A NEW TEST FOR PREDATION: TARGETING

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The prevailing test for predation under section 2 of the Sherman Act is the Areeda-Turner rule, which condemns pricing below a dominant firm's own average variable cost. This rule is both underinclusive and overinclusive, and is not generalizable to cases of nonprice predation. Alternative rules are also flawed. Those based on behavior do not address predation before the victim has been destroyed. Other recently proposed rules are simply legislative suggestions that, if predation is allowed, the lower price should be continued for an arbitrary period to benefit consumers. Other rules condemn the use of asymmetric information, which should, instead, be viewed as a firm's inherent advantage.

In place of these rules, the authors propose that action by a firm with market power be deemed predatory if—and only if—it targets some but not all competitors. Both price and nonprice predation can be challenged under this targeting rubric. Condemning targeting does not run the risk of chilling pro-competitive behavior, nor of punishing a firm for being more efficient than a rival. The authors test recent case law against this new model, and find that it would have accurately predicted all major recent antitrust decisions. They also show that it is allocatively and productively efficient. The method of proof for the authors' propositions includes the use of Voronoi diagrams, illustrating competition between firms in up to three dimensions.

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INTRODUCTION

Predation by a dominant firm (that is, one with market power) against a smaller firm has been held to violate section 2 of the Sherman Antitrust Act.[1] When predation is accomplished by price, the predominant test (Areeda-Turner) condemns pricing by the dominant firm that is lower than the firm's own average variable cost. We show that the Areeda-Turner test is both underinclusive and overinclusive. In its place, we suggest a simpler test that would apply both to price and to nonprice predation. A dominant firm should be prevented from taking action that targets the customers of some but not all of its competitors; action taken that is the same for all of its rivals, and all of their customers, however, should not be condemned. This test meets the strongest criticism of the more traditional predation test: namely, that legal action is not needed, because the predator suffers at least as much harm as the victim. We show that the dominant firm will suffer lower harm, on a percentage basis, than its victim. We demonstrate this for price, and, using Voronoi diagram analysis, for predation by geographic location in one, two, and three dimensions. Assuming that the victim is equally efficient in every way to the dominant firm except in size, the test we propose responds to another common criticism of predation theory: that successful predation only works against less efficient victims, whose defeat by a more efficient rival might not be socially harmful.

The recent U.S. Supreme Court opinion in *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP*[2] cuts back the potential reach of

1. Sherman Antitrust Act, 15 U.S.C. § 2 (2000).
2. 124 S. Ct. 872 (2004).

monopolization law. By invoking *Otter Tail Power Co. v. United States*[3] and limiting *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*,[4] the *Trinko* Court presents a less-than-consistent rationale. The targeting rationale, by contrast, whose premises were present in *Otter Tail* and *Aspen Skiing*, but not in *Trinko*, provides a consistent rule for reconciling the cases.

In this Article, we present a new test for predation under section 2 of the Sherman Act. In Parts I.A through I.E, we review prior predation tests and compare them with the new proposal. In the second part, we present mathematical computations to demonstrate some of the claims advanced for the superiority of this test.

I. A NEW TEST FOR PREDATION

Predation should constitute a violation of section 2 of the Sherman Act where—and only where—a firm with market power targets a smaller rival or rivals, or their customers, in a relevant market. Targeting means the dominant firm treats such parties worse than others. We will show that in such circumstances, the dominant firm imposes greater costs on the target than it bears itself, thus making predation credible. We will explain how this definition differs from others that have been used in American antitrust law. Then we will test this alternative approach on recent landmark antitrust cases involving predation.

A. Areeda-Turner Price Predation Test

The dominant test for price predation proposed by Professors Areeda and Turner condemns a dominant firm for cutting its price below its own average variable cost.[5] Some in the Chicago School would not even condemn that, because if price is below average variable cost, such a strategy hurts the predator firm more than the target, and hence is not credible.[6] This is because the predator is larger than the target. Every sale below average total cost loses money, so the predator loses more money than the target, assuming both are equally efficient (that is, have the same cost structure). Of

3. 410 U.S. 366 (1973).
4. 472 U.S. 585 (1985).
5. Phillip Areeda & Donald F. Turner, *Predatory Pricing and Related Practices Under Section 2 of the Sherman Act*, 88 HARV. L. REV. 697, 716–18 (1975).
6. *See, e.g.*, Frank H. Easterbrook, *Predatory Strategies and Counterstrategies*, 48 U. CHI. L. REV. 263, 281 (1981).

course, if the predator has lower costs, it might not lose as much, but then there is no social cost in driving out the less efficient rival.

The Chicago School criticism is inaccurate, however, if the price cut is targeted. If the dominant firm's offer of a lower price is not made to all customers but only to customers of a targeted firm,[7] the dominant firm does not suffer as much lost revenue, on a percentage basis, as the targeted firm—a vital distinction that rebuts the most powerful criticism of predation.[8] In the case of targeting, the dominant firm continues to sell at a higher price to its original customers and the customers of nontargeted rivals.[9] That revenue might enable the dominant firm to cover its fixed costs, while the targeted firm cannot. Therefore, predation becomes credible.

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7. To offer a lower price only to some of one's customers could violate the Robinson-Patman Act, 15 U.S.C. § 13 (2000), but means of evading that statute are almost innumerable. The entire service sector, for instance, is not covered. Nor are price cuts to match a competitor's offer; so, once the price war starts, all but the opening salvo will be exempt. However, if there is vigorous enforcement of the Robinson-Patman Act and such discriminations in price are not allowed, it is the conclusion of this paper that we will have uncovered a heretofore unheralded reason for supporting that much-maligned statute, as its violation, by a firm with market power, would constitute predation. Such a conclusion would have been presaged by the U.S. Supreme Court which, in *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993), held that the test for primary line Robinson-Patman violations and Sherman section 2 price predation were identical. Finally, with very specific exceptions, the Robinson-Patman Act does not deal with nonprice ways in which a dominant firm can target a specific rival by appealing to its customers.

8. *See* Aaron S. Edlin, *Stopping Above-Cost Predatory Pricing*, 111 YALE L.J. 941, 952 (2002) ("Since McGee, Chicago School critics have been quick to point out that to drive down an equally efficient rival, the predator must charge a price below cost, and that to do this, *the predator must serve the whole market by itself* at an unremunerative price.") (citing John S. McGee, *Predatory Price Cutting: The Standard Oil (N.J.) Case*, 1 J.L. & ECON. 137 (1958) (emphasis added)). "The situation is made worse for the monopoly, however, because in order to drive prices down, the monopoly must increase industry output and supply anything that the market demands that other firms will not supply." *Id.* at 961; *see also id.* at 962 (citing ROBERT H. BORK, THE ANTITRUST PARADOX 149–54 (1978)).

> According to Chicago (and other) scholars the larger size of the incumbent relative to that of its rivals reduces its prospects to successfully predate and recoup whereas it enhances the prospect of the competitors to successfully defend themselves. In the post-Chicago models on the other hand the issue of relative size is simply not addressed.

Adriaan ten Kate & Gunnar Niels, *On the Rationality of Predatory Pricing: The Debate Between Chicago and Post-Chicago*, 47 ANTITRUST BULL. 1, 19 (2002). This Article fits within the lacuna ten Kate and Niels describe. We dispute the Chicago School assumption that the predator has to serve the entire market.

9. The test we propose would not exonerate a predator just because it included *some* of its own customers in the price cut. The test would still condemn the alleged predator if it offered the lower price to the same volume of sales among its own customers as equaled the volume of sales it took away from the target. At that point, it would still create credible predation since taking the same sum from a lower total revenue figure (the target) and a higher total revenue figure (its own revenues) would put the target firm at sooner risk than itself of falling below fixed costs. If the predator included more of its own customers than that, however, the predation-skeptics' point would resurface, namely, that the alleged predator would suffer more harm than its victim, and our test would not be met.

Critics might point out that, in perfect competition, a firm cannot charge different prices to different customers.[10] This response simply assumes away the case we make. It posits a world of perfect competition, populated by a very large number of indistinguishable purchasers and sellers, with one price prevailing. If perfect competition exists, however, then predation will never pay: After anyone leaves the market, an infinite number of new firms will enter the moment a penny of supracompetitive profit arises.

We do grant that targeting—as we define it here—may be rare. However, when it occurs, targeting constitutes predation.

Those who deny predation might reply that, even if targeting were possible, the target can do the same thing in response, thus imposing an equal cost on the predator.[11] Indeed, if the target is sufficiently new and small, it actually fits an explicit exception under the Areeda-Turner test, and the target can go below average variable cost while the dominant firm cannot.[12]

It is not true, however, that the larger dominant firm and the smaller target firm are identical in their ability to engage in this exercise.[13] The dominant firm, expanding its output by a certain percentage (X percent), takes customers away from the target firm. In response, the target firm strives to retain those customers and attract some of the dominant firm's customers in turn. To do so, it must expand its output by more than X percent. A firm chooses its technology to produce a given amount optimally, and strains it to produce more. The target firm must endure a greater strain than the dominant firm to go to battle by expanding in order to produce the same absolute amount of lost customers on the dominant firm that is imposed on the target. And to produce the same percentage amount of lost customers on the dominant firm, the targeted firm would have to endure an even greater percentage strain on its production facilities than that.

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10. *See* GEORGE J. STIGLER, THE THEORY OF PRICE 209–14 (3d ed. 1966).

11. *See, e.g.*, Eric Rasmussen & John Shepard Wiley, *Antitrust and Spatial Predation: A Response to Thomas J. Campbell*, 89 COLUM. L. REV. 1015, 1026–27 (1989); *see also* discussion *supra* note 8.

12. The reason Areeda and Turner give is that a new entrant might be establishing its brand. That might be so, but under Areeda-Turner's own logic, recoupment of the loss from such behavior has to be anticipated, and that means supracompetitive prices (from market power) must eventually be expected, which is the very rationale Areeda and Turner have for condemning prices below average variable cost by larger firms. A better grounding for a new firm exception is the one we advance: The larger (predator) firm has an advantage in a strategy of targeting a rival compared with a smaller firm responding to the attack, simply because the predator is larger.

13. Antitrust law has already made it a de facto requirement for predation that the alleged predator have market power. *See* Brooke Group Ltd. v. Brown & Williamson Tobacco Corp., 509 U.S. 209, 225 (1993). In all realistically conceivable cases, this will mean the dominant firm is larger than its target. *Utah Pie Co. v. Continental Baking Co.*, 386 U.S. 685 (1967), is an exception—the only one we can find in case law, and such a thoroughly discredited decision that it constitutes an additional reason for embracing the rule advanced here.

Unless the firms are operating on flat or declining portions of their long-run average cost curves (a position of the disequilibrium in microeconomics),[14] retaliation by the targeted firm will impose asymmetric costs on itself, relative to the dominant firm that launched the targeted attack.

If the targeted firm seeks to avoid that asymmetric cost by keeping production levels constant, defending its present market share by matching the dominant firm's offer to its customers but not expanding, the dominant firm will win again. The targeted firm will watch its revenues decline, and will reach the point of being unable to cover its fixed costs sooner than the dominant firm, assuming all firms had chosen optimal size.

Thus credible predation can result in the case where a larger, dominant firm targets the customers of its smaller rival. This result simply flows from the dominant firm being larger; we have not assumed that the larger firm is more efficient. If Chicago School defenders claim that being larger is an advantage that permits the success of the targeting strategy, and that all the victim need do for the strategy to fail is to grow larger itself, there would be nothing left to monopolization law. At its absolute minimum, monopolization law must prohibit a firm from using its dominant size to do something to hurt a rival.

Now let us turn to whether the Areeda-Turner condition is necessary or sufficient for such predation to succeed. The Areeda-Turner test introduced the requirement of price below average variable cost (as a surrogate for marginal cost) for a finding of predation.[15] Such a price means the dominant firm is losing money on each good produced and sold at that price. This willingness to lose money, Areeda-Turner asserted, furnished the requisite proof that eventual recoupment was planned, which meant an eventual position of market power.[16] The Supreme Court subsequently embraced the plausibility of recoupment as a necessary condition for predation.[17]

For a seemingly Chicago-School result, however, both Areeda-Turner and the Supreme Court adopted a strongly anti-Chicago belief: that foregone available profits were not analytically identical to taking a loss. If evidence of a plan for eventual recoupment were needed, foregoing profits achievable in the present should be all the proof required. That the firm actually endured an accounting loss should not be required.

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14. *See* B. PETER PASHIGIAN, PRICE THEORY AND APPLICATIONS 198–99 (2d ed. 1998) (discussing long-run average cost functions).

15. Areeda & Turner, *supra* note 5, at 716.

16. *Id.* at 717.

17. Matsushita Elec. Indus. Co. v. Zenith Radio Corp., 475 U.S. 574, 589 (1986); *Brooke Group*, 509 U.S. at 226.

Recoupment is an odd requirement. It draws from a vestigial interest in proving evil motive. Plausibility is all that is needed, and targeting is a plausible strategy whether the dominant firm suffers a loss in doing so or not. The Areeda-Turner test is therefore not necessary to prove predation.

But is it sufficient? Areeda and Turner condemn below-average-variable-cost pricing, without considering whether it is targeted. We have several criticisms of that approach. First, and at the very least, the Areeda-Turner test needs to be amended to require proof that the dominant firm has taken customers away from some rival. As formulated, the test has no such requirement, but there can be no harm—to competition or to customers—if the dominant firm has not taken away business from a rival. Nor is there productive inefficiency,[18] for the same output is being produced by the same inputs.

Perhaps Areeda and Turner can be forgiven for not making explicit that the alleged predator firm must be shown to have expanded its output when it dropped its price, assuming that would always be the case. However, this is not always the case. In an oligopolistic industry, a dominant incumbent firm might lower its price to loyal customers to caution a competitor against going after them, but not expand its output lest it upset a comfortable status quo. In the absence of expansion, there is no reason to condemn such price lowering as predatory, even if the price drops below average variable cost. Until such a firm takes a customer away from another firm, it is not increasing its market share. Thus, it is not acquiring an iota of increased supracompetitive pricing potential, nor is it producing through inefficient means.

So let us reformulate the Areeda-Turner test to condemn below-average-cost pricing by a dominant firm that expands output. The test would still condemn such behavior even if not targeted. The dominant firm might, for instance, have lowered its prices to all its customers, and expanded output.

Under the test we are proposing, in contrast, such conduct would be permitted. The reason is that, without targeting, the predator is now suffering lower revenue on all of its sales. It suffers as much a risk of falling below its total cost as do the firms that match its lower price. This is the traditional Chicago School argument against the plausibility of price predation, and it is valid so long as targeting is not involved.

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18. Areeda and Turner base their condemnation of below-average-variable-cost pricing, in part, on the fact that productive inefficiency results. Areeda & Turner, *supra* note 5, at 712–13. That is possible, however, only if output increases. If all the firm does is lower its price, there is no change in its productive efficiency.

The only argument that appears to remain is that a dominant firm that prices below its average variable cost to everyone might be predating by conveying misleading information to competitors in a situation of asymmetrically incomplete information.[19] This should not be an appropriate concern for predation theory in antitrust, however. This situation can only arise if the dominant firm possesses skills superior to its target,[20] and it should not be illegal for the dominant firm to make use of those skills[21] if there is to be any

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19. These theories require that the predator already have an advantage over the victim. There are two versions of the model, one of one-sided and one of two-sided uncertainty. In the former version information is asymmetric. . . . [In the latter version,] the entrant is uncertain about the state of the incumbent and the incumbent is uncertain about the state of the entrant.

. . . .

. . . [I]t is the information advantage of the incumbent that makes predatory pricing rational. . . .

. . . .

In the game-theoretical models on predatory pricing with a finite number of stages, preying can only be made rational by introducing incomplete information, particularly by placing an information advantage with the incumbent.

ten Kate & Niels, *supra* note 8, at 12, 17, 21. Ten Kate and Niels include in their latter conclusion the theories developed in Donald M. Kreps & Robert Wilson, *Reputation and Imperfect Information*, 27 J. ECON. THEORY 253 (1982), and Paul Milgrom & John Roberts, *Predation, Reputation, and Entry Deterrence*, 27 J. ECON. THEORY 280 (1982).

20. Ten Kate and Niels characterize this entire branch of predation theory as one of bluff:

In a nutshell, the results of the Milgrom-Roberts and Kreps-Wilson models do not go beyond the intuitive understanding that *bluffing may work when victims let themselves be fooled.* The bluffer is the weak incumbent who bluffs that he is strong. The victims are the entrants who let themselves be fooled as long as they believe the incumbent is strong. That is the whole story. There is nothing more to it.

ten Kate & Niels, *supra* note 8, at 24; *see also* Kenneth G. Elzinga & David E. Mills, *Predatory Pricing and Strategic Theory*, 89 GEO. L.J. 2475 (2001).

21. The possibility of a successful bluff due to the comparative ignorance of the victim should not, by itself, be enough to constitute predation under the antitrust laws. The concept of predation is rooted in antitrust's inherent tension—a public policy to condemn monopoly and monopolization, but to allow superior skill, foresight, and industry that can lead to monopoly to be rewarded. *Cf.* United States v. Aluminum Co. of Am., 148 F.2d 416, 430 (2d Cir. 1945) (Hand, J.); United States v. Grinnell, Corp., 384 U.S. 563, 570–71 (1966); BORK, *supra* note 8. Susceptibility to being bluffed, gullibility, and possession of less information than one's rival: all these could be described as less skill, foresight, and industry. Conversely, relying on one's superior information or resolve should be viewed as suitable reward, and inducement, for obtaining such information and resolve.

By contrast, in the test we have been developing, we have relied on no differences between predator and target except size. The target is smaller—that is all.

Similarly, for a firm with market power to lower prices only to the customers of its specific rivals is not the exploitation of superior information or resolve, innovation, insight, or harder work. We would disincentivize nothing valuable by punishing this behavior.

By thus adhering to the strictest of the assumptions of the Chicago School, we are hopeful that our conclusion—that predation is indeed possible—will be all the more telling. Predation can exist without any assumptions of superior skill by the predator. This finding is not undermined by the fact that we might not find predation as readily as those who condemn activity that flows from a firm's

force to Judge Learned Hand's assurance that the fruits of "superior skill, foresight and industry" must be allowed to be enjoyed by a firm possessing them.[22]

Hence, we maintain that a targeting test should replace the Areeda-Turner test as both a necessary and sufficient condition for price predation.

B. Behavior Tests

Professor Oliver Williamson proposed condemning a dominant firm for expanding output in response to a competitive threat, then contracting to a lower level.[23] Professor William Baumol next proposed deeming predatory a dominant firm's lowering of its price in response to a competitive threat, and then raising it again after the threat has been defeated.[24] Professor Aaron Edlin later suggested a period of time, following a rival's substantial price cut, during which a dominant firm's price and quality must stay at the level at which they were before the rival's action.[25]

The first two tests have the drawback of requiring a plaintiff to die (financially speaking) before bringing a case because, if a predatory strategy is what motivated the price cut (Baumol) or the expanded output (Williamson), the predator will not undo its move until its mission has been accomplished. Since undoing the move is the trigger for liability, the

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relative efficiency. *See, e.g.*, Patrick Bolton et al., *Predatory Pricing: Strategic Theory and Legal Policy*, 88 GEO. L.J. 2239 (2000); Edlin, *supra* note 8, at 960–63 (2002).

As to whether those critics are right or wrong, we find it impossible to say, as such a judgment turns on whether the disincentive to a firm from acquiring the superior skill that allows both predation (in their sense) and innovation should outweigh the consumer harm from permitting weaker rivals to be intimidated. Nor, we believe, can anyone offer a firm conclusion on a point so hard to measure as that; nor should one opine that Congress did so when it passed the Sherman Act in 1890. It is, rather, a legislative judgment. Professors Edlin, Bolton, Brodley, Riordan, and others, are entirely within their rights to advocate that their tests be made the content of statutory amendments to the Sherman Act. It is their acceptance by common law accretion that we reject. The professors' alternatives reflect a judgment that it would be desirable to curb to a greater extent the scope presently enjoyed by firms (with possible loss of innovation, flexibility, and enterprise) in order to guarantee consumers' benefit in the near term. That, we submit, is a legislative trade-off. *See* TOM CAMPBELL, SEPARATION OF POWERS IN PRACTICE 22–25 (2004).

By contrast, we are not advancing a legislative solution; the test we propose is compelled by the internal logic of current antitrust doctrine. The fundamental principle of that doctrine is that firms should be allowed to experiment, in the hopes of reaching better outcomes and driven by the profit motive—unless we can identify behavior that is clearly harmful to consumers and lacking reasonable justification in terms of long-range competition.

22. *Aluminum Co. of Am.*, 148 F.2d at 430.

23. Oliver E. Williamson, *Predatory Pricing: A Strategic and Welfare Analysis*, 87 YALE L.J. 284 (1977).

24. William J. Baumol, *Quasi-Permanence of Price Reductions: A Policy for Prevention of Predatory Pricing*, 89 YALE L.J. 1, 4 (1979).

25. Edlin, *supra* note 8, at 945–46.

plaintiff will be dead by then. By contrast, the targeting test empowers a rival to respond at once to the dominant firm's attempted predation.

Edlin would allow for an immediate suit, and grant presumptive victory to a plaintiff that has lowered price by 20 percent or more if, within twelve to eighteen months thereafter, the dominant firm has lowered its price.[26] After the twelve to eighteen months, however, the dominant firm can respond, although Edlin would preserve the Areeda-Turner rule that the dominant firm could not price below its own average variable cost.[27] Thus the criticisms we offer of the Areeda-Turner test apply as well to Edlin's approach, with the exception of the first twelve to eighteen months, during which time Edlin's prohibition on lowering price seems close to a targeting rule.[28]

All three authors would likely reply that the rule of law they propose will have a positive feedback so that bouts of predation are perceived as less lucrative by a dominant firm and, hence, will be engaged in less often. This response works for Baumol and Williamson only if the government, or the bankruptcy trustee of the victim's firm, provides sufficient enforcement to monitor the rule. If potential predators note no enforcement action by their victim, it is hard to believe that predators will be deterred by a rule prescribing the consequences if the law were to be enforced.

In a larger sense, however, it is not appropriate to compare these tests to what is being proposed here, nor to compare them to the Areeda-Turner approach. The behavioral tests are closer to the work of a legislature than the work of a court.[29]

Permission is granted by Baumol and Williamson to price low or to expand output, but conditions are imposed so that, if the upstart firm is driven out, there is some offsetting compensation in consumer benefit. Edlin also makes a policy compromise. He accepts the harm suffered by customers of the dominant firm who will not get a lower price from the dominant firm

26. *Id.* at 946.

27. *Id.* at 971.

28. It is not identical, however, as Edlin would condemn the dominant firm's lowering of price even if it were to all customers in the market. *Id.*

29. Edlin recognizes this potential criticism. Referring to his 20 percent price cut and twelve- to eighteen-month tests, Edlin states, "The reader may wonder whether courts can create such numerical thresholds, or whether that would require a legislative act." *Id.* at 967 n.81. He notes precedent for "introducing arbitrary but not unreasonable numerical thresholds without legislation in other areas of antitrust." *Id.* He cites only one court case, *United States v. Philadelphia National Bank*, 374 U.S. 321 (1963), but it is a rule for courts that Edlin is proposing. His other citations are to recommendations for prosecutorial discretion, as reflected in various incarnations of the merger guidelines. As for the one court case he does cite, *Philadelphia National Bank*, the Court created a presumption, not a rule of decision. As a jurisprudential matter, Edlin's recommendations should be made to Congress, not the courts.

for twelve to eighteen months as a harm worth suffering in order to create one of two alternative (and to him, preferable) outcomes: a breathing space for a rival firm to enter or expand, or the hope that the dominant firm will keep its prices lower than it otherwise would over the long haul, thereby discouraging entry but benefiting their customers on a permanent basis.[30] He also accepts the consequence that the dominant firm cannot improve quality for twelve to eighteen months—a freezing of innovation that could be immensely costly to consumers, particularly in industries like information technology where product cycles are almost never that long.[31]

Each of these behavioral rules therefore incorporates a policy compromise. The policy compromise embodied in any of these tests may be very good, but none purport to identify what really is predatory, in the sense of asking: What conduct by a dominant firm hurts competition so much that the short-term benefit to the consumer does not offset the harm?[32]

Areeda and Turner tried to do so by asking the question: What low-pricing policy by a dominant firm, for whatever good it did for consumers in the short run, hurt consumers in the long run? Pricing below average variable cost was their answer. Baumol and Williamson substituted a rule of behavior for an analysis of the nature of the alleged predation. They made the "long run" never arrive. Edlin, by encouraging limit pricing, also hoped that the long run would never arrive, but if it did, he was willing to allow it so long as there was a twelve- to eighteen-month period of gain for some consumers.

Unlike the rules of Williamson, Baumol, and Edlin, the rule we advance here is a competitor to the Areeda-Turner test, not a substitute for undertaking their analysis. The targeting rule defines both a broader set of circumstances than Areeda-Turner in which the dominant firm can hurt consumers in the long run (our rule eliminates the necessity of showing that

30. Edlin, *supra* note 8, at 991.

31. *Cf.* WILLIAM H. DAVIDOW, MARKETING HIGH TECHNOLOGY 100 (1986) (commenting on the short life cycle of high-technology products).

32. Note that, like the U.S. Supreme Court in *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 223 (1993), we phrase the question entirely from the consumer's perspective. Others have seen in antitrust law an attempt to achieve multiple goals simultaneously and, therefore, at some loss to the maximum attainment of each goal: consumer welfare, fairness to competitors, and optimal production of innovation. Predation theory especially could be open to analysis under the second heading: It condemns conduct of short-run benefit to consumers in order to enhance the survival of competitors. We make no attempt at pursuing goals other than consumer welfare for two reasons: (1) the Supreme Court has said this goal is "primary" in antitrust, *id.* at 221; and (2) to the extent any policy advanced one of the goals at the expense of the other goal there is no algorithm to express how much trade-off we should accept. Edlin explicitly treats this question of whether antitrust should be evaluated in terms of consumer welfare, or a combination of consumer and producer welfare. *See* Edlin, *supra* note 8, at 947–48.

the monopolist's price is below average variable cost), and it corrects for Areeda-Turner's overreach (our rule does not condemn where the price is lowered for all customers).

Recently, Professor Einer Elhauge has proposed another alternative test for monopolization.[33] He separates action by a monopolist into that which utilizes the large firm's efficiency whether or not smaller firms are hurt, and that which would impair smaller firms even if it did not utilize the large firm's efficiency. The former should be allowed, the latter condemned.[34] He makes an exception to the former category for a monopolist's refusal to deal with some rivals on terms offered to other rivals; that, too, should be condemned, in Elhauge's view, when "the refusal to deal with the rival on equal terms was not justified by ex post inefficiencies that would result from sharing, and that the refusal to deal contributed significantly to enhancing, maintaining, or slowing the erosion of monopoly power."[35] Elhauge agrees with the Supreme Court's approval, under section 2 of the Sherman Act, of any above-cost pricing; evidently because, even if discriminatory, any harm done to rivals from that kind of pricing power stems from the monopolist's greater efficiency.[36] He condemns below-cost pricing, even if not discriminatory, because it "can divert sales from rivals in a way that impairs rival efficiency even if the defendant did not enhance its own efficiency, because its prices are lower than its efficiency justifies."[37]

Elhauge's test thus emulates ours only in the refusal-to-deal category, not in his approach to predatory pricing, and he imposes more factors to make out a monopolization case in the discriminatory refusal-to-deal case than we would. His insight that a refusal to deal with rivals should be condemned only if discriminatory, however, points toward the advisability of adopting that same approach more generally. Making an input more expensive for some but not all rivals, or targeting the customers only of the rival with a lower price, are essentially the same kind of conduct. Elhauge might respond that the former conduct is more likely to have an efficiency defense, depending on characteristics of the particular disfavored rival, but then it would not really be discriminatory. The victim would have had some characteristic, other than simply being a pesky rival, whereby the monopolist's supplying him or her was more costly for the monopolist.

33. Einer Elhauge, *Defining Better Monopolization Standards*, 56 STAN. L. REV. 253 (2003).
34. *Id.* at 315–16.
35. *Id.* at 311.
36. *Id.* at 315.
37. *Id.* at 320.

Elhauge's assumption that discriminatory pricing above average variable cost should be per se legal is explicitly based on his belief that such pricing is possible only because of comparative efficiency. This is incorrect. The targeted rival might be less efficient, but it also might be equally efficient—just smaller. In the latter case, action that imposes greater percentage loss of revenue upon the victim than upon the monopolist can drive the victim out of the market sooner if the victim's fixed costs are not covered. We have shown this is so for price targeting; in a later part of this Article, we will show that this is exactly what nonprice targeting by a larger firm against a smaller firm does as well.

Where Elhauge and our approach tend to agree in condemning discriminatory refusals to deal, he imposes the additional conditions that the refusal to deal with the rival on equal terms was ex post inefficient and that it contributed significantly to enhancing, maintaining or slowing the erosion of monopoly power.[38] In a later part, we will show that the first condition, that the discrimination was ex post inefficient, follows simply from targeting. Hence, it is unnecessary to specify discrimination as a distinct condition. Targeting is enough. That will be a boon to proof in courts when one considers the difficulty for a victim of proving that a dominant firm's action lowered overall societal welfare. As to the second condition, why require the victim to succeed at the additional task of proving that the monopolist benefited significantly? Since the targeting is not socially efficient, there is no danger of chilling beneficial conduct.

C. Preferability of the Targeting Formulation of Predation

1. Generalizability to Nonprice Predation

The targeting test for predation can be generalized beyond the context of price predation. Conduct inducing customers of some but not all the rivals of a dominant firm to switch to the dominant firm is suspect. The ability to generalize should be considered a desirable characteristic of an approach if one is engaged in an attempt to understand what it is about some things a dominant firm does to a rival that are unhealthy in the long run for the consumer. In addition to helping identify the crux of predatory behavior, seeking a rule that spans price and nonprice conduct is important given the ability of dominant firms to switch between those categories, depending upon their illegality. The analogous ease of substituting one nonprice restraint for

38. *Id.* at 311.

another was the lesson of the Supreme Court's migration away from the per se rule in territorial divisions, given that the rule of reason governed other kinds of vertical restraints.[39] The increasing pressure to do away with the per se test for resale price maintenance[40] has a similar genesis. A manufacturer might—by creating airtight territorial restrictions—accomplish the same result as a mandated minimum resale price; however, the former is likely legal, and the latter, still, per se illegal. Making one form of conduct per se illegal and the other subject to a rule of reason simply induces dominant firms to migrate from one form of conduct to the other.

The scope of predatory practices does not end with price. Professors Salop and Scheffman proposed the concept that predation could consist of raising rivals' costs; for example, by assisting in the cartelizing of the suppliers of an input, filing unsubstantiated business tort lawsuits, or abusing a regulatory regime by filing baseless hearing requests.[41] In another article, one of us, Campbell, has identified the practice of moving one's product in geographic or characteristic space closer to the location of one's rivals as another potentially predatory act, unrelated to a change in price.[42]

Each of these examples satisfies the targeting test for predation fairly well. A dominant firm targets a particular rival and imposes greater costs (or greater foregone revenue) on the target than it has to bear itself. It often costs more to defend a lawsuit than to initiate one. Hence, nuisance regulatory actions and unsubstantiated business tort lawsuits[43] can consti-

39. *Compare* White Motor Co. v. United States, 372 U.S. 253 (1963), *with* United States v. Arnold, Schwinn & Co., 388 U.S. 365 (1967), *and* Cont'l T.V., Inc. v. GTE Sylvania Inc., 433 U.S. 36 (1977).

40. *See, e.g.*, Kahn v. State Oil Co., 93 F.3d 1358 (7th Cir. 1996), *vacated by* 522 U.S. 3 (1997).

41. Steven C. Salop & David T. Scheffman, *Raising Rivals' Costs*, 73 AM. ECON. REV. 267 (1983).

42. Thomas J. Campbell, *Predation and Competition in Antitrust: The Case of Nonfungible Goods*, 87 COLUM. L. REV. 1625 (1987). Rasmussen and Wiley challenged this form of predation, arguing, inter alia, that the victim could respond by repositioning itself, playing leapfrog with the dominant firm that had located near the target. Rasmussen & Wiley, *supra* note 11, at 1027. The dominant firm, however, would have a first-mover advantage. Treating the costs of relocation as sunk, the dominant firm would present the target with the reality of either having to incur cost to reposition itself, or to lose customers. The sunk-cost argument is important because, in the context of spatial predation, unlike that of price predation, the target need not expand beyond its present level of output in order to win back its lost customer volume and impose harm on the dominant firm. This is because the target could reposition to the side of the dominant firm's new position closest to the dominant firm's original position, and cause the dominant firm to lose many customers. By contrast, to respond to price predation, the target firm would have to lower its own price to all of its former customers, and to some of the dominant firm's customers, requiring an expansion in the size of its operation, as discussed in the text *supra* note 13.

43. It is possible to minimize this effect through various loser-pay rules. *See, e.g.*, 2 THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 19–20 (1998) ("economic theory of liability rules").

tute predation in the targeting sense. In the spatial context, the dominant firm loses a smaller percentage of customers by moving its location close to the target than does the targeted firm.[44]

In the case of the cartelization of the providers of an input, a dominant firm harms all its rivals equally; hence, the targeting definition does not fit perfectly. Nevertheless, there is more of a sense of targeting than in the case of a dominant firm lowering its price to all consumers, because Professors Salop and Scheffman hypothesize the higher, cartelized, price of the input will not be paid by the dominant downstream firm facilitating the creation of a cartel. In the price world, it is analogous to a firm whose own customers cannot switch, but which offers lower prices to new customers drawn from all of its rivals. It is not analogous to the dominant firm lowering its price to all its customers. Hence, unlike a generalized price drop by a dominant firm, an arrangement leading to an increase in input price to a dominant firm's competitors comes close to the rubric for predation that is advanced here—a rubric broad enough to cover both price and nonprice elements.

There is no candidate for generalizing the predation tests of Williamson, Baumol, and Edlin; they were written purely for the case of price predation. One might postulate an extension to the nonprice case to be something like: "a dominant firm may engage in so much nonprice predation, but if it does, any benefits to consumers have to be preserved indefinitely," or, in Edlin's case, "if the dominant firm fails to do good for consumers before a rival does, it cannot perform that good thereafter, for twelve to eighteen months." These are not successful generalizations. In raising rivals' costs, for instance, no benefit is conferred upon consumers at all. Hence, rules saying, "preserve the benefit to consumers" or "you cannot do good for twelve to eighteen months" are intractable in the nonprice context.[45]

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44. A previous article, *Predation and Competition in Antitrust*, deals with the case where the predator moves against a new entrant and—in that circumstance—demonstrates that the predator suffers less loss than the target, an equally efficient firm entering a market, where all were located optimally. Campbell, *supra* note 42, at 1646–48. Where geographical dimensions are involved, two is normally all that is necessary (though we should not exclude the possibility of three dimensions illustrated by rivalry by location above or below a rival in multi-story malls, for instance). Where dimensions of a product are involved, however, such as sweetness or crunchiness of a cereal, a number of dimensions may be involved. For more than two dimensions, see the proof in Appendix, *infra*.

45. In spatial predation, there is some consumer benefit. Some consumers are located closer to the new location of the moving firm than they were to any firm in the original map. In developing the test for spatial predation, Campbell explicitly followed Williamson and Baumol in forgiving the alleged predatory move if it were permanent so that, at least, the consumers closer to the relocated point would benefit. *See* Campbell, *supra* note 42, at 1656–57. We now reject that approach. *See* text accompanying note *infra* 100.

Elhauge's formulation can be generalized in the following way: Any move, pricing or otherwise, that puts the monopolist in a better competitive position because of its superior efficiency is approved; any move, pricing or otherwise, that puts the monopolist in a better position by hurting a rival even in the absence of superior efficiency is condemned. The difficulty of proving these concepts in court, however, will be a major disadvantage over a pure targeting test. Furthermore, we maintain our criticism that above-cost discriminatory pricing should be condemned when Elhauge would allow it; and below-cost, nondiscriminatory pricing should be allowed, when he would condemn it. Speaking purely from the point of view of generalizability between price and nonprice predation, however, Elhauge shares this advantage with the approach recommended here.

Can we generalize the Areeda-Turner test beyond price, to see how it would incorporate these kinds of conduct? Extrapolating, we would rephrase the Areeda-Turner test to be satisfied when conduct in which the dominant firm engages with respect to a rival loses money for the dominant firm in the short run to such an extent that one can infer the dominant firm intends to make up its loss eventually with supracompetitive profits.

This generalized version of Areeda-Turner, however, fails to capture some cases of nonprice predation. Cartelizing the suppliers of an input, for instance, does not necessarily cost a dominant firm anything; nor does bringing a frivolous business tort action or a complaint to a governmental regulator, outside of the cost of filing a complaint. And, at least in one-space, relocating a product costs the dominant firm no customers at all; though in higher dimensions, one could accept the proposed phrasing of a generalized version of Areeda-Turner.[46]

Many of the cases of nonprice predation, therefore, would not be condemned under a generalized Areeda-Turner test. The Areeda-Turner formulation is not robust to the nonprice context.

The targeting formulation, by contrast, is robust across price and nonprice predation. As a key to behavior with which section 2 of the Sherman Act should be concerned, therefore the targeting formulation is preferable. Section 2 is concerned with more than price predation; indeed, the word "price" is never mentioned.

46. *See* Campbell, *supra* note 42, at 1646, 1649 fig.3. In some cases, the move itself might be costly. Further, in dimensions higher than one, a firm that moves its location close to a rival does suffer some loss, so the Areeda-Turner test *would* have a nonprice analogue in those cases. The move would be condemned under a hypothetical generalized Areeda-Turner test if the loss of customers, plus the absolute cost of moving, made the moving firm lose money until the rival departed.

2. Accordance with the Concept of Monopolization.

Monopoly (or near-monopoly) conveys a sense of *relative* size within an industry. Nothing in Areeda-Turner's formulation follows from the *relative* size of the predator, however. Indeed, size enters only as a safe harbor—small firms seeking to become established in an industry may price below average total cost,[47] and at some point, a firm's size will be so small as to prevent a conclusion of market power[48] necessary for any finding of monopolization.[49] Nothing in Baumol, Williamson, Edlin, or the asymmetric information theorists (for example, Milgrom-Roberts,[50] or Kreps-Wilson[51]) requires the predator to be large. Small size is a convenient safe harbor, but the conduct prescribed by each alternative formulation of predation does not flow from the predator's large size relative to its rivals. If an industry were characterized by more than one firm with market power, it is conceivable that a smaller firm could be held guilty of predation against a larger firm, under Areeda-Turner, Baumol, Williamson, Edlin, Milgrom-Roberts, or Kreps-Wilson. The shame of repeating the result of *Utah Pie Co. v. Continental Baking Co.*[52] should be unbearable!

By contrast, what makes the targeting formulation work is that the dominant firm is larger than any targeted firm. Targeting makes the victim lose more than the predator. Where the target is smaller than the predator, even the loss of the same absolute amount per customer runs a greater risk of putting the targeted firm below fixed costs than it would for the dominant firm. If a victim of a targeted action attempts the same medicine against the dominant firm, it must do so on a larger scale, as a percentage of its present capacity, than was represented in the action by the dominant firm. These are two elements of why targeting works, and both elements flow directly from size. Targeting imposes a greater harm on the victim than on the predator, even assuming retaliation.

One hundred fourteen years after the word "monopolize" was written, we confess that court-made law, with precedent building on precedent, has become more important than faithfulness to the simple meaning of a word such as "monopolize." Nevertheless, in the event the latter informs the

47. *See* Areeda & Turner, *supra* note 5, at 715.

48. *See* William M. Landes & Richard A. Posner, *Market Power in Antitrust Cases*, 94 HARV. L. REV. 937, 955 (1981).

49. Spectrum Sports, Inc. v. McQuillan, 506 U.S. 447, 457 (1993).

50. Milgrom & Roberts, *supra* note 19.

51. Kreps & Wilson, *supra* note 19.

52. 386 U.S. 685 (1967); *see* discussion *infra* notes 79–80 and accompanying text.

former, as the common law of antitrust continues to develop, a rule for monopolization that takes into account the relative size of the alleged monopolizer to its target should have some claim on our sympathies.

Does finding a nonempty set for the statutory words to apply result in economic efficiency, however? In other words, why improve the test for monopolization if all such enforcement lowers social welfare?

From a social welfare perspective, the law on monopolization has ambiguous results because of an ambiguity regarding allocative efficiency. If firms are discouraged from lowering price, or from improving product quality, in order to prevent a successful monopolization claim, there is clearly foregone consumer benefit. Such a loss has been viewed as acceptable, by all predation theorists from Areeda and Turner forward, if the end result is the preservation of a firm in an industry which would otherwise be driven out by the dominant, monopolizing firm. On its face, however, losing the small firm because the bigger firm lowers its price need not be a socially undesirable result. If, for example, the surviving monopolist firm keeps its price low (perhaps using a strategy of limit-pricing), and maintains a large level of output (perhaps to discourage further entry), the long-term consumer harm would not be as great as if the surviving monopolist immediately raised its price to equal short-run marginal revenue product, and cut back output. Furthermore, whatever the pricing strategy taken by the dominant firm in the long term, its harm to consumers might be less than the harm of foregoing the lower short-term prices the dominant firm might have offered but for the fear of being branded a monopolist. The balance depends entirely on the choice of a relevant discount rate and time periods involved.[53]

From the productive efficiency point of view, Areeda and Turner do not ever view predation as efficiency enhancing because it results in the capacity of a firm which is at least as efficient as the monopolist being lost to the market. As shown above, however, that is not a necessary result of the kind of conduct Areeda-Turner condemns; if, for instance, the dominant firm lowers its price but does not expand its output, the other firm will be able to stay in the industry.[54]

The test that we propose provides a way to distinguish between firms, to weed out the less efficient victims from the victims that are as efficient as the dominant firm. Dominant firm behavior applied to all rivals cannot

53. When we model competition not in terms of price, but in terms of location in a product characteristic or geographic space, however, the departure of a firm is unequivocally consumer welfare-diminishing. *See infra* Part II.B, .C, .E.

54. *See supra* notes 18, 20 and accompanying text.

cause a harmful effect from the productive efficiency viewpoint, assuming all rivals have access to credit equal to that of the dominant firm. The equally efficient target will go to a bank if necessary, but will tough out the attack. By contrast, targeting can kill an equally efficient firm, even one with the same access to credit enjoyed by the dominant firm.

Thus, in addition to our desire to fashion a test that responds to the legislative words (condemning something, at least, that a monopolist does to become or continue to be a monopolist), the targeting test has the advantage of ensuring an efficient result from the point of view of productive efficiency, and has no worse an effect than the other tests from the point of view of allocative efficiency.

3. Ease of Administration

The Areeda-Turner test has undoubtedly improved the ease of administration of price predation standards in antitrust adjudication. Although the Supreme Court has not absolutely sanctified the use of average variable cost, it has embraced the necessity for a plaintiff to establish "that the prices complained of are below an appropriate measure of its rival's costs."[55] Difficulties remain with apportioning joint costs, as the U.S. Department of Justice's case against American Airlines demonstrated,[56] and Areeda-Turner made no attempt at providing a rule in the nonprice area. Still, ease of administration has to be conceded as a huge advantage of Areeda-Turner's approach over prior law.

The behavior tests, by contrast, are difficult to administer. As noted above, they require perpetual monitoring. Edlin's test has the advantage over both the Williamson and Baumol tests in this respect because it ends supervision of price after a fixed time period.

To apply the targeting test, a court would need some sense of the defendant's size. Gathering such information imposes no additional burden, however, because all monopolization cases require proof of market power as a predicate, which requires an estimate of market share. Once that has been accomplished, the court will know if the defendant is bigger than the alleged victim. Hence, the targeting test imposes no additional burden in this respect.

55. Brooke Group Ltd. v. Brown & Williamson Tobacco Corp., 509 U.S. 209, 222 (1993).

56. United States v. Am. Airlines, 291 F.3d 503 (8th Cir. 2002) (rejecting theory of predation based on lowering prices at a hub to undercut competitors, in part because of impossibility of showing price below average variable cost, spread out over many different flights).

Next, a court must ascertain if the defendant directed conduct toward a rival—or the customers of a rival—that the defendant did not address to *all* its rivals, or their customers. This is also a very simple test, one that virtually answers itself. Reviewing the cases that have defined the landscape of predation in American antitrust law over the last several decades demonstrates that this is so. Such an effort can also tell us how difficult the targeting test might be to apply in the future and whether the outcomes would have been different in the past.

D. Analysis of Major Predation Cases Under a Targeting Standard

In *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*,[57] the Supreme Court refused to find predation in Brown & Williamson's introduction of a line of generic cigarettes ("black and whites") to compete with those pioneered by Liggett, the plaintiff. The defendant had "marketed its black and whites to Liggett's existing distributors as well as to its own full list of buyers, which included a thousand wholesalers who had not yet carried any generic products."[58] The defendant had introduced a new brand, no doubt in response to the success of the plaintiff's brand, but in competition with its own premium brands. Hence, there was no targeting. (In a later part of this Article, we will also suggest that liability should not attach to the creation of a net new brand or product.)

The targeting analysis would thus have led to the same outcome the Court reached in *Brooke Group*; there was no targeting, and the Court held there was no predation. The converse, however, is not true: Changing the facts to create targeting, the Court would still not have found for the plaintiff. The Court's rationale prevented a finding of liability because of what the Court held was the implausibility of recoupment through a cartel orchestrated by Brown & Williamson to lift the price on generic cigarettes to the benefit of all premium brands. We disagree with the Court in that finding: Brown & Williamson was suffering enough by itself from competition from the black and whites that eliminating that competition alone, whether or not prices rose, was of plausible benefit. "Brown & Williamson was hardest hit [by the introduction of black and whites] because many of Brown & Williamson's brands were favored by consumers who were sensitive to changes in cigarette prices."[59]

57. 509 U.S. 209.
58. *Id.* at 215–16.
59. *Id.* at 214.

Judge Easterbrook's opinion for the Seventh Circuit in A.A. *Poultry Farms, Inc. v. Rose Acre Farms, Inc.*[60] presaged the Supreme Court's recoupment analysis in *Brooke Group*. Once again, while we disagree with the recoupment analysis and would use targeting instead, the outcome would have been the same. The Seventh Circuit held there was no liability in a poultry farm's discounting of irregular-sized eggs. The eggs were discounted everywhere; there was no evidence that only those chains that carried the plaintiff's produce were targeted.

In *Eastman Kodak Co. v. Image Technical Services, Inc.*,[61] the decision by Kodak to refuse spare parts to rivals in the business of servicing Kodak copiers was held to be monopolistic. Only Kodak's rivals in the secondary market of servicing were cut off. Owners were allowed to buy the spare parts themselves. The Court did not use a targeting analysis, but the result was the same as if it had.

In *Matsushita Electric Industrial Co. v. Zenith Radio Corp.*,[62] the Supreme Court dealt with a fact situation directly based on targeting. The plaintiff alleged a conspiracy of Japanese television manufacturers to keep their prices low in America, while keeping them high in Japan. This allegation is archetypical targeting; only suppliers to American consumers were faced with the lower priced Japanese television sets.

The Supreme Court rejected the Third Circuit's reversal of summary judgment for the defendant, reinstating the district court's verdict for the defendant because the Court found no plausible theory of the Japanese manufacturers' conspiracy over so many years.[63] If there was no proof of conspiracy, and no single defendant had enough market share to trigger monopolization liability, then the targeting test, too, would rule against the plaintiff. There has to be monopoly power; the defendant has to be bigger than the plaintiff. Hence, even though the Court found no antitrust violation in the face of conduct that looked like targeting, the outcome would have been the same under a targeting test due to the absence of the other factor needed for a monopolization case: proof of market power.

A year earlier, the Supreme Court held for the plaintiff in *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*[64] The defendant, Aspen Skiing, had refused to accept vouchers for its lifts only because they were issued by its competitor. Aspen Skiing discontinued a three-day pass, and imposed a six-day pass, where

60. 881 F.2d 1396 (7th Cir. 1989).
61. 504 U.S. 451 (1992).
62. 475 U.S. 574 (1986).
63. *Id.* at 597–98.
64. 472 U.S. 585 (1985).

the pattern of skier was a six-day stay, in order to preclude the skier from having time to try its competitor's slope. The case still presents difficult issues of market definition,[65] but assuming a properly defined market in which the defendant possessed market power, there was no doubt of targeting.

Most recently, the Supreme Court added to the jurisprudence on monopolization by reversing the Second Circuit's judgment for plaintiff in *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP*.[66] The plaintiff was a consumer who alleged it would have received better telephone service if its local exchange carrier had been treated better by Verizon. Verizon was the successor to the local "baby Bell" monopoly that provided necessary exchange services to rivals and was itself a competitor in the local exchange market. The Court ruled that Verizon was under no duty to deal with its rivals, except for what the federal communications statutes had provided.[67] In reaching this conclusion, the Court had to distinguish two prior opinions condemning refusal of service to rivals as monopolization, *Otter Tail Power Co. v. United States*,[68] and *Aspen Skiing*.

In *Otter Tail*, the wholesale electric company regularly offered access to its transmission lines to retail utilities that paid for it. However, it denied access to the twelve out of 465 towns which, over the course of 1945 to 1970, having previously had Otter Tail as its retail electricity provider, attempted to establish their own municipal retail electricity companies.[69] The Supreme Court upheld the federal district court's finding that Otter Tail's refusal to wheel wholesale power to two of those towns, Elbow Lake, Minnesota, and Hankinson, North Dakota, constituted monopolization.[70] Those towns had bought wholesale power, but they needed Otter Tail to transmit it. They had each previously been retail clients of Otter Tail and were now going into retail business themselves. There were many other municipalities for whom Otter Tail did offer transmission of wholesale electricity—just not the ones that Otter Tail viewed as rivals. It was a clear case of targeting.

In citing *Otter Tail*, the *Trinko* Court described its ruling as follows: "Similarly, in Otter Tail Power Co. v. United States, . . . another case relied upon by respondent, the defendant was already in the business of providing

65. The Court did not discuss the lower court's determination that the destination of Aspen, Colorado, constituted a relevant market. A broader definition, such as Rocky Mountain destination ski resorts, would have prevented the finding of market power by the defendant and would, in our view, have accorded more with economic reality.

66. 124 S. Ct. 872 (2004).

67. *Id.* at 880–81.

68. 410 U.S. 366 (1973).

69. *Id.* at 368–70.

70. *Id.* at 378–79.

a service to certain customers (power transmission over its network), and refused to provide the same service to certain other customers."[71] The *Trinko* Court, therefore, identified two salient factors in *Otter Tail* not present in *Trinko*: that a previous course of dealing had been broken, and that some, but not all, customers had been disfavored. The former, we argue, is not a useful distinction; the latter, we submit, is targeting. The former distinction, however, was what the Trinko court used to distinguish the next important plaintiff's case, *Aspen Skiing*.

In *Trinko*, the Supreme Court signaled that *Aspen Skiing* might no longer be good law: "*Aspen Skiing* is at or near the outer boundary of § 2 liability."[72] However, the Court gamely tried to save *Aspen Skiing* by emphasizing that the defendant there had broken off a previous course of dealing (as had Otter Tail), but that Verizon had not:

> The refusal to deal alleged in the present case does not fit within the limited exception recognized in *Aspen Skiing*. . . . The complaint does not allege that Verizon voluntarily engaged in a course of dealing with its rivals, or could ever have done so absent statutory compulsion. Here, therefore, the defendant's prior conduct sheds no light upon the motivation of its refusal to deal—upon whether its regulatory lapses were prompted not by competitive zeal but by anticompetitive malice.[73]

We believe that this basis for distinguishing *Trinko* from *Aspen Skiing* is unavailing, but that targeting would avail as a basis for distinction. The defendant in *Aspen Skiing* owned three of Aspen's four mountains; the plaintiff owned one. At one point, the defendant refused travelers' checks from the plaintiff's customers seeking to buy lift tickets because those travelers' checks had been clipped together with the plaintiff's own lift ticket package. Presumably, the defendant did accept travelers' checks from every other purchaser. Clearly, the customers of its rival were targeted.[74] By contrast, Verizon did not target certain rivals in that particular case. It was under a statutory obligation to provide "nondiscriminatory access to network elements."[75] Indeed, Verizon's rivals weren't suing to say one was favored

71. *Trinko*, 124 S. Ct. at 880.
72. *Id.* at 879.
73. *Id.* at 880.
74. Attacking one competitor rather than all has been the way we have defined targeting; in the case of only one competitor, however, the definition collapses into targeting that one, smaller rival.
75. *Trinko*, 124 S. Ct. at 876 (quoting the Telecommunications Act of 1996, 47 U.S.C. §§ 251(c)(3), 271(c)(2)(B)(ii) (2000)).

over another; it was a customer of a rival who was complaining about Verizon's interconnection service in general.

The distinction that the Supreme Court seemed to use in *Aspen Skiing*, and as one of two rationales in distinguishing *Otter Tail*, was that a break from prior conduct gives evidence of "anticompetitive malice" while a failure ever to enter into a course of conduct does not.[76] This is less convincing. It makes no economic difference whether a monopolist attacks a rival anew or withdraws a previously friendly relationship. As for proof of malice, *Spectrum Sports, Inc. v. McQuillan*[77] long since put to rest that monopolization theory was to ferret out those who intended evil. It is the evil (or anticompetive) *result*—not the intent—that matters. If the *Trinko* Court intended to signal a return to motive analysis, it would undo a major trend in modern antitrust, not just monopolization, law.

Thus, targeting provides a rule that would lead to the same outcomes as in *Otter Tail*, *Aspen Skiing*, and *Trinko*, but with a more consistent rationale, one that points toward the correct economic result. Smaller-sized plaintiffs should win when a monopolist defendant targets them, because that conduct creates a credible threat of success in driving out an equally efficient rival. That was the case in *Otter Tail* and *Aspen Skiing*, but not in *Trinko*. If Verizon treated all its interconnect rivals the same, the fact that its own internal interconnect was better would not be an *anticompetitive* advantage. Rather, putting statutory obligations under the Telecommunications Act to one side, Verizon and any other monopolist would be under no obligation to help out a rival that lacked something the monopolist had and the rival needed. That is the essence of the *Trinko* Court's denigration of the essential facilities doctrine.[78] Such rivals might, indeed, die, but not simply because they were small. That is the distinction between illegal monopolization and survival of the fittest. Targeting goes beyond simply winning because you are better.

Going back to more aged Supreme Court decisions in the predation area, we find a more mixed conclusion. As noted above, *Utah Pie Co. v. Continental Baking Co.*,[79] which was distinguished—if not overruled outright—in *Brooke Group*,[80] held for the plaintiff although there was no evidence of targeting.

76. Aspen Skiing Co. v. Aspen Highlands Skiing Corp., 472 U.S. 585, 603–04 (1985).
77. 506 U.S. 447, 456 (1993).
78. *Trinko*, 124 S. Ct. at 880.
79. 386 U.S. 685 (1967).
80. Here is how the *Brooke Group* Court dealt with *Utah Pie*:

> *Utah Pie* has often been interpreted to permit liability for primary-line price discrimination on a mere showing that the defendant intended to harm competition or produced a declining price structure. The case has been criticized on the grounds that such low standards of competitive injury are at odds with the antitrust laws' traditional concern for

The defendant was actually smaller than the plaintiff and had lowered its price to compete with the plaintiff in the Salt Lake City market. All customers received the lower price. If Salt Lake City was a relevant market, as the Court found, there was no targeting. However, it is fair to say that the absence of market power on the part of the defendant would have kept this case from being decided in the plaintiff's favor under modern jurisprudence, whether targeting was shown or not. *Utah Pie* is an aberration, and it should not be a criticism of the targeting test that it would fail to reach its conclusion; today's Supreme Court would also fail to reach the *Utah Pie* conclusion.

The next major predation case decided by the Supreme Court, going backward in history, was *Klor's Inc. v. Broadway-Hale Stores*.[81] Targeting was very clear. The defendant went to suppliers and induced them to cut off one of its competitors. It did not seek a better deal for itself in respect to the supply of goods. Rather, it asked for specific conduct to harm a rival. This case fits into the category of nonprice predation, of the targeting kind. The Court decided for the plaintiff, and so would a modern court using the targeting test.

Lorain Journal Co. v. United States,[82] the next earlier case and a victory for the plaintiff, was also a case of targeting. The defendant, a monopolist newspaper, was jealous of the growth of radio, and the resultant loss in its revenues as advertisers spent their dollars on radio advertisements rather than newspaper advertisements. Accordingly, the newspaper refused to take advertisements from those commercial establishments that advertised on the radio station. Refusing to take advertising can be analogized to charging an infinite price—not to all customers, only to those patronizing a rival technology.

Lorain Journal provides the best analogue to the more recent Microsoft case *United States v. Microsoft Corp.*[83] In *Microsoft*, the D.C. Circuit affirmed the district court's finding that Microsoft monopolized the market for operating systems, and required the unbundling of Microsoft's browser from its operating system. The district court found that Intel had agreed, at Microsoft's request, to modify its next generation of chip to make interfaces

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> consumer welfare and price competition. . . . We do not regard the *Utah Pie* case itself as having the full significance attributed to it by its detractors. *Utah Pie* was an early judicial inquiry in this area and did not purport to set forth explicit, general standards for establishing a violation of the Robinson-Patman Act.

Brooke Group Ltd. v. Brown & Williamson Tobacco Corp., 509 U.S. 209, 221 (1993).

81. 359 U.S. 207 (1959).

82. 342 U.S. 143 (1951).

83. 253 F.3d 34 (D.C. Cir. 2001).

for Microsoft's web browser competitor less accessible.[84] Microsoft also granted rebates to original equipment manufacturers who promised not to carry the competing browser. The rebate was not granted to all customers, only those that might have favored a competitor of Microsoft. The concept of targeting runs throughout the case. It is similar to *Lorain Journal* in this respect and in the fact that the defendant was targeting the customers of a competing technology not yet fully competitive but with the potential to be so. (Just as radios were beginning to compete with newspapers as advertisers, browsers would open the Internet to users who might then download applications that, in whole or in part, would supplant Microsoft's Windows operating system.)

The early case of *United States v. Aluminum Co. of America*[85] does not provide enough of a record to determine if targeting was present or not. Judge Hand found the company at fault for anticipating demand and purchasing productive capacity, thereby preventing potential competitors from doing so. Although one can imagine targeting in such a context, if, for example, only those aluminum fabricating plants being sought by a rival were purchased by Alcoa, the record of the case is devoid of such evidence. Certainly, Judge Hand did not base liability upon such a finding.

In *United States v. United Shoe Machinery Corp.*,[86] the other seminal monopolization case decided by a lower court in the earlier antitrust era, targeting was at issue—almost tautologically. Judge Wyzanski found fault in the defendant's failure to sell shoe manufacturing equipment, although it would lease it. In that sense, it targeted its rivals who wanted to get into the business of shoe manufacturing permanently, but not those whom it could, by controlling the terms of the lease, monitor for competitive threats. A similar interpretation finds targeting in the monopolization cases dealing with essential facilities[87] and with *Eastman Kodak*. Failure to provide parts at all might not incur liability; by providing spare parts to machine owners, but not to competitors, they were found liable for monopolization. Applying a targeting test would yield the same outcome.[88]

84. United States v. Microsoft Corp., 84 F. Supp. 2d 9, 107, 109–10 (D.D.C. 1999) (findings of fact 396 and 405).

85. United States v. Aluminum Co. of Am., 148 F.2d. 416 (2d Cir. 1945).

86. United States v. United Shoe Mach. Corp., 110 F. Supp. 295 (D. Mass. 1953), *aff'd*, 347 U.S. 521 (1954).

87. United States v. Terminal R.R. Ass'n, 224 U.S. 383 (1912). Note that the essential facilities doctrine has been explicitly questioned by the Supreme Court in *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP*, 124 S. Ct. 872, 880 (2004). *See also* Elhauge, *supra* note 33; text accompanying *infra* note 90.

88. The problem of market definition, and market power within a properly defined market, remains. While noting that *Eastman Kodak Co. v. Image Technical Services, Inc.*, 504 U.S. 451

In suggesting that almost all past outcomes can be reconciled with our test, we do not wish to overstate our claim. It is impossible to review the cases that never made it to court. We recognize that among such possibilities are cases where targeting might have been present, but the plaintiff did not believe it could prevail. For instance, in the wake of *Brooke Group*, in the absence of recoupment or of pricing below some measure of cost, a plaintiff's attorney might have advised against bringing an action. Nevertheless, if targeting were present, we would allow such cases. The rule is simple: If a monopolist wants to lower price, or improve a product, or make service better, for any one customer at any given level of distribution, it must do so for all. If a monopolist wants to restrict access to a valuable input, or heighten the price it charges its rivals for access it controls, it must do so for all. A monopolist is not compelled to have any dealings with rivals, or their customers, at all; but if it does with some, it must for all.

E. Conclusion of Part I

Cost-based pricing, the dominant test today, is inferior to targeting as a rule of predation. It is both the over- and underinclusive. The various alternatives recently proposed seek to achieve what each author believes is a better tradeoff between present consumer benefit and long-run benefit of more plentiful competition. Deciding among these alternatives is better left to Congress. The targeting test, by contrast, is a coherent synthesis of judge-made law, permitting the more efficient firm to out-compete its rival, but preventing behavior that flows simply from a firm's size from destroying a smaller rival. That, we believe, is the essence of predation under the Sherman Act. Furthermore, the major antitrust cases dealing with predation reach results that would also have been reached under a targeting test, with the only serious exception being *Utah Pie Co.*, which has been discarded by modern antitrust jurisprudence.

(1992), can be seen as a targeting case, we disagree with the Court that the servicing of a single brand in that case constituted a relevant market.

II. APPENDIX: ECONOMIC AND TOPOGRAPHICAL ASPECTS OF PREDATION

A product can be situated along several axes describing its characteristics. Identical products can be situated along geographic axes to depict the location of the nearest sales point. Consumers can be described within such coordinate systems as residing at various points, and those points can be included within boundaries of a cell built around the location of the nearest vendor, or the product with a combination of characteristics most to their liking. The price charged for the product will determine how large the boundaries of such cells are. A consumer might be enticed to purchase a good slightly less to her or his liking if the price is sufficiently low; similarly, a low price might induce a purchaser to drive a longer distance to buy the item in question. There is no limit to the number of dimensions conceivably relevant to a consumer. The dimensions must be a priori neutral: for instance, crunchiness of cereal (some like crunchy, some do not), rather than a priori ordinal (an automobile that gets better gas mileage, ceteris paribus, is always preferred over one that does not). For geographic purposes, obviously, two dimensions are often all that is needed; three might occasionally be relevant (consider a shopping mall with a large atrium allowing consumers to see stores above and below them, as well as to either side and ahead or behind). For products that are not identical, physical attributes might be described in more than two dimensions as well.

A position of equilibrium means that all the firms in a market have so spaced themselves that no other arrangement of that set of firms can make the average distance between a consumer and a product point less. If it could, then profit would be available to the firms by rearranging themselves into that array. It is possible to price discriminate, since each consumer within a cell will be more or less satisfied with the characteristics of the product closest to him or her. Along the boundary between cells, the consumers are indifferent between the adjacent product points. The price charged to customers lying along that boundary will be the marginal cost of production—provided it is above average variable cost—because that is the price charged in perfect competitive equilibrium. If a higher price prevailed along the boundary, one or the other adjacent firms could make money by expanding its cell. If a lower price prevailed along the boundary, the firms would be losing money on every sale and would retract their boundaries.

Suppose that a new firm enters the array of existing firms and does everything right, in the sense that it chooses the best possible location for it, and is equally efficient as the existing firms. We investigate predation against this kind of firm, because if the firm were not equally efficient, or had erred by not coming in at the best possible place, then successful predation would lead to elimination of a higher cost firm or less wise firm, an outcome that some might view as socially acceptable.

All kinds of action that an incumbent firm can take in response to the new entrant fit within one of five types:[89]

1. The incumbent firm can lower its price, or increase the quality of its product, to all consumers.
2. The incumbent firm can lower its price, or increase the quality of its product, to consumers of the entering firm.
3. The incumbent firm can relocate its product closer to the entering firm.
4. The incumbent firm can create a new product and position it close to the entering firm.
5. The incumbent firm can do something to denigrate directly the entrant's ability to produce or sell. Dynamite is one example. Denying the entrant access to an input vital to competition, where the incumbent is vertically integrated, is more commonly encountered in antitrust.

Each of these actions has a ready graphical representation. We propose analyzing whether each of these actions is welfare-enhancing or not, taking into account both static and dynamic effects.

A. The Incumbent Firm Can Lower Its Price, or Increase the Quality of Its Product, to all Consumers

When the firm lowers its price, its cell boundaries expand in a uniform manner. Because we have assumed that all firms are equally efficient, and that price at the margin just covers marginal cost, the expansion will lose money for the firm. Consumers formerly in other firms' territories surrounding the firm will either be neutral (because the lower price just offsets their disutility from purchasing from a firm farther away from its location) or be better off (if they

89. Each of these could be coordinated with other firms, but if that were the case, a Sherman Act section 1 violation would have occurred, and we are exploring section 2 liability here.

were not, they would not switch). Consumer surplus, therefore, must rise. In the absence of a cost-saving innovation, which we have not assumed, the producer is making less per unit. That loss exactly offsets the gain some consumers feel by getting the same product for a lower price. But there are also consumers for whom the lower price just offsets the disutility of a product located less closely to their own preferred point. The loss in producer surplus is greater than the gain in consumer surplus; however, the lower price is extended to all consumers within a producer's cell, or area. This will cause more consumers to appear in the coordinate space within the boundaries of the cell of the firm lowering its price. This circumstance creates an increase in consumer surplus because in net terms these are new customers. If the price they pay covers the producer's marginal cost of the product, the change is welfare-enhancing.

Our conclusion, therefore, turns on whether the increase in welfare from charging a lower price to the inframarginal consumer offsets the loss in welfare from extending into a neighboring firm's cell. That calculation turns on the degree to which the firm was, in its initial state, acting as a discriminating monopolist. It cannot be decided on theory alone, in the static model.

Dynamically, however, this conduct will not drive out an equally efficient rival. The price cut is offered to all customers. If the price is below marginal cost, the dominant firm loses money—indeed more than the targeted firm—and the Chicago School rebuttal to predatory pricing theory holds. That is to say, it is the dominant firm that will depart earlier than any neighboring firm, whether entrant or established.[90] Our conclusion, therefore, is that behavior of this kind cannot be determined in advance to be welfare-enhancing or diminishing in the static case, but if it is the latter, it will self-correct in the dynamic case. Therefore, it should not be condemned as predatory. *Utah Pie* corresponds to this case.

We will illustrate the various scenarios in this appendix by one- and two-dimensional examples. For the one-dimension case, we'll use an example from consumer preference, for pizza along a spectrum of the thickness of crust. For the two-dimension case, we'll use a geographic model, north-south along one axis, east-west along another, assuming consumers are uniformly distributed in both directions.

90. Only if the dominant firm can sustain a price below that of its rival because its costs are lower can this conduct result in a permanent departure, but that is not the case we are exploring. We maintain our assumption of equally efficient firms in order to identify predation in the strict Chicago-School sense.

In considering the illustrations for this first case, note that the geometric representation of lowering one's price to all customers is indistinguishable from maintaining the higher price to one's existing customers but lowering the price only to customers around the periphery of the firm's cell, assuming they could be identified. This mathematical result has informed the formulation of our test for predation—it is for this reason that we do not condemn as predatory the lowering of price to all customers excluding one's own (except in the case where the dominant firm has only one rival.) Rather, we have focused on the dominant firm lowering its price to the customers of a targeted rival or rivals. Similarly, improving the quality of one's product for one's own customers but not for the customers of rivals who nevertheless need some service from the dominant firm (the *Trinko* circumstance) does not constitute predation. Such conduct is indistinguishable from simply improving the quality of one's product—an activity that will expand a cell's size in all directions. It is essential to the approach we take that geometrically equivalent cases be treated the same under the law.

DIFFERENT BRANDS OF FROZEN PIZZA

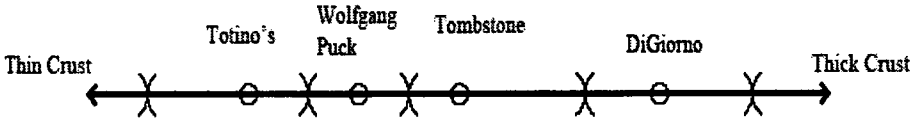

Figure 1A: A new brand, Wolfgang Puck, enters.

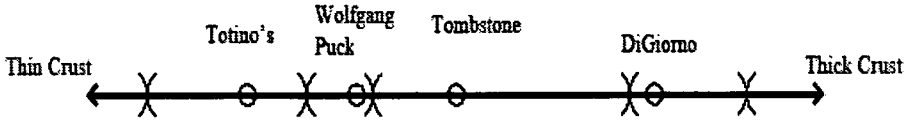

Figure 1B: Tombstone lowers its price to customers of both of its rivals.

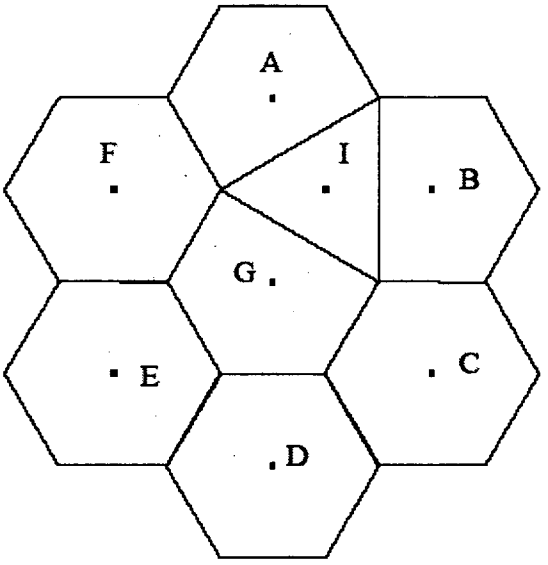

Figure 2A: Interloper *I* enters the market. Incumbent firms *A*, *B*, and G are hurt.

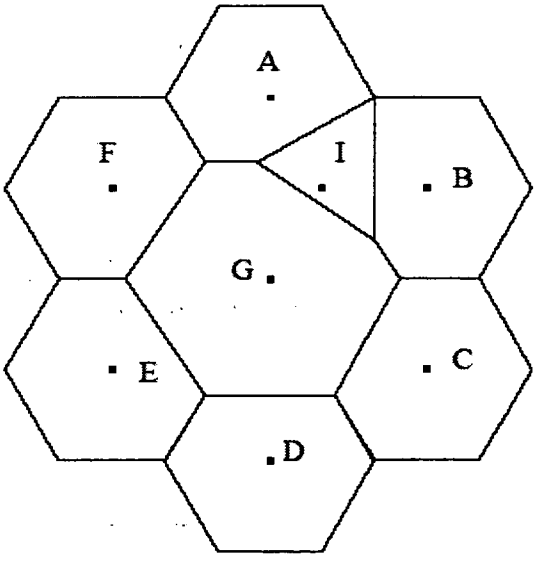

Figure 2B: G lowers its price to customers of all its rivals.

B. The Incumbent Firm Can Lower Its Price, or Increase the Quality of Its Product, to Consumers of the Entering Firm

This is targeting. The lower price, or the improved quality, is offered only to the consumers of a rival, or some rivals. The new customers who have been targeted are either neutral or better off (depending on whether the price concession exactly compensates or overcompensates them for the greater distance they are from the product they choose). The firm that does the targeting is losing producer surplus in either event. If it loses producer surplus to make the targeted consumer no better off, that is socially wasteful. If it loses producer surplus to confer consumer surplus, it is welfare-neutral. There is no additional welfare-enhancing effect because there are no inframarginal consumers within the firm's own original cell who are newly attracted to buy. The price cut is not targeted to them. Thus, the static effect is welfare-diminishing.

From a dynamic perspective, this practice will lead to the departure of an equally efficient, but smaller, rival. The smaller firm loses a higher percentage of its customer base than does the targeting, larger firm. The smaller firm cannot retaliate since, being smaller, it cannot target as large a percentage of the dominant firm's customer base as the dominant firm targeted of its own customer base.

Thus, the conduct is welfare-diminishing in the static case, and welfare-diminishing in the dynamic case. It should be condemned. *Matsushita* would fit in this category, if market power had been proved.

DIFFERENT BRANDS OF FROZEN PIZZA

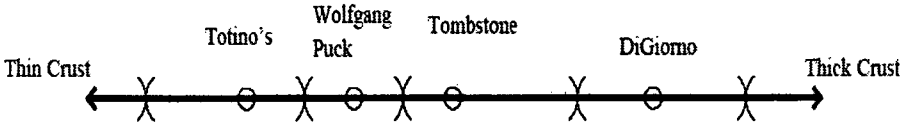

Figure 3A: A new brand, Wolfgang Puck, enters.

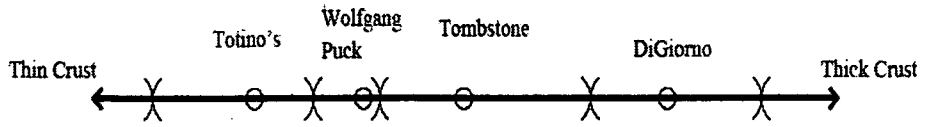

Figure 3B: Tombstone targets Wolfgang Puck by lowering its price only to customers of Wolfgang Puck.

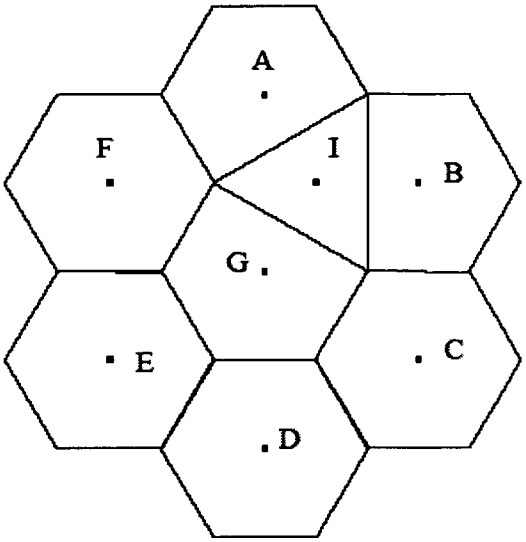

Figure 4A: Interloper *I* enters the market. Incumbent firms *A*, *B*, and *G* are hurt.

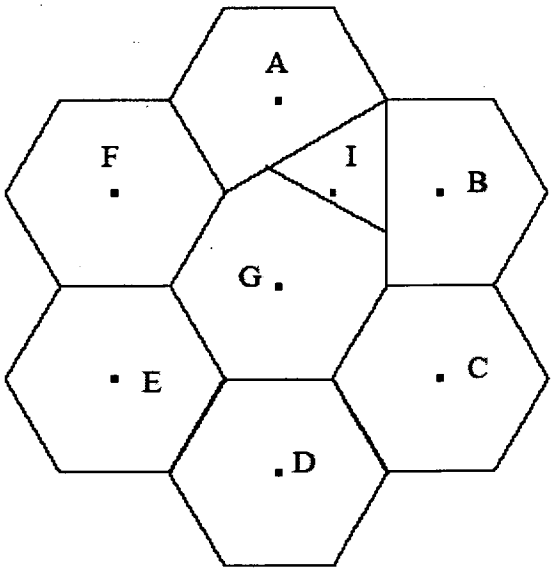

Figure 4B: G targets the customers of *I* only.

C. The Incumbent Firm Can Relocate Its Product Closer to the Entering Firm

This case also falls under the rubric of targeting. In the static case, it is welfare-diminishing. Moving away from initial equilibrium reduces social welfare because the sum of distances from consumers to product points has increased, and the original equilibrium was defined to minimize that sum. Hence, the total amount of consumer and producer surplus has diminished, whatever might have happened to the division between those two. Hence, the static case is welfare-diminishing, in any number of dimensions.

The dynamic case has to be considered in several dimensions. The one- and two-dimension cases were considered in an earlier article.[91] In those dimensions, this strategy was shown to be effectively predatory because the target suffered a greater loss of customers than did the targeting, dominant firm. A fortiori, therefore, the target lost a greater percentage of its customers than did the dominant firm. That is important because it makes the predation credible. The targeted firm will fall to the level of its fixed costs faster than will the targeting firm. As in case 2, this directly rebuts the Chicago School conclusion that a targeted firm can obtain credit from a bank to fend off the predatory activity.[92]

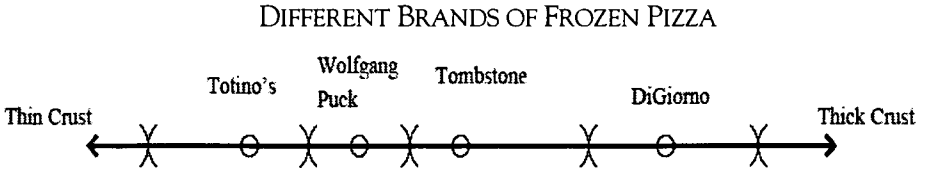

Figure 5A: A new brand, Wolfgang Puck, enters.

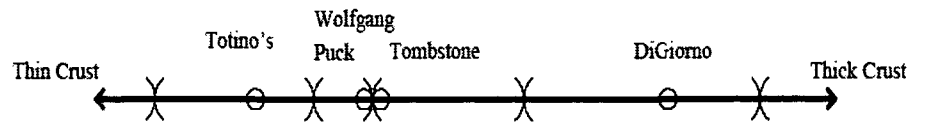

Figure 5B: Tombstone makes its crust thinner, targeting Wolfgang Puck.

91. Campbell, *supra* note 42, at 1649–51.

92. *Cf.* Easterbrook, *supra* note 6, at 287. Note that this rebuttal also assumes lending markets are efficient, and that there is no bias in favor of a firm's share in an industry, or how long it has been in the industry.

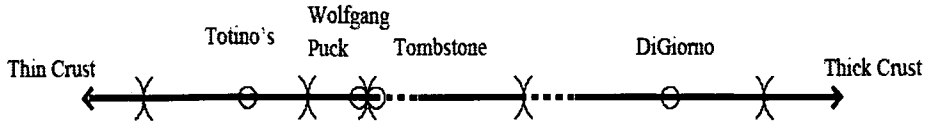

Figure 5C: Tombstone gains dotted segment to the left, and loses dotted segment to the right. Tombstone's net loss is zero.

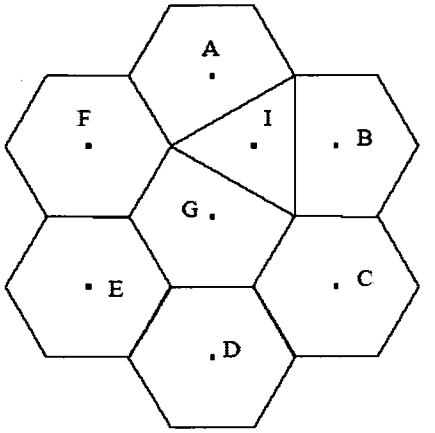

Figure 6A: Interloper *I* enters the market. Incumbent firms *A*, *B*, and G are hurt.

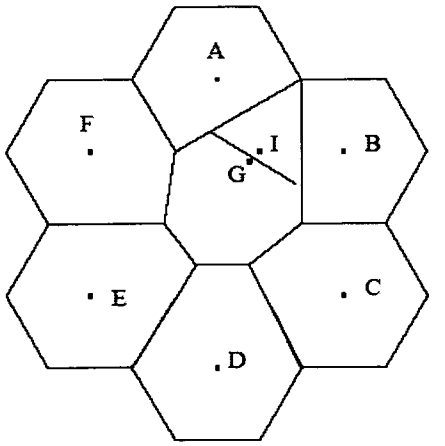

Figure 6B: Incumbent firm G moves toward interloper *I*. Incumbent firms A and *B* are unaffected. Incumbent firms *F*, *E*, *D*, and C are benefited. Incumbent firm G is hurt. Interloper *I* is hurt even more.

It is more complex to pursue this result in more than two dimensions. We first construct a geometric model for how vendors locate themselves in three-dimensional space. We then make the same assumptions as before: that consumers are evenly distributed across the space, that a customer will buy from the vendor to whom the customer is closest, and that all firms are equally efficient. While vendors populating an untapped market may situate themselves haphazardly, the eventual landscape for such a market in equilibrium will become regular, as open spaces are filled and clusters are thinned. For this reason, our model assumes that, at equilibrium, vendors take up positions in three-dimensional space in a regularized form called a lattice.[93]

These assumptions allow us to carve up the entire three-dimensional space into cells, analogous to the two-dimensional case. Each cell contains precisely one vendor along with all the points in the space that are at least as close to that vendor as to any other vendor. The mathematical theory that deals with such partitions of space is known as the theory of Voronoi Diagrams, and such a cell is referred to as a Voronoi cell.[94] In two-dimensional space, a Voronoi cell is a polygon, while in three-dimensional space, it is a solid. The cell surrounding a particular vendor is its market share, and the volume of the cell gives a notion of how large the market share is.

We now address the issue of a new vendor on the scene. We will refer to lattice points as incumbents, and the new vendor as the entrant. Due to the congruency of all the incumbents' Voronoi cells, we may focus on the cell of the origin (0, 0, 0), and refer to this point as the incumbent. We may assume that the entrant locates at a Voronoi vertex of the incumbent's cell. That is because this is the point of maximum distance from the existing vendors.[95] Such a point promises the entrant the greatest number of

93. A lattice L is a discrete and infinite subset of points in three-dimensional space with the following properties: the origin (0, 0, 0) is contained in L, and if points (a1, a2, a3) and (b1, b2, b3) lie in L, then their sum (a1+b1, a2+b2, a3+b3) and their difference (a1–b1, a2–b2, a3–b3) also lie in L. More than one lattice is possible. We choose the lattice that guarantees that consumers are best served in the sense that no other lattice can make the sum of the distances from each consumer and the vendor's location smaller. Only this lattice corresponds to long-run equilibrium, because if consumers could be better served, in the long-run, including lawful joint ventures among competitors, there would be profit to be made in arranging into the lattice that served them better. The unique lattice possessing this special quality is the body-centered cubic lattice, or bcc lattice. *See* J.H. CONWAY & N.J.A. SLOANE, SPHERE PACKINGS, LATTICES AND GROUPS 60 (3d ed. 1999).

94. *See id.* at 33.

95. It is important to assume that the entrant is behaving in as profit-maximizing a manner as it can. If the entrant has made some mistake, or behaved in a less than optimal way, then showing successful predation against such a firm might simply lead to the response that less smart, less efficient firms deserve to die. To rebut the Chicago School criticism of predation, we must make the victim as efficient as possible, with as large a store of producer surplus to draw upon in the event of an attack as possible. Here, that means it enters at a Voronoi vertex of an incumbent's cell.

customers among whom the entrant can practice price discrimination: charging a higher price to those customers closest to its point, diminishing to a competitive price at the shared boundary with the next vendor's cell. The arrival of the entrant creates a new Voronoi diagram, but only the cells of incumbents that are nearest to the entrant are affected. We refer to this Voronoi diagram as "post-arrival."

Assume now that the incumbent attempts to drive the entrant out of business by moving infinitesimally close to the entrant, along the line segment joining the two vendors. This relocation creates yet another Voronoi diagram, which will be referred to as "post-attack." The incumbent will lose some market share by doing this. However, if the incumbent loses a smaller percentage of its market than the targeted entrant does, the incumbent can succeed, as discussed above.[96]

To compute the necessary Voronoi diagrams and volumes, we wrote a computer program for the mathematical software MATLAB.[97] The program starts with the three vectors in three-dimensional space that generate the lattice we described, and produces a finite portion of this lattice. The function VORONOIN then calculates the Voronoi vertices of the Voronoi cell of the origin (incumbent) in the equilibrium lattice, and then selects one of these vertices to be the location of the entrant. (Another special property of the kind of lattice chosen to "serve customers best" is that all vertices of any Voronoi cell in this kind of lattice are geometrically equivalent.)[98] We utilize the VORONOIN function to calculate the "post-arrival" Voronoi diagram, and use the function CONVHULLN to compute the volumes of the incumbent's and entrant's post-arrival cells. For the post-attack Voronoi diagram, we repeat the procedure except with a new set of points consisting of the original lattice, minus (0, 0, 0), plus the entrant (the point (x1, x2, x3)), plus the relocated incumbent (which is 0.999999 * (x1, x2, x3)). We then compare volumes.

Our calculations indicate that, as a result of the attack, the incumbent loses 36.2 percent of its post-arrival volume, whereas the entrant loses 54.5

96. The target will drop below the minimum size necessary to cover fixed costs sooner than will the incumbent. This will be true even if the entrant and incumbent have identical access to loans. Lending institutions will realize the incumbent can win at this exercise, and rationally should not lend to the target. This will also be true if the incumbent and entrant are in every way identical except for the fact that the entrant entered later.

97. The Mathworks, MATLAB, (computer program), Version 6.5.0.180913a, June 2002.

98. *See* CONWAY & SLOANE, *supra* note 93, at 116.

percent of its post-arrival volume.[99] Thus, the incumbent can successfully attack the entrant.

We would like to generalize this result into any number of dimensions; however, it is not true. In four dimensions, using the same kind of lattice that minimizes the sum of all distances from consumers to vendors' locations, the incumbent loses 53.7 percent of its post-arrival volume, while the entrant loses only 50.0 percent of its post-arrival volume. We stopped there, as the four-dimension case demonstrated that the result was not generalizable for all dimensions.

However, the force of what we have been able to show in one, two, and three dimensions is important, since three dimensions plus time make up our physically observable universe. All cases of predation by geographic movement are now addressed.

The only reason to go beyond three dimensions was to deal with the situation of products in space defined by characteristics, as described above for pizza (thickness of pizza crust on one dimension, crunchiness of crust on another dimension, spiciness of sauce on a third dimension, and amount of cheese in a fourth dimension, etc.). We have hit a limit at three of such characteristics, but there is no reason to believe products are limited to three dimensions of competition. As a result we do not advance our conclusions for predation through relocation by a dominant firm in product space. This limits the practical effect of our conclusion, therefore, to alleged predation by movement of a dominant incumbent firm's geographic location.

The conclusion we are tempted to reach is that a dominant firm should be held liable for monopolization against a smaller firm for relocating geographically closer, indeed, almost next to, a smaller firm. However, a complication remains. The assumption we made of uniform customer density now becomes a liability. In the realistic case where consumers are not uniformly distributed across three-dimensional geographic space, movement by the incumbent firm might be an attempt to respond to new information about where consumers are. The fact of a new firm's entry could itself be a signal that there is a deep vein of consumers around the entrant's point.

In an earlier article, this issue was dealt with in two dimensions by adopting a Baumol, Williamson-like approach: allowing the dominant firm to move, but compelling it to stay once it had moved.[100] That now seems to us to be open to the same criticism that we offer to the Baumol and

99. Interestingly, the moving incumbent loses more in absolute size, but unlike in the two-dimension 7case.

100. Campbell, *supra* note 42, at 1656.

Williamson rules in this Article: that the plaintiff has to die before it can sue, and that the duration of time in which they would disallow subsequent movement is entirely arbitrary.[101] Accordingly, we now offer a simpler rule that geographic movement toward a smaller firm by a firm with market power should create the presumption of monopolization, which presumption can be rebutted by evidence of the higher volume of business enjoyed by the moving monopolist as a result of the move. This puts the dominant firm at some peril, of course, but that is quite consistent with how monopolization law imposes constraints on a dominant firm it does not impose upon a smaller firm. Further, the affirmative defense is quite simple to make out, relying, as it does, purely on sales volumes.[102]

Moving away from the case of new entry, and starting, instead, with identical firms in equilibrium, there is one situation that can be successfully generalized into any number of dimensions: where one incumbent firm relocates infinitesimally close to another incumbent.

The proof is as follows. Once more, assume consumers are uniformly distributed across a set of product characteristic coordinates, or geographic coordinates, and assume that all firms are equally efficient. From these two assumptions, it follows that all firms have the same area of consumers (A). Each firm is surrounded by f neighbors. (The greater the number of dimensions, the greater f will be.) The predator firm moves its location infinitesimally close to one of its neighbors, called the target. The area of the predator and the target combined had been $2A$. Now, the predator gains half of the target's area; since it is moving infinitesimally close to the target's location, it is dividing the target's area, A. However, in so doing, it opens up its own area to sales by its own nontargeted neighbors, of which there are f-1. Thus, the predator gains $A/2$ and loses $(f\text{-}1)/f * A$, by its move. In the one-dimension case, f=2 (any firm has a competitor to its left and its right), and, therefore, the predator gains $A/2$ and loses $A/2$. For higher dimensions, as f grows, the loss grows as well. In the limit of f approaching infinity, the predator gains $A/2$ and loses A, for a net loss of $A/2$. This is precisely the loss suffered by the target: half its original area. Since the expression $(f\text{-}1)/f$ is

101. Edlin solves this problem by accepting the arbitrariness of the time period and adopting a set period of months. Edlin, *supra* note 8, at 946. That approach, while clear, suffers from being legislative in nature. It would be fine for Congress to adopt, but it would be difficult for a court to infer from the words of the present Sherman Act. *See supra* note 29 and accompanying text.

102. If the dominant firm both moves and lowers its price, of course, it could become more complex. The greater sales volume might be due to the price change. Estimates of what sales would have been, had the price remained the same, would have to be made; that requires a measurement of demand elasticity facing the dominant firm. Such estimates are commonplace, however, in antitrust litigation.

monotonic in f, the predator's loss rises from zero to an amount equal to the amount of loss it imposes on its target, as the number of dimensions increase.

This proves that, from a starting point of identical firms in equilibrium, a firm that repositions itself infinitesimally close to a rival imposes greater costs on the rival than it suffers itself, in any number of dimensions.[103]

Although this case demonstrates a result that can be generalized into any number of higher dimensions, it does not capture the most common instance of predation: where the victim is smaller in size than the alleged predator.[104] Furthermore, the case it does capture, where the predator and the victim are of exactly the same size, must be exceedingly rare; as our calculations above indicate, there is no robustness with respect to departing from the assumption of exactly equal size firms.

Hence, we restrict case 3 to the instance of moving toward a smaller entrant, in one, two, or three dimensions. The relocation of fast food outlets best captures this case in the real world.

D. The Incumbent Firm Can Create a New Product and Position It Close to the Entering Firm

This instance involves creating a new product. There is unambiguous social welfare enhancement from such a move. Consumers closer to the new product's location than to the previous products they were consuming are more content. Other consumers are no worse off. The new product earns a profit or it could not survive. Thus, net consumer and producer surplus has increased.

While the effect on the targeted firm might be the same as that in case 3, in which an established firm moved toward the entrant, this situation cannot be condemned, except from a distributional point of view, which we do not share. That distributional view would disallow a move that increases social welfare in the static context because of the loss to a competitor in a dynamic context. We do not embrace that point of view because there is no inherent virtue in one firm, rather than another, supplying consumers' needs, and we

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103. We acknowledge the insight offered by our colleague, Professor Dorit Hochbaum, of the Haas School of Business and College of Engineering, University of California at Berkeley, in developing this proof.

104. It might seem odd that we can prove a case of predation in infinite dimensions where the victim is the same size as the predator, but we cannot where the victim is smaller. However, that is indeed the result, and the reason is that an incumbent moving against a smaller victim loses larger amounts from its "hinterland" than it gains from attacking the smaller victim; whereas, when the victim is identical in size, the "hinterland" loss remains the same, but the market share taken from the target is larger, relative to the moving incumbent.

assume that, following the departure of the targeted firm, the new product remains. If it does not remain, there will be space for a new entrant. Although a reputation for predation might give a new firm some reason to hesitate before entering, unless there is asymmetric information (which, we have pointed out above, constitutes an admission of superior efficiency of the dominant firm), the entrant ought to be able to evaluate that reputation on the merits. Doing so, the entrant should have no reason to believe the incumbent's new brand will lose less than the entrant will lose itself when they share essentially the same territory. Hence, the predation, and its threat, should not succeed, and will not be credible. This kind of conduct, creating a new brand, should be allowed. The *Brooke Group* case illustrates this category of behavior—the "black and whites" were a new brand.[105]

DIFFERENT BRANDS OF FROZEN PIZZA

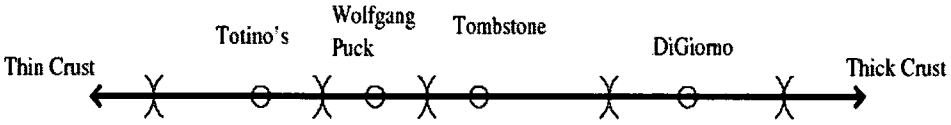

Figure 7A: A new brand, Wolfgang Puck, enters.

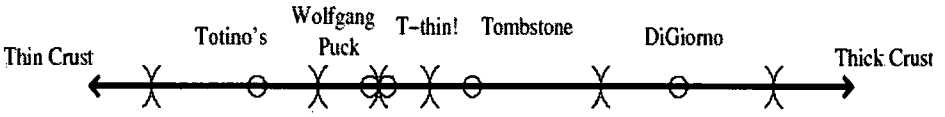

Figure 7B: Tombstone creates a new product, T-thin!, which has a thinner crust similar to Wolfgang Puck's.

105. *See supra* notes 57–59 and accompanying text.

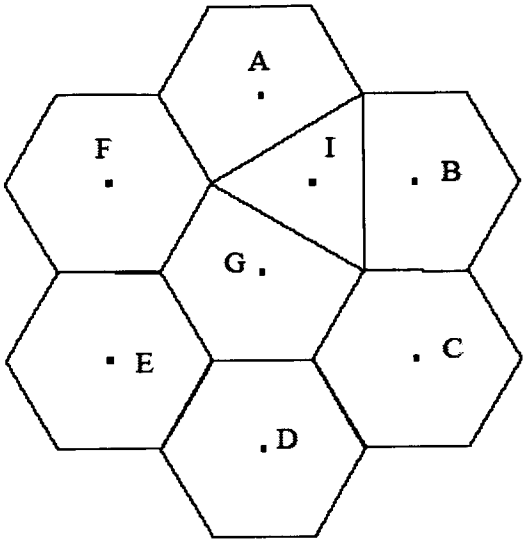

Figure 8A: Interloper *I* enters the market. Incumbent firms *A*, *B*, and G are hurt.

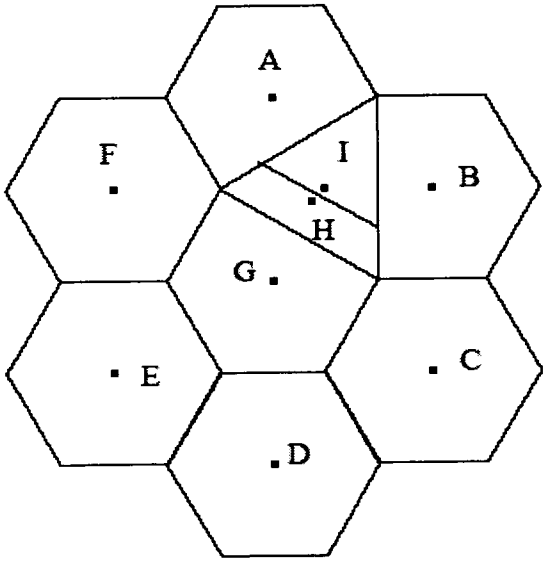

Figure 8B: G creates a new product, *H*, similar in nature to *I*'s.

E. The Incumbent Firm Can Do Something to Damage Directly the Entrant's Ability to Produce or Sell

Lastly, we consider the instance of a firm that, without moving, shrinks the space around a rival's point.

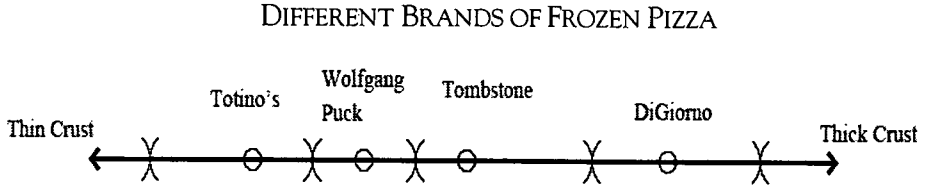

Figure 9A: Incumbents and entrant (Wolfgang Puck) in equilibrium.

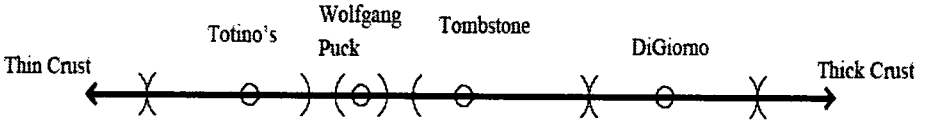

Figure 9B: Tombstone shrinks the interval around Wolfgang Puck.

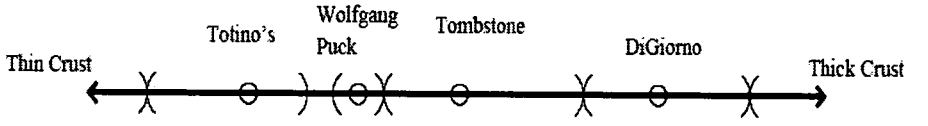

Figure 9C: Tombstone expands its interval to fill the gap created. Totino's may choose to follow suit, expanding rightward.

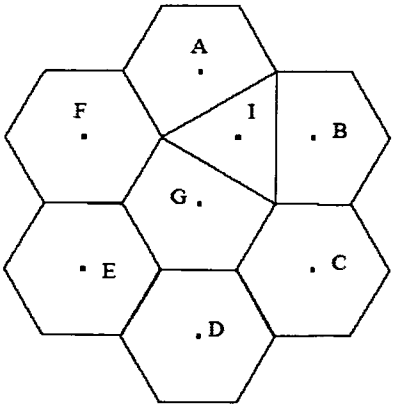

Figure 10A: Interloper *I* enters the market. Incumbent firms *A*, *B*, and *G* are hurt.

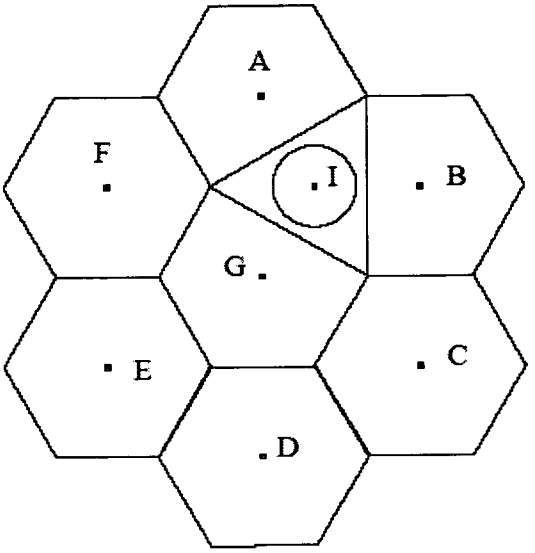

Figure 10B: Firm G shrinks firm *I*'s original triangular area to the new circular area.

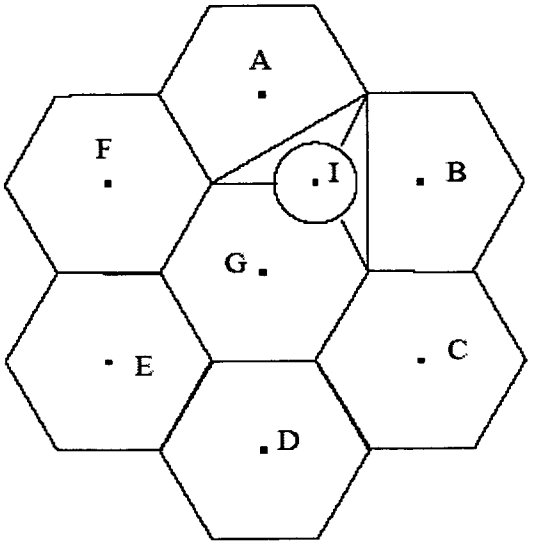

Figure 10C: Firm G expands its area to fill the gap created. Firms *A* and *B* may choose to follow suit.

This is welfare diminishing in the static sense, since the total distance consumers must travel to the vendor from whom they purchase has now increased. Dynamically, it is not self-correcting. The target is diminished or even destroyed. *Lorain Journal*, *Aspen Skiing*, and *Image Technical Services* illustrate this category.[106]

To make this strategy work, the incumbent firm must possess some advantage essential to a rival's success, and that advantage might be a property right.[107] That property might have come into existence as a result of the dominant firm's superior skill, foresight, or industry. That fact, however, does not create blanket immunity for the monopolist's unfettered use of the property.[108] Targeting constitutes a misuse of property, in our view. The right of the inventor, or developer, to keep the benefits of her or his invention for her or his personal use is preserved by our definition of targeting as relating to selection among the users other than the owner of the valuable asset. This is analogous to how we applied targeting in the price context. A firm always possesses the right to set prices lower for its own customers. And it can lower price across the board, thereby attracting even more customers. That is the kind of conduct discussed in category one, above. Liability on the pricing

106. *See supra* notes 64–65, 82, 87 and accompanying text.

107. Elhauge explicitly models this case. Elhauge, *supra* note 33, at 275.

108. "The court has held many times that power gained through some natural and legal advantage such as a patent, copyright, or business acumen can give rise to liability if 'a seller exploits his dominant position in one market to expand his empire into the next.'" Eastman Kodak Co. v. Image Technical Servs., Inc., 504 U.S. 451, 480 n.29 (1992) (citation omitted). Nevertheless, a conflict exists between the circuits regarding whether selecting among patent licensees can create such liability or was intended by Congress as inherent in the grant of the property right itself. *Compare In re* Indep. Serv. Orgs. Antitrust Litig., 203 F.3d 1322 (Fed. Cir. 2000), *with* Image Technical Servs. Inc. v. Eastman Kodak Co., 125 F.3d 1195 (9th Cir. 1997).

It is important to note that the "dominant position" has to be established as a separate element before misuse of intellectual property can be held to constitute an antitrust violation. The patent, copyright, or other governmentally created right does not in and of itself demonstrate such a dominant position. The proof of market power must be based on more than simply the existence of the patent or copyright whose use is denied to a competitor. "The new [Intellectual Property] Guidelines share . . . core principles expressed in the U.S. Department of Justice 1988 Antitrust Enforcement Guidelines for International Operations. [Among t]hese are . . . the absence of a presumption that intellectual property creates market power in the antitrust context . . . ." Richard J. Gilbert, *Defining the Crossroads of Intellectual Property and the Antitrust Laws: the 1995 Antitrust Guidelines for the Licensing of Intellectual Property*, ANTITRUST, Summer 1995, at 6. Dicta to the contrary, however, in *Jefferson Parish Hospital District No. 2 v. Hyde*, 466 U.S. 2 (1984), has kept the controversy alive: "For example, if the Government has granted the seller a patent or similar monopoly over a product, it is fair to presume that the inability to buy the product elsewhere gives the seller market power." *Id.* at 16 (citing United States v. Loew's Inc., 371 U.S. 38, 45–47 (1962)).

side attached when the price cut was targeted to customers of some but not all rivals. That was described in category two.

In *Lorain Journal*, the newspaper took advertising from many customers, just not from those who dealt with the radio station. Those advertisers were targeted. The Court's holding of monopolization was correct.

In *Aspen Skiing*, the defendant controlled three ski slopes. That might be considered an advantage stemming from superior skill, foresight, or industry. The defendant's liability should not have turned on its having departed from a prior agreement to market access to its mountains in conjunction with the fourth, competing mountain, any more than if it had never entered into such a joint marketing arrangement. It should have remained free to enter into a joint venture with its competitors or not, without worrying about monopolization liability. However, the defendant had done more: It had refused payment from customers of the fourth mountain, when it could identify them. That constituted targeting, just as in *Lorain Journal*.

In *Image Technical Services*, Kodak continued to sell spare parts to owners of its machines and, of course, to its own servicing subsidiary. It targeted only some purchasers, the independent service organizations. Hence, even though the product was patented, liability should have followed.[109] The targeting was obvious. If Kodak had decided not to sell parts to anyone other than its own subsidiary, however, it should have been allowed to do so. There would have been no targeting.

The essential facilities doctrine in antitrust is a misdirected attempt to capture the same concept. The focus should be on targeting: Were some competitors allowed access to the facility, while others were not? If no competitors were allowed access, then the special attribute should be considered part of the dominant firm's legitimate advantage. If, however, the dominant firm picks and chooses which competitors it will let use the facility, it has targeted.

The targeting test does not require determining whether a facility is truly "essential" or not.[110] Such an enterprise seems both difficult and irrelevant; it appears to permit some harm, just not killing harm, to be imposed by a dominant firm upon its rivals. Monopolization should not require proof of competitive

109. We repeat that we are temporarily assuming that the other elements of a monopolization case (most importantly, the possession of market power in a relevant market) have been met. Note that the essential facilities doctrine is now in doubt. *See* Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP, 124 S. Ct. 872, 880 (2004).

110. The essential facilities doctrine has been used to condemn as monopolization the refusal by a firm with monopoly power to share a facility "vital to competitive viability and competitors cannot effectively compete in the relevant market without access to it." 1 ABA SECTION OF ANTITRUST LAW, ANTITRUST LAW DEVELOPMENTS 277 (4th ed. 1997) (citations omitted).

homicide; battery should be enough. Predatory pricing cases have not required proof the victim has been driven out, only that it has been harmed.

On the other hand, continuing the analogy, an individual does not have an obligation to share her or his life-saving property with another whom she or he has not put at risk. The essential facility ought to be able to be kept for its inventor alone, without violating the antitrust laws.

If later-enacted statutory law does not create a right to do so, then the shrinking of one or more—but not all—smaller rivals' territories by a firm with market power, by denying those smaller firms or their customers access to its property, intellectual or otherwise, should be considered predatory under the targeting theory.