ANTITRUST GOVERNANCE

by

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Abstract

In this article, the author argues that antitrust law has entered a new phase of its controversial existence. The role of antitrust in moderating inter-firm relationships depends both on the problems of the underlying market regime and the institutional capacity of antitrust decision-makers to respond to those challenges. For much of the 20th century, the model firm was hierarchical: vertical integration within the business organization was a way of achieving transaction cost efficiencies and delivering higher levels of output at lower prices. Recognition of this fact transformed antitrust from its traditional focus on concentrated power, to a policy focused on economic efficiency. This new emphasis necessarily led to a more modest antitrust policy, since courts were not institutionally well-suited to promoting efficiency. However, in the past two decades the model firm itself has also been transformed both by changes in technology and due to greater volatility of market conditions. Production is increasingly decentralized, and characterized by a profusion of deeply collaborative relationships, with innovation as a key aspect of firm success. This article brings together the emerging literature that describes the changes in firm organization, the governance problems of the new forms of joint development and the antitrust responses to those changes. The author argues that antitrust can play an important role in governing collaborative production relationships and identifies the institutional and remedial mechanisms of the new antitrust policy.

I. Introduction

Much maligned and more modest than in its recent heyday, antitrust law is yet again said to be in search for an equilibrium,[1] to adjust the goals and instruments of antitrust intervention to changes in the market environment. The paradox of this field of law is evident — antitrust tries to save the market mechanism from itself — which means that it has no strong friends either among free-marketeers or interventionists. If we asked hypothetically: "What would happen if the antitrust laws were no longer enforced?", the response of our collocutor is likely to be rather muted.[2] With other areas of regulation (such as environmental or labor law) the policy trade-offs are, at least conceptually, much clearer and more apparent.[3] Not so with antitrust. In a world of increasingly open markets marked by intense global competition, and a legal universe of targeted legislative interventions that correct for specific market failures, it is legitimate to ask whether there remains even a residual role for antitrust law. From such a skeptical point of view, antitrust is nothing more than an obstacle to hard-nosed competition or beneficial firm collaboration and integration, or an anachronistic legal-regulatory nuisance. With a more sinister twist, antitrust can be seen as an extraordinary tool that can be abused by less efficient or opportunistic competitors and plaintiff-bar attorneys to disrupt successful firms and claim a share of their revenues.

In the early stages of an always controversial existence, antitrust law was assimilated to the field of business crime and misfeasance. Given the progressivist concerns at the time of the enactment of the Sherman Act in 1890, about the accumulation of economic and political power in the trusts, as well as the practices for buttressing such power that included bid-rigging and cartelization, the standard tools of antitrust intervention were based on law enforcement.[4] In deciding antitrust cases,

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[1] *Cf.* Phillip Areeda, *Monopolization, Mergers, and Markets: A Century Past and the Future*, 75 CAL. L. REV. 959, 959 (1987) ("My theme is the narrower one of, to borrow a phrase, the law in search of itself."); Eleanor M. Fox, *The Modernization of Antitrust: A New Equilibrium*, 66 CORNELL L. REV. 1140 (1981) (hereinafter "Fox, Modernization").

[2] The academic literature has attempted to engage in more precise speculation on this question. *Compare*, Robert W. Crandall and Clifford Winston, *Does Antitrust Policy Improve Consumer Welfare? Assessing the Evidence*, 17 J. ECON. PERSPECTIVES 3, 23-24 (2003) (arguing that the evidence of the net benefits of antitrust enforcement is weak and that this justifies only minimal interventions in the most egregious cases), *with* Jonathan B. Baker, *The Case for Antitrust Enforcement*, 17 J. ECON. PERSPECTIVES 27, 42 (2003) (arguing that the benefits of antitrust intervention far outweigh the costs of enforcement while emphasizing the point that the quantitative calculus is speculative).

[3] *See* Eleanor M. Fox, *Antitrust and Regulatory Federalism: Races Up, Down and Sideways*, 75 N.Y.U.L. REV. 1781, 1790-91 (2000).

[4] Antitrust law was put in place in the U.S. long before the tools of the modern regulatory state emerged during the New Deal.

generalist courts aimed to elaborate clear rules that would isolate species of prohibited business conduct and thereby provide a guide for business compliance. Such rules, when combined with government enforcement and the availability of treble damages in private suits, would also have a powerful deterrent effect for firms not to engage in anticompetitive conduct. Despite changes in the focus of antitrust policy and substantial evolution in antitrust doctrine in over a century,[5] the basic institutional and remedial forms for implementing antitrust through the courts have remained unchanged.

Over time, a number of intractable problems emerged with the standard enforcement approach. First, efficient deterrence requires the elaboration of rules that isolate anti-competitive from innocent conduct. Yet such delineation has proved impossible, in part due to recognition that the competitive significance of most business conduct subjected to antitrust scrutiny is ex ante ambiguous, irrespective of how the goals of antitrust policy are defined.[6] As a result, antitrust doctrinal rules have been either under-inclusive, or over-inclusive, or worse, conclusory labels that approve or condemn particular conduct, but lack substantive content which might guide future compliance.[7] Second, given limits in their capacity to analyze conduct on a case-by case basis and to formulate effective remedies to correct for violations, courts have increasingly tended to shrink the field of antitrust intervention. Finally, because of the difficulties associated with formulation and supervision of effective non-damage remedies, courts prefer to rely on damages awards in antitrust cases.[8] Yet treble damage awards often do not fully correct the identified problem. An additional concern is that, in the context of a murky doctrine, damages may encourage opportunistic misuse of antitrust litigation against successful firms. Therefore, it is no surprise that assimilation to the field of business crime has resulted in a restrained antitrust law that most actively polices only conduct that closely resembles criminal offenses — namely, clandestine price-fixing conspiracies.

A few stylized facts set the background for this article. First, since it achieved dominance in the academy and the courts over two decades ago, the Chicago School dramatically reshaped antitrust law, shifting its concern away from fairness and the

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5 State Oil v. Khan, 522 U.S. 3 (1997) (O'Connor, J.) (antitrust law has "recogniz[ed] and adapt[ed] to changed circumstances and the lessons of accumulated experience").

6 Eleanor M. Fox, *What is Harm to Competition? Exclusionary Practices and Anticompetitive Effect*, 70 ANTITRUST L.J. 371 (2002) (commenting on the elusive notion of anticompetitive effects of conduct under the antitrust laws).

7 *See, e.g.*, Einer Elhauge, *Defining Better Monopolization Standards*, 56 STAN. L. REV 253 (2003).

8 American antitrust lawyers do not view themselves as regulators. The ideal antitrust remedy is a one-off intervention that releases the forces of competition as the main discipline on firms, and thereby helps to avoid the heavy hand of regulation. *See* Robert H. Lande, *Professor Waller's Un-American Approach to Antitrust*, 32 Loy. U. Chi. L.J. 137, 142-144 (2000); Spencer Weber Waller, *Bringing Globalism Home: Lessons from Antitrust and Beyond*, 32 Loy. U. Chi. L.J. 113 (2000).

politics of concentrated economic power, to an overarching concern with economic efficiency. Given that firm size and integration are not necessarily inimical to efficiency, and that courts are not institutionally well suited to promote efficiency, the new paradigm advocated, and produced, a minimalist antitrust policy.[9] In such a context, for a scholarly effort to propose a more ambitious antitrust policy, it must either provide a better set of efficiency-based doctrinal rules, or suggest ways to relax the institutional and remedial constraints on decision-making, or some combination of the two.[10]

Second, in that same period, a fundamental transformation has taken place in the model firm itself: from a top-down vertically integrated organization towards looser networks of collaboration.[11] Rather than emphasizing integration as a way of achieving efficiencies within the firm, the new organization relies on inter-firm collaboration, as a way of managing uncertainty and developing innovative products in an unstable market environment. Antitrust law has only begun to respond to these changes in the very nature of markets. This article describes these developments and proposes a framework for assessing the doctrinal and institutional reactions to the new economy. The key claim is that, antitrust can play an important role in overcoming governance problems of inter-firm collaboration that create bottlenecks in innovation. However, such a role requires an institutional shift away from the traditional deterrence model, a shift which is already under way.

To make this claim, the article demonstrates the institutional strains on enforcement that emerge during the efficiency stage in antitrust, inspired by the Chicago School and the old model of the firm. Oncethe rule-based approach was abandoned, rather than incorporating fact-specific evidence or economic knowledge in antitrust decision-making, the courts responded through doctrinal and procedural short-cuts to effectively avoid becoming embroiled in antitrust disputes. The institutional strains were exacerbated as novel technologies and different kinds of strategic interaction in more dynamic contexts made the efficiency calculus more complex.[12] In the new production

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[9] On the Chicago view, there is no logical reason if a court does not understand a particular practice, to outlaw it. Ronald H. Coase, *Industrial Organization: A Proposal for Research*, in 3 POLICY ISSUES AND RESEARCH OPPORTUNITIES IN INDUSTRIAL ORGANIZATION, 59, 67 (V. Fuchs ed. 1972); Frank H. Easterbrook, *The Limits of Antitrust*, 63 TEX. L. REV. 1, 4-9 (1984).

[10] *See, e.g*, William E. K ovacic, *Achieving better practices in the design of competition policy institutions*, 50 ANTITRUST BULLETIN 511 (2005); William E. Kovacic, *Evaluating Antitrust Experiments: Using Ex Post Assessments of Government Enforcement Decisions to Inform Competition Policy*, 9 GEO. MASON L. REV. 843 (2001).

[11] *See, generally*, John Roberts, THE MODERN FIRM, (2004) (hereinafter "Roberts, Modern Firm"); Charles F. Sabel, *Real Time Revolution in Routines*, in THE CORPORATION AS A COLLABORATIVE COMMUNITY, 106 (C. Hecksher & P. Adler eds., 2005) (hereinafter "Sabel, Real Time Revolution").

[12] Richard A. Posner, *Antitrust in the New Economy*, 68 ANTITRUST L.J. 925, 939(2001) .

environment, innovation is key to success, and on-going collaboration and joint development are key to innovation. The article maps out the governance problems that arise out of collaborative production relationships, and the new challenges they pose not only for antitrust, but also for the forms of contractual relationships among firms and the role of the intellectual property regime. In the absence of guidance from doctrine, antitrust courts and agencies have steered away from imposing antitrust liability on antitrust defendants, relying instead on the design of novel remedial forms.[13] Such remedies are sensitive to the complexities of the underlying problems and, rather than being court-centric, seek to involve a broader set of actors in the resolution of those problems.§[14] To the extent that these novel remedial formsprovide an effective antitrust reponse to the problem of governing collaborations, I argue that they supply the constructs of the new form of competition policy.

II. The elaboration of antitrust doctrines

The antitrust doctrinal rules that courts continue to invoke emerged as the result of judicial efforts to balance the general terms of the statutory language with the public's changing attitudes towards the benefits of competition and its suspicion of business conduct, as well as changes in industry relationships and forms of production. The doctrinal framework has also been greatly influenced by legal policy factors, including the limits of the judicial capacity to engage in economic regulation within the confines of the common law method. The legal tools of antitrust analysis are based on a 19th century statute and the subsequent century of doctrinal elaboration, consistently invoked in antitrust cases since the middle of the 20th century, both struggling to comprehend the new complexities of market interaction and organization of production.

While opting for a statutory entrenchment of the antitrust laws, Congress left both the text and the goals of the statutory provisions considerably vague. Therefore, in deciding antitrust cases the courts have to do more than just implement the law – effectively, they have developed competition policy with little textual or contextual guidance. Atits inception, the Sherman Act was m otivated by a set of concerns about concentrations of power in the hands of large economic conglomerates (or trusts), but the statutory standards were left vague because the goals of the legislation were largely

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[13] Robert Pitofsky, *Antitrust at the Turn of the Twenty-First Century: The Matter of Remedies*, 91 GEO. L.J. 169 (2002) (emphasizing the importance of novel remedial forms).

[14] *Cf.* Charles F. Sabel and William H. Simon, *Destabilization Rights: How Public Law Litigation Succeeds*, 117 HARV. L. REV. 1015, 1017-18 (2004) (observing similar trends in other areas of public law).

inchoate.[15] Both the scope and the application of federal antitrust law developed from the experience and learning that emerged from resolving actual antitrust controversies.

The decision to assign antitrust policy to the generalist courts has had two important consequences. First, relying on legal doctrine as the main vehicle for policy elaboration allowed the goals of antitrust policy to remain vague, since legal doctrine looks to the past for guidance and should not, at least in theory, be focused instrumentally on outcomes. Thus, antitrust law could develop largely unhinged from any elaboration of the goals of antitrust policy, or how particular antitrust interventions could contribute towards achieving those goals.

Second, the elasticity of statutory language gave the courts flexibility to adjust legal doctrine to changing circumstances and experience. However, this left antitrust law only with a long-term ability for learning and self-correction. Legal doctrine is inherently path-dependent and the courts are not institutionally well-suited to monitoring and evaluating their own decisions, given the traditional judicial remedies and the particular preference for one-off remedies in antitrust cases. The law enforcement paradigm makes it difficult to monitor the effectiveness of individual interventions and remedies,[16] and as a result, the opportunity to correct errors was likely to come too late and only after a backlash.

A. The Warren Court and the makings of a backlash

In the post-War period,[17] antitrust became an active area of government enforcement and judicial activity. The progressivist suspicions towards concentrated economic power and its effects on democratic politics of an earlier era were reinforced by the role played by industrial monopolies and cartels in buttressing totalitarian regimes in Germany and Japan before and during the War.[18] Such a view guided government policy

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15 Judge Leval has used the Sherman Act as the paradigmatic example of a delegating statute implementing a new policy in very imprecise terms to be elaborated by the common law method. Pierre N. Leval, *Trademark: Champion of Free Speech*, 27 COLUM. J. L. & THE ARTS 187, 197 (2003).

16 Waller Adams, *Dissolution, Divorcement, Divestiture: The Pyrrhic Victories of Antitrust*, 27 IND. L. J. 1, 31 (1951) ("[T]he government has … won many a case, but lost many a cause".).

17 Earlier attitudes towards antitrust were far more ambivalent. During the Great Depression, there was growing suspicion towards the deflationary effects of ruinous competition and against active antitrust enforcement. ALAN BRINKLEY, THE END OF REFORM: NEW DEAL LIBERALISM IN RECESSION AND WAR 86-91(1995) (describing the shifting attitudes to the antitrust laws and to competition more generally by the late 1930s).

18 DAVID J. GERBER, LAW AND COMPETITION IN TWENTIETH CENTURY EUROPE: PROTECTING PROMETHEUS 147-48 (1998) (the German Nazi government overturned the cartel regulation, required the formation of cartels and sought to integrate them into the state apparatus). See also GARY HERRIGEL, INDUSTRIAL CONSTRUCTIONS: THE SOURCES OF GERMAN INDUSTRIAL POWER 139-40 (1996).

more broadly, and the U.S. promoted an active antitrust policy, both at home and abroad, as a democracy-enforcing tool.[19] Chastened by earlier judicial forays into economic regulation[20] and in an environment of deference to the other arms of government, the Court endorsed a view of antitrust as a procedural tool thatguarantee s the vibrancy of the competitive process so as to ensure opportunity, representation and democratic control over economic agglomerations.[21]

The economic effects of antitrust intervention were not at center stage, and to the extent such effects were relevant to antitrust decisions, early antitrust economics was supportive of an interventionist competition policy. The structure-conduct-performance paradigm, current in the then nascent field of industrial economics, suggested the existence of a direct and causal relationship between a concentrated market structure, exclusionary firm conduct and poor market effects.[22] Low market concentration, and the absence of restraints on the atomistic conduct of small (price-taking) firms were thought to be conducive to superior market performance and beneficial for consumers If consumer welfare was one part of the antitrust calculus, it was certainly not the sole or even the determinative criterion. An active antitrust enforcement aimed to ensure that markets were open in order to protect the economic opportunities of smaller producers to compete on the merits, without being foreclosed by larger, established enterprises. This is another way in which the progressive flavor of the Court's antitrust jurisprudence was consistent with its focus on the emancipation of individual rights and opportunities and its view of the proper judicial role in a democracy.

Given those views, the Warren Court rapidly expanded the category of prohibitions on conduct and inter-firm restraints declared *per se* illegal, at a high level of generality and across different markets. The Court was particularly sensitive to the difficulties associated with a full-fledged analysis of the market effects of particular contractual restraints, or conduct, or mergers under the rule of reason. Instead, the courts relied on retrospective identification and characterization of conduct and on proxies, such as evidence of the firm's anticompetitive intent. If they lacked understanding about

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19 Harry First, *Antitrust in Japan: The Original Intent*, 9P AC. RIM L. & POL'Y J. 1 (2000).

20 By 1937 the Supreme Court pulled back from any constitutional economic supervision of Congressional legislation and yet in subsequent years courts began to reassert their authority, not only in areas such as racial discrimination, civil liberties, but also in new forms of economic regulation where common law institutions were seen to be well-adapted to the post-New Deal context. See John F. Witt, The King and the Dean, unpublished manuscript (46-47) (on file with the author).

21 *See, e.g.*, JOHN ELY, DEMOCRACY AND DISTRUST (1981); Gary Minda, *Antitrust at Century's End*, 48 S.M.U.L. REV. 1749, 1763-65 (1995).

22 *See, e.g.*, JOE S. BAIN, BARRIERS TO NEW COMPETITION: THEIR CHARACTER AND CONSEQUENCES IN MANUFACTURING INDUSTRIES (1956) (viewed as the progenitor of the structure-conduct-performance paradigm).

certain apparently restrictive conduct, courts tended towards outlawing it with very sweeping statements.[23] By contrast, for conduct which was found not to fall within a *per se* prohibition, the courts were reluctant to undertake a complete inquiry into both the reasons and likely effects of the impugned business practice, so that rule of reason analysis amounted to de facto legality.[24]

The Warren Court was not necessarily hostile towards claims of productive and other efficiencies that might result from different forms of integration or collaboration.[25] However, the doctrine limited judges and juries to enforcing a set of procedural rules of the game, rather than becoming involved in substantive evaluation and weighing of efficiency claims, or assessment of how speculative efficiency gains would be distributed. Such an approach was orthodox, since ex post balancing is not a good ex ante guide for firm compliance. Judicial modesty combined with judicial ignorance lead to judicial over-reaching, but the doctrine was consistent with prevailing social attitudes and the dominant view in industry economics. Often in the same breath, the courts professed ignorance about competitive dynamics, but denied themselves the opportunity to overcome this:

> The fact is that courts are of limited utility in examining difficult economic problems. Our inability to weigh, in any meaningful sense, destruction of competition in one sector of the economy against promotion of competition in another sector is one important reason we have formulated per se rules.
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> In applying these rigid rules, the Court has consistently rejected the notion that naked restraints of trade are to be tolerated because they are well intended or because they are allegedly developed to increase competition.[26]

To foregoing approach led to a substantial broadening of the category of *per se* prohibitions and this led to the ultimate backlash against antitrust intervention for two reasons. First, the restrictive doctrine imposed serious limits on inter-firm contracting

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[23] *See, e.g.*, Int'l Salt Co. v United States, 332 U.S. 392, 396 (1947).

[24] Richard A. Posner, *The Rule of Reason and the Economic Approach: Reflections on the* Sylvania *Decision*, 45 U. CHI. L. REV. 1, 14 (1977).

[25] Robert Pitofsky, *Past, Present and Future of Antitrust Enforcement at the Federal Trade Commission*, 72 U. CHI. L. REV. 209, 211-12 (2005) (referring to merger cases where the Court refused to consider efficiencies as a defense). Even the firms proposing a merger in most cases cannot evaluate the likelihood of efficiencies, thus the significant number of failed mergers. *See* Oliver Budzinski, *Towards an International Governance of Transborder Mergers? Competition Networks and Institutions Between Centralism and Decentralism*, 36 N.Y.U.J. INT'L L. & POL. 1, 13 (2004).

[26] United States v. Topco Associates, Inc., 405 U.S. 596 (1972).

practices and collaboration, which would not produce harm, except forinefficient competitors or opportunistic downstream firms. Second, the bias in favor of per se treatment, the reliance on proxy evidence of anticompetitive intent (including easily discoverable general statements by management of plans to squash or destroy competition) and the availability of treble damages in private suits encouraged opportunistic use of the antitrust laws as a tool for market manipulation. The antitrust regime was not a particularly precise or effectivetool of re -distribution, since it could be misused to protect the inefficiencies and profits of market rivals under the guise of protecting competition. Firms did not even have to spend resources to lobby or capture the enforcement agencies as a regulatory screening mechanism, since they could present their arguments directly to receptive courts and juries.

B. The Chicago New Learning

The Chicago School re-examination of antitrust doctrine took place in a context of broader disenchantment about the ability of government and bureaucracy to solve pressing social and economic problems.[27] During and after the 1970s, public policy debates increasingly focused on the issue of the world competitiveness of American industry, and the antitrust regime was scrutinized for its effects on the ability of American firms to compete with foreign products. The U.S. had cast itself in the role of the world's antitrust policeman,[28] and yet U.S. firms found it difficult to withstand foreign competition even in U.S. markets. American firms have attempted to use domestic antitrust to fend off competition from Japanese firms,[29] and even to pry open Japanese markets for American firms.[30] Irrespective of the underlying causes of differences in competitiveness, it was important for rhetorical purposes that Japanese antitrust enforcement was substantially more lax and yet, Japanese firms could deliver products to consumers at a better quality and price. This strengthened the perception that once U.S. firms were subjected to the rigors of foreign competition, U.S. antitrust policy could no longer afford to promote its non-efficiency civic goals.[31]

Chicago scholars proposed to make both the goals and the instruments of antitrust policy more pragmatic and accountable, drawing on economic explanations of the firm

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27 *See* Michael C. Dorf, *After Bureaucracy*, 71 U. CHI. L. REV. 1245, 1254 (2004).

28 *See, e.g.*, Hartford Fire Ins. Co. v. California, 509 U.S. 764 (1993); United States v. Nippon Paper Industries Co., 109 F.3d 1 (1st Cir. 1997).

29 Matsushita Elec. Indus. Co. v Zenith Radio Corp., 475 U.S. 574 (1986).

30 Eleanor M. Fox, *Toward World Antitrust and Market Access*, 91 AMER. J. INT'L L. 1, 11 (1997).

31 Eleanor M. Fox, *Antitrust and Regulatory Federalism: Races Up, Down and Sideways*, 75 N.Y.U.L. REV. 1781, 1798 (2000).

and market interaction.[32] The opening claim of Chicago scholarship was that antitrust policy could be made both coherent and accountable, by clarifying and limiting its goals to enhancing economic efficiency (or consumer welfare), so that the maximum level of output was produced at the lowest price.[33] While market structure could affect other policy goals—distributional, political, civic or environmental—these made antitrust analysis too complex, and reduced the accountability of antitrust interventions.[34] Such goals could be assigned to other, more appropriately targeted policies. In an antitrust policy focused on efficiency, mere reliance on structural variables (such as firm size and market concentration) was a poor guide for antitrust decision-making. Chicago scholars were particularly critical of the courts' unwillingness to hear possible legitimate justification for certain kinds of conduct or contractual restraints. Finally, picking up on the courts' lack of confidence in their own ability to analyze and control anti-competitive conduct, Chicago scholars pointed out that, quite apart from legal rules, firm conduct is subject to market discipline from existing or new rivals.

The Chicago New Learning was not a program for an ambitious antitrust policy to promote economic efficiency. The main aim of the Chicago project was to curtail the growth of the *per se* prohibitions by emphasizing efficiency justifications for some of the contracting practices already condemned by the Court. Importantly Chicago scholars accepted and worked within the institutional constraints inherent in antitrust enforcement through the generalist courts. In describing the limits of antitrust, Chicago scholars were relying (unsurprisingly) on the limits of law, but also (perhaps more surprisingly) on the limits of economics, because, as Easterbrook explained (i) economic analysis may have limited predictive powers; (ii) economists may only be able to fully explain the reasons for, and effects of, particular conduct only retrospectively and with the benefit of hindsight; and (iii) the judicialtask of weighing anticompetitive against procompetitive effects and efficiencies may be either difficult or impossible at the time of a court's decision.[35]

In light of those limitations, Chicago scholars assert the conviction that unfettered markets should be treated as presumptively efficient, or at least that market outcomes are

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[32] *See, e.g.*, ROBERT BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF (1978) (this was the seminal book that became the manifesto of antitrust (non)enforcement during the Reagan Administration).

[33] Fox, Modernization at 1144-45.

[34] The foundations for this shift away from the "civic" and towards the "consumerist" grounds for antitrust had been laid much earlier, with Thurman Arnold's appointment as the head of the antitrust division of the Department of Justice in 1938. Brinkley, supra n.XX at 91. *See also* Michael J. Sandel, *Democracy's Discontent: America in Search of a Public Philosophy*, 85 GEO. L. J. 2073, 2077-79 (1997).

[35] Easterbrook, supra n.XX at 2-3, 39-40.

less likely to be detrimental than government interventions. In the absence of *clearly* demonstrated restrictive effects on output leading to higher consumer prices, an antitrust intervention is not justified, since false positives of government intervention are likely to be more harmful than false negatives.[36]

C. Responses to Chicago

The New Learning had a profound impact on antitrust doctrine and the level of antitrust litigation in the U.S. because it was consistent with a growing understanding of the different role of the firm in production. Courts were receptive to the Chicago prescriptions because they involved minimal adjustments to the standard approach of deciding antitrust cases.[37] Accepting that courts have a limited capacity to engage in antitrust decision-making, the Chicago school did not advocate for a policy of learning. Instead Chicago scholars took the ignorance of the antitrust institutions, at least on the issue of efficiency, as a given and proposed a simple switch in presumptions: the default antitrust rule was to treat the conduct as legal and defer to business decisions. The antitrust plaintiff has a high burden to show how conduct would enhance the defendant firm's market power to exploit consumers, and that this would not be corrected by existing or new entrants, assuming that the courts hear the plaintiff's explanation (in the same way that the courts previously invoked the *per se* rule in order to preclude explanations proffered by antitrust defendants).

The academic response to the Chicago New Learning in favor of a more robust antitrust policy has developed in two broad directions, both of which have had a limited impact on doctrine. Antitrust lawyers steeped in the earlier tradition, accept that in some cases the old antitrust doctrine was consistent with the Chicago insights, and in those cases economic arguments could guide antitrust decision-making.[38] However, they also insist that courts must accommodate the economicconsiderations with in the established doctrine. A rule-based approach to antitrust adjudication has the additional benefit of a reasonably settled state of the law, providing greater certainty for business actors. A more freewheeling (case by case) inquiry into the effects of conduct or mergers is

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[36] Eleanor M. Fox, *Consumers Beware Chicago*, 84 MICH. L. REV. 1714, 1719-20 (1986) (book review) (arguing that Chicago antitrust involves not only a methodological shift, but is underpinned by a particular social and political philosophy). See also Gabrielle Meagher and Shaun Wilson, *Complexity and Practical Knowledge in the Social Sciences*, 53 BRIT. J. OF SOC. 639, 662 (2002).

[37] *See, e.g*, *Continental T.V., Inc. v GTE Sylvania Inc.*. 433 U.S. 36 (1977) (exempting from per se treatment vertical non-price restraints used to control free-riding).

[38] Fox, Modernization at 1180-81.

regulatory and would increase the ex ante uncertainty about the legality of business conduct.

On this view, the Chicago School reformulation of the goals of antitrust was also fundamentally illegitimate. The early antitrust rules were sensitive to the broader political and social context in which competition law operates, and promoted civic objectives.[39] Quite apart from the democracy-enforcing paradigm, the Warren Court antitrust has been described as "humanistic," and consistent with the promotion of the rights and the economic empowerment of systemically disadvantaged groups championed in its constitutional and civil rights jurisprudence.[40] As EleanorFox points out, a competition law regime that does not focus merely on market *outcomes* (such as consumer prices), but also maintains an open market architecture, protects the competitive *process* and the opportunities fornew or smaller firms to bring their product to market and compete on the merits, is not necessarily detrimental to consumer welfare either. This is provided that antitrust enforcement does not illegitimately shield inefficient competitors.[41]

These and similar arguments, however, have not provided a basis for an antitrust resurgence, largely because they do not provide an institutional framework through which these broader considerations can be incorporated in antitrust analysis, without courts slipping into the excesses of the earlier era. In particular, it is not clearhow a court can implement all those strictures and balance the various potentially legitimate considerations within the confines of an antitrust case. The old antitrust rules were over-inclusive and path dependent *because* in an adjudicative context antitrust cases presented a zero sum game (whereby conduct is declared legal or illegal),judicialreasoning is backward looking and yet it has a precedential effect in other market settings. A court simply cannot regulate the competitive process, which is on-going, through one-off interventions adjudicating upon a particular practice. Once the need to gobeyond broad and over-inclusive rules of prohibition is accepted, antitrust decision-making must balance context specific considerations. Even if scholars are willing to entrust this function to the courts,[42] the courts are apparently not willing to accept it. For similar

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[39] Robert Pitofsky, *The Political Content of Antitrust*, 127 U. Pa. L. Rev. 1051 (1979); Philip Areeda, *Always a Borrower: Law and Other Disciplines*, 1988 DUKE L.J. 1029, 1040 (hereinafter "Areeda, Always a Borrower").

[40] Eleanor M. Fox, *Antitrust and Regulatory Federalism: Races Up, Down and Sideways*, 75 N.Y.U.L. REV. 1781, 1798 (2000), Fox, Modernization at 1151-52.

[41] *See, e.g.*, Eleanor M. Fox, *We Protect Competition, You Protect Competitors*, 26 WORLD COMPETITION 149, 162 (2003).

[42] Steven C. Salop and R. Craig Romaine, *Preserving Monopoly: Economic Analysis, Legal Standards and Microsoft*, 7 GEO. MASON L. REV 617, 671 (1999); Richard Schmalensee, *Agreements*

reasons, it is not helpful to insist that antitrust has traditionally embodied values other than economic efficiency, unless those values can be translated into rules that guide judicial decision-making in particular cases.[43]

The second line of research has been spurred by post-Chicago developments in the economics of industrial organization, with the growth of theoretical and empirical work that models competitive market interactions. Improved understanding of the connection between observed structural and behavioral market variables to future market outcomes could identify situations in which anticompetitive problems are likely to arise. Post-Chicago antitrust accepts that the objective of a coherent and accountable competition policy is to enhance economic efficiency. However, it also has greater faith in the assistance that economists can offer antitrust decision-making in predicting the likelihood of consumer price effects of given conduct in particular markets instead of relying on the (unverified) claim that market forces are self-correcting and thus erode entrenchments and abuses of market power, or at the very least do so faster than antitrust intervention.[44]

Antitrust doctrine in the U.S. is capable of incorporating the insights of modern industrial economics in at least two ways. The first route is to rely on more sophisticated economic models in order to develop more nuanced ex ante rules describing conduct that would raise competition concerns.[45] Such rules could come either in the form of per se prohibitions of unambiguously pernicious conduct or more general standards which, applied to particular contexts and cases, could help judges distinguish legitimate competition from anticompetitive conduct. The alternative route is for the court to rely upon economic expert evidence in order to determine, on a case-by-case basis, whether the specific conduct is likely to harm consumers.[46] Of course, these two methods of economic input into antitrust decision-making are not mutually exclusive. Admission of

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Between Competitors, *in* ANTITRUST, INNOVATION AND COMPETITIVENESS 82, 112 (Thomas M. Jorde and David J. Teece eds., 1992).

[43] For example, the argument that a more activist antitrust policy promotes democratic values by supporting the opportunities for self-sufficiency of smaller traders and by reducing the concentration of economic power, to ensure democratic control over corporations, does not supply a set of coherent principles which can provide concrete guidance for deciding particular cases. At best, it is a heuristic that is available for courts to use in deciding how to set the presumptions (e.g., mistrust of business conduct) or burdens of proof and even in doing that, courts cannot rely on any jurisprudential or theoretical arguments, presumably having to rely either on their own or on society's attitudes.

[44] *See* Herbert Hovenkamp, Mark Janis & Mark Lemley, *Anticompetitive Settlement of Intellectual Property Disputes*, 87 MINN. L. REV. 1719, 1766 (2003) (post-Chicago antitrust prefers "accuracy over ease")

[45] Areeda, Always a Borrower at 1040.

[46] *E.g.*, Eastman Kodak Co. v. Image Technical Services, 504 U.S. 451 (1992) (a firm may be able to exploit a set of captive consumers who will continue to purchase supplies even in the face of rising prices, due to the costs of switching to another rival).

expert evidence to resolve a specific question in a particular case may help the elaboration of a rule that can be applied in later cases as precedent, assuming some degree of stability and similarity of competitive interactions across different markets.[47]

D. The incorporation of knowledge

However, the courts have not been too welcoming of the more nuanced post-Chicago approach into antitrust decision-making.The incorporation of economic knowledge has been constrained both by the way in which economic knowledge develops and by the courts' ability to absorb such knowledge in decision-making and rule formulation. After all, the main judicialtool is analogical reasoni ng and an important lesson of the Chicago revolution has been that analogies apparent at first sight may end up being poor and misleading guides to decision-making. Furthermore, as Philip Areeda observed, the process of incorporation of knowledge into doctrine is burdened by the fact that "[t]he needs and purposes of the law are not necessarily the same as the interests and objectives of the expert pursuing his own discipline."[48]

In a recent contribution examining the impact of economic expertise on antitrust doctrine, Lopatka and Page argue that courts do not rely on expert assistance in order to acquire the economic knowledge incorporated into doctrine.[49] Instead of relying on expert input, courts develop "economic authority" through an unstructured common law method of "pragmatically examining the scholarly literature in the context of existing case law and adopting the most persuasive and plausible accounts" available at the time of decision.[50] Lopatka and Page explain thatthis process of selection is influenced by "intuitions," "social visions," and "ideologies,"[51] as well as legal process considerations about the institutional capacity of courts to process highly fact specific expert testimony.[52] Furthermore, they recognize that once such economic authority is accepted into the doctrine even without expert input, it takes precedence over, and sets limits on the scope of expert testimony that a court can admit in a later case to demonstrate that the

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47 Areeda, Always a Borrower at 1036.

48 *Id.* at 1040.

49 John E. Lopatka & William H. Page, *Economic Authority and the Limits of Expertise in Antitrust Cases*, 90 CORNELL L. REV. 617, 631 (2005).

50 *Id.*, at 632.

51 *Id.*, at 636.

52 *Id.*, at 640-41.

economic authority is either incorrect, or at least inapplicable to the circumstances of that case.[53]

In light of this last conclusion, their view that"the informal process of economic authority has decisive advantages within the antitrust system"[54] is surprising. For instance, they argue that the process of unstructured selection is legitimate because it is based on the same foundations as the development of precedent.[55] However, it was precisely the limitations of the method of analogical reasoning in antitrust cases that led to the excesses evident during the Warren Court era. True, courts have legitimate reasons for setting up barriers to prevent additional context-specific factual inquiry, such as ensuring coherence in the law,[56] and limiting the extent to which courts would have to act as super-arbiters of alternative economic theories. This is especially important given that, in most cases, economists do not come to unambiguous or unanimous predictions about either the purpose or the likely effects of the conduct in question. However, a more appropriate response to the contestable and evolutionary nature of economic, like any other knowledge, is to ensure that doctrine permits (and does not foreclose) further inquiry to both develop new learning and incorporate it into decision-making.

The problem of conflicting expert testimony in antitrust, as in other cases is often presented through the prism of the paid expert.[57] On this view, the function of the courts in antitrust cases is impaired by the absence of truly neutral and competent experts, since experts hired by the parties will testify to any proposition in support of the case of their client.[58] However, there are other explanations for expert contests. It may be that the difference of opinion among two economic experts is genuine, yet one economist has employed faulty reasoning or methodology. Or alternatively, even with both proper reasoning and methodology, the economists may arrive at a genuine disagreement about the competitive significance of the case, particularlyif the outcomes of interest extend to the medium to longer term. A survey of articles in the peer reviewed journals in any discipline will reveal numerous disagreements between experts even outside the litigation context. Whatever the reason for the contest, in most cases courts do not have the tools to resolve it. Yet to deny the validity of such input altogether by invoking authority based on judicial "intuitions" and "ideologies" seems a peculiar response to this problem.[5960]

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53 *Id.*, at 643, 698.

54 *Id.*, at 694.

55 *Id.*, at 696.

56 *Id.*, at 695.

57 Areeda, Always a Borrower at 1033-34

58 Posner, supra n.XX at 939.

59 Areeda has argued that the solution to the problem of expert contests is through some form of institutional innovation. One possible strategy for dealing with this problem whereby experts should be

Such a response is particularly problematic in light of the fact that the economic understanding of particular forms of conduct or market phenomenaevolves , particularly since market structures, organizations and strategies change. Antitrust decision-making relied on economic theory long before the Chicago School, even if such reliance was not openly acknowledged by judges.[61] Controversy among economists about the welfare implications of past business practices continues long after those practices have ceased. Conduct which might be recognized as predatory or anticompetitive today, might not have been seen in the same way in the past, not only because economists understand the world better today, but also because the same conduct might not have been as important in the past. Yet, if the courts insist on filtering out the factual evidence about the context of current cases through the prism of past "economic authority" they fail to appreciate the ways in which current cases are different, or the ways in which conduct which was once benign may now be of concern, and vice versa.

In his book *An Empirically Based Microeconomics*[62], Herbert Simon criticizes modern economic theory, arguing that economic modeling is detached from reality and cannot give concrete advice to policy-makers.[63] In a thoughtful review of Simon's book, the economist Ariel Rubinstein explains[64]

> [W]hat we really do in economic theory is to study arguments. Understanding what sort of arguments could be made about a situation does not guarantee our understanding of when this or any other argument will be made. And understanding arguments that people use is very far from predicting the kinds of things that economists attempt to predict or at least try to understand.

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compelled to publish their testimonies in peer-reviewed economic journals, as a way of incurring reputation costs for testimony which is markedly implausible. Areeda, Always a Borrower at 1036. However, Areeda recognizes that this proposal is impractical because it only (partially) corrects for the "hired gun" problem, but not the other reasons for contest and disagreement which could provide an obstacle to courts in resolving concrete antitrust problems. Timing is crucial in this context. Even if an expert has employed, in good faith, some form of faulty methodology, ex post publication will reveal this error later, after the judicial tribunal has already decided the case. The key is to incorporate this process of peer-review into the resolution of the particular case. *See* infra n.XX.

[60] The only proposal that is seriously being considered by the Antitrust Modernization Commission to deal with the problem of contested economic expert evidence is for the appointment of independent experts by the court. AMC asks panelists for details of assignment: Considering court-appointed economic experts, FTC:Watch No. 668, at 2-4 (Jan. 30, 2006).

[61] Herbert Hovenkamp, Post-Chicago Antitrust: A Review and Critique, 2001 COLUM. BUS. L. REV. 257, 259-65.

[62] HERBERT A. SIMON, AN EMPIRICALLY BASED MICROECONOMICS (1997).

[63] *See id.* at 26, 63.

[64] Ariel Rubinstein, Book Review, 37 J. ECON. LIT. 1711, 1712 (1999).

This view suggests both a glimmer of hope and an inherent limitation upon the use of economics in antitrust decision-making, including more theoretically ambitious economic modeling. To the extent that economics seeks to understand the kinds of arguments that can be made about a particular situation, this gives us hope that economic learning can be incorporated into the legal regime. After all, lawyering is all about crafting arguments that explain the reasons for, and likely consequences of, particular conduct as against the background of rules which regulate that conduct. But to the extent that economics enhances our tools of argumentation and helps antitrust advocates, how does it help the decision-maker? It might help the judge discard certain arguments, because they cannot validly be made in particular circumstances, but beyond that it only provides additional valuable arguments without necessarily giving further guidance on how to weigh them against each other — in order to determine whether anticompetitive effects are likely and in what timeframe — or, against other valid legal or policy arguments. As a result, Lopatka and Page's "economic authority" may be nothing more than the courts' formulation of a simple proposition that disposes of the majority of cases, relieving them of the responsibility to mediate and balance such arguments.

E. The law and economics of predation

The evolution in the law of predatory pricing provides a good illustration of the limits of the process of judicial learning described thus far. During the early years, injury to a competitor in itself was seen as destructive to the competitive process. Puttinga competitor out of business through aggressive pricing not only destroyed the productive capacity of a firm, in turn affecting the livelihood of the owners and employees, but also increased market concentration, eliminating the competitive constraint on other market players. Predatory pricing was a vibrant area of public and private enforcement. In the absence of a method to distinguish predatory from ordinary price cuts, courts relied on proxy evidence of anticompetitive intent. As juries were receptive to these claims, the lower courts frequently awarded large treble damage awards against price-cutting firms even in cases where the defendant firm had insubstantial market share.

Attempts to develop easily administrable rules, based on economic theory, that would provide a nuanced predation law have been unsuccessful. At a time when there was little economic analysis of the predation phenomenon, Areeda and Turner used a simple economic argument, based on profit-maximization, to develop a simple rule that

guided both the courts the marketplace [65] Under the Areeda-Turner test, below-cost price cuts were presumptively considered predatory, since such price cuts could not be profitable unless the firm was expecting at some future date to recover the losses through higher prices after the exit of some of its rivals. While this rule was apparently elegant and relevant in different market contexts, attempts to apply it generated further theoretical and practical inquiries about definition and measurement of costs, as well as possible alternative explanations for low pricing. To resolve such inquiries, required admission of factual evidence and therefore left the hands of juries and trial judges largely unrestrained. This undermined both the rule's elegance and its utility in discouraging opportunistic use of antitrust law.

Thus, the only way to impose discipline on this area of law was to foreclose the courts from considering predation cases. In a number of discrete steps, the Supreme Court relied on summary judgment as a procedural tool[66] and Chicago analysis of recoupment as a substantive or doctrinal tool to achieve this goal. Chicago scholars suggested that courts should sidestep the costs inquiry, which had not proven to be particularly helpful or tractable, and focus instead on the likelihood of recoupment by the defendant firm. In *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp*[67] the Supreme Court decided that analyzing the likelihood of recoupment was a threshold condition for a finding of predation. To establish this rule, Justice Kennedy relied on three propositions. First, while accepting that pricing below some measure of cost is the appropriate definition of predation, the Court did not specify the way to define or measure costs. Second, a plaintiff in a predatory pricing case had to prove that the defendant was likely to recoup any losses from predatory pricing by raising consumer prices after the targeted firms were eliminated. Finally, and perhaps more detrimentally, the Court accepted the then reigning Chicago view that predatory conduct was unlikely to occur or to succeed. However, this last point was not a fully theorized conclusion, and was based on only a limited number of empirical studies.[68]

An unfortunate effect of this formulation was that the doctrine precluded further examination or elaboration of any of the three claims that supplied its basis. Implicitly sidestepping the question of costs discouraged any further inquiry into an appropriate

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65 Philip Areeda & Donald F. Turner, *Predatory Pricing and Related Practices Under Section 2 of the Sherman Act*, 88 Harv. L. Rev. 697, 699 (1975).

66 Matsushita Electric Industr. Co. v Zenith Radio Copr., 475 U.S. 574 (1986).

67 509 U.S. 209 (1993).

68 *See, e.g.*, Roland H. Koller II, *The Myth of Predatory Pricing: An Empirical Study*, ANTITRUST L. & ECON. REV., Summer 1971, at 105; Kenneth G. Elzinga, *Predatory Pricing: The Case of the Gunpowder Trust*, 13 J.L. & ECON. 137 (1958).

definition and measurement of costs for the purposes of identifying below-cost pricing. Further, the Court explicitly discouraged lower court from examining the meaning and forms of recoupment that may make predation a rational anticompetitive strategy. The claim that a firm was unlikely to recoup (and therefore engage in predation), signaled to lower courts that absent extraordinary circumstances, predation cases were to be disposed of at summary judgment. Thus, no successful predation cases have been brought since *Brooke Group*, despite the fact that the economic learning has brought additional arguments and considerations to bear on the rationality of predation as an anticompetitive strategy.[69]

More recent economic modeling does not embrace the Chicago proposition that predation cannot be a profitable strategy for dominant firms. To assist the courts in deciding predation cases, Bolton, Brodley and Riordan have collected the emergent economic consensus on predatory strategies.[70] While accepting that the likelihood of recoupment provides an appropriate framework of analysis, they draw upon economic models that incorporate theories of strategic dynamic interaction among firmsin the presence of imperfect information. Such theories demonstrate how predation could be a rational and profitable strategy for a dominant firm in different market contexts. Where an entrant has imperfect information about the cost structure of the incumbent firm, the incumbent may engage in predatory pricing in order to send the wrong cost signal to the potential entrant and deter entry; or a dominant firm selling in numerous markets may engage in predatory pricing against a firm in one market in order to establish a predatory reputation thereby deterring entry or price cutting in other markets in which it operates (recouping in those other markets, rather than the market where it cut prices); or a dominant firm may engage in predatory pricing in order to reduce the rival's short run profitability so as to induce its creditors (who are imperfectly informed about the entrant's potential) to withdraw their financing.[71]

The economic theories that Bolton, Brodley and Riordan draw upon dynamic modeling that incorporates more contextual factors and strategic considerations relevant to identifying novel forms of predatory conduct. As with many other post-Chicago

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[69] The key for a plaintiff to win a case of this nature is to avoid the characterization of predation, irrespective of the similarity of the underlying conduct. Microsoft Corp. v. United States, 253 F.3d 34 (D.C. Cir. 2001) (product integration and exclusionary practices); LePage's Inc. v. 3M, 324 F.3d 141 (3d Cir. 2003) (loyalty rebates provide basis for a monopolization claim though not under predation law).

[70] *See generally* Patrick Bolton, Joseph F. Brodley & Michael H. Riordan, *Predatory Pricing: Strategic Theory and Legal Policy*, 88 GEO. L.J. 2239 (2000).

[71] Bolton, Brodley and Riordan go further and claim that observed through the lens of modern theory, predation was the best explanation for some antitrust prosecutions that Chicago scholars used to support the claim that courts or juries make false inferences of predation.

models, the welfare predictions of those theories are highly sensitive to the starting assumptions of the model. According to Elzinga and Mills, given this lack of robustness in predicitions, such models cannot be a useful guide to judicial decision-making because they cannot be translated into ex ante rules that would apply across different contexts.[72]

However, to reject such economic evidence simply because it does not easily translate into ex ante rules seems paradoxical. If the welfare implications of particular theoretical models are highly dependent on the starting assumptions of such models, to answer the question of whether a model can be used to analyze the case at hand, the court must determine whether the market context of the case maps well onto the assumptions of the model. Therefore, lack of robustness is not a reason to reject evidence (including factual evidence as well as expert assessment) that the market context under consideration is precisely the one in which predation is a rational strategy which is likely to harm consumers. Instead, cases such as *Matsushita* and *Brooke Group* have encouraged courts to address the recoupment issue at the summary judgment stage, which necessarily involves a curtailed evidentiary record.[73]

The most recent DoJ prosecution of American Airlines for predatory pricing relying on the work of Brodley, Bolton and Riordan was also rebuffed at the summary judgment stage, although for different reasons. Both the District Court[74] and the Tenth Circuit[75] accepted that modern economic theory puts some doubt on the *Brooke Group* view that predation is unlikely to occur and even less likely to succeed. Nonetheless, the Court concluded that the Department of Transport had not adduced sufficient evidence that American's strategy involved below-cost pricing to survive a motion for summary judgment, despite the fact that the government complaint relied on four alternative theories of cost to demonstrate that the prices were predatorily low. The Court latched onto the difficulty in determining whether American had sacrificed profits, as part of its alleged predation strategy, due to the substantial portion of arbitrarily allocated costs involved, because of American's coarse cost accounting.[76]

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[72] Kenneth G. Elzinga and David E. Mills, *Colloquy: Predatory Pricing and Strategic Theory*, 89 GEO. L.J. 2475 (2001).

[73] Courts have regularly invoked summary judgment as "particularly well-suited" to "the usual entanglement of legal and factual issues" in antitrust cases. Thompson Everett, Inc. v. Nat'l Cable Adver., L.P., 57 F.3d 1317, 1322 (4th Cir. 1995). *See* Oksanen v. Page Mem'l Hosp., 945 F.2d 696, 708 (4th Cir. 1991); Collins v. Associated Pathologists, Ltd., 844 F.2d 473, 475 (7th Cir. 1988); Bayou Bottling, Inc. v. Dr. Pepper Co., 725 F.2d 300, 303 (5th Cir. 1984).

[74] United States v. A.M.R. Corp., 140 F. Supp. 2d 1141 (2002).

[75] The Tenth Circuit affirmed the grant of summary judgment in United States v. A.M.R. Corp., 335 F.3d 1109 (10th Cir. 2003). *See* Gregory Werden, *The American Airlines Decision: Not a Bang but a Whimper*, ANTITRUST, Fall 2003.

[76] A.M.R., 140 F. Supp. 2d at 1175.

Thus, on either the *Brooke Group* or the *American Airlines* view, the antitrust plaintiff will have substantial difficulty getting past a defendant's motion for summary judgment. The courts avoid entering the fray of deciding complex predation cases by either (i) invoking the incantation that predation occurs rarely and requiring a strong showing of likely recoupment (*Matsushita* and *Brooke Group*) or (ii) requiring a precise showing that the price was below some undefined measure of cost, which plaintiffs will generally be unable to do (*American Airlines*).[77] The fact that both of these approaches dispose of cases on summary judgment suggests that courts consciously tie their hands from considering context specific evidence that might muddy the neatness of current rules, and open the doors to the jury presumably encouraging opportunistic plaintiffs.

F. Conclusion

The Chicago "New Learning," which advocated a minimalist antitrust policy, reflected not only dissatisfaction with the excesses of the Warren era antitrust, but also a number of wider social trends, including the shift away from production-based, towards consumption based communities of identity,[78] as well as growing suspicion about the pernicious effects of the use of governmental or bureaucratic power vis-à-vis business power.[79] Most importantly, the Chicago school sought to incorporate the growing understanding about the new model of the firm that had replaced the decentralized ante-bellum economy of individual traders in arms-length relationships. The arguments used by Chicago scholars were well-accepted in organization theory and industry economics.[80] They reflected the Chandlerian[81] model of the corporation thathad come to dominate U.S. industry since the end of the 19th century. Firms, according to this model, were large multi-product organizations (structured by divisions) that were closed hierarchies, designed to generate rules in order to break down complex problems and goals into manageable tasks and to monitor the compliance of large numbers of subordinates in

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77 *See* Michael Riordan, Presentation to the Conference on the use of Economics in Competition Law, London, March 11-12, 2004. Riordan's characterizes the approach of the courts in both *Brooke Group* and *American Airlines*, as 'legal pragmatism,' resembling the view of legal minimalism advocated by Cass Sunstein. Cass R. Sunstein, *Supreme Court 1995 Term—Foreword: Leaving Things Undecided*, 110 HARV. L. REV. 4 (1996).

78 Sandel, *supra* n. XX, at 2077-79. *See also* DANIEL J. BOORSTIN, THE AMERICAN: THE DEMOCRATIC EXPERIENCE 89 (1973).

79 Dorf, supra n. XX, at 1254.

80 Sabel, Real Time Revolution at 107.

81 After Alfred Chandler, the business historian who identified and described its features. ALFRED A. CHANDLER, THE VISIBLE HAND: THE MANAGERIAL REVOLUTION IN AMERICAN BUSINESS (1977).

performing those tasks.[82] Minimization of transaction costs that stem from bargaining problems, shirking and other forms of subordinate opportunism, was the main driving force towards integration within the Chandlerian firm, and provided the underpinnings for the Chicago attack on antitrust hostility to vertical restraints and mergers.

Yet courts are not a particularly good venue for either promoting economic efficiency, or for trading off efficiency against other societal values. Doctrine does not provide any useful guidance to courts in deciding modern antitrust cases based on the efficiency criterion. The existing categories of judicial analysis (such as the per se and the rule of reason) are largely empty, as courts grapple to adapt the methods of a process-based legal regime to an effects based (regulatory) policy.[83] While the new antitrust is said to incorporate the benefits of economic learning, this is a very partial claim which masks the extent to which presumptions continue to play a role in antitrust decision-making. The doctrinal incorporation of economic learning is limited by the institutional limitations of the courts and is generally biased against intervention. While some have endorsed the judicial development of "economic precedent," this is a dubious kind of precedent that does not reflect a wider economic consensus, but instead involves a judicial re-characterization of economic learning to adapt it into rules thatdispose of cases, rather than engaging in searching economic inquiry.

III. The new cases - the innovation perspective

A. The Post-Chandlerian firm

While the Chicago antitrust revolution took place long after the emergence of the Chandlerian firm, the world that the law regulates is not static either.[84] Parallel with the efforts to update antitrust law and doctrine to incorporate the lessons of industrial organization, the past two decades have witnessed fundamental shifts in the nature and the organization of the firm, the methods of production and competition, as well as the purposes and forms of inter-firm relationships. By contrast to the integrated hierarchical firm, the emerging post-Chandlerian business organization is described as "federated and open"—relying on collaboration, rather than integration—and "networked" so that

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[82] Roberts, Modern Firm, at 1-2; Sabel, Real Time Revolution at 107-08.

[83] Matter of Polygram Holding, Inc. (The Three Tenors), 5 CCH Trade Reg. Rep. ¶15,453 (FTC 2003).

[84] Oona A. Hathaway, *Path Dependence in the Law: The Course and Pattern of Legal Change in a Common Law System*, 86 IOWA L.R. 601, 637 (2001).

information flows not only top-down, but also upwards and sideways.[85] The profound changes taking placein the principles of business organization have a few important features:[86]

> Firms have changed the scope of their activities, typically refocusing on their core businesses and outsourcing many of the activities that they previously regarded as central. ... Many have also redefined the nature of their relationships with customers and suppliers, often replacing simple arms length dealings with long-term partnerships. ... By these measures, coupled with improved information and measurement systems and redesigned performance measurement systems, they have sought to increase the speed of decision-making and to tap the knowledge and energy of their employees in ways that have not been tried before. To facilitate coordination and learning, they have experimented with linking people in different parts of their organizations directly, so that communications are more horizontal and not just up and down the hierarchy.

The shift in organizational structure was precipitated by the limits of the hierarchical model of the Chandlerian firm in resolving the problems of industrial organization, as well as shifts in theunderlying market environments in which the new firm has to operate. In particular, given changes in technology and the intensification of global competition, market changes are more rapid and on-going, which is why the environment in which the modern firm operates is described as more "turbulent"[87] or "volatile."[88] Top executives neither possess the information about market changes and new technologies, nor can they absorb such information rapidly enough to use the knowledge to formulate strategy top-down.[89] The new firm is vertically disintegrated, makingdeeper collaboration and information exchange among firms essential.[90] As a corollarysuch novel forms of organizing production present new challenges in governing inter-firm relationships. Since antitrust is a tool for moderating inter-firm relationships, the new forms of production present novel and unique antitrust challenges.

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85 Sabel, Real Time Revolution at 107.

86 Roberts, Modern Firm at 2.

87 *Id.* at 27.

88 Sabel, Real Time Revolution at 108.

89 Roberts, Modern Firm at 27.

90 Charles F. Sabel and Jonathan Zeitlin, *Neither Modularity nor Relational Contracting: Inter-firm Collaboration in the New Economy*, 5 ENTERPRISE AND SOC'Y 388, 389 (2004).

B. Innovation

Because the underlying market environment in which the new firm operates is fast-changing and turbulent, a key aspect of firm success in new markets is not planning and cost-minimization, but continuous innovation enabling the firm to adjust its decisions and be responsive to market changes that are very difficult to predict. In this context, the firm's key challenge is not to minimize the cost of producing and delivering an existing product with a stable demand to the market, but instead to ensure that its product design keeps up with the future requirements of the market. Such a change of focus also opens the door to different kinds of anticompetitive strategies, which aim to disrupt a competitor's ability to innovate. In an increasing number of antitrust cases the effects of market structure and conduct on the ability to firms innovate (and consequently the pace of innovation) have assumed center stage. Some commentators have gone so far as to suggest that promoting innovation is the primary goal or the touchstone of the modern competition policy.[91]

At least at the conceptual level, there is no reason for an efficiency-minded competition policy to be focused only on static allocative efficiency and conduct that restricts output and raises short run prices, without being concerned about dynamic efficiency, namely development of novel products and processes of production. In dynamic modern markets, the introduction of new products or processes is the main form of firm rivalry that dissipates supra-economic profits and improves consumer welfare.

However, moving from the conceptual to the practical, we have already shown that a key constraint on extending the mandate of antitrust policy has always been the institutional capacity of the antitrust decision-makers to take a broader range of issues into account and to formulate and supervise effective remedies.[92] Both the traditional and the Chicago approach to antitrust intervention deny any possibility for judges to trade-off some goals against others.[93] The old caselaw often made the point that protecting the competitive process is the "law of the land" and courts had no mandate to trade-off

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[91] Robert Pitofsky, *Antitrust and Intellectual Property: Unresolved Issues at the Heart of the New Economy*, 16 BERKLEY TECH. L.J.535, 540 (2001), Timothy Bresnahan, Remarks at the Fair Trade Commission of Japan Inaugural Symposium: Designing the New Competition Policy, "Pro-Innovation Competition Policy: Microsoft and Beyond, Address Before the Competition Policy Research Center" (Nov. 20, 2003) (on file with the author).

[92] Phillip Areeda, *Antitrust Law as Industrial Policy: Should Judges and Juries Make It?*, *in* ANTITRUST, INNOVATION AND COMPETITIVENESS 29, 32 (Thomas M. Jorde and David J. Teece eds., 1992).

[93] Minda, supra n. XX, at 1766.

competition for other socially desirable goals.[94] Similarly, the Chicago view is deeply suspicious of judicial balancing and sees the focus on short-run allocative efficiency as the only way to anchor judicial decision-makingfarfrom error. T he promotion of innovation and industrial progress—whether they were consistent or in conflict with the reigning antitrust view of competition—could be left to the market or to more targeted policy interventions by the other arms of government.

In the aftermath of increased antitrust litigation in high technology industries, Posner observed that"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."[95] By contrast, Posner singles out the institutional constraints as more significant, including the absence of neutral expert assistance to courts, the slow pace of litigation compared to the dynamic and fast-changing nature of the markets, and the fact that this dynamism exacerbates the difficulties in fashioning and supervising effective antitrust remedies.[96]

However, Posner's description of the doctrine as "supple" simply obscures the fact that in the absence of doctrine judges have no legal guidance in deciding these cases. As the F.T.C. recognized in the Three Tenors case,[97] the distinction between the per se rule and the rule of reason has become largely blurred, with most cases inviting some degree of competitive effects analysis. Similarly, the distinction between vertical and horizontal inter-firm relationships is not as critical in modern markets—the modern firm is vertically disintegrated, and collaborates with many different firms who are at least potential participants in the same market. Some of the staples of antitrust analysis, including defining markets, calculating market shares, and comparing prices to cost have become strained and of limited assistance in new economy markets.[98] The fact that there are no *ex ante* rules to constrain judicial discretion, does allow courts to engage in the kind of ex post, all things considered, judging of what's best for economic efficiency that Posner has advocated elsewhere.[99] Those who have greater faith in the judicial capacity to perform a

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[94] *See, e.g.*, Nat'l Soc'y of Prof'l Eng'rs v. United States, 435 U.S. 679 (1978) (courts do not trade-off competition against other policy values, such as public safety, under rule of reason analysis).

[95] Posner, supra n.XX at 939.

[96] *Id.*

[97] Matter of Polygram Holding, Inc. (The Three Tenors), 5 CCH Trade Reg. Rep. ¶15,453 (FTC 2003).

[98] The Microsoft illustrates some of these issues. Market shares may not be a significant guide if firms compete for the market and if a rival can easily dislodge a dominant incumbent with a superior product given the low marginal costs of (re)production of products like software. Similarly, identifying predatory conduct by reference to the price-cost tests becomes more strained in the presence of increasing returns to scale where variable costs of production approach zero.

[99] *See, e.g.*, Richard A. Posner, *Pragmatic Adjudication*, 18 CARDOZO L.J. 1 (1996).

central role in antitrust decision-making and the judicial process to cope with the increased complexity, deny that even the institutional problems identified by Posner are significant or insurmountable.[100]

Yet the evidence suggests that the institutional limits of the judicial process as a format for resolving antitrust problems in contemporary markets is broader than the problem of limited access to truly neutral expert assistance. As already shown, access to an economic expert independent of the litigating parties does not guarantee the proper incorporation of knowledge into antitrust decision-making. Further, given the complexity of modern technologies, analysis of competitive dynamics in such markets is inherently multidimensional, and the need for expert input goes beyond economic analysis, to evidence from experts from other fields (including engineers, scientists, programmers) on issues of design, capabilities and robustness of alternative designs, the need for interconnectivity between different products and so on. In this context, even where independent expert assistance is available, the more challenging problem is to facilitate the communication among experts, and with the decision-maker, so that different conceptual schemes and perspectives for problem-solving can be brought to bear not only to identify the problem, but also in formulating workable solutions.

C. New rules of deference

Given the technological and economic complexity of new production relationships, and the antitrust courts' hostility towards context specific factual evidence,[101] the initial judicial responses to antitrust cases involving high technology industries tended towards fashioning new rules of deference to business conduct. The bias against antitrust involvement was the result of a general preference for broad and easily applicable doctrinal rules and legitimate fear that any other strategy would place courts at the center of decisions ordinarily left to the market. Whatever difficulties courts face in gauging price effects, predicting effects on innovation involves qualitative judgments about which firm's innovative efforts would make a greater contribution to social welfare.

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[100] Lawrence A. Sullivan, *Is Competition Law Possible in High Tech Markets?: An Inquiry into Antitrust, Intellectual Property and Broadband Regulation as Applied to "The New Economy,"* 52 CASE W. RES. L. REV. 41, 42 (2001) ("the inherent strengths of a judicial process open to information and analysis make application of settled antitrust rules to the new economy markets feasible, if difficult.")

[101] *See, e.g.*, United States v. Oracle Corp., 331 F. Supp. 2d 1098 (N.D. Cal. 2004) (denying DoJ request for injunction and rejecting evidence from the customers of the merging parties that the merger is likely to have anticompetitive effects).

(1) Product Development as a trump

Product development decisions are ordinarily the prerogative of the firm that brings the product to market. Product development succeeds when the firm makes the product more attractive for current users. However, product development decisions can also have exclusionary effects on rival producers. For example, a producer of two products can integrate them technologically. While this may bring efficiencies to current users, it can also foreclose sales for a firm participating in one market only. Or, alternatively a firm may develop a product which is not compatible and does not interoperate with those of its rivals, again with potential exclusionary effects.

Where such conduct is subjected to antitrust scrutiny, one can envisage two possible responses by the courts. One would be to subject the integration to a full rule of reason analysis, balancing the efficiencies reaped by consumers from the integrated product, against the exclusionary effects on rivals and the consequential net effects on prices or innovation in the market.[102] As Salop and Romaine have pointed out, if courts shy away from performing this balancing task, they would be dealing themselves out of antitrust, since this is precisely the area in which many contentious issues are likely to arise in modern markets.[103]

However, courtshave refused to perform this function not because they are anti-antitrust, but because, in the absence of doctrinal guidance, they do not have the tools with which to perform this task effectively or legitimately, and in a way which would provide actors with a clear guide to compliance. In the first iteration of the government's litigation against Microsoft, the D.C. Circuit refused to entertain the DoJ's claim that by combining the browser Internet Explorer with the Windows operating system, Microsoft violated the prohibition on product integration in the consent decree thatsettl ed the original DoJ complaint. Microsoft had argued that the combination was a single product since the code of the browser was technologically inseparable from the operating system. Given the technological complexity involved, the D.C. Circuit adopted a highly deferential standard for product integration cases in high tech markets, whereby an antitrust defendant would prevail so long as it "could proffer any plausible non-pretextual product improvement explanation for the integration" of the two products, irrespective of

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[102] Richard Schmalensee, *Agreements Between Competitors*, *in* ANTITRUST, INNOVATION AND COMPETITIVENESS 82, 112 (Thomas M. Jorde and David J. Teece eds., 1992).

[103] Steven C. Salop and R. Craig Romaine, *Preserving Monopoly: Economic Analysis, Legal Standards and Microsoft*, 7 GEO. MASON L. REV 617, 671 (1999).

the significance of any exclusionary effects on rivals.[104] If it were otherwise, the court would be engaging in picking winners and firms would be unable to foresee whether their product design violated the antitrust laws.

In the government's subsequent prosecution of Microsoft for violating § 2 of the Sherman Act, the*en banc* opinion of the D.C. Circuit retreated from the above deferential standard, but this was only an apparent retreat.[105] As a matter of doctrine, the Court's method for analyzing the §2 claim has widely been interpreted as an endorsement of the rule of reason balancing approach,[106] ultimately requiring a judicial determination whether any exclusionary effects asserted by the plaintiff were outweighed by pro-competitive or efficiency justifications asserted by the defendant. However, in deciding the case on the merits the D.C. Circuit avoided having to provide a method for performing the balancing task by rejecting Microsoft's proffered business or efficiency justifications for most of the impugned practices. In fact, in every instance where the Court accepted Microsoft's asserted justifications, such as the development of the incompatible Java virtual machine, the conduct was not condemned.[107] Thus, the method espoused in the Court's *en banc* opinion was facially different from thatof the earlier panel, yet, in its application, it did not differ appreciably from the "any plausible ... explanation" standard.

(2) Intellectual Property as a trump

Protection of an antitrust defendant's intellectual property rights is another general rule of deference increasingly invoked by courts to justify antitrust non-intervention, even in cases where the plaintiff claims that an antitrust defendant's conduct would impair innovation. The courts increasingly accept the proposition that protecting intellectual property rights is a trump card defense that an antitrust defendant can invoke against claims of antitrust violations.[108] Such a proposition would substantially curtail the scope

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104 United States v. Microsoft Corp., 147 F.3d 935 (D.C. Cir. 1998) (while technically the DoJ complained of a violation of the original consent decree, though the Court indicated that its decision was guided by the proper view of the law of tying under § 1 given the technological features of this market).

105 *See generally* United States v. Microsoft Corp., 253 F.3d 34 (D.C. Cir. 2001).

106 *See* Eleanor M. Fox, *What is Harm to Competition? Antitrust, Exclusionary Practices, and the Elusive Notion of Anticompetitive Effect, in* THE FUTURE OF TRANSNATIONAL ANTITRUST – FROM COMPARATIVE TO COMMON COMPETITION LAW 87, 93-96, 110 (Josef Drexl ed., 2003); Sullivan, supra n.XX at 51-52.

107 Microsoft, 253 F.3d at 75.

108 The strongest statement of this proposition comes from In re Independent Service Organizations Antitrust Litigation v. Xerox Corp., 203 F.3d 1322 (Fed. Cir. 2000). *See* Timothy J. Muris, Remarks Before the ABA Antitrust Section Fall Forum, "Competition and Intellectual Property Policy: The Way Ahead" (Nov. 15, 2001) (available at www.ftc.gov/speeches/muris/intellectual.htm) (last visited on February 27, 2006) (commenting on the role of the Federal Circuit in altering the patent-antitrust balance)..

for antitrust intervention in new technology markets, since these markets are characterized by the proliferation of intellectual property protection given the importance of innovation in market success.

The tendency to defer to intellectual property rights is a reversal of an earlier approach, when antitrust courts and agencies were very inhospitable to defendant justifications based on intellectual property rights.[109] Such hostility was so deep rooted, that ownership of intellectual property placed an antitrust defendant in a disadvantageous position ever since the Supreme Court held that the ownership of a patent created a presumption that the owner possessed market power,[110] making it more (rather than less) likely that defendants would be subjected to antitrust duties.

Yet judicial deference to intellectual property rights so as to defeat any competing antitrust considerations is based on both instrumental and institutional considerations. The former strict approach in favor of antitrust duties was bound to be re-evaluated, as antitrust moved away from reliance on broad per se rules towards a methodology more attuned to market effects. Furthermore, if innovation is indeed the key aspect of competitive interaction in new economy markets, intellectual property rights, such as patents and copyrights, are legislative rights of exclusivity. Those rights are created under a constitutionally conferred grant of power to Congress to promote the development of the sciences and arts,[111] in light of the public good characteristics of innovation.

Whatever doubts courts might have about their ability to engage in the modern quasi-regulatory antitrust analysis, protection of property rights has been one of the tasks appropriate even for a minimalist judiciary. Property doctrines are well-settled and the methods of analysis, at least in principle, rely upon retrospective characterization of rights and violations (even in the context of complex technological claims and industries), which seems an inherently judicial task.[112] Furthermore, property law exalts the right to exclude as "one of the most essential sticks in the bundle of rights that are

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109 *See*, *e.g.*, Bruce B. Wilson, Remarks Before the Fourth New England Antitrust Conference, "Patent and Know-How License Agreements: Field of Use, Territorial, Price and Quantity Restrictions" (Nov. 6, 1970).

110 United States v. Loew's Inc., 371 U.S. 38 (1962). See infra n. 133.

111 U.S. Const. art. I, § 8, cl. 8.

112 Contrast this to an alternative regime for intellectual property whereby the court would determine the optimal patent length on a case by case basis, by predicting the likely effects of the patent given the incentives for the patent owner and the competitive structure in the industry

commonly recognized as property."[113] As Thomas Merrill has observed "no other right has been singled out for such extravagant endorsement by the Court."[114]

More recently, the Court has abolished the presumption that patent owners possess market power, holding that the level of market power depends on the degree to which the product is effective and popular, as well as the availability of substitutes.[115] The Chicago view goes a step further, being highly suspicious of the ability of firms in a market economy to become entrenched into positions of market power beyond the short run, absent government regulations restricting entry to the industry.[116] Short-run and temporary acquisition of market power is not viewed as a problem, instead it supplies the incentive for firms to innovate or invest in infrastructure, where the advantages such investments confer are not perfectly appropriable by either the intellectual property protection or by other barriers to entry in the market.

The foregoing view now apparently findssupport in the Supreme Court, where in *Verizon Communications, Inc. v. Law Offices of Curtis V. Trinko LLP*, writing for the Court Justice Scalia explained that imposition of antitrust duties on an owner of infrastructure is both unappealing and difficult to supervise by the courts:

> Firms may acquire monopoly power by establishing an infrastructure that renders them uniquely suited to serve their customers. Compelling such firms to share the source of their advantage is in some tension with the underlying purpose of antitrust law, since it may lessen the incentive … to invest in … economically beneficial facilities. Enforced sharing also requires antitrust courts to act as central planners.[117]

Although *Trinko* did not involve intellectual property, the reasoning is equally apposite to such a case, where a firm invests in R&Dleading to a commercializable invention that both confers on the firm an advantage in the form of a patent (or some other form of intellectual property protection), and makes that firm uniquely placed to fulfill a customer need. To the extent that Justice Scalia's dictum commands majority support on the Court, it suggests a highly deferential approach to intellectual property rights and a limited role for antitrust in such cases more generally.

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113 Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419, 433 (1982).

114 Thomas W. Merrill, *Property and the Right to Exclude*, 77 NEB. L. REV. 730, 735 (1998) (arguing that absent that right the owner is viewed as having no property).

115 Ill. Tool Works, Inc.v. Independent Ink, Inc., 126 S. Ct. 1281 (2006) (owner of intellectual property does not necessarily possess market power).

116 In dynamic markets, market power is likely to be less durable. Pitofsky, *supra* n.XX, at 541.

117 540 U.S. 398, 408 (2004).

IV. Innovation - market structure and collaboration

Apart from the limited doctrinal guidance, the main constraint on the ability of antitrust to play an active role in promoting innovation is the absence of an apparent straight-forward relationship between the structure of the market and the rate of innovation. However, an examination of actual practices that firms use in order to innovate in dynamic markets reveals that while incentives play an important role as a spur for innovation, an equally important consideration is how firms relax the constraint on their ability to innovate through learning about an increasingly complex world. Regardless of the market share it possesses, and the market structure in which it operates, the modern firm can only overcome the limitations of its own capacity and knowledge through collaborating with other organizations. While such collaboration is clearly beneficial, it also makes the firm vulnerable to opportunism of its collaborators and it is precisely the context in which antitrust cases in high technology industries arise.

A. The link between structure and innovation

Positing a relationship between market structure and the rate of innovation is even more elusive than the link between market structure and output (or price).[118] This inquiry is beset by numerous conceptual problems, including measuring innovation, which is a dynamic concept and because reliance on proxies, such as research and development expenditures, is manifestly inadequate.[119] An examination of three important determinants of innovation (incentives to innovate, capacity to invest in innovation and capacity to acquire knowledge), demonstrates that neither a decentralized market of atomistic firms, nor a concentrated market characterized by large firms can guarantee rapid learning and innovation.

In a decentralized market of atomistic firms, multiple innovation sources and competition among firms to bring a new product to the market could lead to faster rates of innovation, as well as a less concentrated product market once the product is developed and the technology dissipated. Innovative ideas are more likely to emerge from new and/or small enterprises that do not have an existing and secure stream of

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[118] Richard T. Rapp, *The Misapplication of the Innovation Market Approach to Merger Analysis*, 64 ANTITRUST L.J. 19, 27 (1995).

[119] *Id.* at 27 ("Innovation is intangible, uncertain, unmeasurable, and often unobservable, except in retrospect.")

profits.[120] Yet small firms can only access local knowledge and might not have the funds, or the incentive, to invest in commercializing the innovation, particularly since it would be difficult to appropriate the benefits of such investments.

Nor is a large firm in a concentrated market a guaranteed to generate rapid innovation. Larger firms can take advantage of economies of scale and efficiencies in research, development, but also in subsequent production and commercialization of an innovative idea. Bigness and high market concentration can also provide the capacity to invest in R&D, because the firm can more readily finance such expenditures out of existing profits. Furthermore, a firm that controls a larger share of the market can appropriate the benefits of innovative investments more easily, and appropriabilityof such investments is only enhanced by the robust protection of intellectual property rights.

However, large incumbent firms may also face problems in generating innovative ideas. Larger enterprises have quasi-bureaucratic governance and management structures. Decision-makers within such organizations tend to rely on branch-knowledge in formulating new decisions and policies.[121] In particular, new decisions are highly contingent upon the familiar decision-steps that have taken the organization up to this point[122] and, as a consequence, they will often be blind to solutions which are well outside tried and tested routines. Scholars of large incumbent firms have noted that such organizations are good at developing "sustaining" innovations, which are based on small and incremental engineering improvements that serve existing customers.[123]

As Bendor demonstrated,[124] two independent persons working on the same problem are more likely to develop a solution working separately than together, even if it is assumed that "success breeds success" (so that if the individuals work together, the conditional likelihood of the second team member successfully solving a second problem given that the first member has already developed one good solution, is higher than if the two individuals worked separately). Thus, somewhat counter intuitively, "[i]f what is

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120 Steven C. Sunshine, *Incorporating Dynamic Efficiency Concerns in Merger Analysis: The Use of Innovation Markets*, 63 ANTITRUST L.J. 569, 574-76 (1995).

121 Charles Lindblom, *The Science of "Muddling Through,"* 19 PUB. ADMIN. REV. 79, 80 (1959).

122 *Id.* at 81.

123 Clayton M. Christensen, *The rules of innovation*, 105/5 TECHNOLOGY REV. 32, 38 (2002); Clayton M. Christensen, Mark W. Johnson & Darrell K. Rigby, *Foundations for Growth: How to Identify and Build Disruptive New Businesses*, 43/3 MIT SLOAN MANAGEMENT REV. 22, 23-24 (2002); Clayton M. Christensen and S. L. Hart, *The great leap: driving innovation from the base of the pyramid*, MIT SLOAN MANAGEMENT REV., 44/1: 51–6 (2002).

124 JONATHAN BENDOR, PARALLEL SYSTEMS: REDUNDANCY IN GOVERNMENT (1985); GARY J. MILLER, MANAGERIAL DILEMMAS 79-80 (1992) (hereinafter "Miller, Managerial Dilemmas").

important is that at least one good idea occurs, the pair working separately is unambiguously more likely to achieve that criterion of success."[125]

The lesson from both Lindblom and Bendor's treatment of the limits on developing new solutions is that, even within alarge enterprise, management will need to generate some degree of diversity and independence if new, innovative and commercially successful ideas are to be developed.[126] However, fostering diversity within the firm is no easy task. Determining the optimal level of diversity and delegation, as well as selecting from among different project-ideas generated by different units, may be a near-impossible task given the limited knowledge of management.[127] Further, diversity and delegation create agency problems in the form of separate power bases within a firm, each with their own interests distinct from those of the firm, producing the risk of bargaining failures as well as the possibility of collusive conduct among different firm divisions to advance purely local interests.

B. Between market and hierarchy - collaboration

One way that the modern firm can garner the benefits of both decentralized production modes and integration is through inter-firm collaboration. Collaboration allows the firm to access other sources of knowledge from other market participants who are attempting to solve a similar problem, to pick up promising ideas from such sources and jointly develop solutions, instead of fostering optimal diversity within the firm [128] Such outside sources of knowledge can come from the firm's suppliers or other vertically related enterprises, but also the firm's customers,[129] its current or potential competitors, enterprises operating in very different industries[130] and others.[131]

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125 Miller, Managerial Dilemmas at 80; Bendor, supra n.XX at 47.

126 John S. Brown & Paul Duguid, *Creativity versus structure: a useful tension*, MIT SLOAN MANAGEMENT REVIEW, 42/4: 93–4 (2001).

127 It may require substantial amount of information and panoptic vision in order to determine the optimal degree of diversity, perhaps almost as much as would be necessary to actually develop innovative solutions.

128 Alice Lam, *Embedded firms, embedded knowledge: problems of collaboration and knowledge transfer in global cooperative ventures*, 18/6 ORGANIZATION STUDIES 973, 973 (1997) ("in the high technology industries where a single company rarely has the range of knowledge and experience needed for timely and cost-effective product innovation, forging cooperative links with external partners has become a necessary part of firms' cost and risk reduction, and more importantly for access to knowledge and capabilities unavailable internally.")

129 Mohanbir Sawhney, *Don't Just Relate —Collaborate*, 43/3 MIT SLOAN MANAGEMENT REV. 96 (2002) (collaborative innovation includes firms tapping into user experience and integrating it into the product development process).

130 Andrew Hargadon & Robert I. Sutton, *Technology brokering and innovation in a product development firm*, 42/4 ADMINISTRATIVE SCIENCE QUARTERLY 716–49 (1997) (firm operating as a

The sociological literature examining innovation practices of firms in new technology markets observes a marked trend towards cooperative, simultaneous and "experiential" innovation, that produces successful and (importantly for a dynamic environment) robust forms of problem solving and product development. In a study of different innovation models pursued by firms in the high-paced computer industry, Brown and Eisenhardt observe those firms do not rely on bursts of radical change emerging from tightly structured design processes with extensive planning and a substantial investment in one version of the future.[132] Instead, innovative change is continuous and adaptive, relying on experimental products and strategic alliances.

Brown and Eisenhardt observe that either the "planned" or the "experiential" innovation strategy may be appropriate for a particular firm, depending on the underlying market environment and structure.[133] The planned (lock-step) process is appropriate in more "certain" environments where underlying changes occur more incrementally and are therefore more predictable.[134] Experiential development strategies emerge in market environments which are unpredictable, intractable and uncertain, where players must rely on accelerated learning, real time interaction, iteration and flexibility.[135]

Long before the more recent antitrust caselaw, Jorde and Teece described the tendency towards collaborative "simultaneous innovation":

> [I]nnovation does not necessarily begin with research ; nor is the process serial. … [I]t does require rapid feedback, mid-course corrections to design, and redesign. This conceptualization … also recognizes the constant feedback between and among activities, and the involvement of a wide variety of economic actors and organizations that need not have a simple upstream-downstream relationship to each other. … R&D personnel must be closely connected to the manufacturing and marketing personnel and to external sources of supply of new components and complementary technologies so that supplier, manufacturer

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technology broker for clients operating in 40 different industries, to spread existing technological solutions in some industries to solve problems in others).

131 *See, e.g.*, John Markoff, At Microsoft, Interlopers Sound Off Security, N.Y. TIMES, October 14, 2005, at B1, B6 (to improve security of the system Microsoft organizes meetings with "white hat" hackers - computer security researchers who expose vulnerabilities and were generally critical of Microsoft).

132 Shona L. Brown & Kathleen M. Eisenhardt, *The art of continuous change: linking complexity theory and time-paced evolution in relentlessly shifting organizations*, 42/1 ADMINISTRATIVE SCIENCE QUARTERLY 1, 31-32 (1997).

133 Kathleen M. Eisenhardt & Behnam N. Tabrizi, *Accelerating adaptive processes: product innovation in the global computer industry*, 40/1 ADMINISTRATIVE SCIENCE QUARTERLY 84–110 (1995).

134 *Id.* at 107-08.

135 *Id.*

> and customer reactions can be fed back into the design process rapidly.[136]

The post-Chandlerian open, federated and networked firm, arises precisely as an answer to this need for the firm to collaborate extensively and deeply in order to be able to engage in such on-going innovation.

The nature of technology and forms of production in these markets alleviate some traditional antitrust concerns, while creating new ones. For example, the rapid changes that take place in technology-driven markets make market power less durable, as new and better products can easily enter markets and quickly replace existing ones. This observation, coupled with the lack of a strong link between observable industry structure and the rate of innovation, which could be translated into easily administrable rules, might suggest a sanguine view about the relevance of a 19th century discipline in these modern contexts.[137]

However, since antitrust is a tool which aids to solve the problems in industrial organization, in order to improve the competitive operation of markets, such a sanguine view may be both too complacent and too skeptical. If, on the one hand, this view reflects a belief that the new principles of industrial organization have solved all problems of inter-firm interaction, which might affectindustry performance and consumer welfare, they are too complacent because problems in these relationships persist and are reflected in many modern antitrust cases. On the other hand, the view that the problems are of such complexity that the existing antitrust institutions cannot effectively grapple with them may be too skeptical, since antitrust interventions in the U.S. as elsewhere, are already developing solutions that overcome the institutional limits of antitrust.

C. Reinterpreting the cases

A number of antitrust cases, in which the promotion of innovation provided a central pillar of the theory of the case and where the role of antitrust duties vis-à-vis intellectual property rights was a key issue, illustrate both the importance of collaboration and the need for collaborating firms to establish a common language, in the form of a

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136 Thomas M. Jorde & David J. Teece, *Innovation, Cooperation, and Antitrust*, *in* ANTITRUST, INNOVATION AND COMPETITIVENESS 45, 49 (Thomas M. Jorde and David J. Teece eds., 1992).

137 Robert Pitofsky, Antitrust Analysis in High Tech Industries: A 19th Century Discipline Addresses 21st Century Problems, American Bar Association, Section of Antitrust Law's Antitrust Issues in High-Tech Industries Workshop, February 25-26, 1999, Scottsdale, Arizona. (Available at: http://www.ftc.gov/speeches/pitofsky/hitch.htm) (last visited on February 27, 2006).

platform or standards that enable them to work together. In this context, antitrust disputes result from break-downs in collaboration and attempts by one firm to appropriate the fruits of the joint collaboration, or prevent other collaborators from innovating. This re-interpretation of the caselaw demonstrates that standard tools of antitrust analysis are of limited utility in resolving these problems, but also, as the Article will go on to argue, that an absolute view of the exclusivity of intellectual property rights might be a poor guide for decision-makers.

(1) Intel

The FTC's complaint against Intel arosefrom a break down in a collaborative relationship due to a bargaining failure between parties over dividing the fruits of their collaboration. The case involved a deeply collaborative relationship between Intel, who with over 80 percent of the sales in that market is the dominant producer of microprocessors (the "central processing unit of a computer system"),[138] and three companies producing microprocessor related technology (Digital, Intergraph and Compaq) that sought the assistance of the FTC. As the FTC recognized, Intel's development and marketing of the microprocessor was dependent on cooperation with a many other firms:

> Intel promotes and markets its microprocessors by providing customers with technical information about new Intel products in advance of their commercial release. ... Subject to [disclosure] restrictions ... Intel makes such information widely available to customers, including manufacturers of personal computers, workstations, and servers. Such relationships have substantial commercial benefits for both parties: Intel's customers benefit because the advance technical information enables them to develop and introduce new computer products incorporating the latest microprocessor technology as early as possible, and Intel benefits because those customers design their new computer systems so as to incorporate, and effectively endorse, Intel's newest microprocessor products.

This need to collaborate does not arise merely because Intel and the complainants produced complementary products that had to interoperate.[139] As the FTC complaint

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138 FTC Complaint ¶ 6

139 Digital produced computer hardware and software systems that incorporated Intel microprocessors, Intergraph key products were computer workstations designed for sophisticated graphics applications that were based on Intel microprocessors. Compaq produced computer systems products, such as personal computers, workstations and servers and was Intel's largest customer for microprocessor products. FTC complaint ¶¶ 16, 24, 33.

pointed out "Intergraph provided Intel with feedback that was essential for Intel's penetration of the workstation market and otherwise validated the use of Intel's products ... for what was at the time a new market segment for Intel."[140] Further, the three complaining companies were among the chief customers for Intel's microprocessors.[141]

Intel's decision to stop providing advance technical information to the three companies was prompted by their litigation alleging that Intel's products infringed their patents. Any dispute between collaborators over the terms, and particularly the price of licensing intellectual property, is a dispute over the allocation of the joint surplus, irrespective of whether Intel's conduct did indeed infringe its collaborators' patents, or whether any infringement was conscious or accidental.[142]

As Commissioner Swindle recognized in his dissent from the final order, the FTC's theory of anticompetitive harm was somewhat unorthodox, since no chain of causation was specified from Intel's conduct to its ability to strengthen its market power. The complainant companies were not Intel's competitors. Nor were Intel's actions ultimately directed at any competitors or designed to strengthen Intel's monopoly in the microprocessor market.[143] Even focusing on the *ex post* effects of Intel's conduct on innovation, Commissioner Swindle commented that there was no evidence that Intel's actions "threatened to harm the consuming public" or stem the "tide of innovation and improvement" in the industry.[144]

In response, the FTC majority argued, somewhat unpersuasively, thatthe consent order was a pre-trial settlement which "necessarily prevents [the Commission] from making any final judgment about the actual evidence of harm to competition from Intel's conduct."[145] Notwithstanding this concession, the main concern for the majority Commissioners was to create conditions in which the disputing companies could resume their collaboration.[146] Further, the majority were concerned about the effect that Intel's resort to self-help (in withholding crucial information) would have on the *ex ante*

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[140] FTC Complaint ¶ 24

[141] Digital's Alpha was also, competitive with Intel's product and, similarly, Intergraph produced the Clipper microprocessor technology, although was no longer focusing on it.

[142] *Cf.* Carl Shapiro, Technology Cross-Licensing Practices: FTC v. Intel, in *The Antitrust Revolution*, John E. Kwoka & Lawrence J. White (eds.) 350, 354, 356 (2004).

[143] This argument was dispositive of the antitrust issues for the Federal Circuit in its decision against Intergraph in its litigated case against Intel. *See* Intergraph Corp. v. Intel Corp., 195 F.3d 1346 (Fed. Cir. 1999).

[144] Intel, Decision and Order 1999 FTC LEXIS 145 (Aug. 3, 1999) (Commissioner Swindle, dissent.)

[145] Intel, Decision and Order 1999 FTC LEXIS 145 (Aug. 3, 1999) (Statement of Chairman Robert Pitofsky and Commissioners Sheila F. Anthony and Mozelle W. Thompson).

[146] Resumption of collaboration was ultimately in Intel's interest as well, which may be why Intel agreed to the consent order while at the same time vigorously denying that its conduct constituted a violation of the antitrust laws.

incentives for inter-firm collaboration, where a firm which owns a platform can act as a gate-keeper with disproportionate power to make such a threat.[147]

(2) Microsoft before the European Commission[148]

Microsoft's collaboration with firms in the industry was also at the center of the European Commission's complaint and decision thatMicrosoft violated European competition law.[149] The decision was based, in part, on Microsoft's refusal to provide interoperability information to other producers of work group servers so that their servers could call up functions on the Microsoft Windows operating system, which runs on the vast majority of individual computers. The Commission's final order was for Microsoft to fully disclose the information necessary to ensure complete interoperability to rivals, such as Sun and Novell. The Commission emphasized the fact that Microsoft had previously provided full disclosure of such information. However, once Microsoft developed, corrected and launched its own work group server, it ceased to disclose the full information and "disrupt[ed] previous levels of interoperability."[150]

In defending its actions, Microsoft relied on its absolute prerogative as the owner of intellectual property rights, arguing that its conduct was necessary to protect its intellectual property and furthermore, was not inconsistent with vigorous competition with its rivals. To the extent that Microsoft invested in infrastructure (including both the operating system and the work group server that interoperates smoothly with Windows), this gave Microsoft an advantage in serving customers needs (to use the *Trinko* language).[151] If this conduct could not strengthen Microsoft's power, i.e. if Microsoft cannot raise the price of the operating system or the work group server, and the consumers can obtain a server that interoperates seamlessly with the operating system, there does not appear to be consumer harm from Microsoft's conduct.

Apart from emphasizing that Microsoft's conduct seriously impeded the rivals' ability to compete in the market,[152] the Commission argued that if Microsoft could refuse to continue the prior level of disclosure to its rivals, this would lead to a net reduction in

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147 Of course, it would have been impossible for the F.T.C. to compel the parties to resume their collaboration. Section V.C(2), infra, discusses the mechanics by which the F.T.C. attempted to restore the collaboration, with some criticism of its view that the intellectual property laws were the proper place to find the solution to the underlying problems between the collaborators.

148 The next section will also examine the U.S. government's case against Microsoft to focus more specifically on both the threats to innovation and the remedial efforts in the two cases.

149 Case COMP/C-3/37.792, Microsoft, Commission Decision (Mar. 24, 2004) ("Microsoft EU").

150 Microsoft EU at ¶588.

151 See supra, n.126 and accompanying text.

152 Microsoft EU at ¶589 (puts competitors at strong competitive disadvantage), ¶694 (prevents competitors from innovating), ¶1064 (interoperability information is indispensable).

innovation, even if mandating disclosure would reduce the incentives for Microsoft to innovate.[153] As Fox has pointed out, the Commission's claims about *ex post* effects on innovation can be contested, particularly since Microsoft's practices have not had a detrimental effect on the ability of Sun or Novel to compete effectively to the point where they might be eliminated from the market. Further, at least at first sight the Commission's claim of a negative net effect on innovation in work group servers may be viewed as speculative, and not rooted in the evidence.[154] Focusing only on the ex post incentives, Microsoft's refusal to provide full interoperability information might spur companies such as Sun and Novel to innovate more vigorously, to make their work group servers attractive to consumers or overcome any interoperability problem with the Windows operating system. Furthermore, given the integrative efficiencies of bringing two complementary products within the same firm,[155] Microsoft's integrated product could work much better than Sun or Novel's work group servers.

While the Commission's decision was apparently based on its assessment of *ex post* effects on innovation, it is arguably better understood as an attempt to protect the incentives for collaboration, necessary to acquire knowledge that generates innovation. Microsoft reaped benefits from its collaboration with Sun and Novel, as well as with other firms whose products used the Windows system, for at least two reasons. First, given that Microsoft was not producing its own work group server, having work group servers that interoperate with Windows made Windows a more attractive operating system and strengthened the indirect network externality. Such interoperation strengthened the applications barrier to entry, enhancing the dominance of Windows, as well as the value of Microsoft's intellectual property in the operating system. Second, information sharing between Microsoft and Sun or Novel in order to iron out problems and ensure the interoperability of their work group servers with Windows generated knowledge thatwould aid Microsoft in developing its own work group server.

Microsoft's refusal to continue to ensure full interoperability to its rivals may be condemned on fairness grounds, but beyond that, it can also stunt innovation by reducing the incentives for firms such as Sun or Novell, or venture capital investors that support such firms, to participate in similar collaborative relationships. Furthermore, if Microsoft's innovation is responsive or requires external sources of learning, the

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153 Microsoft EU at ¶783.

154 Eleanor M. Fox, Refusal to Deal: A Right or a Wrong?, Address at the Center for European Law, King's College, London (Mar. 18, 2005).

155 Joseph Farrell and Philip J. Weiser, *Modularity, Vertical Integration, and Open Access Policies: Towards a Convergence of Antitrust and Regulation in the Internet Age*, 17 HARV. J.L. & TECH. 85, 98 (2003).

disincentive for collaboration arising from the power to unilaterally terminate such relationships, dries up sources of learning and error-correction information, essential for the development of improved and new products even by Microsoft itself. This produces not only a static misallocation of resources, whereby resources shift away from those products, but also leads to a loss in dynamic effciency if it retards the rate of introduction of new and improved products on the market.

(3) IMS

To illustrate the way in which the operation of the intellectual property laws can stunt innovation by arbitrarily assigning ownership over a joint product resulting from a collaborative effort to a single entity consider another European case, with far less remarkable facts. In *IMS Health GmbH & Co. OHG v. NDC Health GmbH & Co. KG*, the defendant IMS had copyright, under German law, in the "brick structure" that was used for the presentation of regional sales data in the pharmaceutical industry.[156] As the European Court of Justice pointed out that, while IMS claimed the copyright, the brick structure was developed through a collaborative work group, organized by IMS, with its customers in the industry. The customers' supply of information and feedback to IMS was a key factor in the development of the brick structure, which was relevant to the question of whether IMS's refusal to license the structure was abusive under the competition laws.[157] Furthermore, what gave the otherwise unremarkable brick structure its value, was the decision by IMS's customers to adopt it as the industry standard for the presentation of marketing information "to which they adapted their production and distribution systems."[158] IMS's customers therefore had an important contribution and a stake in the development of IMS's intellectual property. The Court reasoned that if the plaintiff, NDC, could introduce new features to the brick structure that the clients might want or prefer, access to the brick structure to NDC should not be foreclosed by an absolute view of IMS's property right. To adopt such a view would provide a disincentive for the customers to engage in the collaboration in the first place.

The Court's decision is based on the premise that NDC was seeking access to IMS's copyrighted structure in order to build upon the brick structure which was the industry standard by developing an improved product thatserved some of the customers' needs. The Court noted that access to NDC could be granted only if "it intends to produce new goods or services not offered by the owner of the right and for which there

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156 Case C-418/01 (2003) at ¶3 ("IMS").
157 IMS at ¶30.
158 IMS at ¶6.

is a potential consumer demand."[159] Given this last requirement, it is not true to say that European law is unambiguously more interventionist or more concerned with the interests of competitors, rather than consumers.[160] The *IMS* decision discourages mere price competition with an identical product (in a way which might be permissible under the U.S. essential facilities doctrine,[161] to the extent it survives *Trinko*), and instead promotes competition through innovation to build on a product in which the customers have an important stake.

V. Antitrust mechanisms for governance

If collaboration is essential for the new firm to be able to innovate, an antitrust policy that promotes innovation would need to provide mechanisms for managing continuing cooperation. However, traditionally antitrust has not been viewed as a tool that fosters inter-firm collaboration. Antitrust law is ordinarily deeply suspicious of firms coordinating their decision-making. This suspicion can be traced back to Adam Smith's comment that "people of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices."[162] Smith did not think that there was anything the law could do to prevent such "meetings," but he also suggested that the law should do nothing to encourage or facilitate them either.[163] This view reflected Smith's more general disapproval of any form of integration (including modern corporations) which restricted the freedom of the "workman" or "tradesman" and the discipline that competition imposed on thempersonally .[164] Needless to say, this position no longer reflects the realties of industrial organization in the modern economy. The need for collaboration among loosely linked firms, as a form of innovative problem-solving, is a response to the turbulence of the underlying environment in which the new organization operates. To understand the role that antitrust can play in advancing such collaborations, we must understand both the problems that are likely to beset such team relationships, and the weaknesses of alternative instruments for resolving those problems.

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159 IMS at ¶49.

160 This is a widely held view about the difference between current European and U.S. competition law. *See, e.g.,* Fox, supra n.44 at 162.

161 Robert Pitofsky, Donna Patterson and Jonathan Hooks, *The Essential Facilities Doctrine Under U.S. Antitrust Law*, 70 ANTITRUST L.J. 443, 460 (2002).

162 ADAM SMITH, THE WEALTH OF NATIONS 148 (Edwin Canaan ed., Modern Library 2000) (1776).

163 *Id.* at 148.

164 *Id.* at 149.

A. Problems in team production

Collaboration among different individual units in a problem-solving team makes it possible for individual team members to specialize, which generates both productive efficiencies and governance problems. Specialization among different team members generates positive externalities, increasing the marginal productivity of each member, so that the total production of the entire team is more than the sum of the output that would be produced by each member individually.[165] However, the interdependencies among team members lead to governance problems of at least three kinds: hidden action, hidden information and bargaining difficulties. For example, a team member whose effort is difficult to observe by others can free ride on the efforts of others. While this reduces the total output produced by the team as a whole, it can increase the share of output (net of the cost of effort) to the shirking member. Similarly, an individual team member can strategically misinform other collaborators about a piece of data possessed only by that member, again with the aim of increasing his or her share of the surplus produced in the joint collaboration. These governance problems create *ex post* inefficiencies, as well as *ex ante* disincentives to engage in team production in the first place.

The increased specialization that produces production efficiencies leads to an "increased inability to see the other person's point of view" as well as a "decrease in the likelihood that competitive market forces will solve coordination problems by ... the neutral operation of the price mechanism" because specialized team members are not easily substitutable.[166] Ultimately, the team must also decide how to divide the jointly generated surplus between different team members, and such bargaining can be both prolonged and costly.[167] If the parties have made relationship-specific investments that cannot be used with other collaborators, indispensable team members can engage in opportunistic hold-up of the negotiations. This can increase the transaction costs of bargaining substantially and consume the entire surplus generated by the team, making the collaboration *ex post* inefficient.[168]

Given its hierarchical and vertically integrated nature, the Chandlerian firm emerged as the mechanism that resolved the problems of joint production.[169] By imposing hierarchical authority on team members who are brought within the

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165 Armen Alchian and Harold Demsetz, Production, information costs, and economic organization, 62 AMER. ECON. REV. 777 (1972).

166 Miller, Managerial Dilemmas at 33.

167 *Id.* at 47.

168 *Id.* at 49.

169 *See, generally*, Alchian and Demsetz, supra n.XX.

organization, the firm eliminated the need for collective decision-makingand attenuated governance problems: the managers of the firm apportion rewards to the subordinates (eliminating the need for bargaining and the risk of hold-up), monitor their performance and punish shirking, while also rewarding effort.[170] Further, the manager sets the goals for the firm, and decomposes complex tasks into simpler component tasks, establishing rules for the subordinates to follow in day-to-day operations, thereby overcoming the limits in knowledge, capacity and rationality of individual team members.[171]

This benign view of the productive efficiencies of vertical integration informed the Chicago New Learning which was an effort to incorporate the insights about the efficiency benefits of integration into antitrust doctrine. By contrast, the classic antitrust thinking that found expression in the Warren court antitrust doctrines, was influenced by earlier ideas about maintaining the freedom of individual producers, with market competition as the only disciplining mechanism. This is why the doctrine was generally inhospitable to contractual restraints on the freedom of individual traders,[172] as well as vertical mergers and other forms of inter-firm collaboration.[173]

Through integration and planning, the Chandlerian firm was particularly effective at achieving production efficiencies in stable market environments where changes in the patterns of demand, technology and competitive threats were gradual and predictable. Even within stable environments however, the task of the managers in the hierarchy was not a simple one. As Miller documents, managerial problems arise due to the inability of managers to observe the level and cost of effort of subordinates, making it difficult to ensure task compliance either through rules or through incentive schemes that align the interests of principals and subordinates.[174] Similarly, the Chandlerian firm was plagued by bargaining problems, in the form of industrial conflict over the distribution of surplus profits.[175]

Internal pressures within hierarchical organizations were exacerbated by external changes to the environment in which such firms were operating. One external pressure was increased volatility of the market environment, due to greater openness of once protected domestic markets to international trade and related rapid changes in technology and demand patterns. Such an unstable environment made it even more difficult for managers to monitor subordinates, since outcomes were contingent on many external

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170 *Id.* at 782.
171 *Id.*
172 United States v. Arnold, Schwinn & Co., 388 U.S. 365 (1967).
173 United States v. Topco Associates, Inc., 405 U.S. 596 (1972).
174 Miller, Managerial Dilemmas, 144-49.
175 *Id.* at 35.

confounding factors, of which the manager cannot be aware in advance. In a turbulent environment, firms cannot rely on executing plans as the main tool for decision-making and organizing production, placing a premium on the ability of firms to operate flexibly, be able to adjust to changes quickly, and innovate constantly. Therefore, the firm's goals could not be limited to reducing the cost of producing and delivering a given product, but instead the firm must develop a robust project-selection process, so as not to be left behind by developments in the market.

The firm innovates by selecting and executing new goals, which, as already explained does not depend only on the firm's incentives,[176] but also its capacity to acquire knowledge about the world so as to select and evaluate possible future projects.[177] Since no "single company has the full range of knowledge or expertise necessary for timely and cost-efficient product innovation,"[178] the firm must search for others already solving a similar problem, or at least some component of that problem. As the ultimate aim is to solve problems for which the firm does not already have an answer (or has not even identified), the point of such a search is to divert attention from habits and routines within the firm, generate information about the advantages and disadvantages of identified possibilities, thereby limiting the search process and making it manageable.[179]

Three disciplines regularly used by firms in selecting and refining future production goals include benchmarking, error detection and correction, as well as simultaneous design. Benchmarking identifies the successful solutions by other firms who are solving the same or similar problems in order to identify the set of best current, or potential, designs. Error-detection, on the other hand, focuses on break downs in the chains of activity that lead to current disruptions in production or product design. These disciplines can define a space of design solutions that are similar, but in some ways also better than, current solutions, while at the same time identifying potential collaborators in delivering a new design to the market. Furthermore, such design-selection techniques are

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176 Economics does not have much to say about the goal-selection process of the firm. The entrepreneur is the least well explained link in the process of production and distribution, reflecting the deeply ingrained idea that the entrepreneur is powerfully motivated by the profit incentive to bring forward and execute good ideas.

177 In the standard models examining incentive compatible mechanisms for the subordinates of the hierarchical organization, the principal is assumed to lack information about the agents' costs of performance for a set project with a given revenue stream. The problem of eliciting this information is a difficult one, and as Holmstrom and others have shown, this problem cannot be solved through budget-balancing incentive payments to the subordinates. However, selecting one project among many for the firm to pursue is arguably the more difficult problem, and not one that the principal can solve without eliciting information about technological capabilities, production constraints and consumer preferences from the subordinates. Miller, Managerial Dilemmas at 138.

178 Lam, supra n.XX, at 973.

179 Sabel, Real Time Revolution at 120.

robust and "can be expected to produce workable answers in turbulent task environments."[180] By benchmarking, the firm surveys the field of possible design solutions, some of which illuminate unforeseen problems and solutions and increase the reliability of the ultimate product design.[181] To this we might add that benchmarking and error-detection could identify design alternatives that the firm decides not to pursue at present, although such alternatives might become more suitable in the dramatically different market conditions of tomorrow.

The design process is refined through iterated modification of the initial specifications and this involves on-going consultation and contributions from collaborators, namely the firms that supply either component parts or complementary products. The process is iterated, since rapid shifts and unpredictable changes in the market make it imprudent to commit excessively to one design version. Furthermore, the collaborators must be involved in this process jointly, because changes in the specifications or requirements that could improve the performance of one aspect of product design will require incorporation and adjustments in the design of other components.[182] As Jorde and Teece point out, this process continues even after a product is developed, produced and delivered to market.[183] These practices are contingent upon the existence of a standard or platform that supplies the language for collaboration, as well as avoiding the governance problems, described earlier, that impede decentralized team production in the absence of hierarchical authority.

On one view, a partial solution to the team governance problem is inherent in the disciplines of innovation and product design already described. In particular, the "collaborative processes for disciplined joint inquiry about how common projects can be improved to mutual benefit,"[184] also provide mechanisms that ensure the accountability of other collaborators, precisely because they rely on rich mutual provision of information. Such information provision attenuates the opportunities for collaborating partners to shirk or to withhold relevant information, about their capabilities or about their costs.[185]

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180 *Id.* at 128.

181 *Id.* at 130-31.

182 Sabel, Real Time Revolution at 131.

183 See supra n.XX and accompanying text.

184 Gary Herrigel, *Emerging Strategies and Forms of Governance in High-Wage Component Manufacturing Regions*, 11 INDUSTRY & INNOVATION 45, 52 (2004).

185 Sabel, Real Time Revolution at 132-133 ("At least some of the information needed for the substance of collaborative problem solving in particular cases can be used for benchmarking the abilities and probity of current and potential partners.")

However, the provision of information necessary for joint development attenuates some of the governance problems of team production, it exacerbates others. In particular, such information sharing makes collaborators particularly vulnerable, because one firm may be tempted to appropriate the fruits of the joint exploration and innovation. In addition, in case of a break-down in the relationship, one firm could inhibit the capacity of its collaborators to innovate. Furthermore, antitrust lawyers have always recognized that information sharing among competitorsor potential competitors makes it easier for them to coordinate their decisions at the expense of third parties, such as consumers or other entrants.

The remainder of this section examines a number of alternative mechanisms that could be used for the governance of innovative collaborations, including contracts, intellectual property, and incentive compatible mechanisms. For a number of reasons none of the above mechanisms provides an adequate response, leaving open the space for antitrust to fulfill this role. After all, antitrust is a tool for moderating inter-firm relationships. However, as will be seen, the antitrust mechanisms that are effective in these contexts do not rely on the traditional antitrust remedies, including *ex post* awards of treble damages, or the imposition of unqualified duties to deal with collaborators. The prospect of such remedies only escalates threats of opportunistic hold up. As the antitrust disputes described in the prior section illustrate, once a collaboration break-down results in litigation, firms can assert overlapping claims of breaches of contractual, intellectual property rights, as well as the antitrust laws. In this context, standard antitrust and intellectual property remedies simply exacerbate the incentives for opportunistic conduct. Relying on the usual armory of debilitating remedies under the intellectual property and antitrust regimes enhances the credibility of the threat to walk-out from the negotiations. Doing so credibly, enables a party to claim a greaterportion of the surplus in any settlement negotiations and therefore, provides an ex ante disincentive for collaboration.

B. Contracts, standards and incentive-compatible mechanisms

(1) Governance through contracting

Contracts among collaborating firms cannot provide an effective solution to the governance problems likely to arise. The modern collaborative relationships involve a much deeper level of involvement between the firms than was present under traditional arms-length contracting. The firms are not simply trading widgets used in the production process. Through the disciplines for innovation described earlier, they are jointly making sense of the problem presented and designing a solution. Furthermore, neither the

outcomes of the process of mutual exploration, nor the range of future states of the market are either *ex ante* certain or predictable enough to make future duties or actions of the parties susceptible to specification through contractual rules.[186] In other words, the parties' investments in the collaboration are not contractible.A fter all, a fully specified contract to govern such a relationship would be nothing but a plan, and as already shown, planning does not supply an adequate paradigm for the nature and purpose of these collaborative relationships.

Nor does it help to characterize such close collaborations as relational contracts, as this simply restates the problem, rather than providing a solution. Presciently, Robert Scott has observed that "[w]e are all relationists now."[187] To characterize a contract as relational simply acknowledges the existence of contractibility problems in a relationship, making it impossible to specifycontractual rules that identify the parties' future duties and obligations. As a consequence, parties will avoid specifying details and instead will need to rely on some other mechanism to resolve the contracting problem, though it is not obvious what that mechanism would be. For example, purely informal, reputation based mechanisms can control opportunistic conduct in small groups with limited and stable memberships. In such settings, the existing mutual bonds oftrust and community create a credible threat of punishment by the community for non-cooperative opportunistic conduct by individuals (for example through exclusion from and ostracism) even in the absence of rules.[188] Such is not the environment where potential collaborators are numerous and diverse, where they may originate in different parts of the world and where

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[186] Given such uncertainty, the future duties of the parties would have to be very broad in scope, and parties would be unwilling (or unable) to commit to such duties (e.g., a platform owner would not credibly commit not to integrate into related markets). Alternatively, the duties would be so imprecisely defined, compliance would be difficult to verify to an enforcing court (e.g., an undertaking by a platform owner to continue to provide full interoperability information to downstream collaborators).

[187] Robert E. Scott, *The Case for Formalism in Relational Contract*, 94 NW. U.L. REV. 847, 852 (2000).

[188] Lisa Bernstein has written about the use of informal mechanisms (such as reputation) as an alternative to formal contract to resolve disputes and solve problems in communities of commodity traders, such as diamond or cotton traders. While she these non-formal systems opt-out of the public contract law system (based on the U.C.C.), she recognizes that the practices of such communities cannot provided the basis for an affirmative alternative project to the U.C.C. What sustained the informal mechanisms in the past in these communities is the stability of the environment in which the traders operate. Once cotton traders have to deal with others outside of the close-knit Southern communities (in which social and economic ties largely overlapped), and the environment was disrupted by removal of protection or new technology, the purely informal reputation mechanisms are no longer a viable mechanism for governing inter-firm relationships. Lisa Bernstein, *Private Commercial Law in the Cotton Industry: Creating Cooperation through Rules, Norms and Institutions*, 99 MICH. L. REV. 1724 (2001); Lisa Bernstein, *Opting Out of the Legal System: Extralegal Contractual Relations in the Diamond Industry*, 21 J. LEGAL STUD. 115 (1992).

the industry turn-over is high, or where some firms have a disproportionate power to make credible threats compared to others.

The classic relational contract arose in the very different context of long-standing relationships among parties locked into mutual collaboration due to their geographic proximity, or because their assets and investments are specific to the relationship and have no value outside it. Such a relationship foreclosed outside options for the collaborating firms, making it necessary to rely on other mechanisms to resolvedisputes as they arose. Standard mechanisms for dispute resolution in relational contracts, such as the use of formulae to determine mutual prices or "split-the-difference" arbitration are unlikely to be suitable in environments where key inputs to production and innovation process are not physical, and where the assumptions about the world that are ordinarily embodied in such formulae are constantly changing. Furthermore, in contemporary industries, assets are increasingly de-specified, reducing the classic lock in effects among firms. Instead, firms collaborate in order to engage in mutual learning and problem-solving, which involves extensive sharing of information, leaving them exposed to the possibility of opportunistic exploitation only heightened by the fact that assets are not specific to the relationship.

(2) Modular relationships

Modular production relationships enable decentralized firms to engage in the production of mutually compatible products, while minimizing the amount of intimate information firms must supply to other firms in order to mimic market exchange. According to one view of modern decentralized production, Langlois suggests that the post-Chandlerian landscape is dominated by modularized production approximating arms-length relationships where "differentiated exchanges are underpinned by a set of market-supporting institutions, notably standard interfaces or design rules."[189] Standardization of interfaces ensures inter-firm coordination, allowing firms to innovate within their own sphere, but at the same time it reduces the need for firms to share a great deal of intimate information. According to Langlois, firms "arise as islands of non-modularity in a sea of modularity."[190] In a modular production model, individual firms are focused on innovating within their own field (produce their unit) and modules can be

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[189] Sabel and Zeitlin, supra n.XX at 388-89, referring to Richard N. Langlois, *Modularity in Technology and Organization*, 49 J. ECON. BEHAVIOR & ORG. 19 (2002); Richard N. Langlois, *Chandler in a Larger Frame: Markets, Transaction Costs, and Organizational Form in History*, 5 ENTERPRISE & SOC'Y 355 (2004).

[190] Richard N. Langlois, Modularity in Technology and Organization, 49 J. ECON. BEHAV. & ORG. 19, 34 (2002).

produced in high volumes and re-combined in novel ways so as to satisfy consumer demand.

However, modular production relationships also rigidify unit boundaries leading to the so-called "modularity trap" where the range of possible productive innovations is limited by the overall design framework,[191] (if we assume the existence of an unchanging optimal partition of tasks). Langlois himself recognizes that with rigid boundaries between units, modular systems cannot deal adequately with dynamic learning and unpredictable novelty.[192] Sabel and Zeitlin point out thateven in the electronics sector (often seen as the paradigm), pure modularity is not observed.[193] Further, modular systems generally underperform in industries where they compete with non-modular ones, since firms have to outlay substantial investments to adjust their production to the modular architecture, and modular producers are locked into an irreversible commitment to a product architecture that may turn out to be unsuccessful.[194]

Furthermore, the "market-supporting institutions" that develop interfaces and design rules for collaboration raise institutional problems of their own. This function is ordinarily assigned to trade associations or standard-setting organizations. In setting standards and design rules, such bodies must obtain information from their members, but they do not necessarily have the mechanisms to align the individual interests of their members either with the interests of the collective or the public interest. The problem of joint opportunism of association members who use the standard-setting process as a mask for collusion or collusive exclusion of other competitors is well-known to antitrust lawyers.[195] Moreover, where the standard is used to block entry of competitors, it is difficult for an antitrust court to resolve such cases by merely enforcing a set of procedural rules and without arbitrating the question of the more appropriate standard or design architecture.

In a similar vein, individual members of a trade or standard association have an incentive to subvert the standard-setting process through strategic provision or withholding of information, in order to influence the adoption of a (sometimes suboptimal) standard that favours the interests of that member. For example, in a number

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191 Henry Chesbrough, *Towards a Dynamics of Modularity: A Cyclical Model of Technical Advance*, in The Business of Systems Integration 174, 181 (Andrea Prencipe, Andrew Davies and Michael Hobday, eds. 2004). This seems like a very apt description of the so-called "applications barrier to entry" that the court identified in Microsoft.

192 *See* Sabel and Zeitlin , supra n.XX, at 396.

193 *Id.* at 395.

194 *Id.* at 396.

195 *Cf.* Allied Tube & Conduit Corp. v. Indian Head, Inc., 486 U.S. 497 (standard-setting activity used to exclude competitors).

of recent cases, the antitrust authorities have intervened in order to ensure the fidelity of information about patent ownership thata member provides in the proceedings of a standard-setting body.[196] While trade associations are often governed by rules, such associations are not hierarchical and therefore cannot impose a solution. Exclusion from the standard-setting process is the only real sanction they can impose for breaches of the rules, yet such a threat may not be credible against certain crucial players.

Furthermore, where the modular platform is privately owned, and perhaps ubiquitous due to strong network externality effects, the rigid modular design architecture presents particular problems from an antitrust perspective. If the platform owner pursues a modular structure, other firms focused on developing their own modules will be effective in linking to the incumbent platform, but "will lack the knowledge to envision how to connect to a new architecture,"[197] thereby limiting possibilities for system level learning and disruption of the incumbent's ubiquity.[198] In such a scenario, the modularity trap resulting from a rigid architecture may actually protect the platform owner's monopoly profits. Not only do individual module producers lack knowledge to disrupt the existing architecture, but the platform owner acquires knowledge from collaborating with downstream firms and, given the leverage afforded by the ubiquity of the platform, can easily integrate into vertically related markets.

(3) Incentive-compatible solutions

In a thoughtful analysis of the foregoing problem, Farrell and Weiser examine the platform monopolist's private choice to either maintain a modular market structure or integrate into adjacent product markets in order to determine whether this private decision is consistent with the market architecture that best promotes the public interest.[199] They argue that from the antitrust policy point of view neiher modularity, nor vertical integration provides a safe harbor rule applicableacross all markets. In addition, the antitrust decision-maker cannot decide that one architecture is unambiguously better than the other in a particular market, since in every industry there will be benefits from both integration and independence. However, if the profit-maximizing solution of the platform owner is consistent with the social optimum, this would also support a non-interventionist antitrust policy.

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196 *See*, *e.g.*, Dell Computer Corp., 121 F.T.C. 616 (1996); In re Unocal, FTC Docket No. 9305; Rambus FTC Docket No. 9302 (all alleging anticompetitive acts and practices to deceive an industry-wide standard-setting organization, resulting in adverse effects on competition and consumers).

197 Chesbrough, supra n.XX, at 181.

198 This is precisely an underappreciated aspect of the "applications barrier to entry" that the District Court and the D.C. Circuit identified in the government's prosecution against Microsoft.

199 Farrell and Weiser, supra n.XX at 103-04.

In Farrell and Weiser's the platform owner chooses between a modular architecture or downstream integration. Modularity promotes innovation because of the independence that it fosters between business firms: "Modular industry structures enable independent firms to introduce innovations into an established environment. An open architecture can facilitate innovation in individual components, spur market entry, and result in lower prices."[200] The platform monopolist also benefits if a modular downstream structure fosters innovation in the applications market, because this increases the attractiveness and the value of the platform. However, if the platform owner integrates into downstream markets, this results in transaction costs efficiencies benefiting both the platform monopolist and the pubic. Such efficiencies include minimizing the risk of downstream holdup, avoiding double marginalization, resolving coordination problems among collaborators, ensuring better interoperability between products, and enhancing the monopolist's ability to alter platform interfaces in order to evolve the platform.[201]

Invoking a variant of the Chicago school single monopoly profit argument, Farrell and Weiser point out that the monopolist has an incentive to promote an efficient market structure in the downstream market. Not only does the monopolist not increase its profit by leveraging itself into the downstream market (since it could always charge a higher price for the platform), but in fact it also gains from an efficient downstream market that promotes downstream innovation, which enhances the value of its own platform for consumers, and therefore the price it can receive.

However, they go on to caution that this argument does not necessarily support a non-interventionist antitrust policy towards a ubiquitous platform monopolist. This is because the logic of internalizing complementary efficiencies ("ICE") can break down for a number of reasons, which give the platform monopolist inefficient incentives to integrate into the downstream market. They identify at least eight reasons forbreakdown , including cases where the upstream price is regulated, so the monopoly profit can be derived from monopolizing the downstream market,[202] bargaining failures (between the monopolist and a downstream market participant), the monopolist's fear that a downstream application could develop into potential competition to the platform, and

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200 *Id.* at 95.

201 *Id.* at 97-99.

202 Even if the monopolist is not currently regulated in the upstream market it might wish to charge a lower price there and get some of the monopoly profits in downstream markets precisely in order to avoid regulation in the upstream market.

also, perhaps surprisingly, the incompetence of the incumbent (whereby either the incumbent or at least some of its employees do not appreciate[203] the logic of ICE).[204]

By contrast to Farrell and Weiser's model where the monopolist (or the policy-maker) chooses from two alternatives for the downstream market structure (modularity or integration), the model of innovation outlined in this Article is more general. The innovation practices described earlier suggest that for joint problem solving to succeed and be robust, the collaborators must be "loosely coupled."[205] This implies that collaborators must be intimate enough to learn from nuance, but at the same time sufficiently detached in order to be able to break with convention and the habits of the group.[206] Thus, inter-firm relations need sufficient proximity to benefit from complementarities and mutual learning, while avoiding integration in ways that come to resemble a hierarchy.

Not only may pure modularity be undesirable as a model of inter-firm relationships for the reasons identified earlier,[207] but such a structure may be impossible in the technology markets, particularly where the platform is owned by a privateentity . A purely modular market structure would approximate arms-length relationships, with minimal information exchange between the platform supplier and downstream market suppliers. However, given the need for applications at the two levels to be able to interoperate, to coordinate the introduction of new products at both levels sequentially and to provide feedback in both directions about the robustness of designs (including the interfaces) before products can be delivered to market, it seems difficult to even conceive of purely modular relationships.

Once we recognize that in order to produce robust product and systems designs, firms must engage in deeper forms of collaboration than those implied by pure modularity, the factors identified by Farrell and Weiser thatundermine the "logic of ICE" become even more salient. In particular, the rich sharing of information in order to engage in collaborative innovation elevates the risks of opportunism, and heightens the possibility of inefficient incentives for integration. For example, the platform maker might learn sufficiently from the relationship to enable it to integrate in the downstream market and eliminate the value of the investments of the downstream collaborators, or

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[203] We should add that employees might make decisions inconsistent with the logic of ICE either because they do not appreciate it, or due to agency problems, where the interests of those particular employees are more consistent with vertical integration, instead of proper assessment of ICE.

[204] Farrell and Weiser, supra n.XX at 105-19.

[205] Karl E. Weick, *Educational organizations as loosely coupled systems*, 21 ADMIN. SCI. Q. 1, 3 (1976).

[206] Sabel, Real Time Revolution, at 116.

[207] Supra, section V.B.2.

conversely, that the downstream collaborators will be able to create products which are a substitute for the platform of the monopolist. The risks of ex post opportunism could also lead to bargaining failures.

Finally, Farrell and Weiser's observation about the "incompetence" of the incumbent becomes more important and is generalizable. The incumbent (or its management) may in fact realize the logic of ICE, yet they might not know precisely what would be the structure of an efficient downstream market, particularly in a dynamic underlying environment. Uncertainties about the future regulatory and competitive environment, together with the possibility that downstream suppliers may commoditize its platform by learning from the collaboration, are alladditionalreasons for inefficient downstream integration, which create further doubts that the platform monopolist would be a good steward of the downstream market through its own unilateral decisions.

C. Property rights in innovation

The courts' growing emphasis on strong intellectual property protection to preserve the incentives for innovation by corporations, in preference to ex post antitrust duties, is also not an adequate solution to the governance problems in inter-firm collaborations identified earlier. If the contributions of individual firms to a common innovative venture or design could be clearly delineated and protected by the grant of a property right (such as a patent or copyright[208]), this would have a number of beneficial consequences. First, and most importantly, the delineation of boundaries would attenuate the collaborators' concern that one of them could appropriate the fruits of the mutual collaboration. Secondly, clear assignment of property rights can lead to efficient outcomes from Coasian bargaining and, in fact, if the individual contributions to the joint product are clearly identified, this may also reduce the costs of bargaining. Finally, consonant with the traditional understanding of the rationale for intellectual property, the right to exclusivity of appropriation provides incentives for each collaborator to invest in that component of the collaboration over which it has residual control.

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[208] It is unlikely that mere reliance on trade secrets would be sufficient protection in the context of innovation collaborations, since the process of mutual sense-making (including practices such as benchmarking, error-detection and correction and simultaneous innovation) depend upon the substantial sharing of information among collaborators, as the Intel case illustrates. Thus, a right of exclusivity, such as a patent, would be necessary to allow the collaborators to share information, while at the same time maintaining their proprietary interests. By contrast, trade secrets are contractual tools that prevent the collaborators from sharing confidential information with other non-parties to the collaboration.

(1) Practical and conceptual problems

The practical limitations of the intellectual property regime as a solution to the governance problems in team production stem from the fact that the patent and copyright systems emerged against the background of very different processes of discovery and creation, which were more suited to stable environments rather than the practices of rapid and on-going innovation described earlier in the Article. A key limitation stems from the fact that both copyrights and patents rely on judicial action for ex post enforcement. Furthermore, the process of granting the property right ex antefor both copyright s and patents also presents problems A copyright, for instance, subsists in the final embodiment of the creation, and no attempt is made to distinguish the contributions of different collaborators towards the final product at the point when the right is created. The grant of a patent depends on hierarchical action — namely, an administrative process before the Patents and Trademarks Office assessing the innovative contribution of the patent application — which presents a set of institutional questions.

The institutional infirmities of the intellectual property regime, and particularly the patenting system, have been the topic of extensive academic and policy scrutiny.[209] That criticism focuses on the limits of the patent examination process, including the time and resources available to examiners, which makes a detailed and careful assessment of the merits of each individual patent application impossible. This is seen as one of the key reasons for the dramatic increase in the proliferation of patents in recent years.[210] An even more important limitation, particularly if intellectual property rights are to provide a solution of the governance problem in inter-firm collaborations, is the process by which the patent examiner acquires knowledge in order to process the patent application. Patent applications are submitted by an applicant who claims to be the inventor, and the novelty and inventiveness of the applicant's contribution are decided in an administrative conversation between the patent examiner and the applicant, by reference to the prior art and prior use.[211] Importantly, other claimants do not take part in this process, and the purpose of patent examination is not to identify and allocate the contributions of different

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[209] Carl Shapiro, Technology Cross-Licensing Practices: FTC v. Intel (1999), in The Antitrust Revolution (John E. Kwoka and Lawrence J. White, eds.) 350, 354 (2004).

[210] *See, e.g.*, Robert P. Merges, *As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 BERKELEY TECH. L.J. 577, 588-91 (1999)

[211] While a patent can be issued in the name of a number of inventors who jointly developed the invention, the patenting process does not allocate rights as between those inventors. Similarly, where two or more applications are submitted claiming the same invention, the process of resolving patent interferences is designed to identify who has the better claim to exclusivity. Such an all or nothing approach, together with the preference given to those who file earlier under the patent system, only further encourage opportunistic use of the patenting system.

collaborators to the claimed invention.[212] Once a patent issues, it is presumed valid[213] and any further disputes about either the validity or infringement of a patent are decided in court, where judges are at an even more significant information disadvantage.[214] These features of the process, together with the armament of remedies that exist under the intellectual property laws, allow firms to use patenting defensively and strategically, increasing the cost of bringing novel technology to the market in a world where the number of patent grants has grown exponentially.[215]

The practical limitations of the intellectual property solution to the governance of collaborations cannot be overcome by adjustments in the patenting regime because the property based solution to the governance problem is also conceptually unsound. The conceptual reasons are similar to those that led to doubt the effectiveness of contract or modularity as governance mechanisms. Collaborative relationships, in part, overcome the limits of individual rationality and imagination through the mutual "sense-making" in an increasingly complex and fast-moving world. To the extent that this process is more akin to a conversation or deliberation,[216] it is doubtful whether the outcomes of such process can be represented in a way that satisfactorily allocates the individual contributions of the collaborators. Any attempt to do so *ex ante*, or in the course of product design and development, will slow both the patenting and the innovation process to a halt. As Helper, MacDuffie and Sabel explain, in the deeply collaborative relationships in the automotive industry, even the residual control over physical assets is not clearly delineated in a way that would resolve the team governance problem to provide an effective protection from appropriation.[217]

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[212] If the PTO were to be given the mandate to carefully examine the individual contributions to particular innovations in a way which at least attempts to draw those boundaries more carefully (including by extending rights of participation in the process to third parties), this would slow the process substantially, making it irrelevant to firms in highly dynamic markets.

[213] 35 U.S.C. § 242.

[214] The possibility of litigating patent disputes only heightens the opportunistic incentives for using the patent regime, because a firm can hope to either persuade a relatively uninformed court to assign the entire property right to itself, or can use the threat of the very potent remedies (such as an injunction to shut down the business of its collaborator, or winning an award of damages which in patent disputes can be very substantial) as a tool to bargain a greater share of its collaborator's surplus.

[215] Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting*, *in* 1 Innovation Policy and the Economy 119 (Adam B. Jaffe et al. eds., 2001).

[216] *See* Charles Taylor, *To Follow a Rule…*, in PHILOSOPHICAL ARGUMENTS, 165, 172-73 (1995).

[217] Susan Helper, John P. MacDuffie, Charles F. Sabel, *Pragmatic Collaborations: Advancing Knowledge While Controlling Opportunism*, 9 INDUS. & CORP. CHANGE 443, 482 (2000) ("Joint control of the assets in the new collaboration shades into joint residual control, and thus a novel form of ownership."). While this might be seen as a novel form of ownership, the more important point for present purposes is that delineation of property rights, combined with the right to exclude, does not protect from appropriation.

(2) The FTC's "romantic" view of patents and pragmatic view of remedies

The F.T.C.'s complaint against Intel illustrates both some of the problems identified above and one possible way of mediating the excesses of the antitrust and IP regimes.[218] The FTC challenged Intel's resort to self-help in the patent disputes with its collaborators, arguing that those patent disputes were better decided in court. Carl Shapiro criticizesthe FTC's position as being based on a "romantic" view of patents.[219] Arguing that litigation was the more appropriate forum in which to resolve the patent disputes is particularly difficult to defend, given that patent litigation is notoriously long and expensive, and trial judges are ordinarily reluctant to try patent cases that involve evaluation of copious and complex scientific and technical evidence.[220] However, the remedy implemented by the consent decree with Intel reflects an understanding of the role of collaboration in promoting innovation, the forces that can undermine such collaboration, as well as the ways in which traditional patent and antitrust remedies heighten the incentives for opportunistic conduct.

In what was essentially a bargaining dispute within a collaborative relationship,[221] the FTC's consent decree can be viewed as an instrument promoting a negotiated solution, which preserves the incentives of the parties to continue their collaboration. It achieved this by eliminating the most debilitating remedies that the parties could rely upon if they litigated the dispute, either from the antitrust or intellectual property armory of remedies.[222] Thus, the complaining firms gave up the right to seek treble damages under the antitrust laws.[223] Further, the consent decree provided that the complaining firms would not seek an injunction which would shut down Intel's operations as a remedy in the patent litigation. Intel, on the other hand, gave up its right of self-help against the complaining firms, namely to stop providing advance technical information, which would retard their ability to innovate. If firms in the position of the complainants fear that the contributions they bring to the relationship and joint innovation could easily be appropriated by Intel, this would be a disincentive for such firms to invest in the collaboration.[224] Similarly, Intel as the platform owner would be reluctant to engage in

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[218] See supra, section IV.C.3.

[219] Shapiro, supra n. XX at 353.

[220] The implication is that ultimately nobody is interested in resolving intellectual property disputes, particularly in technologically complex settings.

[221] Farrell and Weiser, supra n.XX at 112-13.

[222] This approach was important given that the main obstacle to a negotiated solution is the parties' perceptions of their outside options and their (biased) judgments about the probabilities with which such alternatives are likely to eventuate.

[223] Only Intergraph proceeded with its ultimately unsuccessful antitrust suit against Intel. Intergraph Corp. v. Intel Corp., 195 F.3d 1346 (Fed. Cir. 1999).

[224] *Cf.* Pitofsky, *supra* n. XX at 549-50.

closer collaboration with other firms, if this results in an ex post duty to continue to collaborate even in the face of opportunistic conduct by downstream firms.

By eliminating the most extreme litigation options that would give the parties reasons for hold-out,[225] the FTC consent decree increased the likelihood that the disputes in the collaborative relationship could be resolved.[226] Therefore, the possibility of a long and protracted patent litigation, in which a court would reach a one-sided and perhaps arbitrary decision, could be viewed as the penalty that the parties would have to incur if they did not reach a negotiated resolution to their disputes.[227]

(3) "Dilution" of IP rights

The discussion in this section illustrates the problems with the ascendant view that strict protection of intellectual property rights is an essential precondition to provide incentives for firms to invest in innovative ventures and that the ex post imposition of antitrust duties on the successful innovator dilutes those incentives. For instance, Elhauge has criticized courts (and scholars) who advocate imposing antitrust duties on a patent owner based on a case-by-case assessment of the effect of such duties on the innovation incentives in the industry:

> [B]oth [Scherer's] theory and evidence are purely ex post. They cannot tell us whether, if these firms had realized the law would impose this risk of compulsory patent licensing, they would have had sufficient ex ante incentives to create the initial inventions ...[228]

In words that resonate with the *Trinko* decision, Elhauge argues that "the *prospect* of future monopoly profits is necessary to encourage ex ante innovation and investment to

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225 Shapiro correctly recognizes that the underlying problem was an attempt to engage in opportunistic hold up by a party to a collaborative relationship. His is not inconsistent with the FTC's view of the problem. The only difference is that the FTC was of the view that Intel could also have been behaving opportunistically, and disapproved of its attempt to foreclose the other firms from making their claims by use of the power arising out of its dominance in the microprocessor market.

226 Intel agreed to the consent decree, even though it consistently contested the point that it violated the antitrust laws. Further, at least in respect of Digital and Compaq, it seems that the firms had already moved towards a resolution with Intel. *See* Shapiro, supra n. at 359, 360-61.

227 *See* Bradley C. Karkkainen, Information-Forcing Regulation: Penalty Defaults, Destabilization Rights, and New Environmental Governance, in New Governance and Constitutionalism in Europe and the U.S. (Grainne de Burca & Joanne Scott eds. forthcoming 2006).

228 Elhauge, supra n.XX at 301.

create that monopoly power."[229] And further, even in cases where the patent monopoly was created improperly[230]

> Forced sharing of the improperly created monopoly does not remedy the past mistakes. Rather, it worsens them by undermining not only the monopolist's incentives to maintain and enhance the value of the property that gives it monopoly power but also rival incentives to duplicate the functional benefits of that property. And it creates enormous administrative difficulties by requiring antitrust judges and juries to set the reasonable price for access, a task rendered only more difficult by the fact that optimal prices will continually vary over time with changing market conditions, but will end up being assessed retrospectively by antitrust tribunals after years of adversary proceedings, with any wrong guess being punished by treble damages.[231]

However, the evidence that the simultaneous model of joint problem-solving has decided advantages in high technology industries suggests caution about viewing rights in intellectual property in such absolute terms, as if they have resulted from dedicated unilateral research efforts of a single enterprise. A firm operating in turbulent market conditions may neither have capacity nor the incentive to invest in such a research effort. Yet a manufacturer or software developer cannot afford not to innovate because market conditions are constantly changing and failure to keep pace would be disastrous. The tendency towards experiential and on-going innovation practices, based on provisional designs and iterated solutions, arises precisely because it is risky for the firm to invest too much in research which is contingent on a particular future state. Further, product or process developments that are protected as intellectual property can be the result of learning and sharing of information that draws from other actors involved in the production process. A firm depends upon the information supplied by users about problems they have encountered, or feedback from vertically related firms in order to fix problems with their own product, and such information can be used for strategic or opportunistic purposes.

Dominant firms that have a gate-keeping function, particularly in industries with strong indirect network effects, benefit significantly from their collaboration with other firms. Such collaboration enhances the value of the network, the barriers to entry that prevent a challenge to the dominant firm, and the value of intellectual property. However, such firms also have a disproportionate power to force a resolution of any

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229 *Id.* at 298 (original emphasis).

230 Or one could add, provided by the government or through governmental subsidies or protection.

231 Elhauge, supra n.XX at 308.

emerging dispute in their own favor. An untrammeled right to refuse to continue to cooperate (even in the absence of any ex post effects on consumers in the market or product under scrutiny), reduces the ex ante incentives for other firms to participate and invest in collaborative efforts or the incentives of venture capitalists to finance such firms who would be subject to significant hold-out costs from a termination of the collaboration.

D. Antitrust governance

The advancement of innovation in modern marketsrequires collaborative modes of production among decentralized production units, in a way which charts a path between purely arms-length or modular relationships (which are either impossible or undesirable given the nature of production) and hierarchical relationships (which allow for integrative efficiencies and aim to control the opportunism of subordinate units, but also stifle inventive learning). While the governance mechanisms discussed above show limited promise of success, the classic antitrust remedies are similarly constrained. The solution to the governance problem does not lie in damage payments for the violation of a given rule. Indeed, if ex ante rules could adequately resolve the governance problem, the parties may have generated those rules themselves. Nor does the solution lie in reallocation of property rights, such as a duty to deal, which would not adequately control for collaborator opportunism or take into account possibilities of integrative efficiencies.[232] And yet any more nuanced or substantive remedy would tend towards a particularly undesirable form of hierarchical intervention: a legal or administrative solution to problems of product design.

However, some more recently implemented antitrust remedies demonstrate sensitivity to the problems identified so far, and develop governance mechanisms for the on-going cooperation in the industry. Such mechanisms are not based on rigid rules or arbitration, but instead on institutions which might promote learning about the industry, while resolving disputes among collaborators. The remedies evaluated in the remainder of the Article stem from litigation against Microsoft, including the main U.S. litigation by the DoJ together with the Attorneys General of 20 states, and the European Commission's decision that Microsoft had violated EU competition law. The focus is on thefeatures

[232] As a corollary of those two observations, the hierarchically imposed (i.e., judicial or administrative) structural remedies involve the design of the market structure, which cannot be done either because of the complexity of the underlying production relationships or the instability of the environment in which the firms operate.

incorporated in the design of these mechanisms to generate knowledge through monitoring inter-firm relationships, but also to ensure accountability of the new implementation bodies.

(1) Schumpeterian Competition or Evolving the Platform

The government's prosecution of Microsoft was based on its practices directed at so called "middleware" applications such as the Netscape Browser and the Java Virtual Machine. Microsoft implemented a number of strategies, through its relationships with other firms in the industry, in order to prevent the growth of middleware applications. Those strategies were motivated by Microsoft's fear that, because middleware applications expose their own APIs (and therefore applications can be written for middleware), they could replace or commoditize the Windows operating system. Microsoft attempted to forestall the growth of middleware applications not only by developing its own alternative products, such as the Internet Explorer browser, but also integrating them into the Windows platform.

Further, Microsoft instituted a set of exclusive contracting practices with downstream suppliers, such as computer equipment manufacturers, other platform suppliers (Apple) as well as software applications suppliers requiring downstream suppliers not to support Netscape's browser, as a condition for Microsoft's continued cooperation. Given the overwhelming dominance of Windows in the operating systems market, as well as of Microsoft Office in basic software applications, Microsoft could impose such conditions. Microsoft went further and by invoking its intellectual property rights, dictated some of the micro details of the way in which the computer equipment manufacturers would configure their personal computers, including the appearance of the desktop after the initial start up of the system.[233]

By the time the case reached the D.C. Circuit, the government's claim was based on a monopoly maintenance theory under section 2 of the Sherman Act.[234] In particular, the government claimed that through its practices directed at Netscape and Java, Microsoft was aiming to protect its operating system monopoly by extinguishing the threat that the middleware applications could undermine or replace the ubiquitous Windows operating system. Modern antitrust analysis requires the likelihood of anticompetitive effects to be demonstrated before a finding of liability, which in this case required proof both that the targeted middleware applications could pose an alternative to

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[233] Amanda Cohen, Note, *Surveying the Microsoft Antitrust Universe*, 19 BERKELEY TECH. L.J. 333, 340 (2004).

[234] 15 U.S.C. §§ 1, 2 (2006).

the operating system *and* that extinguishing those applications strengthened Microsoft's market power. Yet the record did not demonstrate that either Netscape or Java were anywhere near a point where they could expose sufficient APIs for applications to be written, let alone up to a stage where they could offer a viable alternative to the Windows operating system.[235]

According to Bresnahan, the underlying theory of the U.S. case against Microsoft was based on a Schumpeterian[236] view of competition in the market for platform software, as opposed to, for instance, a natural monopoly theory. Given the strong network effects and increasing returns to scale in the supply of the operating system, firms compete to capture the field or the entire market.[237] Microsoft's use of its leverage to impose a number of contractual restrictions was aimed at forestalling innovation that would, in turn, extinguish emergent competitors for the field, thereby impeding the mechanisms of Schumpeterian competition in their nascence.

However, in light of the model of collaborative innovation outlined earlier in the Article, it is possible to engage in a degree of revisionism and provide a somewhat different interpretation of that case as well as its progeny. Microsoft's ability to use its leverage to impose contractual restraints on various firms operating in related markets impeded the possibilities for collaboration among such firms, even though this collaboration would result in successful problem-solving innovations that Microsoft might not have been able to develop itself. Thus, such collaborations enhanced the value of Microsoft's platform. Effectively, Microsoft's conduct was an attempt to impose a hierarchical structure on inter-firm relationships in the products related to the operating system. In such a structure Microsoft would be primarily responsible for the selection of goals and innovation projects, while other firms were largely delegated the task of implementing decisions and engaging in limited innovation, within those spheres left open by Microsoft.[238]

Irrespective of the fact that Microsoft's effort and acumen may have produced its leading position as an operating system, this quasi-hierarchical market structure would retard innovation because it would impede both independent creativity and disruptive innovation. While this might, over time, have reduced the value of Microsoft's platform

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[235] The Court overcame this hurdle by claiming that where the suit is brought by the government, the court would not require a strong establishment of causation.

[236] *See* JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM AND DEMOCRACY (1976) (process of creative destruction, where a creative new solution undermines the dominance of the previous one).

[237] Bresnahan, supra n.XX.

[238] The similarity of this form of inter-firm relationships to a modular market structure is quite striking, with the exception that the hierarchical model might in fact be better because it does not face the problem of collective action in any effort to evolve the platform and the system as a whole.

making it more vulnerable to a challenger, such a challenge might occur too far in the long run and would be uncertain, given that, if unchecked, Microsoft had the ability to scuttle (or appease) potential challengers early on. Thus, rather that enabling Schumpeterian competition, the government's case is more appropriately seen to promote "evolutionary" competition. Preventing Microsoft from imposing the contractual restraints on collaboration would improve the level of innovation within Microsoft's platform, also enabling Microsoft to better realize its own self-interest, rather than relying on the uncertain future threat of a Schumpeterian rival as a disciplining mechanism.[239] The remedial mechanisms in the Microsoft cases provide further support for this view.

(2) Microsoft remedies

(a) DoJ negotiated decree

Following the decision of the D.C. Circuit, the DoJ, under a new administration and with the agreement of nine of the prosecuting states, decided not to litigate the remanded liability questions or to seek a judicial remedial decree from the District Court, but instead settled the case through a remedial decree negotiated with Microsoft. The negotiated remedial decree has received two principal criticisms. For some, the decree was a result of the unwillingness of the DoJ, under a new administration, to prosecute the case to its end. By not seeking a more far ranging remedy (particularly by contrast to the structural break up that had been originally requested and ordered by Judge Jackson) the DoJ, in effect, gave away its appellate victory.[240] For others, the key problem was that the negotiated decree did not provide a one-off antitrust remedy. Instead, the decree isolated forms of conduct condemned by the court's decision and imposed restrictions on such conduct, together with a mechanism for on-going supervision and monitoring of Microsoft's compliance, which, on this view, produced unnecessary costs, burdens and uncertainty.

However, the quasi-regulatory remedy was simply the result of the complexity of the problems presented by the case. Given the dynamic nature of the technology, a one-off injunctive decree (i.e., a list of "don'ts") could not have provided an effective remedy as much as a recipe on how to effectively evade the letter of the injunction.[241] Further,

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[239] The fact that such a rival does not appear to have emerged thus far, and the fact that Microsoft has in fact turned many of its antitrust foes into collaborators is further evidence that this would have been a good strategy. See, e.g., Steve Lohr, Antitrust Suit Turns Into A Partnership For Microsoft, N.Y. Times, October 15, 2005, (partnership between Microsoft and RealNetworks, one of the antitrust complainants both in the U.S. and Europe to develop an open alternative in the digital media market).

[240] *See, e.g.*, Fox, supra n.115 at 93-96, 110; Timothy F. Bresnahan, *A Remedy That Falls Short of Restoring Competition*, ANTITRUST, Fall 2001, 67.

[241] The experience with the original Microsoft consent decree only confirms this view.

even if it were possible to devise an effective behavioral remedybased on simple injunctive rules, such a remedy would not be self-executing and would require some form of supervision and monitoring. Even a structural break-up of the company, which is an apparently one-off surgical remedy, would involve the court — or some other entity — in on-going resolution of a mire of difficult and intractable problems because it requires specification of a host of further micro-level details about the activities, staffing, future integration and collaboration among the newly separate entities.

Instead, the remedial mechanism in the decree was not hierarchical and did not involve the Court in daily operations of the company, nor did it place all implementation functions with one body.[242] The process of monitoring Microsoft's conduct and resolving questions and disputes that would emerge in the course of implementation was more diffuse, through four principal channels. These channels are mutually supportive and encourage mutual learning for all actors involved, including Microsoft as the regulated entity.

The first, "peer evaluation," channelentrusts the primary supervisory responsibility for the implementation with a court appointed technical committee of experts[243] in software design and programming.[244] The primary function of the committee is to monitor Microsoft's compliance with the decree, receive complaints and relay those complaints to an internal compliance unit established within Microsoft (the "internal self-evaluation" channel).[245] Microsoft's internal compliance unit coordinates the company's efforts to comply with the decree and educates Microsoft employees about the requirements of the decree and the antitrust laws more generally.[246] Further, the decree left a large degree of autonomy to Microsoft to devise its compliance strategy and its response to any complaints forwarded through the technical committee.[247]

The third channel of implementation (the "reporting channel") is based on a process of joint status reporting of both strategiesadopted and outcomes achieved. Joint

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[242] This is in stark contrast to the AT&T remedial decree, where the Court was at the center of the implementation and adjustment of the remedial decree which ultimately restructured the entire telecommunications industry. The original DoJ action against AT&T that lead to a consent decree settlement was in 1949. United States v. Western Elec. Co., 1956 Trade Cas (CCH) ¶ 68,246 (D.N.J. Jan. 24, 1956). The main case against AT&T was in 1974, and was also settled with a consent decree after Judge Greene denied summary judgment for AT&T. United States v. AT&T, 552 F. Supp. 131 (D.D.C. 1982), a decree which governed the telecommunications industry until the enactment of the Telecommunications Act in 1996.

[243] Microsoft Decree IV.B.3(c). The Technical Committee are the only group that has access to the Windows source code to aid their monitoring of the compliance. § IV.B.8.c.

[244] Microsoft Decree IV.B.2.

[245] Microsoft Decree IV.B.8.

[246] Microsoft Decree IV.C.

[247] Microsoft Decree IV.D.3(c).

Status Reports are regularlyproduced by Microsoft and the Department of Justice and those reports describe and evaluate Microsoft's compliance with the remedy decree. The reports focus on the extent to which the steps and measures undertaken by Microsoft have achieved the goals pursued by the decree, and propose alternative measures where a particular problem is seen to persist.[248] The final channel (the "reserve (or penalty) channel") is vested in the court by Judge Kollar Kottely's decision to reserve the district court's jurisdiction to revisitthe decree, should it determine that Microsoft's compliance is unsatisfactory.[249]

(b) The non-settling states' proposal

While the District Court approved the decree negotiated by the DoJ, Judge Kollar Kottely refused to implement an alternative remedy according to the request of nine states, which disagreed with the DoJ approach. The non-settling states continued with the litigation and argued that the District Court should impose an alternative remedy in line with the D.C. Circuit's findings of liability. The courtheld that, as a general proposition, the imposition of a two track remedy would be too onerous for Microsoft. Further, it specificallyrejected all of the proposals for alternative mechanisms proposed by the non-settling states and their independent expert witnesses.

The non-settling states were strongly opposed to the technical committee, as proposed in the DoJ decree, and asked instead for the court to appoint a special master and a special committee of independent directors within Microsoft. While refusing to appoint a special master to oversee the implementation, the Court agreed to the states' request for a special committee of independent directors on Microsoft's board and an internal compliance officer with a more independent status within Microsoft:[250]

> [T]he compliance officer position proposed by [the non-settling states] is appointed by a committee comprised of at least three members of the Microsoft board of directors who are neither present, nor former, Microsoft employees. The compliance officer in Plaintiffs' proposal is protected against abrupt termination by a provision which permits removal only by the Chief Executive Officer of Microsoft

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248 *See* Joint Status Report of January 2004.

249 Judge Kollar-Kottelly declined any limits on the court's jurisdiction to intervene in the matter. United States v. Microsoft Corp., 231 F. Supp. 2d 144, 200 (D.D.C. 2002). Not only can the parties apply for further orders, but the Court can "sua sponte" issue orders and directions. *Id.* at 201. See also Cohen, supra n.XX, at 344.

250 New York v. Microsoft, 224 F. Supp. 2d 76, 182-183 (D.D.C. 2002). The internal compliance officer was also to report to the plaintiff states.

> with the concurrence of the committee that appointed the officer. The compliance officer reports to the Chief Executive Officer and to the committee which appointed him or her.

In another significant rebuff to the remedy proposal of the non-settling states, the Court also refused to allow third parties to have direct access to the remedy implementation mechanism in order to make complaints about Microsoft's conduct and allege violations of the remedial decree.

Although the non-settling states did not persuade the Court to impose a different substantive remedy, their intervention served the useful purpose of allowing the Court to compare the decree negotiated by the DoJ to a specific alternative proposal. This made it necessary for the Court to articulate reasons for rejecting their alternative proposals. In the ordinary course of approving settlement decrees negotiated by the DoJ, a court is presented with an already finalized proposed decree which it must assess pursuant to the Tunney Act.[251] In the Tunney Act, Congress empowered Courts to examine antitrust settlement decrees with limited Congressional guidance: before approving and entering the decree, the court had to be satisfied that the degree was in the "public interest."[252] While this gives the court a potentially broad mandate, review is constrained by limits on judicial capacity to perform a searching review, particularly since the judge performing such review, is largely dependent on information supplied by the settling parties. Even though the Tunney Act allows third parties to provide comments on the proposed decree, such comments can be either insufficient,[253] or overwhelming,[254] so that the court must rely on the DoJ to process and sublime those comments.[255] Furthermore, the court is ordinarily constrained both in its capacity to appreciate the significance of those comments, and its ability to reformulate and propose a concrete alternative to the decree under review. Thus, ordinarily negotiated decrees pursuant to the Tunney Act are reviewed under a fairly loose and deferential standard, whereby the decree is approved if

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[251] 15 U.S.C. § 16(b)-(h).

[252] 15 U.S.C. § 16(e).

[253] United States v. Microsoft Corp., 159 F.R.D. 318, 325 (D.D.C. 1995) (in evaluating initial DoJ consent decree with Microsoft judge received only five largely unilluminating submissions).

[254] United States v. Microsoft Corp., 231 F. Supp. 2d 144, 200 (D.D.C. 2002) (in the final Microsoft settlement the court received over 32,000 public submissions: 10000 in favor of the decree, 12,500 opposed and the rest expressing no direct view).

[255] *See* Response of the United States to Public Comments on the Revised Proposed Final Judgment, 2002 WL 32151978, ¶¶ 4-8.

it was negotiated bona fide (in the absence of improper influences) and is within the realm of the public interest.[256]

(c) The European Commission remedy

The goal of European Commission's remedy in its Microsoft decision was to promote Microsoft's collaboration with rival suppliers in related markets, while neither preventing Microsoft from integrating forward into those products nor chilling the innovation incentives for all industry participants.[257] In light of the complaints by work-group server producers, the Commission mandated Microsoft's continued cooperation with firms that produce work-group servers in the following terms:

> The natural remedy to Microsoft's abusive refusal to supply is an order to supply what has been refused.
>
> ...
>
> Microsoft should be ordered to disclose complete and accurate specifications for the protocols used by Windows work group servers in order to provide file, print and group and user administration services to Windows work group networks.[258]

On the surface at least, the Commission's injunction that Microsoft must supply all the information necessary for the interoperability of Windows with non-Microsoft work group servers seems to be a standard conduct remedy. However, as the Commission recognized in its decision,[259] the seemingly simple injunction generates numerous further questions: about the nature and scope of the information that was to be disclosed, about ensuring that such disclosure is timely, as well as setting the terms of that disclosure so that they are neither unreasonably burdensome nor discriminatory.[260]

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256 Microsoft Corp. v. United States, 56 F.3d 1448, 1460 (D.C. Cir. 1995). See also United States v. Gillette Co., 406 F. Supp. 713, 715-16 (D. Mass. 1975) (the Tunney Act is a check on the government's good faith in settling the case, although the court does not determine if the settlement is the best that could be obtained).

257 See section IV.C.2.

258 Microsoft EU ¶¶998-999.

259 Microsoft EU ¶¶1000, 1005-1006.

260 The uncertain scope of the duty imposed on Microsoft is confirmed by recent events associated with implementing the European decree. The first report from the Microsoft Monitoring Trustee found initial disclosures by Microsoft to be so inadequate, that a programmer or team would be "wholly and completely unable to proceed on the basis of the documentation." Microsoft's initial response was that the European Commission required more than was set out in the decree, although subsequently offered to "go beyond the 2004 Decision and offer a license to the source code" of the Windows system, a proposal which met with mixed reactions from both within the Commission and Microsoft's competitors. *See* Microsoft Offers to Open Windows Code, But European Commission, Critics Doubtful, 71 Antitrust & Trade Reg. Rep. (BNA) No. 1755, at 358 (Feb. 3, 2006).

The Commission's decision provides no detailed or exhaustive rules that govern such questions, identifying instead, in fairly broad terms, the objectives of the remedy.[261] In a manner similar to the U.S. decrees, the Commission relegated the detail to a monitoring mechanism established by the decree, in order to supervise Microsoft's compliance conduct:[262]

> The effective monitoring of Microsoft's compliance with this Decision will therefore have to be ensured by establishing a suitable monitoring regime including a monitoring trustee. Microsoft will have to submit a proposal to that effect. Guiding principles for Microsoft in this respect are outlined in the following.
>
> The primary responsibility of the Monitoring Trustee should be to issue opinions, upon application by a third party or by the Commission or *sua sponte*¸ on whether Microsoft has, in a specific instance, failed to comply with this Decision, or on any issue that may be of interest with respect to the effective enforcement of this Decision.[263]

The monitoring trustee was selected by the Commission from a list of experts provided by Microsoft,[264] and the remedy mandated that the trustee be given access to Microsoft employees, premises and the source code. The decree also permits the trustee to occasionally call upon other experts, to assist the trustee with discreteand precisely defined tasks.[265]

(3) Evaluating remedial architectures

Judge Kollar-Kottelly's decision that rejected the non-settling states' proposal, and a comparison of the proposals of the DoJ, the non-settling states and the European

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[261] Microsoft EU ¶1003 ("The objective of this Decision is to ensure that Microsoft's competitors can develop products that interoperate with the Windows domain architecture natively supported in the dominant Windows client PC operating system and hence viably compete with Microsoft's work group server operating system."); ¶1006 (to promote "the objective of *ensuring that competition in the common market is not distorted*") (quotations omitted).

[262] Note that the notion of "compliance" in this context is quite peculiar, in the sense that the Commission's decision did not specify what level of cooperation Microsoft needed to maintain with its rivals in this sector (there are no rules specifying the protocols or elements of code that Microsoft must make available). Instead, the obligation on Microsoft is to supply adequate levels of interoperability information and the definition of what level of cooperation is adequate is part and parcel of the process of implementation rather than being determined *ex ante*.

[263] Microsoft EU ¶¶1044-1045 (footnote omitted).

[264] The Commission appointed Professor Neil Barrett (a cybercrime expert) as the monitoring trustee on October 5, 2005. *See* http://www.eurunion.org/News/press/2005/2005083.htm (last visited on February 27, 2006).

[265] Microsoft EU ¶1048.

Commission, demonstrate three principal controversies about the institutional architecture of these antitrust remedial mechanisms. First, while all of the remedial decrees removed the direct responsibility for on-going monitoring, supervision and decision-makingfrom the courts and agencies, the proposed monitoring arrangements differed in important respects. The DoJ decree opted for a more diffuse monitoring mechanism, including the technical committee, the internal unit within Microsoftand the joint DoJ-Microsoft reporting. By contrast, both the non-settling states' proposal and the European Commission opted for a single monitor (the special master and the monitoring trustee) with wide-ranging powers and responsibilities. The states also relied on an internal mechanism implemented through Microsoft's corporate governance structure: an independent internal monitor responsible to a special committee of independent directors. The second key controversy relates to the rightsof access to the remedial mechanisms by third parties— namely, entities apart from the agencies responsible for the antitrust prosecution. The non-settling states and the European Commission opted to give third parties right of access in addition to the monitor's right to initiate their own investigations, while the DoJ decree limited the right of access to the remedial mechanism to parties of the litigation only.[266] Finally, the key substantivepoint of divergence of the remedial duties was the extent to which the different decrees included forward looking provisions, to cover products or technologies that were not central to the findings of antitrust violation. This issue was important in light of the fast changing environment in which different technologies can become superceded in short periods of time.

In order to evaluate the above questions of institutional design, it is necessary to examine the role these mechanisms play in promoting either the efficacy of the antitrust remedial mechanisms in achieving the objectives of the antitrust intervention or the accountability of the implementing bodies (to ensure thatthe remedy advances the public interest, rather than, for example, being captured by the interestsof the regulated entity). Within a standard hierarchical mechanism, both efficacy and accountability are assured through the generation of top-down rules thatbreak down the overarching goal of the principal into specific tasks. If well formulated, following such rules ensures both the

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[266] According to the District Court opinion, the plaintiff states were themselves responsible to receive complaints from third parties, assess those complaints and ultimately to decide whether they merit to be brought to the mechanism put in place by the decree. New York v. Microsoft, 224 F. Supp. 2d at 181. Furthermore, the Court directed the states to form a committee which would coordinate their enforcement efforts, so as to eliminate duplication of enforcement activities and ease the burden on both Microsoft and the court. *Id.* at 182.

effective pursuit of the desired goal, and the accountability of thoseresponsible for implementation.

In the hierarchical paradigm, a remedial decree can be conceptualized as a contract of a principal-agent variety, where a principal (the antitrust authority or court) is providing a binding contract to the agent (the regulated entity), which the entity must accept. If the principal is sufficiently well-informed about the world and about the agent, she both knows the goals she is trying to pursue through the forcing contract, and (more importantly) she can translate those goals into specific rules of conduct for the regulated entity. Further, the all-knowing principal observes the actions of the agent — in which case the remedial process becomes a relatively easy task. The principal can both specify rules of conduct and observe the regulated entity's actions in order to determine the degree of compliance. In this scenario the monitoring process serves the relatively limited function of checking compliance vis-à-vis clearly specified rules.

In the context of the antitrust remedial decree, as in many other regulatory settings, the decision-maker (particularly the antitrust court, but also the antitrust agencies) satisfies virtually none of the conditions to be an all-knowing principal. The decision-makers have a general idea of the goals they wish to pursue - such as advancing the public interest, restoring competition or eliminating any distortions to competition, advancing innovation, preventing the exploitation of consumers, to name just a few possible formulations. The principals are also substantially less informed about the detail of the operations and capabilities of the agent necessary to answerquestions, such as whether separating (or uncommingling) the code so as to provide Windows operating system separately from the browser or the media player is feasible, whether the release of interoperability information to competitors risks undermining the security or exclusivity of the operating system source code and so on. Furthermore, the decision-maker cannot observe all the actions of the agent to determine compliance, making it difficult both to write the contract and to monitor compliance. The problem is compounded by the fact that both the principal and the regulated entity are to some degree imperfectly informed about the current state of the world, and have far from perfect foresight about ways in which market conditions will change in the future (although, again, the regulator is at an informational disadvantage).

Given those conditions, the monitoring system is more appropriately characterized as a learning mechanism. Even if the principal is fully informed about the goals she is trying to pursue, she would still need to know what actions by the agent are feasible in pursuit of those goals and to call upon some body with greater local

expertise[267] to evaluate claims of feasibility or determine the level of implementation. The monitoring agent aids the principal precisely by providing greater access to local expertise about the activities of the scrutinized entity.

However, the injection of the monitoring agent, as an additional chain in the remedial mechanism, creates another form of agency relationship. Ideally, monitoring agents advances the goals of the principal, but the incentives of the principal and the monitoring agent are not necessarily aligned. Thus, the institutional design should ensure that the monitoring agent is properly accountable. Furthermore, while the monitoring agent should have a greater degree of local expertise than the principal, to be able to better evaluate and respond to claims and conductby the regulated entity and others in the industry, the monitor still does not have perfect knowledge. For instance, the monitor would still suffer from the limits of bounded rationality and the problems of hidden action and asymmetric information vis-à-vis the regulated entity. Successful monitoring mechanism design relaxes these constraints, so that the monitor can also access the local knowledge only available to market participants. The mechanism should provide incentives for the regulated entity itself to volunteer relevant information. This helps both to monitor the compliance with the current set of rules, but also helps the principal learn about the market, adjust the rules, or even the goals of the intervention. With this as the background, we return to the three controversies identified earlier.

(a) Who should monitor?

The design of the monitoring mechanism involves decisions about (i) the make-up of the monitoring body (whether it should be composed of one person or a committee); (ii) the allocation of responsibilities to the monitor (whether the monitoring body can initiate investigations, carry out those investigations, obtain external assistance, mediate or arbitrate the issues that come before it); and (iii) the nature of the relationship between the monitoring body and the regulated entity (whether the monitoring body can make binding orders about the resolution of disputes or impose punitive measures).

The non-settling states proposal, likethe European remedy, would entrust extensive responsibilities in a single special master. In the states' proposal, the special master was given a general obligation to take all actions necessary or proper for "the efficient performance of the special master's duties."[268] The special master was obliged to receive third party complaints, evaluate those complaints, carry out an investigation if

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[267] Local expertise refers to expertise or knowledge which is close to the every day operations of the regulated entity.

[268] New York v. Microsoft, 224 F. Supp 2d 76, 180.

one is warranted, hear argument based on documentation and propose factual findings and an order to the court, or alternatively to act as a mediator.[269] All these obligations were to be performed by the special master within "stringent time schedules."[270]

The district court rejected all aspects of the states' proposal for a special master as a scheme that "would [not] prove to be workable in practice," since it placed the special master in the role of detective, prosecutor and judge (as well as mediator).[271] While this language to some extent reveals the extent to which judges are steeped in the law enforcement paradigm of antitrust, there is clearly a tension in placing both hierarchical and problem-solving powers in the same person, which would place limits on the relationship between the monitoring body and the regulated entity, as well as the extent to which the two will be able to engage in free exchange of relevant information.[272] In light of the basic limits of human cognition and capacity, the Court criticized the special master proposal as a "panacea." No matter how capable and knowledgeable the person in the position of special master, there would be limits on her capacity to process all relevant information, to appreciate the significance of complaints from industry, to devise proposed solutions and to do so in a timely manner.

Quite apart from doubts about the effectiveness of this mechanism in promoting the goals of the intervention, placing all monitoring responsibilities in the hands of an all-powerful master or trustee raises significant accountability concerns. As already pointed out, once the monitoring arrangement is in place, the interests of theprincipal decision - maker—court or authority—that grants the mandate and those of the monitoring agent are not necessarily aligned. Furthermore, the starting assumption was that, while both the

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269 *Id.* at 180, 181.

270 *Id.* at 180.

271 *Id.* at 181.

272 For example, Microsoft's level of cooperation with the technical committee from the DoJ decree as compared with the monitoring trustee in the E.U. is likely explained by the different functions of these bodies and their relationship vis-à-vis Microsoft. The E.U. Monitoring Trustee evaluates Microsoft's actions to comply with the decree requirements, and in response to insufficient compliance the Commission has threatened additional fines (while both the European Commission and Microsoft are also mindful of the court review to which the Commission's decision and remedy are about to be subjected). In the DoJ remedy, the Technical Committee submits technical documentation issues to Microsoft, and the timeliness of responses is measured by specifically established Service Level Guidelines. Until late 2005, the joint status reports were showing that Microsoft was meeting the guidelines nearly 100% of the time. Since November 2005, both Microsoft and the Plaintiffs acknowledged that Microsoft had started to fall significantly behind, and proposed to the Court that Microsoft file monthly reports on its cooperation with prototype projects run by the Technical Committee. Even where problems arise, Microsoft staff have worked with Technical Committee staff in order to develop improvised solutions that would ensure that data collection and testing is not delayed. In their filing from Jan. 23, 2006 the Plaintiff authorities comment that "[b]y the time of the next Joint Status Report, we should have a clearer picture of whether the improvised solution has worked." Microsoft: The case that won't quit - Deadlines Slip, "mistakes" are made, FTC:Watch No. 668, at 11-12 (Jan. 30, 2006).

principal and the monitor have imperfect knowledge, the principal has less knowledge. This is why the principal relies on the monitoring agent to assist in implementing the decree. Since, in both the non-settling states proposal and in the European remedy, the monitor is given a broad mandate, and is not specifically hemmed in by a set of rules, it is not clear how such an all powerful trustee is held accountable and by which body. There is no mechanism in these proposals that guarantees that the monitor would not be subject to capture, or would not be self-aggrandizing or that she would not pursue her professional, rather than the public, interest.

The only proposal of the non-settling states accepted by the district court was to appoint an internal compliance officer within Microsoft by a committee of independent directors, who is given considerable autonomy in monitoring activities within the company. The rationale for such a proposal is to inject considerations relevant to antitrust compliance into the highest levels of strategic thinking within the corporation.[273] However, in light of the growing recognition of the weaknesses of existing forms of corporate oversight, there are reasons to doubt that the corporate governance route provides an effective response to the monitoring problem. After all, because directors rely almost entirely on information from the agents whom they are supposed to govern and monitor, they are victims to the selective and opportunistic presentation of information. This would also be the case for a semi-autonomous compliance inspector answerable only to independent directors and existing ostensibly outside the structure of the company's regular operations.[274]

This discussion demonstrates the merit of relying upon a number of separate channels for monitoring and implementation adopted in the negotiated decree by the DoJ. For instance the peer-evaluation channel, through the technical committee, can, on an on-going basis, tap into on-the-ground expertise in order to assessthe significance of claims and disputes that arise between the regulated entity, other firms in the market or the antitrust agencies. The reporting channel (performed jointly byMicrosoft and the DoJ) provides for public evaluation of the implementation of the decree, which promotes learning by all who are involved in the process (including other firms). This creates opportunities for adjustment of regulatory and business strategy. For example, Microsoft

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[273] Such a proposition seems particularly apposite, given Farrell and Weiser's argument that in some instances the platform monopolist acts in ways that are not necessarily consistent with its own medium to long term self-interest. Injecting the antitrust perspective (including promoting collaborative relationships and promoting an innovative downstream market structure) at the strategic level may be an occasion to disrupt and reflect upon a proposed course of action consistent with such a perspective, revealing effects or possibilities previously not considered.

[274] In fairness, to the states and their expert advisers, this was not their only proposal for an institutional alternative, but this was the only one the Court was willing to accept.

and the DoJ have jointly proposed adjustment of some of the strategies pursued where they were not achieving the goals of the decree.[275] The learning by the principal (the DoJ) about the market, through direct engagement with Microsoft in drawing up the joint reports, is in itselfa n accountability check on the technical committee. Further, if the remedy persistently fails in promoting the desired goals, such engagement gives the DoJ a better appreciation for the need of further action and the kinds of action that might be feasible. Finally, the possibility for the court's jurisdiction to be re-engaged, possibly with more blunt and draconian solutions, provides not only a final instrument in the armory, but an important background threat that provides incentives for the regulated entity to cooperate and work within the remedial decree mechanism.[276]

(b) The role of third parties in the remedial process

Expanding rights of participation within the remedy mechanism can improve both its efficacy and accountability. Both the U.S. litigation and the decision of the European Commission thatled to the above remedies arose from government prosecution efforts under the respective antitrust laws of the two jurisdictions. As such, it was only Microsoft and the prosecuting government agencies that were direct parties to the disputes. However, those government efforts were generated and informed by complaints from firms who were either subject to the restrictive practices employed by Microsoft, or the targets of such practices. In the United States, the government litigation ran parallel with a number of private suits against Microsoft by its rivals, such as Netscape, Sun Microsystems and others.

The ability of third parties to have a direct "voice in this process"[277] enables the monitoring mechanism to tap into the local knowledge of participants in the industry, to understand their concerns and to learn about technological capabilities of different solutions based on benchmarking with solutions of other firms. This strengthens the monitor's ability to assess the actions, claims and capabilities of Microsoft. Judge Kollar-Kottelly acknowledged that "very often such third parties will be most immediately aware of Microsoft's conduct."[278] If modern antitrust remedies are to resolve governance problems in the context of innovative collaborations, it is third party firms thatare most immediately affected by such conduct. Consistent pressure from third party submissions

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[275] An opportunity to be part of the process of generating alternative courses of action, with the need to justify those alternatives, improves the quality of the information supplied my Microsoft to the implementation process.

[276] *Cf* Karkkainen, supra n. XX.

[277] 224 F. Supp 2d 76, 181.

[278] *Id.*

to the monitoring and remedial bodies (whether from software developers, equipment manufacturers, final consumers, or academics) also enhances the accountability of the monitors. To the extent that the monitoring agent is primarily reactive to third party complaints, such direct participation prevents them from shirking, or getting captured or self-aggrandizing.

In light of the potential benefits of broader participation outlined above, the District Court's refusal to allow third parties to directly participate in the implementation mechanism is puzzling.[279] The Court's justification that the plaintiff-states themselves should "assess the assertions of such third parties for merit" and bring such complaints to the remedial mechanism for resolution is not very satisfactory.[280] After all, the fact that the government authorities call upon the services of aseparate monitoring body, and rely on third party complaints, is essentially, an admission of their inability to guide the implementation process themselves. This may be due to their ability to assess the merits of certain complaints or out of fear that they may be subject to capture or the selective presentation of information. Given the court's insistence that the antitrust authorities should act as an additional filter to third party complaints, the limitations of those authorities' will constrain the efficacy of the remedial mechanism.

(c) Forward-looking mechanisms

In asking for an alternative substantive remedy, the non-settling states' key argument was that the terms of the DoJ decree did not go far enough to guarantee the restoration of competitive conditions in the market. The states had three specific concerns. First, they claimed that the decree narrowly defined the middleware applications to which it was principally addressed, and did not cover a sufficient range of applications that could pose a threat to the Windows operating system monopoly, particularly in light of the dynamism of the market and the changes that had already taken place since the litigation was commenced. For example, even before the litigation was concluded, Microsoft had stopped engaging in many of the restrictive practices impugned by the original DoJ complaint.[281] Similarly, by the time the remedy was implemented, applications such as the Netscape browser were no longer viable competitors. Second, the states argued that the DoJ decree did not provide sufficient levels of disclosure by Microsoft of the information necessary for developers to write applications that would communicate with the Windows system and effectively compete with Microsoft's own

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279 *Id.*

280 *Id.*

281 *See* William E. Kovacic, *Designing Antitrust Remedies for Dominant Firm Misconduct*, 31 CONN. L. REV. 1285, 1291 (1999).

applications (a similar concern was the basis of the European case). Finally, the non-settling states also argued that limiting the term of the decree to only five years was insufficient.

The DistrictCourt rejected all of the above suggestions for expanding the scope of the decree so as to make it forward looking. The court's opinion did not analyze the substantive reasons offered for an extended scope. Instead, the court emphasized that the remedial mechanism was primarily a compliance mechanism, which meant that its provisions had to be limited by the practices identified in the original complaint and found to be illegal by the D.C. Circuit. While recognizing that it had the power to implement a remedy with much broader scope, the Court viewed an extension of either the time or the scope of the decree as illegitimate:[282] " This suit, however remarkable, is not the vehicle through which Plaintiffs can resolve all existing allegations of anticompetitive conduct which have not been proven or for which liability has not been ascribed."[283] Commenting on the terms of the decree, Judge Kollar-Kottelly went on to observe that "the Court has taken great care to provide the parties with a decree which is unambiguous in its terms so as to ensure that Microsoft's compliance is readily achieved."[284]

Such a characterization of the remedial mechanism is inadequate for at least three reasons. First, given the scope and the breadth of the Microsoft litigation (with a number of iterations through government prosecutions in the U.S., Europe and elsewhere, many private suits, and unsuccessful attempts to formulate an acceptable and effective remedy), it is very unlikely that an effective final remedy could be in the form of a decree entirely free from ambiguity in its terms. The key reason for the complexity of the litigation was the profusion of ambiguity — about the nature of the competitive interactions in the market, the ultimate effects of the impugned conduct, as well as the outcomes of any remedial efforts implemented. Given this background, if the final decree was "unambiguous in its terms," this could only be either because Microsoft had already stopped to engage in the practices covered by the decree, or alternatively because the decree was so narrow in its scope that market developments had made it irrelevant. Furthermore, it is clear that Microsoft and the DoJ did not view the decree as being

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[282] 224 F. Supp 2d 76, 192-93, 240. Massachusetts was the sole state that appealed this judgment to the D.C. Circuit, which unanimously affirmed the district court's decision. See Massachusetts v. Microsoft, 373 F.3d 1199, 1216, 1222-25 (D.C. Cir. 2004).

[283] 224 F. Supp 2d 76, 192.

[284] *Id.* at 181. Judge Kollar-Kottelly went on to cite from the transcript of testimony by Microsoft Chairman Bill Gates that the decree provides "clarity of [Microsoft's] obligations that allows [the company] to direct [its] employees ... to steer absolutely clear of ever violating one of these things." *Id.*

water-tight, since the joint reporting mechanism provides scope for exploring different strategies to advance the goals of the decree.

Secondly, as a matter of legal principle, there was no reason why the terms of the final decree should be tightly hemmed in by the judicial findings of violation.[285] After all, no criminal sanctions or fines were imposed on Microsoft or Microsoft officers in the U.S. litigation. The court did not award damages, nor was the most drastic of measures, the break-up of the company, ultimately considered or adopted. Had those standard antitrust remedies been sought or imposed, the case for limiting the remedy to the findings of liability would have been stronger — either because of concerns about fairness, or because of the need to tailor and quantify monetary or structural remedies. In fact, the main advantage of the diffuse remedial architecture established in the decree, with opportunities for the parties to learn and adjust strategy mid-course, is precisely to avoid difficult ex anteline- drawing in circumstances where the future of the market is difficult to predict. If similar questions arose in the future, with similar underlying problems about mediating cooperation and competition, there is no reason not to resolve those problems within the same mechanism that resulted from the original litigation. This seems preferable from the perspective of every party involved, compared to the alternative of re-engaging the cumbersome, lengthy and expensive apparatus of another antitrust litigation.

Thirdly, as the District Court recognized, the remedial mechanism established by the decree was, to a large extent, an alternative forum for dispute resolution between Microsoft and firms that operate in markets related to the Windows operating system.[286] This view is uncontroversial in light of the inherently collaborative nature of inter-firm relationships in this industry and the dangers for collaboration break-down outlined earlier.[287] However, if the remedial mechanism is to be a forum for resolution of future disputes, it is difficult to view it as a classic compliance regime — particularly since in these industries, the past is unlikely to repeat itself.

To make the same points in a different way, Microsoft's aggressive practices directed at Netscape or Java created disincentives for firms to cooperate with Microsoft and innovate within its network, since Microsoft, as the owner of the platform standard, could determine the dynamics of competition and innovation in the sector. The decree

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[285] It is worth noting that the initial negotiation for a settlement decree was instigated by the original trial judge, Judge Jackson, after he delivered his findings of fact, but before he issued any findings of liability.

[286] 224 F. Supp 2d 76, 181 (the Court faulting the plaintiff states for not having included a dispute resolution provisions in their proposed decree).

[287] Microsoft Decree IV.D.1.

provided a framework for the re-building of collaborative relationships in the industry which would benefit innovation.[288] In this context collaboration does not mean simply working together, which is essential in order for related products and services to interoperate, but also engaging in the deep sharing of information necessary to produce novel and robust solutions.[289] The decree mechanism could give smaller innovators a venue in which they can air their grievances to the extent that they believe that Microsoft has appropriated the value of their joint collaborative investigation, or that its actions are likely to harm the public interest in some other way. Such complaints are not guaranteed to have merit, nor will they necessarily be heard. However, this process provides opportunities for a more deliberate evaluation, even of their own interests, by Microsoft and other firms in the industry. For the decree to perform this role, unlike ordinary antitrust litigation, it does not create opportunistic incentives for disgruntled competitors to sue for treble damages in hoping to exploit the sentiments of an uninformed jury or judge or, alternatively to use such a threat as a tool to achieve a favorable settlement.

On this view, the antitrust decree could result in a forward looking governance mechanism that would form the basis for an alternative regime of self-regulation of inter-firm relationships in the industry. Not only is the availability of such a process beneficial to all participants in the industry — including, we should emphasize, Microsoft as the network owner — but the technical committee and the joint reporting process also generate information and knowledge about the technology and inter-firm relationships that can be used in either adjusting the decree[290] or in a subsequent more ambitious regulatory effort if this proves necessary.

E. Why antitrust?

It comes as no surprise that, as the structure of markets and inter-firm relationships changes, so will the role of antitrust law. Thus, given the tendency towards

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[288] The dispute resolution mechanism utilizing the technical committee and the internal compliance unit is particularly important in this context. Microsoft Decree IV.D.1, 2 and 3.

[289] The dispute resolution mechanism utilizing the technical committee and the internal compliance unit is particularly important in this context. Microsoft Decree IV.D.1, 2 and 3.

[290] In a joint status report in January of last year, the parties noted that the licensing arrangements that were put in place to ensure interconnectivity of servers with the Windows operating system were not attractive to potential licensees and did not spur the growth of possible alternative platforms. *See* Joint Status Report on Microsoft's Compliance With the Final Judgment, January 16, 2004. Note that this is precisely the issue that the European Commission was concerned with, although unlike in Europe, in the U.S. this part of the remedy was justified by the affirmative predatory acts that Microsoft was found to have committed. *See* Massachusetts v. Microsoft, 373 F.3d 1199, 1216, 1222-25 (D.C. Cir. 2004) (Ginsburg, C.J.).

networked forms of production among collaborating firms, the antitrust concern shifts away from static efficiency towards the governance issues presented by innovative collaborations, particularly because the other possible governance mechanisms cannot fulfill that role. Yet this Article does not suggest that antitrust mechanisms are likely to proliferate as an aid to inter-firm collaboration more broadly. Such a claim would be both conceptually unappealing and practically unattainable in a market economy. In the majority of cases, antitrust intervention is not likely to be necessary. Inter-firm collaborative problem-solving is already prevalent as a mode of production and innovation, and in most cases firms find ways to manage their cooperation effectively. Those are caseswhere the intense mutual provision of information about designs and capabilities, the uncertainty about the future environment and the potential gains from the mutual exploration are a sufficient check on opportunistic conduct.[291]

Within the modes of production of the new economy, competition continues to play a key moderating and disciplining function — as a spur for innovation, as an incentive to find good collaborators and as a control on collaborator opportunism. For instance, firms rely on benchmarking to identify the space of possibilities and to verify the claims of the firm's collaborators, but this discipline depends on the availability of solutions developed by other firms, not only those who are immediate competitors, but also those facing similar design or production problems in other markets. Moreover, the tendency towards flexible modes of production leads to an increased de-specification of assets which reduces the opportunities for hold-up by collaborators:

> [T]he master resource in the new system is the ability to re-deploy resources fluidly. ... [T]he novel search routines and problem solving disciplines help develop this flexibility by breaking apart static procedures. Equally important is the capacity to re-use a high ... percentage of capital equipment committed to one project in subsequent ones ... The greater a work team's command of the search routines, the problem solving disciplines and the re-configuring of flexible equipment, the more accomplished it becomes at re-deploying any resource. The effect is that product-specific resources are 'de-specified,' coming increasingly to

[291] Alternative institutional forms for managing collaboration have emerged, including consortia in which producers help sub-contractors to develop capacities for problem-solving collaboration. *See* Josh Whitford and Jonathan Zeitlin, *Governing Decentralized Production: Institutions, Public Policy, and the Prospects for Inter-Firm Collaboration in the US*, 11 INDUSTRY & INNOVATION 11 (2004).

> resemble general purpose assets, and thus no longer the instruments or object of hold-up.[292]

Despite the fact that certain mechanisms for controlling opportunism are inherent in the modes of production, as this Article demonstrates, there remain situations in which cooperation break-down (particularly in distributing the fruits of the joint collaboration) can occur, and where the possibility of such break-down can act as an ex ante disincentive to cooperate. Furthermore, none of the usual ex ante mechanisms, such as contracts or property rights, provides a promising instrument for resolving or attenuating the governance problem. Once disputes arise, the parties do invoke the antitrust laws as an instrument for dispute resolution. A possible response of the antitrust authorities is to treat this problem as being outside the antitrust purview, even though it affects the competitive dynamics in the market, the rate of innovation and consumer welfare. Alternatively, if the antitrust institutions decide to intervene, any intervention — even a seemingly simple duty to provide sufficient interoperability information — requires a mechanism to oversee the implementation, and even more importantlyto determine the content of the duty (what is "sufficient interoperability information"). The threat of damages is a clumsy deterrence mechanism, since both sides can have legitimate (or non-opportunistic) reasons for ending the collaboration. Therefore, the danger of an award of damages ex post only deters, rather than promoting collaboration.

Many of the antitrust cases discussed in the Article arise in contexts where for a given reason, such as strong network effects, increasing returns to scale, or in a quasi-regulated setting, a firm has an overwhelming share of the market in a product which becomes a platform to which other firms must adjust their own products. For that reason alone, some degree of cooperation becomes inevitable in those settings. The control over the platform product gives the firm the power to act opportunistically in negotiations with its collaborators, including a disproportionate ability to appropriate the results of the joint exploration (either directly or through integrating vertically) and to inhibit the innovation efforts of its rivals. Somewhat surprisingly, the dominant firm may do so even in situations where integration would not serve its own interest, properly defined. Therefore, the availability of ex post antitrust governance mechanisms can provide a credible instrument to "ty[e] the king's hands"[293] - enabling a dominant firm to garner the diversity of collaborators in problem-solving innovation in a way that helps it advance its own self-interest.

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[292] Helper, MacDuffie, Sabel, supra n.XX at 472.

[293] Miller, Managerial Dilemmas at 155-56 (borrowing the phrase from Hilton L. Root, *Tying the king's hands: Royal fiscal policy during the Old Regime*, 1 RATIONALITY & SOC'Y 240 (1989)).

The remedial solutions that have emerged are more closely tailored to the problems that beset these relationships. In accordance with the modern principles of organizational success, the antitrust governance mechanisms are not hierarchical - they aim to generate knowledge and encourage cooperation by preventing unthinking and opportunistic reliance on self-help strategies.[294] Precisely for this reason, these mechanisms are preferable to the many alternative proposals for new administrative or legislative tools to cope with the antitrust challenges presented by the transformation in the nature of productive relationships in the new economy.

The enactment of the National Cooperative Research Act ("NCRA") was the first, although very partial, legislative measure that attempted to deal with the disjuncture between the classic concerns and remedies of antitrust law and the need for and the profusion of deeply intimate collaborations among modern firms.[295] The key reform introduced by this Act was to reaffirm that collaborative research ventures were not per se illegal under the antitrust laws, and instead scrutinized under the rule of reason.[296] In a number of contributions, Jorde and Teece criticized the NCRA reforms as insufficient for two reasons.[297] First, in their view the uncertainty of the contentand applicatio n of the rule of reason was a continuing disincentive for collaborative innovation. Secondly, they argued that the NCRA was drafted on the erroneous premise that innovation was a serial process which began with research and ended with production, instead of the on-going iterative and recursive process described earlier in this Article. Jorde and Teece proposed that the safe harbors in the NCRA be extended not only to jointresearch, but to all collaborations involving innovative joint production, commercialization and distribution. Further, in order to ensure that such joint arrangements were not used as a cover for collusive behavior, Jorde and Teece proposed transferring responsibility for antitrust review from the courts to the agencies. Namely, the parties of a proposed collaborative venture could notify the venture to the antitrust agencies, and the agencies would vet the proposal and provide antitrust clearance for those ventures that do not raise anticompetitive concerns.[298]

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294 *Cf.* Sabel, Real Time Revolution at 108-09.

295 15 U.S.C. §§ 4301-4306. The NCRA was amended in 1993 and renamed to the National Cooperative Research and Production Act.

296 15 U.S.C. § 4302.

297 *See generally* Thomas M. Jorde and David J. Teece, *Innovation, Cooperation, and Antitrust: Balancing Competition and Cooperation*, 4 HIGH TECH. L.J.1, 62 -80 (1989); Jorde and Teece, supra n.XX, at 71-81.

298 Thomas M. Jorde and David J. Teece, *National Cooperative Research and Commercialization Act: Legislative Proposal by Professors Thomas M. Jorde and David J. Teece*, *in* Antitrust, Innovation and Competitiveness 71, 71-72 (Thomas M. Jorde and David J. Teece eds., 1992).

While the above proposals have been partially implemented,[299] they are insufficiently sensitive to the limitations of a system of notification and clearance both generally, but especially in highly dynamic contexts. Such a regime places an enormous administrative burden on the agency to make an ex ante judgment about the likely competitive effects of collaborative ventures based on a voluminous record of documents, before the venture has even commenced its activities. The Jorde and Teece proposal did not provide any mechanisms through which the agencies would overcome the limits in their own capacity, in order to gain knowledge about the relevant market.[300]

In a world in which collaborative inter-firm relationships are widespread, a regime for administrative notification and clearance must be either perfunctory or entirely meaningless. The purpose of the new collaborations is not to implement a particular joint plan, but instead to jointly learn about the world which is dynamic and unpredictable. In light of that purpose, the antitrust agencies are simply not capable of making ex ante predictions about the competitive significance of an arrangement without actually monitoring its implementation. Apart from the fact that such a regime does not effectively guard against possible collusive arrangements, the clearance procedure only protects the collaborating parties from opportunistic use of the antitrust laws by competitors (or consumer plaintiffs) outside the venture. However, as described earlier in this Article, the disputes leading to innovation bottlenecks can arise due to opportunistic conduct within collaborative relationships and out of attempts to exploit other collaborators. This is a problem for which the clearance regime offers no solution. Furthermore, the technological complexity of new economy markets creates novel opportunities for collusive arrangements, while making it increasingly difficult for the antitrust authorities to appreciate and detect them,[301] unless they have ways of monitoring and learning about new technologies and market relationships.

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[299] In particular, § 4301(a)(6) extended the application of the Act beyond research and development activities to ventures engaged in the production of the product, process or service (although not commercialization, marketing and distribution as Jorde and Teece had suggested). Also, § 4305 permits the joint venture to be notified to either the DoJ or the FTC. While the agencies do not provide any ex ante clearance for the venture, the notified activities of the venture cannot be the basis for a treble damages suit under the federal or state antitrust laws. 15 U.S.C. § 4303.

[300] Jorde and Teece viewed the European Union as a paradigmatic example of a competition law regime that adopts the notification and clearance system, as a way of promoting collaboration and innovation. Jorde and Teece, supra n.XX, at 77. However, since 2004 the European Union has abandoned the system of notifying inter-firm arrangements to the European Commission for clearance precisely because of the administrative burden on the Competition Directorate, diverting it from other activities, and the fact that this provided only a limited opportunity for a meaningful review of the notified arrangements. See Council Regulation 1/2003, 2003 O.J. (L1) 1.

[301] Avery W. Katz, *Contract Law in the Age of the Internet: An Economic Analysis*, *in* ECONOMIC ANALYSIS OF THE SOCIAL PROTECTION PRINCIPLE IN CIVIL LAW (Hans-Bernd Schafer & Claus Ott.

New legislation is also unlikely to address these governance problems adequately and timely. For example, some have argued that in preference to ad hoc dilution of intellectual property rights by antitrust courts, legislatures are better situated to implement detailed statutoryaccess regimes that regulate the conduct of the owner of a bottleneck in production and innovation, should they deem that the public interest is sufficiently engaged.[302] However, for a statutory regime to be enacted, the particular problem must be sufficiently salient to attract legislative attention. The legislative machinery operates slowly and the point at which legislative intervention is needed is not always apparent. Even for problems which are sufficiently salient,[303] legislative solutions are by definition ex cathedra and difficult to alter. In a dynamic market environment, detailed and specific statutory schemes would tend to be too rigid and become obsolete relatively quickly. Yet a broadly worded statute would need to rely on the courts or some other mechanism for interpretation and implementation.[304]

The antitrust remedies described earlier are preferable to comprehensive legislative solutions for at least two reasons. The flexible remedy implemented through an antitrust intervention, which leaves a high degree of autonomy on the regulated entities and provides mechanisms for on-going adaptation, can be a first step towards identifying both the extent of the problem and the range of possible and appropriate responses. If developments in the industry or technology circumvent the bottleneck problem, the antitrust remedy can be easily terminated. Further, if the problem persists, the antitrust remedy is a mechanism for resolving disputes and generating information that builds capacity to develop a more fully fledged regulatory effort by Congress, should that become necessary.

VI. Conclusion

Tubingen eds., 2004) (with the expansion of electronic commerce, sellers may pursue market division strategies by restricting the ability of consumers to deal across incompatible networks).

[302] Elhauge, supra n.XX at 303.

[303] Presumably, the Microsoft problem would be such a case, given the widespread use of the relevant products, however beyond that the determination becomes far more uncertain.

[304] For those reasons, no legislative schemes have been adopted to deal with the limitations of the antitrust regime described in this paper. The antitrust laws have rarely been amended in more than a century to either elaborate more specific rules that govern conduct, or to deal with the profound changes in productive relationships that have occurred since their original enactment. In addition, even where statutory schemes of access to infrastructure have been adopted, such as the Telecommunications Act of 1996, 47 U.S.C. § 251 et seq, it was based on the accumulated experience from the courts mandating access to competitors in the aftermath of the antitrust break-up of the AT&T monopoly.

In a recent article comparing the evolution of U.S. and European antitrust law, John Vickers has argued that antitrust can develop into either a form based or an economics based law. He proceeds to endorse the latter as a sounder basis for future evolution and elaboration of European competition law.[305] In his view, form based antitrust law aims to develop rules that describe the kinds of conduct that business firms should avoid.[306] By contrast, economics based evolution would allow the law to distill underlying principles with reference to actual or potential economic effects. According to Vickers, economics based evolution is preferred because this approach aligns competition law with its economic purposes and contributes towards making the law internally consistent.

Yet Vickers' distinction between form and economics based law may not be as simple nor withstand further scrutiny, unless it is linked to a further claim about institutional responsibilities for decision-making and mechanisms for knowledge acquisition. If economic analysis could supply *ex ante* efficiency-based rules to isolate conduct likely to be harmful, then this would be nothing but a description of the types of conduct that firms must avoid, eliminating any difference between form and economics-based evolution.[307] If the distinction is to hold, therefore, Vickers must be envisaging largely *ex post* analysis of the actual or potential effects of impugned business conduct, presumably through extensive involvement of economic experts.

However, in the U.S. at least, the courts did not whole-heartedly embrace such a project. While the Chicago era focus on efficiency may have been appropriate for the Chandlerian production landscape, the courts are not institutionally well-suited either to promote efficiency or to arbitrate expert disputes. Instead, they have invoked formalist legal screens to limit *ex post* admission of factual and expert evidence in antitrust disputes, even if the doctrinally supple rule of reason allowed (or encouraged) it.[308] On the one hand, the generation of economic knowledge occurs in one space, often in a conflicting and evolutionary manner. On the other hand, this knowledge was translated into economic precedents that satisfy the requirements and limitations of the judiciary. Such precedent, once encrusted, discourages the questioning of even erroneous principles, or presumptions arising out of ideological habits.

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305 John Vickers, *Abuse of Market Power*, 115 ECONOMIC J. F244, F259-F260 (2005).

306 *Id.* at F260.

307 This is unless, of course, "form based law" also incorporates values apart from economic efficiency, but that is a very different argument.

308 The fear of the courts was, in part, due to the fact that ex post adoption of knowledge which is highly context dependent would not lead to a coherent set of doctrinal rules. Lopatka and Page, supra n.XX at 695; Harry First, *Is Antitrust 'Law'?*, 10 Antitrust 9 (1995).

More importantly, as firms and markets have changed, the static allocative efficiency paradigm is less relevant to the new antitrust regime. Post-Chandlerian market relationships are characterized by vertically disaggregated, federated and networked firms. Underlying market conditions change rapidly, so innovation is an essential aspect of success and often takes the form of routine problem-solving and re-application of existing knowledge to novel contexts. Collaboration is endemic, as a way of disrupting organizational routine and generating otherwise inaccessible information necessary to formulate, evaluate and adjust novel designs. In this environment, collaboration with customers, vertically related firms, but also current or former horizontal competitors is not merely an aspiration, but an empirical fact. Such changes in the nature of the firm lead to novel problems of managing joint co-development and complex strategic interactions in a dynamic world.

Therefore, contemporary antitrust interventions focus on regulating the forms of inter-firm cooperation indispensable to innovation, a problem which antitrust law traditionally disclaimed[309] and yet one that cannot be resolved through alternative governance mechanisms such as contract or property. Since it cannot rely on the traditional deterrence model, the new antitrust policy is more ambitious, and must overcome the limits of the standard decision-making mechanisms. Thus, this Article considers a third alternative, of an institutions-based elaboration of antitrust law,[310] which Vickers' apparently exhaustive covering of the field does not contemplate. The new competition policy is based on designing remedies that resolve concrete problems in inter-firm relationships. Such an antitrust policy is more attuned to the nature of relationships and interaction among firms – it is neither inherently suspicious of firm action and inter-firm collaboration, nor rooted in the belief that the market is presumptively efficient and self-correcting. As a result, in its new phase antitrust is less abstemious and self-abnegating compared to its recent past, yet it is not the activist enforcer of democratic values of an earlier era. The inspiration for these proposals, as is often the case, comes from actual practice – the emergence of non-hierarchical remedial decrees that generate knowledge in order to adjust to a dynamic environment, in which the courts merely support an emergent regulatory regime. The Article identifies criteria for evaluating those mechanisms in order to understand when and how they may be useful and to stimulate further thinking about improving their design.

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309 Olympia Equipment Leasing Co. v. Western Union Telegraph Co., 797 F.2d 920 (7th Cir. 1986); Trinko. Cf Aspen Skiing Co. v. Aspen Highlands Skiing Corp., 472 U.S. 585 (1985).

310 *Cf.* Michael C. Dorf, Legal Indeterminacy and Institutional Design, 78 N.Y.U. L. REV. 875 (2003).