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Promoting Innovation Competition through the Aspen/Kodak Rule

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This article is about the design of an antitrust rule. The central question is whether antitrust should employ a structured or truncated analysis rather than an unstructured review of the reasonableness of defendant's conduct in evaluating a monopolization allegation. This type of question frequently arises in thinking about Sherman Act § 1; this article considers the question with respect to Sherman Act § 2 doctrine.

The project of identifying appropriate truncated judicial decision rules is consistent with an economic approach to antitrust enforcement. Indeed, Chicago school commentators have embraced it by proposing new per se rules or structured decision rules intended to make antitrust law more economically rational. The tradeoffs involved in choosing between truncated and unstructured review can be set forth briefly. All truncated rules amount to instructing courts not to listen to certain kinds of evidence. Their use thus raises the possibility that the court will get the answer wrong. And there is a fairness concern: why not look at evidence that one party thinks would be relevant? The answer may be that it could be very costly to consider that evidence, and doing so may not alter the outcome. That is, the additional evidence may be difficult to uncover, expensive for other parties to confront in an adversarial setting, and hard for a fact-finder to evaluate—and in the end, the court's decision may be unlikely to vary from the outcome that would have arisen without considering it. In short, in some cases bright-line rules can reduce the transactions costs of operating the judicial system without markedly increasing the likelihood or costs of judicial errors. The key to developing good trun-
cated rules is to base them on readily observable conduct whose presence or absence is highly correlated with the conclusion a court would reach were it to conduct a full analysis.⁶

The truncated rule discussed in this article was established in two Supreme Court monopolization decisions, *Aspen Skiing v. Aspen Highlands Skiing Corp.* ("*Aspen Skiing*")⁷ and *Eastman Kodak Co. v. Image Technical Services, Inc.* ("*Kodak*").⁸ The rule may be stated as follows: a firm with monopoly power violates Sherman Act § 2 if it excludes⁹ rivals from the monopolized market by restricting a complementary or collaborative relationship without an adequate business justification. Section I below highlights that the *Aspen/Kodak* rule does not require proof of harm to competition; harm is inferred if the dominant firm exploits a complementary or collaborative relationship to exclude and the dominant firm’s proffered business justification is insufficient.

A court can thus apply the *Aspen/Kodak* rule by looking at two readily observable factors—exclusion that exploits a complementary or collaborative relationship and the absence of a satisfactory business justification—without taking on the task of evaluating harm to competition. The harm to competition inquiry is likely to be especially difficult when the effects would mainly be prospective. Section II explains why a rule based on these two factors is likely to promote innovation in industries with a dominant firm where innovation competition is effectively "winner-take-all" and where fringe rivals are in a collaborative or complementary (as well as competitive) relationship with the dominant firm.¹⁰ Winner-take-all

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⁹ "Exclusion," as a term of art in monopolization doctrine, does not require that the excluded firm exit from the market. The excluded firm need only be weakened significantly by the monopolist’s conduct, as happened to the plaintiff in *Aspen Skiing* and many of the plaintiffs in *Kodak*. In short, the term "exclusion" is properly understood as referring to a practice that "raises rival’s costs," either directly or indirectly through foreclosing a rival from inexpensive access to customers (thus reducing the rival's demand). See, e.g., Thomas G. Krattenmaker et al., *Monopoly Power and Market Power in Antitrust Law*, 76 GEO. L.J. 241, 249 (1987); cf. 3 PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶ 650a (rev. ed. 1996) (in defining exclusion, the focus should be on the potential benefit of the conduct to the monopolist, not the degree of foreclosure of the impaired rival); id. ¶ 651c (exclusionary behavior means conduct other than competition on the merits "capable of making a significant contribution to creating or maintaining monopoly power") (emphasis added).

¹⁰ The markets where innovation competition is winner-take-all and collaboration among rivals is common may include elements of the computing and communications industries, where government charges of unlawful monopolization have recently made headlines. This article will not, however, discuss the ongoing antitrust litigation involving Microsoft or Intel. See, e.g., United States v. Microsoft, No. 98-1232 (D.D.C. filed May 18, 1998); *In re Intel Corp.*, FTC Docket No. 9288 (filed June 8, 1998).
innovation competition will likely occur, for example, when intellectual property protections and network externalities are both strong and buyers have a low demand for variety. In such industries, the Aspen/Kodak rule encourages fringe firm innovation (by forbidding certain dominant firm tactics that could substantially reduce the returns to new products introduced by fringe firms) without markedly reducing dominant firm incentives to innovate (because those incentives are driven mainly by the large winner-take-all prize). The Aspen/Kodak rule thus proscribes dominant firm conduct that would likely be found to reduce innovation if evidence of harm to competition were considered.

The type of industry considered in Section II constitutes only one area of application for the Aspen/Kodak rule. This was not the type of industry at stake in the two cases in which the rule emerged, but it is worthy of special consideration because the stakes can be high when innovation incentives are at issue. Section III considers whether the application of the Aspen/Kodak rule is likely to foster competition in other types of industries.

I. THE ASPEN/KODAK LEGAL RULE

A. Aspen Skiing and Kodak

As a matter of black letter law, the offense of monopolization has two elements: (1) proof of monopoly power and (2) demonstration of its “willful acquisition or maintenance . . . as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.” The second component of the offense is commonly referred to as the “bad act” or “deliberateness” element. The Supreme

11 Network externalities arise when each customer’s valuation of a product or service increases with the number of other customers who purchase it. For example, telephone service is more valuable to everyone when most people in town have such service than it would be if few people in town were connected to the network. This effect can also arise without communication, in markets where goods have complements (like “hardware” and “software”); under such circumstances, the network externalities have been termed “virtual.” Here, each customer’s purchase of a product or service leads to increased purchases of the complement; with economies of scale in the production of the complement, the valuation of the first product to the next customer rises as the first product’s sales increase. See generally CARL SHAPIRO & HAL R. VARIAN, INFORMATION RULES 13-14, 183-84 (1999); Mark A. Lemley & David McGowan, Legal Implications of Network Economic Effects, 86 CAL. L. REV. 479 (1998). Network externalities tend to generate a winner-take-all competition in which the market “tips” to favor one firm. SHAPIRO & VARIAN, supra, at 176.

12 Seller scale economies could also generate winner-take-all innovation competition.

13 Thus, the consequences of antitrust rules for incentives to innovate were a major concern of a recent Federal Trade Commission staff report. 1 FED. TRADE COMM’N, ANTICIPATING THE 21ST CENTURY: COMPETITION POLICY IN THE NEW HIGH-TECH GLOBAL MARKETPLACE (May 1996) reprinted in Trade Reg. Reports (CCH) No. 424 Extra Edition (June 11, 1996).

Court’s *Aspen Skiing* and *Kodak* decisions set up a truncated inquiry for identifying a bad act.\(^{15}\)

The *Aspen Skiing* litigation arose out of a change in the way the Aspen Skiing Company (Ski Co.), which controlled three downhill skiing mountains in Aspen, Colorado, dealt with the Aspen Highlands Skiing Corp. (Highlands), which owned the only other downhill skiing mountain in town. In brief, for years Ski Co. and Highlands had together offered skiers a six-day, four-mountain ski ticket, allowing skiers access to all the mountains in Aspen at a discount from the daily rate, and dividing the revenue among the firms based on a survey of ski area usage among multi-area pass-holders. Thus, Highlands was a collaborator with Ski Co. as well as a competitor; Highlands’ product was a demand complement to Ski Co.’s product in producing the all-Aspen ski ticket.

In 1978, Ski Co. told Highlands that it was unwilling to continue offering a four-area ticket unless Highlands accepted a fixed percentage of revenues considerably below Highlands’ historical average based on usage. This proposal was unacceptable to Highlands, and Ski Co. instead sold a multi-area weekly ticket limited to the three mountains it controlled.\(^{16}\) Without participating in a convenient all-Aspen ticket, Highlands effectively became a day ski area in a destination market, and was placed at a disadvantage in attracting the patronage of the many skiers who came to Aspen from far away and stayed for a week. Highlands’ share of the market for downhill skiing services in Aspen declined steadily over the next four years to about half the previous level.

Highlands brought suit alleging that Ski Co.’s conduct violated the antitrust laws. The case was tried to a jury, which found Ski Co. guilty of monopolization under Sherman Act § 2. The district court denied Ski Co.’s motion for judgment notwithstanding the verdict and awarded damages. The lower court decision was affirmed by the Tenth Circuit and then affirmed in 1985 by the Supreme Court, in a unanimous decision authored by Justice Stevens (with Justice White not participating).

The Supreme Court did not review the jury finding that Ski Co. was a monopolist in the market for downhill skiing services in Aspen; the Court focused its attention on whether Ski Co.’s effective termination of the all-Aspen ticket was unlawful conduct by a monopolist. In doing so,

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15 These decisions have been widely discussed, but most of the attention has gone to issues other than the legal rule governing the conduct of a firm exercising monopoly power. In both cases, for example, the Court’s definition of the relevant market has been questioned. *Kodak* has also led to debates over the contours of tying law and the role of imperfect information and locked-in customers in antitrust analysis.

16 Ski Co. also discontinued offering a 3-day, 3-area ski ticket for one season. It later reinstated this ticket, but without publicity or a discount off the daily rate. *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 593 & 593 n.13 (1985).
the Court was required to construe the facts in a light most favorable to Highlands. It pointed out that Ski Co.'s conduct was a significant marketplace event, emphasizing that "the monopolist elected to make an important change in a pattern of distribution that had originated in a competitive market and had persisted for years."17 The Court concluded that this behavior was unlawfully exclusionary, rather than a legitimate business practice, for several reasons: Highlands' market share had declined; the four-area ticket that Ski Co. had effectively eliminated was superior in quality, from the point of view of consumers, to the three-area ticket that replaced it; and, "perhaps most significant[ly], ... Ski Co. did not persuade the jury that its conduct was justified by any normal business purpose."18 Indeed, Ski Co. "fail[ed] to offer any efficiency justification whatever for its pattern of conduct."19 The Court found this evidence sufficient to support the inference "that the monopolist made a deliberate effort to discourage its customers from doing business with its smaller rival" and "that Ski Co. was not motivated by efficiency concerns and that it was willing to sacrifice short-run benefits and consumer goodwill in exchange for a perceived long-run impact on its smaller rival."20

As with Aspen Skiing, the Kodak case emerged out of a change in a firm's business policies that harmed rivals by exploiting a relationship involving product complements. The Eastman Kodak Company ("Kodak") manufactured and sold photocopiers and micrographic equipment. It also sold service and replacement parts for its equipment. For several years, Kodak had sold replacement parts to independent service organizations (ISOs) and to customers obtaining service from ISOs. The ISOs were rivals of Kodak in providing service, but they were also distributors of Kodak parts; thus the ISOs and Kodak were "complementors" (sellers of demand complements), as well as competitors. The litigation arose out of Kodak's efforts to deny parts to ISOs, making it more difficult for ISOs to compete with Kodak in servicing Kodak equipment. Many ISOs were forced out of business, while others lost substantial revenue.

The ISOs filed suit, claiming that Kodak had unlawfully tied the sale of service for Kodak machines to the sale of parts in violation of Sherman Act § 1 and that Kodak had unlawfully monopolized the sale of service for Kodak machines in violation of Sherman Act § 2. After brief discovery, the district court granted summary judgment for Kodak. On review, in which facts were construed in a light most favorable to the

17 Id. at 603.
18 Id. at 608.
19 Id. The Court pointed out that Ski Co.'s claim, that a multi-mountain ticket shared by more than one firm could not be properly monitored, was contradicted by the prior experience in Aspen and by Ski Co.'s successful participation in interchangeable lift tickets in other multimountain areas. Nor was another claim, that Highlands offered an inferior product, convincing. See id.
20 Id. at 610.
ISOs, the Ninth Circuit reversed. In 1992, a Supreme Court majority of six agreed with the Ninth Circuit, and the case returned to the district court for trial. The three dissenting Justices had concerns unrelated to the formulation of monopolization doctrine. Indeed, they defended the importance of Sherman Act § 2 and emphasized that conduct that would be acceptable for most firms may raise antitrust concerns when undertaken by a monopolist.21

Most of the Supreme Court majority’s opinion was devoted to tying issues. When it turned to the monopolization claim, the Court first concluded, based largely on its prior analysis of tying, that the facts could establish that Kodak had monopoly power in two relevant product markets: parts for Kodak equipment and service for Kodak equipment. Moreover, the Court found that the ISOs had presented evidence from which a court could find that Kodak adopted exclusionary parts and service policies in order to acquire or maintain monopoly power. With these findings, according to the Court, “liability turns . . . on whether ‘valid business reasons’ can explain Kodak’s actions.”22 Although Kodak proffered three business justifications, the Court found that factual questions existed about the “validity and sufficiency” of each, making summary judgment inappropriate.23 Thus, “[n]one of Kodak’s asserted business justifications . . . are sufficient to prove that Kodak is ‘entitled to a judgment as a matter of law’ on respondents’ § 2 claim.”24

B. Truncated Analysis of “Bad Act”

Not everyone was convinced that the Court was establishing Sherman Act § 2 doctrine when Aspen Skiing was handed down.25 But

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21 Eastman Kodak Co. v. Image Technical Servs., Inc., 504 U.S. 451, 488 (1992) (Scalia, J., dissenting) (“Where a defendant maintains substantial market power, his activities are examined through a special lens: Behavior that might otherwise not be of concern to the antitrust laws—or that might even be viewed as procompetitive—can take on exclusionary connotations when practiced by a monopolist.”). The dissent challenged the majority’s conclusion regarding monopolization only with respect to the finding of monopoly power; the dissent did not need to discuss the majority’s analysis of exclusion and did not choose to do so.

22 Id. at 483.

23 Id. The first was to promote interbrand equipment competition by allowing Kodak to stress the quality of its service. The Court concluded that a trier of fact could have found this justification pretextual. The second was to reduce Kodak’s inventory costs. Here, the Court observed that Kodak’s actions seemed inconsistent with the claimed justification; most of the challenged conduct would not have reduced Kodak’s need to inventory parts. Finally, Kodak claimed it needed to prevent ISOs from free-riding on Kodak’s capital investment in equipment, parts and service. The Court rejected this argument on the grounds that the ISOs were also investing in the activities that would maintain Kodak’s reputation for quality (such as worker training and investment in parts inventories), and that the ISOs failure to enter the equipment and parts markets cannot constitute free-riding. Id.

24 Id. at 485-86.

25 Judge Posner read the case “narrowly” and questioned whether “it stands for any principle beyond its unusual facts.” Olympia Equip. Leasing v. Western Union Tel., 797 F.2d 370, 379 (7th Cir.
such a narrow interpretation of *Aspen Skiing* does not survive *Kodak.* The analytical route toward finding that the facts (construed to benefit the original plaintiff) could support a monopolization charge was similar in each case. The Court first found that the defendant had monopoly power in a relevant market and focused its attention on whether the defendant’s conduct satisfied the “bad act” requirement of monopolization doctrine. The legal analysis of that question in the two decisions shares three key features.

First, the Court found that a rival (or rivals) was substantially excluded from that market by defendant’s conduct, in the sense that the rival was weakened significantly (by a reduction in demand or increase in costs) or forced to exit. Thus, Highlands, the plaintiff in *Aspen Skiing,* was harmed but not forced out, and some of the ISO plaintiffs in *Kodak* were harmed but remained in business while other ISO plaintiffs exited from the market.

Second, in both cases the Court found that the monopolist excluded its rival or rivals from the market where the two competed by exploiting another relationship between the two, either a collaborative or complementary one. In *Aspen Skiing,* Ski Co. and Highlands collaborated on an all-Aspen ticket until Ski Co. chose to exclude its rival. In *Kodak,* firms selling demand complements, the situation in *Kodak,* are tacitly collaborators because they must recognize that an increase in the demand for one product raises the demand for the other. Each knows that its marketplace success depends on the demand for the “system” of complementary products taken as a whole, just as members of a formal collaboration understand that they sink or swim together. As a result, sellers of demand complements may coordinate product design and marketing, as well as new product development, much as formal collaborators often do.

Professor Areeda too sought to limit *Aspen Skiing*’s reach, mainly to discourage an interpretation that would permit liability to be based solely on an intent to exclude. Phillip Areeda, *Essential Facilities: An Epithet in Need of Limiting Principles,* 58 ANTITRUST L.J. 841, 848-50 (1989).

See Stephen Calkins, *Supreme Court Antitrust 1991-92: The Revenge of the Amici,* 61 ANTITRUST L.J. 269, 304 (1993) (After *Kodak,* “Aspen will be harder to limit; it (and *Kodak*) will be a challenge to interpret and apply.”).

Exit is not required. *See supra* note 9.

Firms selling demand complements, the situation in *Kodak,* are tacitly collaborators because they must recognize that an increase in the demand for one product raises the demand for the other. Each knows that its marketplace success depends on the demand for the “system” of complementary products taken as a whole, just as members of a formal collaboration understand that they sink or swim together. As a result, sellers of demand complements may coordinate product design and marketing, as well as new product development, much as formal collaborators often do.

Judge Posner reads *Aspen Skiing* to stand possibly for the principle “that a monopolist may be guilty of monopolization if it refuses to cooperate with a competitor in circumstances where some
the ISOs distributed Kodak parts while competing with Kodak on service, until Kodak denied them access to parts. The vertical (complementary or collaborative) relationship between the firms provided the plaintiff a prior business relationship with the monopolist that could be impaired; a change in prior conduct was a feature of both cases. The horizontal (competitive) relationship between the firms gave rise to the potential harm to competition.

Finally, in each case, the Court did not consider effect on competition in determining whether the monopolization offense could be found. Harm to competition was effectively inferred in each case from the absence of a valid and sufficient business justification. This inference is most clear in *Kodak*, where the Court did not consider effect on competition (harm to buyers). While the Court in *Aspen Skiing* did observe that the cooperation is indispensable to effective competition.” *Olympia Equip.*, 797 F.2d at 379. This formulation highlights that the rival is both a competitor and collaborator with the monopolist.

It does not appear to matter whether the complementary products are sold by the monopolist, the excluded firm or both. The focus is on whether the two firms are simultaneously rivals (in the monopolized product) and collaborators (in the sense that at least one sells a complement to the monopolized product), so there is a complementary relationship that the monopolist can exploit to exclude.


All market power is ultimately the result of a reduction in output (or other dimension of competition) by a monopolist or among horizontal rivals within a market, although market power can be obtained through non-horizontal exclusionary conduct. See generally Jonathan B. Baker, *Vertical Restraints with Horizontal Consequences: Competitive Effects of “Most-Favored-Customer” Clauses*, 64 ANTITRUST L.J. 517 (1996).

In both cases, the monopolist’s conduct excluded all of its rivals; absent an efficiency justification, consumers would almost surely have been harmed. But the Court never makes this observation, and thus cannot be said to have inferred effect on competition from market structure. Nor did the *Kodak* opinion’s earlier discussion of tying supply the missing effects evidence for either monopolization claim (equipment or service) in that case. In analyzing the plaintiff ISOs’ tying claim, the Court noted that service prices rose for Kodak customers. This could perhaps be construed as evidence that buyers were harmed by practices that maintained Kodak’s monopoly in service (when interpreted in conjunction with the Court’s observation that Kodak had never asserted that it prices equipment or parts subcompetitively). But the Court did not draw this conclusion; its observation about prices was instead part of an explanation of why defendant Kodak was not entitled to a legal presumption that it could not exercise market power in the parts and service “aftermarkets” if the equipment market is competitive. Thus, whether or not the majority thought buyers were harmed, getting higher prices and lower quality, it did not consider proof of harm to buyers to be an element of the monopolization
defendant's exclusionary conduct reduced the quality of the products available to customers, and referred to that inquiry as consideration of the impact of defendant's conduct on consumers, this evidence went toward establishing that the jury could have found that defendant sacrificed short term profits in order to reduce long run competition—and thus toward finding that defendant had no business justification.\textsuperscript{34} Moreover, regardless of what the Court intended in \textit{Aspen Skiing}, \textit{Kodak} read the earlier decision not to require proof of an effect on competition. The \textit{Kodak} opinion states that once respondent presented evidence that the defendant took exclusionary action to maintain its monopoly (and thus, given the procedural posture, once exclusion to maintain monopoly was demonstrated), liability then "turns" on whether valid business reasons can explain defendant's action—citing \textit{Aspen Skiing} as primary authority.\textsuperscript{35}

These three features of the analysis of "bad act" in \textit{Aspen Skiing} and \textit{Kodak} establish the elements of the \textit{Aspen/Kodak} rule: a firm with monopoly power violates Sherman Act § 2 if it excludes rivals from the monopolized market by restricting a complementary or collaborative relationship without an adequate business justification.

\section*{C. Open Questions and a Settled Issue}

The Supreme Court did not directly explicate this rule as doctrine in \textit{Aspen Skiing} and \textit{Kodak}, so many of the elements of the rule are not discussed in detail and must be inferred.\textsuperscript{36} Consequently, a number of im-

\textsuperscript{34} \textit{Aspen Skiing Co. v. Aspen Highlands Skiing Corp.}, 472 U.S. 585, 610-11 (1985). In addition, the \textit{Aspen Skiing} opinion explains its statement that impact on consumers is "relevant" to the characterization of defendant's conduct as exclusionary by a passage from the Areeda and Turner treatise that defines exclusionary behavior as conduct that not only impairs the opportunities of rivals, " but also . . . either does not further competition on the merits or does so in an unnecessarily restrictive way." \textit{Id.} at 605 & n.32. This definition focuses on business justification (and less restrictive alternatives), not harm to competition.

For an alternative reading of \textit{Aspen Skiing} as requiring plaintiff to show harm to consumers, see \textit{HOVENKAMP, supra} note 31, at 264. Professor Hovenkamp can be found on both sides of the argument, as he had previously read \textit{Aspen Skiing} to suggest that the Sherman Act is violated by conduct that raises a rival's costs without creating an efficiency, apparently without need for proof of market power. Herbert Hovenkamp, \textit{Antitrust Policy After Chicago}, 84 Mich. L. Rev. 213 (1985). In that article, Professor Hovenkamp defines an efficient exclusionary practice as one that increases industry-wide demand, thus following \textit{Aspen Skiing} in looking at the impact of defendant's conduct on buyers as a basis for evaluating the adequacy of the proffered business justification (rather than as an element to be demonstrated separately). \textit{Id.}

\textsuperscript{35} \textit{Eastman Kodak Co.}, 504 U.S. at 483. The Court also relied upon \textit{United States v. Aluminum Co. of America}, 148 F.2d 416, 432 (2d Cir. 1945) ("Alcoa").

\textsuperscript{36} Professor Calkins calls the wording of the test applied in \textit{Kodak} "indeterminate" and notes that the Court was "maddeningly silent . . . on burdens of proof." Calkins, \textit{supra} note 26, at 304. Cf. \textit{Data Gen. Corp. v. Grumman Sys. Support Corp.}, 36 F.3d 1147, 1183-84 (1st Cir. 1994) ("It is not entirely clear whether the Court in \textit{Aspen Skiing} merely intended to create a category of refusal-to-deal cases different from the essential facilities category or whether the Court was inviting the application
important questions are left open for later refinement. These may include: What business justifications count? How substantial must the business justification be? Who bears the burden of proving a business justification? To what extent must the rival’s ability to compete be impaired? What is the role of defendant’s intent in evaluating the likely effect of its conduct and the adequacy of its business justification?

The Court also did not address how the analysis of monopolization should proceed in the event the defendant’s business justification is adequate. It appears that the Court intends to require an unstructured reasonableness review given that it suggested that a less restrictive alternative analysis is incorporated into Sherman Act § 2. Under this approach, if an adequate business justification removes the case from the Aspen/Kodak

37 For example, two circuit courts have accepted a rebuttable presumption of a procompetitive business justification when the monopolist unilaterally refuses to sell or license its intellectual property rights. See Data General, 36 F.3d at 1187; Image Technical Servs. v. Eastman Kodak Co., 125 F.3d 1195, 1219 (9th Cir. 1997).

38 The Court did not reach this question in Aspen Skiing, see supra note 19 and accompanying text, and found the proffered justifications insufficient in Kodak. See supra notes 23-24 and accompanying text. In another setting, proof of a substantial business justification, tantamount to the creation of a new product, is necessary to remove conduct from the per se prohibition against horizontal agreements on price. Broadcast Music, Inc. v. CBS, 441 U.S. 1 (1979) ("BM").

39 In both decisions, the Court placed the burden of coming forward with a legitimate business purpose on defendant. The Court did not address in Aspen Skiing whether plaintiff or defendant bears the burden of persuasion about the sufficiency of the justification because the burden of coming forward had not been met. Kodak appeared to place the burden of persuasion on defendant, without discussion. In contrast, the Areeda treatise places the burden of persuasion on plaintiff, based on pre-Kodak decisions by lower courts. 3 AREEDA & HOVENKAMP, supra note 9, at 123 & n.37.

40 That is, will any practice that raises rival’s costs suffice? See supra note 9.


42 Moreover, there is no reason to think that the Supreme Court intended the Aspen/Kodak rule to be the only truncated inquiry that could be conducted under Sherman Act §2. The Supreme Court has, however, rejected one such possible rule since Kodak, holding that the attempted monopolization offense requires more than proof of a bad act and specific intent to monopolize; plaintiff must also show “dangerous probability of success” in achieving monopoly power. Spectrum Sports, Inc. v. McQuillan, 506 U.S. 447, 459 (1993). This decision overruled a Ninth Circuit decision that had allowed inference of likely anticompetitive effect in an attempted monopolization case from the other two elements (i.e., had effectively refused to hear exculpatory evidence involving likely market effect offered in defense).

43 See Aspen Skiing, 472 U.S. at 605 & 605 n.32 (citing 3 PHILLIP E. AREEDA & DONALD F. TURNER, ANTITRUST LAW 78 (1978) with approval); cf. Kodak, 504 U.S. at 484-85 (finding one proffered business justification insufficient because it would not justify most of the conduct under review). The Ninth Circuit, in Image Technical Services Inc. v. Eastman Kodak Co., does not conclude otherwise. 125 F.3d 1195, 1212-13 (9th Cir. 1997). The circuit court interpreted the jury instructions it upheld as not permitting the jury to consider whether Kodak had less restrictive alternatives. Id. at 1213. Given that the court upheld a jury verdict against Kodak on those instructions, it did not reach the question of whether liability could have been found on a theory that defendant had a less restrictive way to achieve efficiencies. For an argument that less restrictive alternative analysis may be more difficult to employ in the review of unilateral actions (under Sherman Act §2) than in the review of collaborative conduct (under Sherman Act §1), see 3 AREEDA & HOVENKAMP, supra note 9, ¶ 658f2.
rule and leads to an unstructured reasonableness review, the monopolist's conduct could still be found unlawful through either of two routes: (1) if the harm to competition (in creating or protecting monopoly) outweighs the efficiency justification, or (2) if the procompetitive benefits can reasonably and practically be obtained with less harm to competition. Alternatively, the Court may be indicating merely that an inquiry into whether the monopolist had a less restrictive way of achieving a legitimate business purpose is an aid to characterizing the monopolist's conduct as a "bad act" or not (rather than part of an effort to determine the reasonableness of that conduct). Under that interpretation, the less restrictive alternative question goes only to whether the business justification is adequate, and the acceptance of a justification as sufficient would operate as an absolute defense. But the differences between the two approaches may be more in their articulation than their substance. If the characterization inquiry evaluates the adequacy of a business justification on a sliding scale (requiring a more substantial showing the greater the likely harm to competition) and incorporates a less restrictive alternative analysis, then the question of whether defendant's conduct satisfies the "bad act" requirement amounts to an unstructured reasonableness review.

The rule of reason is not always easy to apply. But the suggestion that doing so is beyond judicial "competence" when high-tech product designs must be evaluated, put forward recently by a D.C. Circuit panel,

44 This is the position advocated in 3 AREEDA & HOVENKAMP, supra note 9, ¶ 658fl.

45 For example, the Areeda & Hovenkamp treatise finds it necessary to explain that certain conduct ("aggressive but non-predatory pricing, higher output, improved product quality, energetic market penetration, successful research and development, cost-reducing innovations, and the like") ought "not to be considered exclusionary for §2 purposes even though they tend to exclude rivals and may even create a monopoly." Id. ¶ 651b. This approach appears to adopt a sliding scale (where the business justifications for some practices are thought almost surely to outweigh the harm those practices create), and thus effectively to introduce an unstructured reasonableness analysis into the definition of a bad act.

46 See United States v. Microsoft Corp., 147 F.3d 935, 949-50 & 950 n.13 (D.C. Cir. 1998) (concluding that a court's evaluation of a claim of integration in applying tying doctrine must be "narrow and deferential").

47 Courts properly exercise discretion not to impose unenforceable remedies, perhaps including price regulation or other injunctions requiring ongoing judicial supervision. In an extreme case where no practical remedy could exist, it would be appropriate not to find liability. See Donald F. Turner, The Definition of Agreement Under the Sherman Act: Conscious Parallelism and Refusals to Deal, 75 HARV. L. REV. 655, 669-73 (1962) (explaining that parallel pricing does not violate Sherman Act §1 even if prices are above the competitive level because the courts have no practical remedy); Richard Posner, Oligopoly and the Antitrust Laws: A Suggested Approach, 21 STAN. L. REV. 1562, 1564 (1969) (same). But the Microsoft panel did not make this argument, presumably because the possibility of a remedy cannot be ruled out as a general matter. For example, a less restrictive alternative analysis may help a court frame a remedy by focusing on what was practical and reasonable.
evaluating the complex technical details of product design are no greater than those routinely met by the judiciary elsewhere, as in patent infringement or products liability litigation. The appellate panel’s concern about judicial competence is therefore best interpreted as a plea to litigants to educate courts by providing testimony of scientific experts, and as a suggestion to lower courts that they seek out similar expertise when necessary.

While many questions about the Aspen/Kodak rule remain open, one key issue has been settled: liability may be established without considering evidence on the effect of the monopolist’s conduct on competition. This understanding of Aspen Skiing and Kodak has been confirmed by two circuit courts in monopolization cases. The First Circuit held that “a monopolist’s unilateral refusal to deal with its competitors (as long as the refusal harms the competitive process) may constitute prima facie evidence of exclusionary conduct in the context of a Section 2 claim,” though a monopolist may “rebut such evidence by establishing a valid business justification for its conduct.” The qualification that the refusal to deal must “harm the competitive process” was not a vehicle for bringing in evidence of harm to buyers; rather, it operated merely to ensure that the refusal to deal was of a sort that could harm buyers by reducing rivalry among sellers. In addition, in affirming a jury verdict after Kodak was

48 In addition, a Fifth Circuit panel wrote an opinion defining exclusionary conduct as behavior "that tends to exclude or restrict competition and is not supported by a valid business reason." Great Western Directories, Inc. v. Southwestern Bell Tel. Co., 63 F.3d 1378, 1385 (5th Cir. 1995), modified, 74 F.3d 613 (5th Cir. 1996). The court emphasized that “[i]njury to competition is NOT an element of Section 2,” although evidence of such injury “supports” a finding of exclusionary conduct, and evidence of injury may be relevant to proof of damages. Id. at 1385 (emphasis in original). But the panel withdrew this observation later, after realizing that the discussion was not necessary to decide the case before it. See Great Western Directories, Inc. v. Southwestern Bell Tel. Co., 74 F.3d 613, 614 (5th Cir. 1996).

49 The Areeda & Hovenkamp treatise also reads Aspen Skiing and Kodak this way. 3 AREEDA & HOVENKAMP, supra note 9, ¶ 658f (“Aspen appeared to approve a formulation that certain acts are presumptively unlawful unless justified by some legitimate business purpose”) (recommending a more narrow reading); id. ¶ 764e6 (“Kodak dicta indicate that once market power is found, any ‘exclusionary action’ to ‘maintain’ or ‘strengthen’ a monopoly in a downstream market violates §2 unless justified by a legitimate business purpose.”).

50 Data Gen. Corp. v. Grumman Sys. Support Corp., 36 F.3d 1147, 1183 (1st Cir. 1994). The court defined a business justification as valid “if it relates directly or indirectly to the enhancement of consumer welfare.” Id. In their treatise, Areeda & Hovenkamp criticize this definition as too narrow. 3 AREEDA & HOVENKAMP treatise, supra note 9, ¶ 658f.

51 Thus, in discussing Aspen Skiing, the First Circuit panel termed the refusal to deal “exclusionary” when it involved a refusal “to continue a presumably efficient ‘pattern of distribution that had originated in a competitive market and had persisted for several years,’” without mentioning the Supreme Court’s review of evidence of harm to buyers. Data General, 36 F.3d at 1183. Moreover, in rejecting defendant’s invitation for it to accept that a unilateral refusal to license a copyright can never constitute exclusionary conduct, the panel conducted a brief policy analysis of whether consumers could be better off in the short term and long term as a result of the incentives created by such conduct, and appeared to term that analysis a focus on “harm to the competitive process.” Id. at 1184-85. In short, the phrase “harm to the competitive process” appears intended to ensure that the term “exclusionary” is not applied to refusals to deal that do not in fact impede or raise costs for rivals, and thus
remanded for trial, the Ninth Circuit held that Sherman Act § 2 "prohibits a monopolist from refusing to deal in order to create or maintain a monopoly absent a legitimate business justification."\(^{52}\)

The absence of harm to competition as an element of the Aspen/Kodak rule is not surprising from one perspective. Earlier Supreme Court decisions under Sherman Act § 2 do not require proof of lowered output, raised prices or other harm to competition,\(^{53}\) and the black letter elements of the monopolization offense are limited to a "bad act" and monopoly power. But this feature of the rule is surprising from another perspective. In recent years, as part of antitrust’s Chicago School revolution, the Supreme Court has reshaped other antitrust rules to emphasize that the antitrust laws are not concerned about harm to rivals absent harm to buyers.\(^{54}\) Aspen Skiing and Kodak gave the Court an opportunity it did not accept to read an injury to competition requirement into the identification of a "bad act,"\(^{55}\) for example by seizing on the doctrinal distinction between a deliberate act of monopolization and a monopoly that results from serving customers better.\(^{56}\) Instead, these decisions interrupted what one commentary terms the "trend toward greater permissiveness" in Sherman

\(^{52}\) Image Technical Servs., Inc. v. Eastman Kodak Co., 125 F.3d 1195, 1209 (9th Cir. 1997). Only the Sherman Act §2 claims were submitted to the jury, which found against Kodak on monopolization and attempted monopolization counts. The Ninth Circuit held that Aspen Skiing and Kodak did not require that the refusal to deal involve something essential to the survival of the competitors. Id. at 1209, 1211. In an earlier post-Kodak decision, the Ninth Circuit had similarly concluded, based on Aspen Skiing and Kodak, that "[a] monopolist can refuse to deal with its competitors only if there are legitimate competitive reasons for the refusal." High Tech. Careers v. Mercury News, 996 F.2d 987, 990 (9th Cir. 1993).

\(^{53}\) See, e.g., Lorain Journal Co. v. United States, 342 U.S. 143, 150 (1951) (proof of success not required to make out Sherman Act §2 violation when exclusion of rival would automatically restore dominant firm’s monopoly and no efficiency justification was alleged) (monopolization case framed as attempt to monopolize); American Tobacco Co. v. United States, 328 U.S 781, 810 (1946) (“neither proof of exertion of the power to exclude nor proof of actual exclusion of existing or potential competitors is essential to sustain a charge of monopolization under the Sherman Act”) (upholding conspiracy to monopolize, monopolization, and attempt to monopolize verdicts in violation of Sherman Act §2).

\(^{54}\) See, e.g., Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc., 429 U.S. 477, (1977) (injured rival lacks standing to challenge merger in action for damages if its injury results from increased competition).

\(^{55}\) This possibility is suggested by Spectrum Sports, Inc. v. McQuillan, 506 U.S. 447, 458-59 (1993), where the Court relied on an argument based on the purpose of the Sherman Act to determine the meaning of one element of the attempt to monopolize offense: a “dangerous probability” of achieving monopoly power. To defend incorporating an “injury to competition” element into the identification of a “bad act” in Aspen Skiing or Kodak, had it wished to do so, the Court could have made a similar argument while also recalling the rule-of-reason roots of Sherman Act §2 doctrine.

\(^{56}\) The courts have long recognized that the exercise of monopoly power achieved by “superior skill, foresight and industry” does not violate the Sherman Act. See United States v. Aluminum Co. of Am., 148 F.2d 416, 430 (2d Cir. 1945).
Act § 2 cases since the mid-1970s, when the Supreme Court’s antitrust decisions began to adopt a Chicago School perspective.

II. DOMINANT FIRMS AND INNOVATION

The Aspen/Kodak rule promotes the ends of the antitrust laws by fostering rivalry in industries with a dominant firm where innovation competition is effectively “winner-take-all” and where fringe rivals are in a collaborative or complementary (as well as competitive) relationship with the dominant firm. Some economists have questioned the extent to which competition promotes innovation, effectively calling into question whether the antitrust prohibition against monopolization promotes innovation, whether or not the antitrust doctrine incorporates a truncated review. Accordingly, this section begins by explaining why competition likely spurs innovation when innovation competition is winner-take-all, both generally and particularly in industries with a dominant firm where fringe rivals are also collaborators or sellers of complements. The focus is on industries where innovation is ongoing and rapid, so that competition centers primarily on the development of new products—substitutes for the monopolized product (including later generations) or goods complementary to it—rather than price. The remainder of the section explains why a truncated legal rule that looks to two readily observable factors, exclusion that exploits a complementary or collaborative relationship and the absence of a satisfactory business justification, is likely to promote innovation competition in such industries.

A. Competition and Innovation

The economic question of whether competition or monopoly best promotes innovation has long been disputed. Indeed, this question was at issue in an important constitutional law case, Charles River Bridge v. Warren Bridge, decided a half century before the antitrust laws were enacted. The Charles River Bridge was a monopolist. It had a franchise, conferred by the Massachusetts legislature, to build and operate a toll bridge across the Charles River. Building the bridge was a risky venture; for example, this was the first bridge in New England built over an arm of the sea, and there was serious concern that it would collapse in the winter from thawing

58 The emphasis on product innovation is not intended to exclude the possibility that a new generation product could have the same features as the current generation, while producing the product at lower cost.
and freezing. The bridge turned out to be a successful venture, earning its investors a profit.

The legal controversy arose more than forty years after the Charles River Bridge was authorized, when the state legislature granted a competing franchise to the Warren Bridge. After the second bridge was erected, the Charles River Bridge was no longer very profitable. The Charles River Bridge challenged the legislature’s franchise grant to its rival. It argued that its franchise was exclusive, so the later legislative act violated the Contract Clause of the Constitution (which forbids states from passing laws “impairing the Obligation of Contracts”60).

The Supreme Court held that Charles River Bridge’s franchise should be construed as nonexclusive absent express indication otherwise from the state legislature. Had the Court done otherwise, one would “soon find the old turnpike corporations awakening from their sleep, and calling upon this Court to put down the improvements which have taken their place.”61 In short, the Court in Charles River Bridge saw competition as a spur to innovation, and monopoly as its enemy. This judgment shaped the way American economic development proceeded thereafter, according to a prominent legal historian.62

The argument about whether competition or monopoly best promotes innovation has continued among economists. While it is widely accepted that competition generally promotes low prices, the suggestion that competition promotes innovation is more controversial.63 Indeed, Jo-

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60 U.S. CONST. art. I, §10, cl. 1.
61 Charles River Bridge, 36 U.S. (11 Pet.) at 552-53 (Taney, C.J.). In dissent, Justice Story pointed out that the grant of exclusivity helped spur innovation, because it created an incentive for initial investment. Id. at 608 (Story, J., dissenting). Story’s main concerns were to uphold common law rules of statutory interpretation and protect private property rights. See generally JAMES MCCLELLAN, JOSEPH STORY AND THE AMERICAN CONSTITUTION 215-26 (1971).
62 See MORTON J. HORWITZ, THE TRANSFORMATION OF AMERICAN LAW: 1780-1860, at 130-39 (1977). Judge Learned Hand came down on the same side of the policy argument in Alcoa. “Many people believe that possession of unchallenged economic power deadens initiative, discourages thrift and depresses energy; that immunity from competition is a narcotic, and rivalry a stimulant to industrial progress; that the spur of constant stress is necessary to counteract an inevitable disposition to let well enough alone.” United States v. Aluminum Co. of Am., 148 F.2d 416, 427 (2d Cir. 1945).
63 This article presumes that society is better off if a dominant firm and fringe firms are all investing in the development of new products, relative to having only the dominant firm or only the fringe firms invest. This presumption is reasonable for policymaking, given the common research finding that the social return to investment in research and development is more than double the return to the firms making the investment. See, e.g., Edwin Mansfield, Microeconomics of Technological Innovation, in TECHNOLOGY AND GLOBAL INDUSTRY 311 (Bruce R. Guile & Harvey Brooks eds., 1987); Jeffrey Bernstein & M. Ishaq Nadiri, Interindustry R&D Spillover, Rates of Return, and Production in High-Tech Industries, 78 AM. ECON. REV. 429 (1988). It is nevertheless possible, as a matter of economic theory, to have too much innovative effort in an industry—essentially an excessive scramble among fringe firms to replace a dominant firm—for much the same reason as it is possible to have too much product variety. That is, the private benefits to research and development can exceed the social benefits when firms see substantial profits not just in bringing attractive new products to market, but also in taking business away from rivals.
Joseph Schumpeter famously took the view that monopoly encourages innovation. The most plausible reason for this is that a monopolist may have a greater ability to appropriate the value of its new ideas than would a firm in a more competitive market. On the other hand, there is a theoretical reason, associated with the work of Kenneth Arrow, to suppose that competition, not monopoly, drives innovation. A monopolist may have less to gain from innovating. It could spend a great deal of money to lower cost, improve quality, or develop new products, only to find that it does not get much additional business as a result—because, unlike a competitor, it already has most of the business there is to get. Relatedly, a monopolist’s employees may resist innovations that would threaten the existing organizational structure.

These theories, which framed the traditional debate about the connection between market structure and innovation, are not necessarily inconsistent. They can be rationalized as suggesting that competition promotes innovation if the innovator can ensure reasonable appropriability through means other than prior monopoly, for example, by relying upon intellectual property protections. The empirical literature is consistent


65 In addition, the literature defending the Schumpeterian view suggests that a monopolist may have greater access to low cost internal finance or greater ability to take advantage of scale economies in research and development. However, these are potential advantages of large firms, regardless of the extent to which they face competition, and do not bear on a monopolist’s actions except to the extent monopoly happens to be correlated with firm size. Given that the markets commonly relevant to antitrust analysis (the minimum agglomeration of products necessary to permit successful collusion) are typically more narrow than four-digit Standard Industrial Classification (SIC) industries, see Gregory Werden, The Divergence of SIC Industries from Antitrust Markets: Some Evidence from Price Fixing Cases, 28 ECON. LETTERS 193 (1988); Russell Pittman & Gregory Werden, The Divergence of SIC Industries from Antitrust Markets: Indications from Justice Department Merger Cases, 33 ECON. LETTERS 283 (1990); and given that there are many large multi-product firms, the correlation between monopoly and firm size is unlikely to be high.

66 See Kenneth J. Arrow, Economic Welfare and the Allocation of Resources for Innovation, in ESSAYS IN THE THEORY OF RISK-BEARING 144 (3d ed. 1976); see generally BALDWIN & SCOTT, supra note 64; Gilbert & Sunshine, supra note 64, at 574-76.

67 When applied to the dominant firm setting discussed below, the Arrow effect may be interpreted as suggesting that the dominant firm may prefer to accommodate fringe innovation, and perhaps imitate it if successful, rather than seek to deter it. That is, the dominant firm may see its current rents as worth protecting, notwithstanding that fringe firms are innovating in an effort to compete them away. This may occur if innovation is more costly to the fringe than to the dominant firm, perhaps because the dominant firm controls complementary products. See Jonathan B. Baker, Fringe Firms and Incentives to Innovate, 63 ANTITRUST L.J. 621, 637-38 (1995); see also infra note 72 (examples of accommodation strategies).

68 Thus, the FTC is concerned with the loss of research streams aiming for new drug patents and FDA approval. See, e.g., In re Ciba-Geigy Ltd., 62 Fed. Reg. 409 (Jan. 3, 1997) (analysis to aid public comment).
with this suggestion. Recent studies have undermined support for what previously looked like a Schumpeterian tendency for highly concentrated industries to be more innovative than moderately concentrated ones. The older empirical generalization may be an artifact of biases in the most common study design, and in any event the asserted Schumpeterian relationship largely disappears once the degree of appropriability across industries is controlled for. Accordingly, it is reasonable to expect innovation competition to promote innovation when that competition is winner-take-all, and thus when appropriability is not an issue.

Recent theoretical work about the determinants of innovative effort and the prospects for innovation success has begun to consider market structures not at the extremes of monopoly and competition. In these markets, strategic behavior can be important. Markets with dominant (leading) firms and fringe firms are particularly relevant to the present inquiry, because what antitrust calls a "monopoly" may be better described as a dominant firm—that is, one with a large market share in a relevant market into which entry is not easy. (The antitrust term can be misleading to the extent it wrongly suggests the absence even of fringe rivalry.) An analysis of the innovation incentives facing a dominant firm and its fringe rivals suggests why the antitrust ban on monopolization promotes innovation competition when competition is winner-take-all and fringe firms are collaborators as well as competitors.

In markets with a dominant firm, research and development (R&D) investments can operate as strategic commitments, affecting the rivalry between the leading firm and fringe firm. The framework is similar to analyses of entry deterrence. If a dominant firm makes commitments (sunk investments) to deter fringe innovation by investing heavily in its own R&D, then the dominant firm will become the primary source of new products, and fringe firms will find it more profitable to imitate proven leading firm innovations than seek to innovate first. On the other hand, if this deterrence strategy is too costly and risky, the dominant firm may instead choose to accommodate fringe innovation. Here, fringe

69 See generally Baker, supra note 67, at 640 n.89.
70 It is worth emphasizing that a large market share does not necessarily reflect the ability to exercise market power. As is well known, firms can achieve high market shares for a host of reasons, many commendable. The good reasons may include, for example, developing a superior product, managing production efficiently to keep costs low, and responding to changes in customer preferences. Moreover, achieving a high market share in a relevant market does not necessarily confer the ability to exercise market power—to reduce output and raise price—even if the market is properly defined from a demand-side perspective. A high share of a relevant market allows a dominant firm to exercise market power only if new supply—fringe expansion or de novo entry—would not be forthcoming in sufficient amounts to counteract or deter the anticompetitive conduct.
71 This paragraph summarizes a more extensive discussion in Baker, supra note 67, at 634-39.
72 Large firms may indeed pursue accommodation strategies; this is how the major U.S. automakers probably behaved during the 1960s and 1970s. See id. at 634-39. Nintendo also apparently
firms will innovate first and grow in significance over time, while the dominant firm will take short-term profits and allow its market position to erode. The considerations are similar whether the innovative effort is aimed at creating a substitute for the monopolized product (including a later generation) or a complementary good.

As a matter of economic theory, it is impossible to say for certain whether enforcement of the antitrust prohibition against monopolization, which might restrict the conduct of a dominant firm, will on balance enhance or reduce aggregate industry innovation in general. The most direct effect is to lessen the value of innovation to the dominant firm, reducing its incentive to innovate, while increasing the value of innovation to fringe firms, raising their incentive to innovate.73 Moreover, an antitrust rule that enhances fringe incentives to innovate could induce a dominant firm to adopt an accommodation strategy when it would otherwise have chosen a deterrence strategy. Such a switch in strategy could generate a substantial reduction in the dominant firm's innovative effort. For both reasons, the dominant firm may seek to innovate less while the fringe firms seek to innovate more. Accordingly, the net effect of the bar on monopolization on both industry-wide innovative effort and the prospects for innovation success in the general dominant firm setting, considering both dominant firm and fringe firms, is unclear as a matter of economic theory.

When innovation competition is winner-take-all and fringe firms are in a collaborative or complementary relationship with the dominant firm as well as competitors, it is possible to say more. To see why, consider the following hypothetical example based loosely on the U.S. photography industry in the 1960s and 1970s.74 Assume that Kodak is a dominant firm in both the camera and film markets, though there is a competitive fringe in each market. In addition, Kodak provides photofinishing services in a competitive market for that product.

Berkey and Kodak are competing to develop a new film with superior qualities. The firms both expect that one film product will come to dominate the market, primarily because consumers do not have a strong demand for product variety and retailers find it costly (in terms of shelf space usage and restocking) to carry multiple lines of film. Berkey brings its product to market first. Kodak responds by making its new camera models consistent only with film packaged in a new format. It licenses that format to other camera manufacturers but not to other film manufacturers


74 The actual facts are recounted in Berkey Photo, Inc. v. Eastman Kodak Co., 603 F.2d 263 (2d Cir. 1979).
such as Berkey. The new format is not significantly better or cheaper than the old one.

Fringe firms manufacturing cameras follow Kodak in switching their new products to the new film format; they think this is where the market is going. One fringe firm seeks to expand camera sales by continuing to produce for the old format and advertising the compatibility of its product with Berkey's new film, but it does not capture a large share of the new camera market. Over time, more and more of the cameras that consumers own will be incompatible with Berkey's new film.

Some time later, Kodak introduces its own new and improved film product. Kodak sells that product in both the old format and the new format (unavailable to Berkey). Kodak's new film product quickly achieves a high share of sales in the film market, comparable to Kodak's dominant market share prior to Berkey's innovation.

The facts in the hypothetical example have been invented to take away some competitive advantages a Berkey might actually have in the marketplace and to exclude some defenses a Kodak could employ. Berkey's intellectual property rights did not block Kodak's innovation; the two firms found different ways to achieve a similar result. Berkey could not practically evade the exclusionary effect of Kodak's practice by teaming up with a fringe camera manufacturer. Berkey could not hope to split the market with Kodak; Kodak did not license Berkey even after Kodak had succeeded and the innovation competition is close to winner-take-all. Berkey did not keep its first-mover advantage for long. And Kodak had no good business justification for changing film format. The point of the example is not that the hypothetical Kodak will invariably be able to prevent Berkey's success, and not that Berkey's failure would necessarily be the result of anticompetitive practices. Rather, the example is a vehicle for illustrating the kind of incentives that can be expected to operate in winner-take-all industries, and the kind of tools a dominant firm can use to exclude when its rivals are also collaborators or sellers of complementary products.

If Berkey knows that the odds were stacked against it as far as they are in the hypothetical example, because Kodak can add to the natural advantages that its reputation confers by altering its camera format, Berkey might reasonably choose not to attempt to create a new film in the first place. But if Kodak knows that Sherman Act § 2 prohibits it from responding to Berkey's new product by creating an incompatible camera and film format, then Kodak probably still has a strong incentive to try to develop a new film itself. The prize for success is too big, even in the setting of the hypothetical, without strong network externalities. Accordingly, in this case it is reasonable to expect that enforcement of an antitrust rule against monopolization would enhance Berkey's incentives to innovate.
substantially without markedly reducing Kodak’s incentives, and thus lead to more innovative effort in aggregate and greater prospects for innovation success.\textsuperscript{75}

The hypothetical example suggests two important points. First, even when the dominant firm would have sought to innovate aggressively, absent a prohibition on monopolization, it is unlikely that the dominant firm’s innovation incentives would decline substantially as a consequence of antitrust enforcement in industries where innovation competition has strong winner-take-all properties. Second, antitrust enforcement can make a big difference to rivals when the dominant firm is exploiting a collaborative or complementary relationship to exclude them. Enforcement of antitrust’s prohibition against monopolization thus can be expected to encourage fringe firm innovative effort without markedly discouraging dominant firm innovative effort when innovation competition is winner-take-all and the dominant firm takes advantage of a complementary or collaborative relationship to exclude.

These conclusions appear to be general. When innovation competition is winner-take-all, that property means that the prize to innovation, from the point of view of the dominant firm, is likely to be large whether or not the antitrust laws prohibit monopolization.\textsuperscript{76} When the expected reward is large—the important case for policy analysis—\textsuperscript{77} that reward is

\textsuperscript{75} In an extreme case, where the dominant firm’s advantages (perhaps derived from its installed base) make innovation an uphill battle for fringe firms even with such a policy, the rule may make little difference to aggregate innovation incentives. But even then, it is not likely to reduce aggregate innovative efforts and aggregate prospects for innovation success.

\textsuperscript{76} A related argument derives from the suggestion that incentives to innovate turn less on the expected prize than on the possibility of receiving a very large prize—that innovation is encouraged primarily by a “fat tail” in the distribution of probable awards to research and development. F. M. Scherer, The Innovation Lottery (April 1998) (unpublished manuscript, on file with author). If so, an antitrust policy like the antitrust prohibition on monopolization may make little difference to dominant firm incentives to innovate, because a fat upper tail in the distribution of probable awards is likely to remain (albeit shifted roughly uniformly toward lower returns). (On the other hand, fringe firms may in theory become more reluctant to innovate. They would recognize that the rule would affect their returns only if they became so successful as to become dominant, thus reducing only the upper tail of their distribution of possible rewards. This latter incentive is unlikely to be important; if it were, the loudest complaints about aggressive Sherman Act \$2 enforcement would come from fringe firms, not dominant firms.)

\textsuperscript{77} If the prize is small, so that a small reduction in the dominant firm’s incentives could plausibly lead the dominant firm not to pursue the innovation, the innovation itself is unlikely to have great social value. That is not to say there is no welfare loss from discouraging dominant firm research and development aimed at small innovations. A small innovation will, in general, be more beneficial to society if introduced by a firm with a large market share than if introduced by a firm with a small market share, because more buyers will benefit. But the aggregate welfare calculus of an antitrust rule governing the behavior of dominant firms is likely to be driven by the effects of the rule on incentives to pursue large innovations. If antitrust policy can energize fringe firms to pursue large innovations without markedly discouraging the dominant firm’s innovative activity, and more innovation is socially beneficial, then that policy is likely welfare enhancing even if the dominant firm is discouraged from pursuing some small innovations.
likely to be the primary determinant of the dominant firm's research and development expenditures.\footnote{The length and scope of intellectual property protection will affect the size of the prize, for example, by affecting the ability of the innovator to appropriate the benefit of successive (follow-on) innovation by rivals, but not in any way that is likely to vary with the nature of the antitrust rule concerning monopolization.} In other words, it is unlikely that small reductions in the expected return to the dominant firm would make much difference to that firm's innovative effort and prospects for innovation success, so long as the total reward remains large.\footnote{It is plausible that a small increase in the probability of success has a greater marginal effect on fringe firm investments in research and development than on dominant firm investments. If research and development investments are strategic substitutes, an increase in fringe firm investment may lead to an even greater reduction in dominant firm R&D. See Jeremy I. Bulow et al., Multimarket Oligopoly: Strategic Substitutes and Complements, 93 J. POL. ECON. 488 (1985). This consideration, too, is likely to matter least toward explaining dominant firm innovation incentives in markets where innovation competition is winner-take-all.} The winner-take-all feature also means that an ex ante monopoly is unnecessary to ensure ex post appropriability of the value of new ideas.

In addition, the complementary or collaborative relationship between the dominant firm and its fringe rivals suggests that an antitrust prohibition on monopolization is not likely to tip the dominant firm's incentives from deterrence to accommodation.\footnote{The potential for an antitrust rule against monopolization to reduce aggregate industry innovative effort and innovation success derives from the possibility that the dominant firm's incentives to innovate would decline so much as to outweigh the spur to the fringe firms. The primary concern arises if, as is assumed in the text, the dominant firm would otherwise have pursued an aggressive innovation strategy rather than a strategy of accommodating fringe innovation. (If instead, absent antitrust, the dominant firm would have decided not to invest in innovation, preferring to react later in the event the fringe were to succeed, an antitrust rule that discourages the dominant firm from impeding fringe firm innovation efforts would be unlikely to reduce the dominant firm's already low innovative effort substantially.)} Such a relationship can be expected often to give the dominant firm access to tools for impeding the success of a fringe firm's new product,\footnote{This discussion assumes that the dominant firm will seek to exclude a successful fringe firm rather than co-opting it (through acquisition or licensing its technology), either because the antitrust laws would not prohibit this conduct or because the dominant firm could not commit to the latter strategy at the time of the initial investment decisions.} such as creating incompatibilities or limiting access to collaborative activities, that the dominant firm would employ only in response to fringe firm innovation success.\footnote{The general conditions under which exclusionary strategies would profit a firm are discussed in Jonathan B. Baker, Vertical Restraints with Horizontal Consequences: Competitive Effects of "Most-Favored-Customer" Clauses, 64 ANTITRUST L.J. 517 (1996). Intertemporal scope economies or demand complementarities, which are often features of innovating high-technology industries, can make it more profitable for a firm to participate in the complementary market in the future if it was also active in that market in the present, providing one mechanism by which the dominant firm's exclusionary efforts can succeed in raising the costs of the excluded rival. See Dennis W. Carlton & Michael Waldman, The Strategic Use of Tying to Preserve and Create Market Power in Evolving Industries (Sept. 1998) (unpublished manuscript, on file with author).} For example, the dominant firm might engage in actions like refusing to license intel-
llectual property, closing standards or changing product designs. Exclusionary actions such as these may be particularly effective in impeding fringe success when they deny fringe firm innovators the ability to gain the critical mass needed for success in network industries, or when they create expectations among buyers about the success of the dominant firm’s product that are divorced from product performance.

When the dominant firm can exploit a complementary or collaborative relationship to exclude in this way, doing so need not be expensive for it, in part because it can defer doing so until after observing whether the fringe firm has successfully created a new product. It may believe that if it brings the new product to market first, its advantages from dominance in the current product may give it an unbeatable head start in winning the race for the new prize (even assuming the fringe firm’s innovation does not infringe on dominant firm intellectual property), thus permitting the dominant firm to avoid costly expenditures on creating incompatibilities or otherwise hindering the fringe firm. Moreover, the dominant firm may be unable to determine how to impede its rival’s innovation before it learns the details of the fringe firm’s new product.

In sum, when the dominant firm can exploit collaborative or complementary relationships to impede fringe firm innovation success, the dominant firm likely has access to tools whose use would reduce the prof-

83 These kind of exclusionary actions are suggested by the allegations in antitrust cases involving dominant firm innovation. See, e.g., Berkey Photo, Inc. v. Eastman Kodak Co, 603 F.2d 263 (2d Cir. 1979); In re IBM Peripheral EDP Devices Antitrust Litig., 481 F. Supp. 965 (N.D. Cal. 1979), aff’d sub nom. Transamerica Computer Co. v. IBM, 698 F.2d 1377 (9th Cir. 1983); Litton Sys. v. AT&T, 700 F.2d 785 (2d Cir. 1983). In contrast, factors inhibiting fringe firm success that do not rely on collaboration or complements, like the dominant firm’s installed base or reputation, or information advantage from dominating the current generation product, might be thought to affect the value of the fringe firm generally, regardless of whether the fringe firm successfully innovates.

84 See generally Carl Shapiro, Exclusivity in Network Industries, 7 GEO. MASON L. REV. 673 (1999).

85 Thus, the other participants in the industry need not line up in favor of the fringe firm’s product even if that product performs better than the dominant firm’s product. See generally Farrell & Katz, supra note 73 (highlighting the self-fulfilling nature of expectations in network industries).

86 Waiting even later, until the dominant firm were sure of its own innovation success, may be too late, for example, because those buyers who are most concerned about incompatibilities would have already switched to the fringe firm’s new product, and it would be prohibitively costly for the dominant firm to force them to switch again.

87 This advantage may derive from a scope economy or a complementarity in demand that operates to give the dominant firm a strategic advantage in the new market, regardless of whether the new product is the next generation of the current product or a complement for the current product. (If the targeted innovation is a next generation product, such scope economies or complementarities would be intertemporal.)

88 These costs may include the direct expenditures on impeding the successful fringe firm, lost benefits of collaboration, and lost goodwill with customers with customers or firms selling complements, for example. The point is not that there are no costs to the dominant firm; it is that the dominant firm need not make those expenditures unless the fringe firm succeeds in bringing the targeted new product to market, and perhaps not unless the fringe firm succeeds first.
itability of the fringe firm’s new product much more than it would cost the dominant firm. Hence, the antitrust prohibition on monopolization would operate in practice by limiting the dominant firm’s use of such tools to exclude; that would be deemed the “bad act.”\footnote{For a similar reason, a court can likely devise a practical remedy when the dominant firm exploits a complementary or collaborative relationship to exclude, thus addressing Judge Posner’s concern about pursuing Sherman Act § 2 cases involving unilateral refusals to deal. RICHARD A. POSNER, ANTITRUST LAW 211 (1976).} Under such circumstances, Sherman Act § 2 would plausibly operate surgically: to remove an important inhibition on fringe firm innovation without interfering with the primary determinant of the dominant firm’s incentive to innovate, the winner-take-all “prize.”

B. Innovation Competition and the Aspen/Kodak Rule

Given that the antitrust prohibition against monopolization likely promotes innovation when competition is winner-take-all and the dominant firm exploits collaborative of complementary relationships to exclude fringe rivals, why should antitrust employ the Aspen/Kodak rule, a truncated analysis of monopolization that does not consider harm to buyers? The short answer is that the two key elements of the Aspen/Kodak rule—the requirement that the dominant firm exploit a complementary or collaborative relationship to exclude and the absence of a satisfactory business justification—are reliable and readily observable guides to how the antitrust analysis would come out without truncation, while the unstructured analysis is probably more difficult to apply.\footnote{These elements thus satisfy the conditions for good truncated rules discussed supra at note 6 and accompanying text.}

If the dominant firm is in a complementary or collaborative relationship with its fringe firm rivals, it likely has access to tools for impeding the success of a fringe firm’s new product, such as creating incompatibilities or limiting access to collaborative activities, that it can employ to great effect at relatively little expense and with little bearing on its own innovation efforts or prospects for innovation success. If it exploits those tools to exclude, harm to competition is likely to result. On the other hand, a successful collaboration may require some restrictions on the conduct of the partners. For example, the dominant firm may be concerned about limiting its partners’ incentives to free ride on the services or information it contributes to the collaborative activity or system of complementary products.\footnote{It may not be clear how this concern could arise in the case of complementary products (not an express collaboration). Suppose a system of complementary goods would benefit (in competition with other systems) from all firms’ upgrading the quality of their components simultaneously. If one firm does so on its own, the others may recognize that their sales may increase substantially even if they do not also invest in improvements. The first firm could seek to make its product incompatible} Or the dominant firm may wish to protect against opportunistic
bargaining by its collaborators after the dominant firm has made substantial sunk investments. The other element of the Aspen/Kodak rule, the absence of an adequate business justification, helps guarantee that the exclusionary actions are harmful by ruling out the possibility that they are needed to make collaboration possible.92

An unstructured analysis of whether the dominant firm's conduct harms competition would also consider evidence as to the likely or actual effect of that behavior. That approach would add to the difficulty and cost of judicial review. Harm to competition is probably more difficult to evaluate than the adequacy of the business justification, even in prospect, and particularly in the dominant firm setting, where the fringe is already weak. And when competition can quickly tip the market to a winner, as when network externalities are important, waiting to find out whether a business practice harms competition may well mean that antitrust intervention occurs too late to remedy any competitive problem.

III. THE ASPEN/KODAK RULE IN OTHER INDUSTRY SETTINGS

The previous section analyzed the likely performance of the Aspen/Kodak rule in one industry setting, where competition is a winner-take-all tournament involving the introduction of new products. But this is not the only setting where a dominant firm is in collaborative or complementary relationships with its fringe rivals, and thus where the rule might come into play. One possibility is that price competition predominates.93 Another is that innovation competition would not be winner-take-all. This section evaluates the Aspen/Kodak rule in its broader application by taking a more general perspective on competition between dominant firms and fringe rivals who also are collaborators and sellers of complements.94

92 Similarly, were the business justification defense omitted from the Aspen/Kodak rule, then the charge that Aspen Skiing and Kodak discourage monopolists from undertaking procompetitive business collaborations (for fear that a court would forbid termination) would be more credible. See GELLHORN & KOVACIC, supra note 57, at 147. Cf. Areeda, supra note 25, at 850-52 (advocating that courts read a legitimate business justification defense into the essential facilities doctrine, on the model of Aspen Skiing).

93 The Aspen/Kodak rule was articulated in cases involving markets where price competition was mainly at issue. Downhill skiing in particular was not characterized by winner-take-all innovation competition.

94 A collaborative or complementary relationship between a dominant firm and its excluded rival could arise in many ways, including the following four. The firms may produce a new product collectively, as in Aspen Skiing. One may produce parts and service while the other only provides service, as in Kodak. One may be vertically integrated into distribution, while the other only manufactures upstream. Or one may produce a full set of complementary products (like personal computers and printers), while the other produces a partial set (only printers).
Several policy concerns favor the Aspen/Kodak rule in its broader application. One traditional antitrust concern applies to all efforts by monopolists to exclude actual or potential rivals. Each rival or potential entrant, however small, represents a lingering hope that competition in the market can be restored. Rivals may appear competitively insignificant if the industry has a dominant firm, but there are no better situated rivals to constrain the monopolist. Hence, careful scrutiny of exclusionary conduct by a dominant firm, no matter how small the harmed rivals, helps preserve competitive possibilities for the future.

Moreover, when the fringe rivals are also in a complementary relationship with the dominant firm, regardless of whether it is they or the dominant firm (or both) who participates in the complementary market or in a collaborative relationship with the dominant firm, two additional concerns about exclusion may arise. The first is that the collaboration may give the monopolist convenient and effective instruments for exclusion; this possibility was emphasized in the previous section. For example, the monopolist may be able to threaten to cut off its rival’s access to the monopolized product, harming the rival’s complementary business. Or it may threaten to end a collaboration (restrict its rival’s access to the complementary product), harming the rival’s efforts to compete directly with the dominant firm. Indeed, a fringe rival that depends on a dominant firm for a complementary product, produces a complementary product to the monopolized good, or collaborates with the dominant firm, may be peculiarly susceptible to pressure by the dominant firm exploiting that relationship.

In addition, any firm that produces a complement (whether or not it is also a rival to the dominant firm) may have an important role to play in fostering competition and innovation in monopolized markets because it may have a leg up in helping a fringe rival in the monopoly market enter or expand. Its existence may make it unnecessary for a new firm seeking to challenge the monopolist or a fringe rival seeking to expand to engage in more difficult “two level” entry. Furthermore, sellers of product complements have an incentive to help make the monopoly market more competitive. This is because output restrictions in the monopolized market, as from the exercise of monopoly power, reduce sales of the complementary product. The incentive of the sellers of product complements to encourage competition in the monopolized market is particularly great for a firm with a large share of the market for the complementary good; under such

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96 See U.S. Dep’t of Justice, Merger Guidelines, §4.21 (1984), reprinted in 4 Trade Reg. Reports (CCH) ¶ 13,103 (June 29, 1984) (a vertical merger may harm competition by raising entry barriers, as entry may then be required at two levels).
circumstances, it can expect to appropriate most of the resulting benefit to the complementary market. And if the complementary market has a dominant firm that differs from the dominant firm controlling the initial market, each has an additional incentive to promote competition in the other market: success in doing so would allow the remaining dominant firm to appropriate all the rents from exercising market power in the system of complementary products taken as a whole, instead of sharing those rents with a monopolist at some other level of competition. In these ways, sellers of complements may, in part, substitute for sellers of substitutes as the engine of competition with a monopoly. Thus, sellers of complements may play an important role in policing a dominant firm, particularly when fringe rivals are not strong competitive threats on their own. These incentives may have as much impact on rivalry in developing better products and production processes, as on price competition.

Other policy concerns do not favor general application of the Aspen/Kodak rule, however. First, close scrutiny of a dominant firm’s conduct can raise that firm’s costs of achieving efficiencies. Indeed, antitrust rules that restrict the dominant firm in its efforts to lower costs or improve products risk denying the dominant firm’s customers—who are, after all, most of the customers in the marketplace—the benefits of efficiencies the dominant firm would otherwise have achieved. But this concern is limited given that the Aspen/Kodak rule finds liability only when the dominant firm does not have a sufficient business justification for its actions.

Second, the collaboration may also create new opportunities for the rival to free ride on the dominant firm’s investments, and thus potentially provide an efficiency justification for some exclusionary actions by the dominant firm. This concern, too, is limited by the element of the Aspen/Kodak rule requiring the absence of an adequate justification for the dominant firm’s conduct.

Third, any antitrust prohibition against monopolization can discourage a dominant firm from innovating. Although, as discussed above, this concern is limited when innovation competition is winner-take-all, it may prove more substantial in other industry settings. Indeed, when the goal is to promote innovation, it is difficult to devise a general rule appropriate to the circumstances of all industries. But the general concern

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98 This point is related to the efficiencies that result from ending “double marginalization” (the transfer of an intermediate good at a price in excess of marginal cost). See, e.g., DENNIS W. CARLTON & JEFFREY M. PERLOFF, MODERN INDUSTRIAL ORGANIZATION 526 (1990) (The double markup “provides an incentive for firms to either vertically integrate or use vertical restrictions to promote efficiency and thereby increase joint profits.”).

99 Cf. SHAPIRO & VARIAN, supra note 11, at 10 (1999) (“It’s in the interest of [Intel or Microsoft] to create multiple sources for its partner’s piece of the system but to prevent the emergence of a strong rival for its own piece.”).

100 Baker, supra note 67, at 640-41.
about reducing the innovative effort of a dominant firm, and its prospects for innovation success, is unlikely to be great when the dominant firm would, in the absence of antitrust enforcement, pursue an accommodation strategy rather than aggressively seek to innovate. In the remaining case—aggressive dominant firm pursuit of innovation, with innovation competition not winner-take-all—the likely welfare consequences of the prohibition on monopolization are less clear. Even there, however, the disincentive to dominant firm innovation could be more than counterbalanced by the increased innovation incentives of fringe firms, so it is possible that aggregate industry innovation will be enhanced.

The Aspen/Kodak rule addresses the threat to competition that may arise in any industry when a dominant firm excludes fringe rivals who are in a collaborative or complementary relationship with it, without an adequate business justification. Practices condemned under the rule are generally likely to harm competition, and the application of the rule allows antitrust to reach them reliably while avoiding the difficulty of proving likely effect on competition. In addition, the rule likely promotes innovation when applied to govern dominant firm conduct where innovation competition is winner-take-all, and may or may not spur innovation otherwise. The Aspen/Kodak rule thus appears likely to reduce the transactions costs of operating the judicial system, relative to an unstructured review of dominant firm conduct, without markedly increasing judicial errors.

101 See supra note 80.