic advantage” market. The next level up in Figure 1 identifies the likely potential players. One set would include firms offering desktop operating systems. A second might be those that provide the software for Internet access to run programs, which includes browsing and the ability to send data (e.g., typed words) to a distant application (e.g., a word processor) and then receive and reconstitute the results in a useful form on one’s computer (e.g., a formatted page.) A third set might include other technologies that provide operating systems for servers, set-top boxes for video and broadband services, wireless access, and maybe others.

This takes us to the top row, identifying the lead players in two of the boxes. On the desktop side, we have Microsoft with the lion’s share of the current market in desktop operating sys-

tems, with Apple and Linux as other notable players. On the browser side, we have Netscape's Navigator that, along with Sun's Java program, allows one to run programs effectively over the Internet. Those two programs were designed to run on any minimal operating system, and thus could potentially serve as application platforms if the market were to develop in that direction. We also have Microsoft's Internet Explorer and its own adaptation of Java, WinJava, which Microsoft designed to run exclusively on the Windows operating system. Others may be in this market as well.

Figure 1 traces out the strategic theory under this view. At the time when theorists were drawing up this case, Microsoft already dominated the desktop operating system market; we can think (perhaps metaphorically) of that dominance as giving Microsoft some substantial share of the market for competitive advantage in future operating systems. Netscape Navigator and Java together possessed a similar share. The anticompetitive claim is that, by developing Internet Explorer and its own essentially proprietary version of Java, and by impeding Netscape's ability to distribute Navigator both as a result of offering Internet Explorer and other contracting arrangements, Microsoft would come to possess most of the strategic advantage necessary to compete in the market for future application platforms. Limiting Microsoft's opportunities in that direction would keep the "strategic advantage" market open and thus not preempt competition either to offer differentiated application platforms or to become the future dominant supplier.

**THE AIR SUPPLY CASE**

The story illustrated in Figure 1, or something like it, seems to be the general conceptual core of the case against Microsoft. The case that actually went to trial is best described by Figure 2. The case revolved around the charge that Microsoft tried to "crush" Netscape by various aggressive distribution practices involving Internet Explorer. The "bar napkin" theory may have played a role in the case in giving some theoretical cover and significance for the application of antitrust against the hallmark firm of the information economy. But at heart, the case came down to a fairly traditional antitrust story about a big firm crushing an upstart competitor.

I refer to the ultimate court case theory as the "air supply" theory — a name that comes from a Microsoft employee's e-mail stating an interest in cutting off "Netscape's air supply." Exploring the implicit market defined by the phrase "air supply" illustrates what the case factually concerned. The "air supply" here was the means of distributing browsers to users. Several channels for such distribution were potentially available, such as inclusion with the Windows operating system itself, pre-sale installation by computer manufacturers, and provision as access software by Internet service providers (ISPs). Along with documentary evidence of Microsoft's intent to triumph over Netscape, the central claim was that Microsoft used control over its own channel (bundling with Windows) and exclusive contracts with computer manufacturers and ISPs to cut Netscape's access to efficient distribution paths.

The aura from the grand strategic theory about application platforms had little to do with the case that was litigated. Rather,

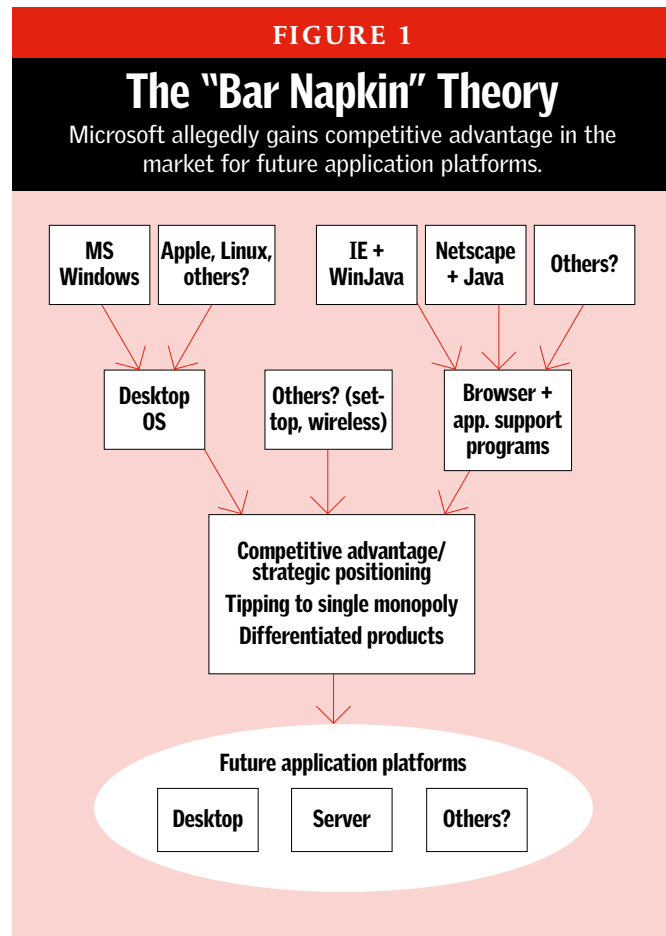
the market allegedly monopolized by Microsoft was that for distributing browsers. The economic facts were largely about whether Netscape was or was not able to distribute Navigator in the face of Microsoft's impediments. Microsoft's inclusion of Internet Explorer with Windows at no additional charge invited questions of anticompetitive tying and predation, but those are best understood as part of the larger claim that Microsoft had, and reserved for itself, an important distribution channel — bundling with the operating system.

Ultimately, the case became an impressionistic "big vs. little," pre-Chicago antitrust case. It came to remind me of an Austin Powers film, in which 1960s antitrust was pulled out of the deep freeze to keep Dr. Evil from taking over the world. A central point is that this factual core had nothing to do with whether the distributed software — browsers — had any potential to compete eventually against Microsoft in a future application platform market. It would apply equally well to any utility software — "middleware" — that would be distributed along with the operating system or as a likely add-on from computer manufacturers or ISPs.

**WHY THE DIFFERENCE?**

From a speculative distance, three reasons emerge as to why a potentially innovative case motivated by strategic concerns on the future of personal computing turned into a routine case about tying up middleware distribution channels.

**Conflating the cases?** It seems clear that the "air supply" case about middleware distribution had little to do with operating



systems, and required none of the detailed empirical showings necessary to substantiate the “bar napkin” case. It also should be clear that browsers, with application support software such as Java, are not themselves in the same market as Windows. But some observers claim the “air supply” case and the “bar napkin” theory are different versions of the same argument. That claim could be a byproduct of post-Chicago antitrust doctrines, such as “raising rivals’ costs,” that recast monopolization of an input market (distribution of middleware, in this case) as being about protecting a downstream market (browsers and application platforms). The Microsoft case suggests that recasting horizontal theories as vertical ones does not promote clear analysis and, as we will see below, clear remedies.

**Monopolization law idiosyncrasies?** A more plausible and charitable explanation is that the plaintiffs had to play the legal hand they were dealt. The primary legal basis for attacking Microsoft was Section 2 of the Sherman Act, which makes it illegal to “monopolize.” That section has been interpreted as covering practices that act to “create or maintain” a monopoly, with emphasis on the latter.

The standard way to make a Section 2 case is to establish that a firm currently has a monopoly and that it has engaged in illegal practices to maintain it. Consequently, satisfying the legal conditions for a successful case requires blurring distinctions between the market in which the accused firm has a monopoly and the market in which it takes actions to impede competition.

The need to blur that distinction becomes apparent when one looks at the inherently contradictory legal requirements of establishing “monopoly maintenance.” On the one hand, the first step is to show that the alleged monopolist has a monopoly to maintain. The stronger the evidence that the monopoly is impregnable and inevitable, the better. In the Microsoft case, this showing relied on three arguments: enormous scale economies in developing operating systems, network externalities (i.e., the compatibility value of everyone using the same operating system), and “application lock-in” (i.e., unwillingness of consumers to switch without assurance that their applications would run on the new operating system).

Those arguments seem rather compelling. But on the other hand, the second step in proving monopolization is for the plaintiff to claim that, but for thwarting the efforts of the targeted upstart, this impregnable monopoly would collapse. Here, the story (not necessarily as the plaintiffs put it) was that Microsoft’s motivation for monopolizing browser distribution was to ensure that Netscape Navigator, along with Java, would not bring about the demise of the Windows empire. But if that empire was created and protected by scale economies, network externalities, and application lock-in, could Navigator have been a threat? If Microsoft’s monopoly is so strong, how could the alleged exclusionary practices have had any effect?

An indicator of the contradictory nature of this argument was that to bolster the first “impregnable” step, the plaintiffs claimed that the relevant market was not future application platforms, or even present application platforms, but “Intel-based PC operating systems” — a market that Netscape’s Navigator (with Java) is not and never was going to be a member.

A better argument would have been to first define a market large enough to include both Windows and Netscape Navigator, e.g., strategic position in competition to be the next future application platform. Then, one would claim that Microsoft’s monopoly in this “strategic advantage” market, not the “Intel-based PC operating system” market, was not impregnable but fragile, i.e., it would fall apart if Netscape succeeded.

**The easy way out?** Neither inability to distinguish between arguments nor Section 2 straitjackets may have caused the Microsoft case to move from “bar napkin” theory in Figure 1 to the “air supply” case in Figure 2. The third and most plausible reason for the change is simply that the “air supply” case was relatively easy to understand and present in court. It may have been too difficult to validate a “strategic advantage in future application platforms” allegation beyond providing some modern respectability to cover an impressionistic case. That is why *U.S. v. Microsoft* turns on its head the classic aphorism of jurisprudence, instead suggesting that “easy cases make bad law.”

Consider, if the plaintiffs had elected to pursue the “bar napkin” theory case, what they would have had to demonstrate even if they could get a court to comprehend the chain of events leading from present positions in (separate) desktop operating system and browser markets to future application platforms. One can begin at the top of Figure 1, following the heavy arrows. Not only does one have to show that Microsoft has a monopoly in desktop operating systems (not just those for Intel-based computers), but one also has to show that Navigator and Internet Explorer are the only significant current and potential participants in a market for browsers with application support programs.

FIGURE 2

## The “Air Supply” Theory

Microsoft allegedly “crushes” Netscape by dominating “middleware” distribution via exclusionary contracts with manufacturers, internet service providers, etc.



MICROSOFT

NETSCAPE

Next, one has to show that strategic advantage in competition among future application platforms rests with the dominant providers in present markets for operating systems and browsers. If one or the other is not a stepping-stone toward being the application platform of the future, there is no strategic threat posed by one side taking over the other. If significant platforms can arise outside desktop operating systems and browsing, the competitive threat from one monopolist dominating the other market is lessened.

Verifying those allegations requires some understanding of how competition in the future applications platform market will take place. If differentiated competitors will survive, e.g., both desktop and server-based platforms, then the threat to competition from the desktop operating system monopolist taking over the browser market would be having one firm dominate a potential duopoly. If only one application platform

of the legal team to attempt to force a judge to work through the machinations embodied in the “bar napkin” theory.

#### **OTHER PATHS NOT TAKEN**

The “bar napkin” strategic positioning story was not the only post-Chicago theory that the plaintiffs decided to pass on in their pursuit of Microsoft. Some other theories might have been productive for the plaintiffs to pursue:

**Tying** As alluded to above, Microsoft was accused of tying its browser to its monopoly operating system, both economically and technologically (intermingling computer code). The Chicago counter-argument is that prohibiting tying is likely to lead to higher prices for the monopoly product (here, Windows) and undercut any efficiencies associated with bundling. One post-Chicago response might be to identify transaction-

**Just as the difficulty of the “bar napkin” case does not mean that it is false, so the ease of the “air supply” case does not mean that it is true.**

would dominate the market, as is the case in the desktop operating system market today, the suppressed competition will be for the franchise itself, akin to a patent race.

Clearly, an antitrust case rooted in a strategic theory regarding future application platforms is complicated. That does not mean that it is unprovable in court, but proving it sure is a lot harder than proving the “air supply” argument of Figure 2. After meeting the court’s apparent demand that there be a strategic theory out there somewhere and that Microsoft has a monopoly, all the plaintiffs need to show is that Microsoft controlled enough of the means for distributing Netscape Navigator to undercut its survival as a competitor to Internet Explorer.

Just as the difficulty of the “bar napkin” strategic case does not mean it is false, the ease of the “air supply” distribution case does not mean it is true. Netscape may have been able to use other means (downloads, direct mail) to distribute Navigator, frustrating Microsoft’s efforts to cut off its “air supply.” But it is undeniable that treating the case as a big firm crushing a little one was an extremely successful legal tactic. The core monopolization claims, including the “Intel-based PC operating system” market definition, were strongly supported by the trial judge and affirmed unanimously at the Court of Appeals. (The Court of Appeals rejected other claims, particularly anticompetitive tying of browsers to operating systems. It also rejected a proposed and problematic vertical divestiture by Microsoft of “middleware” and applications largely on procedural grounds, finding that the trial judge had not held sufficient hearings and had raised a taint of prejudice by granting interviews on the case while it was still in litigation.) Once obliged to win the case, it would be irresponsible

al impediments that would keep Microsoft from raising the price of Windows directly, but the firm could do so by forcing consumers to get a browser they did not want. (A similar Chicago-era argument, that regulatory restrictions on a monopolist’s price can lead to anticompetitive tying, led to the 1980s divestiture by AT&T of its local telephone operating companies. However, Microsoft’s Windows prices are not regulated, refuting suggestions that the Microsoft and AT&T cases were fundamentally the same.) A second post-Chicago tying argument is that a link to its monopoly service might enable a firm to commit to keep prices low in a competitive market regardless of what the competitors do. Neither of the theories was pursued, leaving the tying claims as pre-Chicago impressionistic aversion to a monopolist dominating a related market.

**Tipping** Markets in which the products have “network externalities,” i.e., are more valuable the more others have them, are prone to “tipping,” in which a slight advantage by one competitor over others would lead everyone to choose it. The Microsoft case included some allusions to this possibility, but arguments along that line need not favor the plaintiffs. A leading insight of post-Chicago economics is the asymmetric strategic positions of monopolists and entrants, largely because, if the former wins, it keeps monopoly profits, whereas a successful entrant gets only its share of competitive or duopoly profits. That difference explains why a monopolist has a stronger incentive and credible threat to “win,” e.g., by outspending the entrant in order to come up with the next innovation. But this asymmetry does not hold in markets prone to tipping. In a winner-take-all contest where a successful com-

petitor today could get monopoly profits tomorrow, the incumbent will have a much harder time deterring entry.

**Predation** My favorite neglected post-Chicago theory involves predatory pricing. Chicago economics took the wind out of the predatory sails in pointing out that such threats were not credible. Attempts to recover the losses incurred by charging below-cost prices would only induce entry later.

One of the earliest and most important post-Chicago theories was that a monopolist might charge otherwise money-losing predatory prices in order to preserve a reputation for being a tough competitor that prefers market share to profits. The problem with this post-Chicago theory is applicability. In the usual situations where managers have fiduciary duties to a board and stockholders, imputing this particular “irrationality” may be difficult. But Microsoft, at the time of the case, was a nearly \$500 billion firm run like a sole proprietorship by an owner notorious for a determination to dominate the industry. That owner, as the wealthiest man in the world, would also seem to be a prime candidate for putting anything over acquiring yet more money. The Microsoft case was the one and probably only time when one would find an incumbent that would fit the reputation-based predation story. It is regrettable that the plaintiffs passed up this unique opportunity to put post-Chicago economics to the best test it may ever get.

**TOO MUCH OF A GOOD THING?**

A few years ago, when I worked on the Council of Economic

Advisers staff, I learned a lesson about economic policy: If “Nth best world” arguments are allowed, any policy is optimal for sufficiently large ‘N’. The post-Chicago antitrust analogy would be that if ‘N’ strategic assumptions or informational constraints are allowed, any business practice can be bad (or good) for sufficiently large ‘N’. The devolution of *U.S. v. Microsoft* indicates that this analogy applies. If antitrust courts are unwilling or unable to undertake the effort to test whether theories are true, they become only a kind of quasi-evidence — if a practice is good or bad under some conditions, it might be good or bad in the case at hand.

The usefulness of economic theory as a guide to antitrust policy is inversely proportional to its ability to lend support to both sides of any question. With economists able to testify on both sides of a case (at least on the theory), their role in helping to find better outcomes falls. That does not mean economists will disappear from antitrust courtrooms, as both sides will still need to hire their experts to validate their positions with this quasi-evidence. Having to provide economic expertise may become little more than a tax on litigation. If one believes there are too many antitrust cases, that could be a good thing, I suppose. But it is a meager role for economics, compared to the promise in the 1970s that it might substantively constrain antitrust to reduce error and increase efficiency.

The paradox that advances in economics may reduce its relevance is not unique to antitrust. Strategic trade theory modeled situations in which imperfect competition and incomplete

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markets could warrant quotas or tariffs. To the chagrin of some of the founders of that theory, it was used to re-energize general support for protectionism without regard to whether the specific conditions of its models were satisfied. In environmental economics, a growing body of research uses “Nth best” theory to show that incentive-based policies (e.g., emissions taxes, permit trading) may reduce efficiency if processes that emit pollutants complement other taxed goods, most notably labor. We may find opponents of permit trading using those models to reverse policies that have reduced enormously the cost of achieving environmental targets.

### ACTIVISTS TO THE RESCUE?

If the Microsoft case was won at trial and affirmed in large measure without the need to verify the conditions underlying the “bar napkin” theory or other strategic justifications for concern, impressionistic economics seems to be alive and well. In antitrust, and perhaps in other policy venues, many may regard the self-defeating nature of advances in economic theory as a good thing. Certainly, antitrust activists who applaud the growing prominence of post-Chicago economics in antitrust do not do so because they enjoy calculating subgame perfect Bayesian sequential equilibria. Some 20 years ago, when the Department of Justice advocated switching concentration measures from the four-firm concentration ratio to the Herfindahl-Hirschmann index, much of the antitrust bar was put into a tizzy because the latter required multiplication along with addition. The appeal of post-Chicago economics to antitrust activists is in its removal of Chicago-era constraints, reopening the door to cases involving predatory pricing, monopoly leveraging, vertical market, and tacit collusion.

Ironically, however, *U.S. v. Microsoft* offers some hope that the activists may find it in their interest to undertake the heavy lifting to ensure that post-Chicago economics is more than an excuse for impressionistic antitrust. The hope arises because the “bar napkin” and “air supply” cases imply different remedies. The “air supply” case, being fundamentally about Microsoft’s cornering the market in distributing browsers, implies merely that the courts need to keep Microsoft from entering into the kinds of exclusive contracts that led to such control. Expanding the restrictions to “middleware,” including audio and video streaming, e-mail, and instant messaging, only buttresses the conclusion that the case ultimately had little to do with application platform monopolization.

Leaving aside some fine points on compliance and disclosure of interfaces, that is substantially the remedy the case eventually produced. Numerous critics of Microsoft found that relief trivial and inadequate, largely because it leaves Microsoft’s positions in the operating system and browser markets intact. For example, some of the states that partnered with the U.S. Department of Justice to bring the case wanted the courts to force Microsoft to disclose the source code for Internet Explorer, essentially placing it in the public domain.

But the purportedly weak remedy, focusing on exclusive contracts affecting middleware distribution, is exactly what the “air supply” case implied and deserved. Had post-Chicago economics been the actual basis for the case and not just window

dressings, a stronger remedy might have been forthcoming. The “bar napkin” theory supports getting Microsoft out of the browser business altogether. My preferred solution would not be to make Internet Explorer a public good by disclosing the source code, but to have given it to some other entity that would then have the incentive to develop whatever strategic advantage it may have in competition among potential future application platforms.

Establishing the evidence to support the “bar napkin” case (with all of those yet-unrealized markets and chains of causation), and any divestiture-like relief of the browser that would follow from it, would not be easy. Nor should it be. Because the “air supply” market was at the heart of the litigation, accusations that the case was about Microsoft’s freedom to innovate were not true. Reluctance to bring a case with those implications is certainly understandable, but perhaps “freedom to innovate” is exactly what the case should have been about.

To get the outcomes the antitrust activists sought, such a case would have been necessary. The best hope for making post-Chicago economics productive might be for its constituency to realize that impressionistic pre-Chicago antitrust might not support innovative remedies. Economic theory may return to playing a substantive role in antitrust, and not just be bombast on the soundtrack, if activists come to see that their goals require biting the bullet and accepting the burden of turning cleverly conjectured possibilities into proved realities. **R**

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