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Living with Monsanto

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LIVING WITH MONSANTO

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ABSTRACT

Bowman v. Monsanto Co. *signaled the end of an era of seed saving. Farmers must buy new seed for replanting or risk patent infringement. The familiar rhetoric of oppressed farmers belies the fact that Monsanto's success rests in part on farmers prizing its innovations. Current trends indicate that this reliance on Monsanto will continue. The Supreme Court correctly found for Monsanto. However, future cases must iron out the kinks in the* Bowman *decision. Despite the Court's best intentions, inadvertence cannot shield farmers from patent infringement. The Court must also make it clear that patentees cannot use licensing restrictions to claw back rights that patent exhaustion has extinguished.*

Beyond patent exhaustion, the Supreme Court in Federal Trade Commission v. Actavis *recently held that the exercise patent rights, even if validly obtained and infringed, are subject to scrutiny under the rule of reason. The "scope of the patent" approach that shielded Monsanto from scrutiny under antitrust law and patent misuse in the past should be reexamined. The effects-focused approach under* Actavis *will help yield outcomes that better track policy goals. That approach should contain three features. First, it should be based on a coherent theory of harm. Second, that theory should be supported by evidence that the harm can be effected. Third, the approach should contain heuristics to make it administrable, such as harm to*

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competition and innovation and a shifting of the burden of production in appropriate cases informed by judicial experience and economic learning.

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INTRODUCTION

The rhetoric of antagonism against Monsanto is a familiar one. Monsanto has been accused of turning farmers into serfs and dominating our food supply.[1] Yet the Supreme Court recently found

1. *See, e.g.*, James Ming Chen, *An Agricultural Law Jeremiad: The Harvest Is Past, the Summer Is Ended, and Seed Is Not Saved*, 2014 WIS. L. REV. 235, 235 ("The saving of seed exerts a powerful rhetorical grip on American agricultural law and policy. . . . Seed-saving advocates protest that compelling farmers to buy seed every season effectively subjects them to a form of serfdom."); James Matson, Minli Tang & Sarah Wynn, Seeds, Patents and Power: The Shifting Foundation of Our Food System 37 (Nov. 1, 2014) (unpublished manuscript), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2525120 ("[F]armers have become captive buyers of commercial seed."); Vandana Shiva, *The Seeds of Suicide: How Monsanto Destroys Farming*, GLOBAL RES. (Mar. 13, 2014), http://www.globalresearch.ca/the-seeds-of-suicide-how-monsanto-destroysfarming/5329947 ("Control over seed is the first link in the food chain because seed is the source of life. When a corporation controls seed, it controls life, especially the life of

for Monsanto, holding that it was illegal for a farmer to buy soybean seeds from a grain elevator for replanting.[2] The progeny seed would infringe Monsanto's patents over traits that enabled soybeans to survive the application of Roundup herbicide, also produced by Monsanto.[3] Instead the farmers could only use grain elevator seed for their intended purpose—animal feed or consumption.[4]

The central legal issue in *Bowman* was patent exhaustion. The doctrine was developed to prevent patentees from extracting further tolls from items that they paid for as well as to facilitate the creation of secondary markets for the items sold.[5] As the Court put it, because "'the initial authorized sale of a patented item terminates all patent rights to that item,'"[6] the purchaser or any subsequent owner could "'use [or] sell' the thing as he sees fit."[7] Users, however, cannot

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farmers. . . . Monsanto has become the 'Life Lord' of our planet, collecting rents for life's renewal from farmers, the original breeders.").

2. Bowman v. Monsanto Co., 133 S. Ct. 1761, 1766 (2013).

3. *Id*. at 1764; *see also* Monsanto Co. v. McFarling, 363 F.3d 1336, 1338 (Fed. Cir. 2004) (explaining glyphosate inhibits the metabolic activity of the enzyme 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS), which converts sugars into amino acids needed for plant growth); Monsanto Co. v. Bowman, 657 F.3d 1341, 1343 (Fed. Cir. 2011). The RE39,247E patent (the '247E patent) claims a DNA molecule containing a genetic code for an enzyme that enables Roundup Ready crops to withstand glyphosate-based herbicides, glyphosate-tolerant plant cells as well as seeds and plants comprising the DNA molecules, and a method of controlling weeds by planting the transformed seeds and spraying glyphosate over the fields in which those seeds were planted. *Id*. The 5,352,605 patent (the '605 patent) claims chimeric gene expressed in plant cells and for the plant cells comprising that chimeric gene. *Id*.

4. *See* Saby Ghoshray, *Food Safety and Security in the* Monsanto *Era: Peering Through the Lens of a Rights Paradigm Against an Onslaught of Corporate Domination*, 65 ME. L. REV. 491, 521 (2013) (stating that grain elevators sell seed for feed and other purposes, but not for replanting, and that seed from grain elevators is known as "junk seed," containing seed of different maturities unsuitable for planting).

5. Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502, 513 (1917) (stating that a patentee's reward should be commensurate to his contribution and that "he should not be permitted by legal devices to impose an unjust charge upon the public in return for the use of it"); *id*. at 516 (forbidding a patentee from "send[ing] its machines forth into the channels of trade of the country subject to conditions as to use or royalty to be paid, to be imposed thereafter at the discretion of such patent owner. The patent law furnishes no warrant for such a practice, and the cost, inconvenience, and annoyance to the public which the opposite conclusion would occasion forbid it").

6. *Bowman*, 133 S. Ct. at 1766 (quoting Quanta Computer, Inc. v. LG Elecs., Inc., 553 U.S. 617, 625 (2008)).

7. *Id*. (quoting United States v. Univis Lens Co., 316 U.S. 241, 249-50 (1942)).

make new copies of the patented invention.[8] Hence, Bowman could not avail himself of patent exhaustion because the progeny seed that grew from the seed he had bought was an unauthorized "making."[9]

The Court was correct to find for Monsanto. The Roundup Ready trait in soybean seeds "carries forward into each successive . . . generation."[10] Giving Bowman an unfettered right to grow new seed would reduce Monsanto's patent rights to a single sale, as each seed would become a mini-factory of infringement. Farmers may quibble about specific licensing terms, but spending patterns show support for transgenic seed.[11] Our food is grown more efficiently, with less harm to the environment, and is infused with more nutritional punch than ever before.[12] We owe these blessings to Monsanto and other agrobiotech companies like it. The modified seed helps farmers ease the squeeze that comes from growing demand and shrinking available farmland.

Monsanto's record and its plans for the future show that rational market choice has played a part in its success. Roundup and Roundup Ready, the transgenic trait that confers resistance to Roundup, has entered the public domain. However, Monsanto is already in the process of offering next generation genome sequencing, data analysis and genetic prediction for its technology in seed traits.[13] Monsanto has also transitioned to its new offering, Roundup Ready 2 Yield, and its microbial-based herbicide and pesticides technology in its pipeline could displace current chemical alternatives as the next industry standard.[14]

Still, the *Bowman* decision is problematic for at least two reasons. First, the Court wrongly focused on Bowman's intention to free ride and stressed that inadvertent or *de minimis* infringement might shield farmers inflicted by transgenic pollution they did not want.[15] It did so arguably to avoid criticism that the *Bowman* decision would toss farmers like tussled-up sheep to the wolves. But intent

8. *Id*. at 1764.
9. *Id*. at 1767-68.
10. Monsanto Co. v. Bowman, 657 F.3d 1341, 1345 (Fed. Cir. 2011).
11. *See infra* Section I.C.
12. *GM Crop Use Continues to Benefit the Environment and Farmers*, PG ECON. (May 6, 2014), http://www.pgeconomics.co.uk/page/36/-gm-crop-use-continues-to-benefit-the-environment-and-farmers.
13. Maxx Chatsko, *3 Reasons Monsanto Company's Stock Could Rise*, MOTLEY FOOL (August 25, 2014) http://www.fool.com/investing/general/2014/08/25/3-reasons-monsanto-companys-stock-could-rise.aspx.
14. *Id*.
15. *See infra* Section II.A.

and control are irrelevant to infringement.[16] *Bowman* has made it uncertain at what point farmers who passively benefit from a trait using routine farming practices infringe the patents that cover it. This uncertainty is unfair to farmers—and to patentees—who must now punt on patent liability.

Second, the Court flirted with correcting the Federal Circuit's controversial conditional sale doctrine during oral arguments but ultimately decided to duck the issue.[17] The conditional sale doctrine allows patentees to restrict uses that can be made of the patented invention. The doctrinal basis is a simple but insidious one: since patentees can exclude others from all uses, it follows that they can parcel out any part of those uses with take-it-or-leave-it conditions. Those who take it, whether as licensees or purchasers, must adhere to the restrictions or risk a stinging patent infringement suit. The problem with the conditional sale doctrine is that it is an end-run around patent exhaustion, which extinguishes a patentee's right to patent remedies once an authorized sale has been made.[18] Buyers should be entitled to use, sell, or otherwise dispose of those items.[19] The doctrine turns innocents into infringers.

The Court's silence in *Bowman* emboldens patentees, who can continue to rely on the conditional sale doctrine to convert every sale into a license. This unfairly overcompensates patentees and could create patent hold-ups downstream if the patentee sued users who had sunk investments into developing infrastructure to comply with

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16. *See, e.g.*, Jurgens v. CBK, Ltd., 80 F.3d 1566, 1570 n.2 (Fed. Cir. 1996).

17. Numerous commentators and at least one court have categorically said that the conditional-sale doctrine contravenes patent policy and precedent and is bad law. *See infra* Section II.B.

18. *See infra* Section II.B; Daryl Lim, *Self-Replicating Technologies and the Challenge for the Patent and Antitrust Laws*, 32 CARDOZO ARTS & ENT. L.J. 131, 195 (2013) ("[F]armers would be liable for patent infringement if they used those seeds in a manner prohibited by the patentee, even though they were using the seeds bought (rather than new seeds grown), as long as the patentee had restricted the permissible uses through its license agreement.").

19. Lim, *supra* note 18, at 195 ("The Court's express expunging of *Mallinckrodt* in *Bowman v. Monsanto* would have been helpful in clarifying the law. More importantly, it would have provided a critical avenue out for these farmers, whose rights must now be tested and defined by further litigation."); Li Guo, *Self-Replicating Technologies: Do They Exhaust Patent Rights?*, 18 J. TECH. L. & POL'Y 197, 211 (2013) ("It remains unclear to what extent a patent owner can use a conditional license to impose restrictions on downstream purchasers to avoid patent exhaustion or whether the *Quanta* opinion has affirmatively rejected the view that one can contract around the doctrine.").

the patented technology.[20] The doctrine is no longer good law and should be abrogated.

Living with Monsanto requires vigilance against abuses of its patent rights. Until recently, jurisprudence advocating the "scope of the patent" approach shielded patentees from scrutiny under the antitrust laws and patent misuse under all but a sliver of circumstances. For antitrust law, that changed after the Supreme Court in *Federal Trade Commission v. Actavis*, which held that patent rights, even if validly obtained and infringed, are subject to antitrust scrutiny under the rule of reason.[21] In so doing, the Court rejected the "scope of the patent" approach which had traditionally shielded patentees behind a *per se* rule of legality and accepting any anticompetitive harm as part and parcel of the exercise of patent rights.

Post-*Actavis*, the view that patentees should be granted broad rights to reward innovation and to allow coordination of derivative streams of innovation must be qualified by the Court's reiterating that "patent and antitrust policies are both relevant in determining the 'scope of the patent monopoly.'"[22] Patent misuse jurisprudence tracking the "scope of the patent" approach contains the same formalistic flaws and should be rethought as well.

Operationalizing *Actavis* requires courts to balance the consequences of intervention on the one hand with inaction on the other. This effects-focused approach will help yield outcomes that better track policy goals and should contain three features.

First, it should be based on a coherent theory of harm. The discussion focuses on the foreclosure of access to Monsanto's traits and articulates how foreclosure might be problematic as a matter of both antitrust and patent policy. Foreclosure raises antitrust concerns when it raises prices, lowers output, or diminishes the quality of goods offered. Patent misuse is concerned about foreclosure as well. However, unlike antitrust law, it safeguards against abuses of the patent system that impede technological progress, with protecting competition as a secondary goal.

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20. Richard H. Stern, *Post-Sale Patent Restrictions After* Mallinckrodt*—An Idea in Search of Definition*, 5 ALB. L.J. SCI. & TECH. 1, 4 (1994); Brief of BSA, The Software Alliance as Amicus Curiae Supporting Respondents at 21-22, Bowman v. Monsanto Co., 133 S. Ct. 1761 (2013) (No. 11-796) (warning that patent hold-ups in the downstream market could occur if the defendant incurred sunk costs by adopting the technology).

21. 133 S. Ct. 2223, 2227 (2013).

22. *Id*. at 2231.

Second, that theory should be supported by evidence that the harm can be effected. Complainants in antitrust litigation already must show actual or circumstantial evidence of harm. That framework can easily be applied in cases involving Monsanto and others like it. Patent misuse does not require its complainant to show market power unless tying has been alleged. It is sufficient to prove that the conduct supporting the theory of harm had in fact occurred.

Third, the approach should contain heuristics to make it administrable. Antitrust law requires the showing of antitrust injury and offers judges the use of a truncated rule of reason in appropriate circumstances. The former requires plaintiffs to show harm to the competitive structure rather than to the plaintiff alone. The latter allows the initial burden to be shifted to the antitrust defendant to explain the restraint or conduct where judicial experience and economic learning indicate a strong likelihood of anticompetitive harm. In patent misuse cases, the defendant similarly stands before the court as a proxy for the public interest. Where appropriate, the court may truncate the inquiry by shifting the burden onto the patentee to explain its conduct. This will incentivize the party best placed to provide the information to the court to do so.[23]

I. A NECESSARY "EVIL"

Every movement has its icons. Agrobiotech has several. In 1994, genetically modified Flavr Savr tomatoes hit supermarket shelves.[24] With their ripening process delayed, they lasted longer

23. *See, e.g.*, U.S. DEP'T OF JUSTICE, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY 16-18 (1995), *available at* http://www.justice.gov/atr/public/guidelines/0558.htm#t34 ("Application of the rule of reason generally requires a comprehensive inquiry into market conditions. However, that inquiry may be truncated in certain circumstances. If the Agencies conclude that a restraint has no likely anticompetitive effects, they will treat it as reasonable, without an elaborate analysis of market power or the justifications for the restraint. Similarly, if a restraint facially appears to be of a kind that would always or almost always tend to reduce output or increase prices, and the restraint is not reasonably related to efficiencies, the Agencies will likely challenge the restraint without an elaborate analysis of particular industry circumstances.").

24. GL Woolsey, *GMO Timeline: A History of Genetically Modified Foods*, ROSEBUD (Dec. 3, 2013), http://www.rosebudmag.com/truth-squad/gmo-timeline-a-history-of-genetically-modified-foods#sthash.XByFPD6i.dpuf; G. Bruening & J.M. Lyons, *The Case of the FLAVR SAVR Tomato*, CAL. AGRIC., July-Aug. 2000, at 6, 7, *available at* http://californiaagriculture.ucanr.org/landingpage.cfm?article=ca.v054n04p6 ("Demand for [the FLAVR SAVR tomato] was high and remained high, but the product was never profitable . . . .").

than conventional tomatoes.[25] Soon after, a gene engineered to resist the papaya ringspot virus saved the Hawaiian papaya industry from ruin.[26] Genetically modified corn, soybeans, wheat, rice, and sorghum offer farmers the opportunity to grow crops with better soil quality, reduced erosion, and less insecticide use.[27] Grains feed us both directly and indirectly when they are processed into feed for animals that nourish us with their flesh.[28] So successful are genetically modified crops that the National Research Council has urged greater use of genetic modification to more crops for more purposes.[29]

Up until the late nineteenth century, seed varieties were publicly funded and freely distributed.[30] However, the free-seed program crowded out private breeders from the marketplace, and breeders lacked the incentive to invest in plant productivity.[31] To encourage private investment, Congress passed the Plant Protection Act in 1930, extending patent-like protection for asexually reproducing seeds, and the Plant Variety Protection (PVP) Act protecting sexually reproducing seeds in 1970.[32] As public funding

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25. *See* Bruening & Lyons, *supra* note 24, at 6.

26. Pamela C. Ronald & James E. McWilliams, *Genetically Engineered Distortions*, N.Y. TIMES, May 15, 2010, at A19 ("[Eighty] percent of Hawaiian papaya is genetically engineered, and there is still no conventional or organic method to control ringspot virus.").

27. *Id*.

28. Matson, Tang & Wynn, *supra* note 1, at 9 ("Grain is the foundation for many foods, including a wide array of traditional and processed foods. It is also important for feeding livestock. Most of the calories in the human diet are supplied, directly or indirectly, by grain. . . . Much of the world's grain production is used to feed livestock and poultry, which in turn provide meat, dairy products and eggs (animal protein) for human consumption.").

29. *See* NAT'L RESEARCH COUNCIL, THE IMPACT OF GENETICALLY ENGINEERED CROPS ON FARM SUSTAINABILITY IN THE UNITED STATES 219 (2010); Ronald & McWilliams, *supra* note 26, at A19 (noting that modifications could allow crops to be grown in "difficult conditions throughout the world. . . . Drought-tolerant cassava, insect-resistant cowpeas, fungus-resistant bananas, virus-resistant sweet potatoes and high-yielding pearl millet are just a few examples of genetically engineered foods that could improve the lives of the poor around the globe").

30. *See* Lim, *supra* note 18, at 140.

31. Keith Aoki, *Weeds, Seeds & Deeds: Recent Skirmishes in the Seed Wars*, 11 CARDOZO J. INT'L & COMP. L. 247, 268-69 (2003); JACK RALPH KLOPPENBURG, JR., FIRST THE SEED: THE POLITICAL ECONOMY OF PLANT BIOTECHNOLOGY 64 (1988).

32. Plant Patent Act of 1930, Pub. L. No. 71-245, 46 Stat. 376 (codified with some differences in language at 35 U.S.C. § 161 (2012)); Plant Variety Protection Act of 1970, Pub. L. No. 91-577, §§ 51-52, 84 Stat. 1542, 1548 (codified as amended at 7 U.S.C. §§ 2421-2422 (2012)).

stagnated, universities relied more heavily on patent revenues as well as major seed companies to finance their research.[33] Seed companies in turn demanded more control over access to trait and variety technology and integrated more functions such as breeding, production, and marketing in the process.[34]

The march toward privatizing agrobiotech research and development continued with the passing of the Bayh–Dole Act in 1980, which enabled public and university research institutions to patent their results and exclusively license private corporations.[35] In 2001, the Supreme Court held that seeds could be protected by overlapping utility patents with PVP protection.[36] PVP protection confers less robust protection than utility patents because they allow farmers to save seeds for replanting his own acreage and provides for a research exception for private, noncommercial uses of protected seed.[37]

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33. JORGE FERNANDEZ-CORNEJO, USDA, AGRIC. INFO. BULLETIN NO. 786, THE SEED INDUSTRY IN U.S. AGRICULTURE: AN EXPLORATION OF CROP SEED MARKETS, REGULATION, INDUSTRY STRUCTURE, AND RESEARCH AND DEVELOPMENT 47-49 (2004), *available at* http://www.ers.usda.gov/media/260729/aib786_1_.pdf; *see also* Lim, *supra* note 18, at 146 ("Once the backbone of seed germplasm research, public expenditure leveled off in the 1970s and began to decrease by the mid-1990s. In contrast, private investment in seeds and genetic trait research doubled from $146 million to $305 million between 1979 and 1980, and domestic soybean production has increased 96% and yields per acre have increased 55%. By 2010, private investment rose to $2 billion. Private spending continues to outpace government spending." (footnotes omitted)).

34. *See* Matson, Tang & Wynn, *supra* note 1, at 8 ("Over time, seed companies began to integrate plant breeding, production, conditioning, and marketing functions, and continued to replace the public sector as a source of seed for farmers.").

35. Pub. L. No. 96-517, 94 Stat. 3015, 3019-20 (1980) (codified as amended at 35 U.S.C. §§ 200-211 (2012)).

36. J.E.M. Ag Supply Inc. v. Pioneer Hi-Bred Int'l, Inc., 534 U.S. 124, 135 (2001) ("Denying patent protection . . . simply because such coverage was thought technologically infeasible in 1930 . . . would be inconsistent with the forward-looking perspective of the utility patent statute."); *see also* Elizabeth I. Winston, *Sowing the Seeds of Protection*, 2014 WIS. L. REV. 445, 448 (noting that unlike the PVP, utility patent protection covers traits found in multiple seed varieties); Rita S. Heimes, *Post-Sale Restrictions on Patented Seeds: Which Law Governs?*, 10 WAKE FOREST INTELL. PROP. L.J. 98, 109 (2010) (stating that this case "signaled a shift in enforcement of plant intellectual property rights from litigation against corporate competitors to lawsuits against the end-user farmer"). PVP protection does not require a showing of nonobviousness or written disclosure. 7 U.S.C. § 2402 (2012).

37. 7 U.S.C. §§ 2543-2544; *see also* UNIDROIT, *Intellectual Property Rights and Contract Farming*, at 9, Study 80A/Doc. 1/Add. 18 (Aug. 2014), *available at* http://www.unidroit.org/english/documents/2014/study80a/wg04/s-80a-

The results were evident. A recent empirical study showed that average corn yields rose thirteen-fold, mostly through gene technology.[38] Traited crops have "reduced chemical pesticide use by 37%, increased crop yields by 22%, and increased farmer profits by 68%."[39] Farmers have been buying seeds from seed companies since 1965, and nearly all soybean acreage is planted with annually purchased seed.[40]

Farmers routinely buy much of their seed annually for various reasons. In some cases, replanting results in inferior varieties. Hybrid crops such as corn and sorghum lose their traited qualities with subsequent crops, and farmers must buy new seed each season to keep the trait potency strong.[41] Corn farmers have been exclusively growing commercial hybrids for more than half a century.[42]

With crops such as soybeans that "breed true," preventing seed saving becomes important for agrobiotech interests because the seeds produced replicate genetically identical traited seeds.[43] This means

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01-add18-e.pdf ("The seed saving exemption as currently codified in US law remains more generous than its counterparts in many other UPOV-based regimes. The US seed-saving exemption does not require the seed-saving farmer to pay a fee to the PVP owner for the saved seed, while other jurisdictions (such as Europe, under the Community Plant Variety regime) do require payment.").

38. Matson, Tang & Wynn, *supra* note 1, at 6 ("From 1930 to the mid-1990s, average U.S. corn yields rose seven-fold, from 20 bushels per acre to 140 bushels per acre. Today, yields average about 160 bushels per acre, and can sometimes reach 260 bushels per acre in prime corn-growing locations. Genetic improvements, including the development of high-performance 'hybrid' corn varieties, account for much of the gain (although mechanization, chemical fertilizers, pesticides, seed treatments, irrigation, and seed placement strategies have also played key roles)." (footnotes omitted)).

39. Wilhelm Klümper & Matin Qaim, *A Meta-Analysis of the Impacts of Genetically Modified Crops*, PLoS ONE, Nov. 2014, at 1, 1, *available at* http://www.plosone.org/article/fetchObject.action?uri=info:doi/10.1371/journal.pone.0111629&representation=PDF.

40. Matson, Tang & Wynn, *supra* note 1, at 7.

41. *See* Aoki, *supra* note 31, at 250.

42. Dan Charles, *Top Five Myths of Genetically Modified Seeds, Busted*, NPR (Oct. 18, 2012, 11:51 AM), http://www.npr.org/blogs/thesalt/2012/10/18/163034053/top-five-myths-of-genetically-modified-seeds-busted ("By the time Monsanto got into the seed business, most farmers in the U.S. and Europe were already relying on seed that they bought every year from older seed companies. . . . This shift started with the rise of commercial seed companies, not the advent of genetic engineering. But Monsanto and GMOs certainly accelerated the trend drastically.").

43. *See* Richard Jefferson, *Science as Social Enterprise: The CAMBIA BiOS Initiative*, INNOVATIONS, Fall 2006, at 13, 14, *available at* http://www.bios.net/daisy/patentlens/3068/version/default/part/AttachmentData/data/Science_as_Soc

that each seed becomes a mini-factory capable of making every new sale the seed seller's last. Without proper patent protection, biotech companies may have simply focused on hybrid crops.[44] It was this worry that pulsed through the Supreme Court's deliberations as it weighed the merits of a patent lawsuit by the world's largest agrobiotech company against a *pro se* seventy-five-year-old soybean farmer from Indiana.[45]

A. *Bowman v. Monsanto*

Monsanto's Roundup herbicide contains glyphosate, a chemical that kills vegetation by inhibiting the metabolic activity of an enzyme necessary for growth.[46] Roundup offers farmers a simple one-stop solution. It is effective against most weeds, can be applied at all stages of growth, and is easily integrated into conservation tillage and narrow row spacing.[47] Roundup can be paired with Monsanto's Roundup Ready seeds, which contain a synthetic gene and plant cells containing a promoter that endows crops with glyphosate resistance.[48] The gene sequence is unaffected by glyphosate, allowing the seed to continue the sugar-conversion function required for cell growth.[49] The Roundup Ready technology

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ial_Enterprise-_The_CAMBIA_BiOS_Initiative.pdf ("[S]eeds of most crop plants breed true . . . .").

44. Tamar Haspel, *Unearthed: Are Patents the Problem?*, WASH. POST (Sept. 29, 2014), http://www.washingtonpost.com/lifestyle/food/unearthed-are-patents-the-problem/2014/09/28/9bd5ca90-4440-11e4-9a15-137aa0153527_story.html.

45. Andrew Pollack, *Farmer's Supreme Court Challenge Puts Monsanto Patents at Risk*, N.Y. TIMES (Feb. 15, 2013), http://www.nytimes.com/2013/02/16/business/supreme-court-to-hear-monsanto-seed-patent-case.html?pagewanted=all.

46. *See* Monsanto Co. v. McFarling, 363 F.3d 1336, 1338 (Fed. Cir. 2004) (describing EPSPS, which is necessary for the conversion of sugars into amino acids).

47. Janet Carpenter & Leonard Gianessi, *Herbicide Tolerant Soybeans: Why Growers Are Adopting Roundup Ready Varieties*, 2 AGBIOFORUM 65, 65 (1999); *see also Roundup Ready® Soybeans*, STINE, http://www.stineseed.com/soybeans/traits/roundup-ready/ (last visited Apr. 13, 2015) (allowing farmers to "spray Roundup® agricultural herbicides in-crop from emergence through flowering for unsurpassed weed control, proven crop safety and maximum yield potential").

48. N.C. Farmers' Assistance Fund, Inc. v. Monsanto Co., 740 F. Supp. 2d 694, 696 (M.D.N.C. 2010).

49. *McFarling*, 363 F.3d at 1338 ("ROUNDUP READY® soybean seeds produce both a 'natural' version of EPSPS that is rendered ineffective in the presence of the glyphosate in ROUNDUP® herbicide, and a genetically modified version of EPSPS that permits the soybean seeds to grow nonetheless.

was quickly adopted and became an industry standard in agriculture.[50]

Since 1996, Monsanto has itself sold Roundup Ready soybean seeds and licensed the Roundup Ready technology to seed partners who insert the trait into their own seed varieties.[51] In either case, farmers buying the seeds must adhere to a number of restrictions, including single-season planting.[52] Farmers may sell progeny seed to grain elevators. Monsanto does not require these grain elevators to screen its buyers for their intended use of the seed.[53] The seed, known as commodity seed, are a mix of undifferentiated seeds of different maturities and therefore unsuitable for planting a crop.[54]

For his first crop, Bowman bought seed from Pioneer Hi-Bred, one of Monsanto's licensed seed partners, and adhered to the single-season restriction.[55] For the riskier late-season crop, Bowman bought commodity seed from a grain elevator to avoid paying the premium

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ROUNDUP®, or other glyphosate-based herbicides, can thus be sprayed over the top of an entire field, killing the weeds without harming the ROUNDUP READY® soybeans.").

50. UW EXTENSION, WISCONSIN FARMERS AND AGRI-BUSINESS CALL FOR GLYPHOSATE (ROUNDUP) STEWARDSHIP (2013), *available at* http://extension.psu.edu/pests/weeds/control/glyphosate-wi.pdf; *see also* Monsanto Co. v. Scruggs, 249 F. Supp. 2d 746, 750 (N.D. Miss. 2001) ("Roundup Ready® seed technology was first marketed commercially in time for the 1996 planting season. Although relatively new to the agricultural market, Roundup Ready® seeds have already earned a reputation as an effective product, and are considered to be a significant technological advancement to place in the hands of growers, resulting in greater efficiency.").

51. Monsanto Co. v. Bowman, 657 F.3d 1341, 1344 (Fed. Cir. 2011); *see also McFarling*, 363 F.3d at 1339 ("Under this license, seed companies gain the right to insert the genetic trait into the germplasm of their own seeds (which can differ from seed company to seed company), and Monsanto receives the right to a royalty or 'technology fee' of $6.50 for every 50–pound bag of seed containing the ROUNDUP READY® technology sold by the seed company. Monsanto also owns several subsidiary seed companies that comprise approximately 20 percent of the market for ROUNDUP READY® soybeans.").

52. *Bowman*, 657 F.3d at 1344-45; *McFarling*, 363 F.3d at 1339 (limiting planting to single season; "[t]o not supply any of this seed to any other person or entity for planting[;] . . . [t]o not save any crop produced from this seed for replanting, or supply saved seed to anyone for replanting[; t]o not use this seed or provide it to anyone for crop breeding, research, generation of herbicide registration data or seed production").

53. *Bowman*, 657 F.3d at 1345 ("Based on Monsanto's statements, the only permissible reading of the Technology Agreement for purposes of this appeal is that it authorizes growers to sell seed to grain elevators as a commodity.").

54. *Id*.

55. Bowman v. Monsanto Co., 133 S. Ct. 1761, 1765 (2013).

on Roundup Ready seed.[56] After Bowman applied glyphosate to confirm their resistance, he treated his second crop with it.[57] He saved that crop for replanting as a second crop over eight years.[58] In all this, Bowman was open and explained his practices to Monsanto's representatives when asked.[59]

Monsanto sued for infringement, winning in the lower courts.[60] The district court and Federal Circuit based their analysis on two grounds. First, the sale of all Monsanto's seeds was conditional on adhering to the single-season planting restriction, leaving Monsanto with the right to control the replication of the trait in the seed sold.[61] Since farmers who buy the seed can only give what they own, neither the grain elevator nor Bowman possessed the right to replicate the trait. Second, even if the right in the seed sold was exhausted, the seed that Bowman grew was never sold, and exhaustion could not affect it.[62] The "making" was unauthorized and therefore infringing.[63]

The case centered on the scope of patent exhaustion. Bowman's bone of contention was that exhaustion should not apply because he was simply "using seeds in the normal way farmers do" and that "allowing Monsanto to interfere with that use would create an impermissible exception to the exhaustion doctrine for patented

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56. *Id*.

57. *Id*.

58. *Id*.

59. *See Bowman*, 657 F.3d at 1346 ("Bowman did not attempt to hide his activities, and he candidly explained his practices with respect to his second-crop soybeans in various correspondence with Monsanto's representatives.").

60. Monsanto Co. v. Bowman, 686 F. Supp. 2d 834, 840 (S.D. Ind. 2009); *Bowman*, 657 F.3d at 1349.

61. *Bowman*, 657 F.3d at 1344-45.

62. *Id*. at 1347-48; *see also* N.C. Farmers' Assistance Fund, Inc. v. Monsanto Co., 740 F. Supp. 2d 694, 697 (M.D.N.C. 2010) ("'The claims of the '605 patent have been construed numerous times by other district courts, as well as the Federal Circuit, in cases involving the replanting of saved Roundup Ready soybeans. These cases have concluded that Claims 1, 2, 4 and 5 of the '605 patent cover saved Roundup Ready soybeans. Thus, there is ample case law holding that replanting saved Roundup Ready® crops is a direct infringement of the '605 patent.'" (quoting Monsanto Co. v. Parr, 545 F. Supp. 2d 836, 841 (N.D. Ind. 2008)); Monsanto Co. v. McFarling, 363 F.3d 1336, 1343 (Fed. Cir. 2004) ("[W]e must presume that Monsanto's '435 patent reads on the first-generation seeds, it also reads on the second-generation seeds." (footnote omitted)).

63. *Bowman*, 133 S. Ct at 1764; *see also* 35 U.S.C. § 271(a) (2012) ("Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent.").

seeds."[64] It seems trite to say that replication is part of the natural cycle of any living organism, particularly if those organisms are seeds.[65] For Bowman, it was reasonable to expect that a farmer who buys seed should be entitled to use seed qua seed.[66] This argument has intuitive appeal. One who buys a cow expects to own its calf.

The Court rejected this argument. The quid pro quo of arguing every seed embodies future generations is that the buyer must pay for every seed through a billion-dollar sale.[67] If Bowman could make and sell endless copies of the seed bought, Monsanto's patents would be telescoped into a single sale. The Court reasoned that "[w]ere the matter otherwise, Monsanto's patent would provide scant benefit."[68]

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64. *Bowman*, 133 S. Ct. at 1763.

65. *See* Ghoshray, *supra* note 4, at 510 ("Relying on more than 10,000 years of history of human civilization, what has been traditionally recognized and understood by mankind as ordinary pursuit should be the controlling authority in determining what constitutes normal usage for the purpose of determining- what activities by the buyer are permitted under sale of a patented product. Implicit in this interpretation is the recognition that patent exhaustion occurs when a purchaser buys a patented item for the purpose of using it in the ordinary pursuit of life."); SUZANNE ASHWORTH, SEED TO SEED: SEED SAVING AND GROWING TECHNIQUES FOR VEGETABLE GARDENS 15 (Kent Whealy & Arllys Adelmann eds., 2d ed. 2002) (describing how farmers select "heirloom varieties" based on favorable traits which allowed crop diversity adapted to different regions, soil types, climates, local pests, diseases, and cultures by the process of phenotypic selection, where seeds from the healthiest and most productive plants were selectively saved).

66. Tabetha Marie Peavey, Bowman v. Monsanto*: Bowman, the Producer and the End User*, 29 BERKELEY TECH. L.J. 465, 487 (2014) ("Seeds, such as Monsanto's Roundup Ready® soybean, present similar concerns and are particularly troubling not only because their only real purpose is to reproduce, but also because all the aspects of the patented biotechnology are passed to subsequent generations.").

67. *See, e.g.*, Brief for the American Seed Trade Association as Amicus Curiae Supporting Neither Party at 16, Quanta Computer, Inc. v. LG Elecs., Inc., 553 U.S. 617 (2008) (No. 06-937) (arguing that the price for that transaction would be "so prohibitively expensive that few farmers could afford to purchase it"); *see also* Lim, *supra* note 18, at 172-73 ("The problem with this argument is that both the buyer and seller of a Russian doll know exactly how many baby dolls are sheathed within its wooden bosom, and its market price is set accordingly. With [self-replicating technologies] in general, and with soybeans in particular, no such number can be determined ex ante, or can be assumed to be infinite. . . . If exhaustion does apply, progeny seeds will quickly compete with seed sold by Monsanto or its seed company licensees, depressing the market price toward the competitive price. Anticipating this, owners would charge a price for the first sale based on the present discounted value of its expected future income. The prohibitively high price would lead to market failure, unless farmers formed a consortium wealthy enough to induce a sale.").

68. *Bowman*, 133 S. Ct. at 1767.

After Monsanto sold its first seed, other seed companies could produce the patented seed to compete with Monsanto, and farmers would need to buy seed only once.[69] Besides being inconsistent with the twenty-year period of exclusivity that patentees generally enjoy, telescoping Monsanto's commercialization into a single sale could lead to a less-competitive seed market and one that discourages disclosure of new technologies. Instead of licensing other seed companies, Monsanto might vertically integrate downstream and keep its technologies secret.[70]

According to the Court, exhaustion severs the legal rights tethering the patented article to patentees, preventing them from extracting further economic rents from downstream commerce.[71] Thus, "'the initial authorized sale of a patented item terminates all patent rights to that item.'"[72] At the same time, the user does not acquire the right to replicate the item because "'a second creation' of the patented item 'call[s] the monopoly, conferred by the patent grant, into play for a second time.'"[73] The Court concluded that "it is really Bowman who is asking for an exception to the well-settled rule that exhaustion does not extend to the right to make new copies of the patented item."[74]

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69. *Id*. (explaining that the exhaustion doctrine application would negate Monsanto's reward).

70. Lim, *supra* note 18, at 173.

71. *Bowman*, 133 S. Ct at 1766. From the patentee's perspective, "patent exhaustion limits a patentee's right to control what others can do with an article embodying or containing an invention." *Id*. From the buyer's perspective, "the sale confers on the purchaser, or any subsequent owner, 'the right to use [or] sell' the thing as he sees fit." *Id*. (alteration in original) (quoting United States v. Univis Lens Co., 316 U.S. 241, 249 (1942)).

72. *Id*. (quoting Quanta Computer, Inc. v. LG Elecs., Inc., 553 U.S. 617, 625 (2008)).

73. *Id*. (alteration in original) (quoting Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336, 346 (1961)); *id*. ("Consistent with that rationale, the doctrine restricts a patentee's rights only as to the 'particular article' sold; it leaves untouched the patentee's ability to prevent a buyer from making new copies of the patented item. . . . That is because the patent holder has 'received his reward' only for the actual article sold, and not for subsequent recreations of it." (citations omitted)).

74. *Id*. at 1763.

B. The "Make-Use" Dichotomy

This "make-use" dichotomy allows patentees to secure returns on their inventions.[75] *Bowman* presented the Court with a novel issue: Was using the self-replicating function illegal if that function was one of its primary purposes? The Court's response was that replication was a form of "use" but pointed to the fact that it had "always drawn the boundaries of the exhaustion doctrine to exclude that activity, so that the patentee retains an undiminished right to prohibit others from making the thing his patent protects."[76] Allowing replication "would result in less incentive for innovation than Congress wanted. Hence [its] repeated insistence that exhaustion applies only to the particular item sold, and not to reproductions."[77]

In contrast to *Bowman*, the trail of vaporized business models indicates that the Court is not mesmerized by pleas of longstanding practice if the industry is able to subsist on narrower rights.[78] In *Limelight Networks, Inc. v. Akamai Technologies, Inc.*, the Court refused to find infringement of a patent directed to methods of delivering electronic data even when the steps were designed to be performed by different parties to circumvent the law on direct infringement.[79] That result eviscerated many multi-actor method claims, but the solution lay in proper claim drafting and not in

75. *See* Matson, Tang & Wynn, *supra* note 1, at 22 ("Widespread 'seed saving' may depress seed prices and revenues, and may at some point pose an existential threat to the seed companies themselves.").

76. *Bowman*, 133 S. Ct at 1768 (citing *Cotton–Tie Co. v. Simmons*, 106 U.S. 89, 93-94 (1882) for its "holding that a purchaser could not 'use' the buckle from a patented cotton-bale tie to 'make' a new tie").

77. *Id*.

78. For parallel examples in copyright law, see Kirtsaeng v. John Wiley & Sons, Inc., 133 S. Ct. 1351, 1355-56 (2013) (holding that textbooks sold more cheaply in Thailand could be imported into and offered in competition with more expensive local ones); Am. Broad. Cos. v. Aereo, Inc., 134 S. Ct. 2498, 2502-03 (2014); Tanya Agrawal & Jonathan Stempel, *Video Streaming Service Aereo Files for Bankruptcy*, REUTERS (Nov. 21, 2014, 2:26 PM), http://www.reuters.com/article/2014/11/21/us-aereo-bankruptcy-idUSKCN0J513K20141121 ("That decision effectively forbade New York-based Aereo's business model, an attempt to offer a less-expensive alternative to cable television.").

79. 134 S. Ct. 2111, 2117 (2014) (rebuking the Federal Circuit for "fundamentally misunderstand[ing]" basic principles of patent law and holding that it could not justify finding infringement on the Federal Circuit's theory of divided infringement even though there was misappropriation).

stretching direct infringement to cover the legal loophole.[80] In *Association for Molecular Pathology v. Myriad Genetics, Inc.*, the Court invalidated claims over isolated, naturally occurring DNA segments while allowing synthetic DNA sequences and stressing that the decision did not implicate claims over gene manipulation methods, application of the knowledge of the isolated DNA sequences, and the patentability of sequences where nucleotide order had been altered.[81]

The same could not be said of *Bowman*. The Court recognized that exhaustion did not include "uses"—even time-honored ones—that allowed the user to create replicas that would compete with the patentee's primary market—in this case, Monsanto's market for traited seeds.[82] This was because

> in short order, other seed companies could reproduce the product and market it to growers, thus depriving Monsanto of its monopoly. And farmers themselves need only buy the seed once, whether from Monsanto, a competitor, or (as here) a grain elevator. The grower could multiply his

80. Bridget Hayden, John T. Kennedy & David H. Tseng, *Post* Limelight v. Akamai, *Are Multi-Actor Method Patent Claims D.O.A.?*, DORSEY (June 3, 2014), http://www.dorsey.com/eu-post-limelight-akamai-multi-actor-patent-claims/ ("[*Akamai*] renders many multi-actor method claims D.O.A. as no single supplier for many of today's e-commerce (and other) solutions infringes such claims by 'controlling or directing' the actions of one or more vendors, suppliers or customers as is often necessary to practice every step of such claims."); MICHAEL DZWONCZYK, BULLETPROOFING METHOD CLAIMS FOR POST-*LIMELIGHT* ENFORCEMENT 9 (2014), *available at* http://www.sughrue.com/files/Publication/2c8b4990-0c73-4330-b50e-625e2877f3c2/Presentation/PublicationAttachment/d9d2bf57-98b6-4080-a8d8-64e9de4463f3/01-18-14%20Final%20Naples%20Paper%20(2).pdf ("The use of system claims, single-actor method claims and method claims that omit all but the most essential features of the inventive process remain commercially valuable both now and after the Court's ultimate decision [in] *Limelight*. Claiming nonessential elements that can be carried out by second or third entities, or those that can be easily exported, may very well deprive a patent holder of the right to enforce an important method claim.").

81. 133 S. Ct. 2107, 2119-20 (2013); *see also Supreme Court's Decision Is a Gene-Patent Gambit Says Professor Daryl Lim at Chicago's John Marshall Law School*, PR WEB (June 18, 2013), http://www.prweb.com/releases/2013/6/prweb10842966.htm (noting that patents on human gene sequences accounted "for [only] 10% of all gene patents," and that "biotech firms like Myriad have valuable data on gene mutations locked away as trade secrets"); *D'Arcy v Myriad Genetics, Inc*. [2014] FCAFC ¶ 218 (Austl.) (finding isolated nucleic acid patent eligible).

82. *Bowman*, 133 S. Ct. at 1766 ("If the purchaser of that article could make and sell endless copies, the patent would effectively protect the invention for just a single sale.").

> initial purchase, and then multiply that new creation, *ad infinitum*—each time profiting from the patented seed without compensating its inventor.[83]

For this reason, the Court concluded that exhaustion was limited to the items sold "to avoid . . . a mismatch between invention and reward."[84] Even Bowman agreed that it was the "'well settled'" principle "'that the exhaustion doctrine does not extend to the right to 'make' a new product.'"[85]

Commercial expectations also informed the inquiry. Seeds purchased from grain elevators are not for replanting.[86] They are of different maturities and intended for animal feed and processing.[87] Further, existing markets for grain and processed soybean product indicate that traited seed have non-infringing uses.[88] Unlike conventional seeds, there is no legitimate expectation that those seeds could be used to produce another harvest. Part of the reason is practical: The commingled seed was unsuitable for farming use.[89] Part of the reason is legal: Every new generation of seeds that contains the glyphosate-resistant trait is infringing, regardless of whether glyphosate is actually used.[90]

Monsanto managed to frame the issue as "all or nothing," a tactic that ultimately helped it win the case. Cauterizing the right to replant seed with patented traits comported with orthodoxy on infringement for unauthorized "making." However, this result does not make it self-evident that easing up on the level of control given to Monsanto would necessarily diminish a societally optimal level of innovation. What the Court in *Bowman* did was to provide a neat

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83. *Id*. at 1767.

84. *Id*.

85. *Id*. at 1766 (quoting Brief for Petitioner at 37, *Bowman*, 133 S. Ct. 1761 (No. 11-796)); *id*. ("Bowman himself disputes none of this analysis as a general matter.").

86. *Id*. at 1763 ("Bowman purchased soybeans intended for consumption from a grain elevator; planted them; treated the plants with glyphosate, killing all plants without the Roundup Ready trait; harvested the resulting soybeans that contained that trait; and saved some of these harvested seeds to use in his late-season planting the next season.").

87. Ghoshray, *supra* note 4, at 552.

88. *See Bowman*, 133 S. Ct. at 1765 & n.1.

89. *See* Ghoshray, *supra* note 4.

90. *Bowman*, 133 S. Ct. at 1766 ("[T]he exhaustion doctrine does not enable Bowman to make *additional* patented soybeans without Monsanto's permission.").

solution to appropriating investment returns without having to rely on less administrable alternatives.[91]

For instance, making an example of a few farmers in breach of licensing agreements by pursuing contractual remedies may, in reality, have been sufficient to deter others from replanting traited seeds. However, contracts require privity between the parties, offering limited protection.[92] Restrictions on alienation could also impose great transaction costs.[93] The risk would be that enforcement costs could eventually make it commercially unviable for Monsanto to license its patents and lead it to protect inbred parent lines as trade secrets, as many in fact do.[94]

Trade secrets are not an option for crops like soybean that "breed true." Like drugs, seed traits and varieties are self-disclosing and therefore cannot be kept secret.[95] A Chinese woman who was

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91. Lim, *supra* note 18, at 183-86 (explaining why other alternatives not listed below, such as PVP protection and first-mover advantages, are unsuitable).

92. Brief for Respondents at 51-55, *Bowman*, 133 S. Ct. 1761 (No. 11-796) (noting that in a world where soybeans "could be purchased from another grower or a grain elevator, plucked from a field or road, or snatched off the back of a truck," patent owners would have to establish "contractual privity with *every* person who might try to misappropriate its patented technology").

93. Herbert Hovenkamp, *Post-Sale Restraints and Competitive Harm: The First Sale Doctrine in Perspective*, 66 N.Y.U. ANN. SURV. AM. L. 487, 541 (2011) ("[T]he 'infringement' action permits enforcement of the restriction at much lower transaction costs than the endless series of breach of contract actions.").

94. Roger A. McEowen, *Legal Issues Related to the Use and Ownership of Genetically Modified Organisms*, 43 WASHBURN L.J. 611, 636 (2004) ("The practice of protecting inbred parent seed under trade secret law has been adopted as a strategy by several breeders of proprietary lines of inbred lines."); *see also* Norman W. Hawker, *Competition Issues Arising from Generic Biotech Crops*, 18 DRAKE J. AGRIC. L. 137, 139 (2013) ("[C]orn (maize) and sorghum are generally produced commercially as hybrids in most areas of the world, and the open-pollinated varieties in commercial use are not generally covered by patents.").

95. Jeremy N. Sheff, *Self-Replicating Technologies*, 16 STAN. TECH. L. REV. 229, 242 (2013) ("Self-replicating technologies don't merely teach competitors how to practice a new invention, they supply such competitors with a factory as well. So for novel technologies that we believe have characteristics of public goods and therefore warrant a proprietary right to the inventor in the first place, self-replication poses an additional barrier to such appropriation. Granting an inventor a property right only in the first generation of a self-replicating technology merely pushes the free-rider problem that patent protection purportedly solves down to subsequent generations." (footnote omitted)); Mark A. Lemley, *The Surprising Virtues of Treating Trade Secrets as IP Rights*, 61 STAN. L. REV. 311, 313 (2008) ("For products that are inherently self-disclosing (the wheel, say, or the paper clip), trying to keep the idea secret is a lost cause. We don't need trade secret law to encourage disclosure of inherently self-disclosing products—inventors of such products will get patent protection or nothing."); Katherine J. Strandburg, *What*

recently charged in a plot to steal U.S. corn technology by smuggling corn seed in boxes of microwave popcorn packed in luggage is a reminder of how vulnerable to misappropriation these technologies are.[96]

Monsanto also owns patents on technology that result in sterile seed, known as genetic use restriction technology (GURT), and in theory could use that technology to prevent unauthorized propagation of its technology. In the face of adverse public opinion, however, Monsanto has committed not to use it.[97] GURT also exchanges one problem for another. Useful research that might otherwise have been channeled into improving agronomic or nutritional qualities could be diverted to devising appropriate GURT "locks" on seed.[98]

From a patent policy perspective, GURT is also suboptimal since there is no date on which the technology enters the public domain and becomes freely accessible.[99] If challenged, a colorable claim could be made that GURT amounts to an impermissible restriction on patent exhaustion because it eliminates the possibility of resale and reuse of progeny seed. If so, state law contracts purporting to facilitate transactions of GURT seeds between Monsanto and its seed distributors could be preempted.

In addition to contracts and GURT, there is the option of compulsory licensing. Other countries have explored compulsory

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Does the Public Get? Experimental Use and the Patent Bargain, 2004 WIS. L. REV. 81, 104-18 (distinguishing between self-disclosing and non-self-disclosing inventions).

96. MoFo Tech, *Seeds Worth More than Gold*, JDSUPRA (Nov. 25, 2014), http://www.jdsupra.com/legalnews/seeds-worth-more-than-gold-24973.

97. *See* Samuel K. Moore, *Terminating the Terminator*, CHEMICAL WK. Oct. 13, 1999, at 9; *Terminator Genes: Fertility Rights*, ECONOMIST, Oct. 9, 1999, at 104. At the time the announcement was made, Monsanto's Chief Executive Officer explained that "[t]hough we do not . . . own any sterile seed technology, we think it is important to respond . . . by making clear our commitment not to commercialize gene protection systems that render seed sterile." Letter from Robert B. Shapiro, CEO, Monsanto, to Gordon Conway, President, Rockefeller Found. (Oct. 4, 1999), *available at* http://www.monsanto.com/newsviews/pages/monsanto-ceo-to-rockefeller-foundation-president-gordon-conway-terminator-technology.aspx.

98. Chen, *supra* note 1, at 252 ("Because every investment in GURTs diverts resources that could have been aimed at improving crops' agronomic and nutritional attributes, the whole enterprise reeks of enforcing legal rights at the expense of actual innovation.").

99. Lim, *supra note* 18, at 183 ("[T]his solution has the distinct disadvantage that unlike patents that expire after twenty years, the technology lock is perpetual.").

licensing as a means to provide a blanket solution to replanting traited seed.[100] The compulsory licensing scheme could also create a clearinghouse for stacked traits. Seed companies could obtain licenses to multiple traits rather than negotiate with each trait patentee individually, thus lowering transactions costs.[101] The U.K. regime allows farmers owning less than 150 acres to save their seed in return for a license fee charged through seed cleaners.[102] Brazil charges grain elevators that benefit from higher seed yields.[103] Argentina taxes farmers' crops.[104] The administration of that regime could be similar to collecting societies like the American Society of Composers, Authors and Publishers (ASCAP), charged with collecting licensing fees for copyrighted works.[105]

The main obstacle is political. The Judiciary Committee has on three occasions considered and rejected proposals for farmers to save seed and pay license fees that would be administered by an office in

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100. A compulsory license scheme would not be limited to "essential" traits and would therefore be broader in application to a compulsory licensing remedy under the antitrust essential facilities doctrine. *See id*. at 208 (discussing the essential facilities doctrine and advocating for its application to allow derivative products to be offered); *see also* discussion *infra* Section IV.A.

101. The need to lower transaction costs has also led commentators to argue for a liability regime in transacting plant breeder rights overseas. For one such perspective, see Viola Prifti, *The Breeding Exemption in Patent Law: Analysis of Compliance with Article 30 of the TRIPS Agreement*, 16 J. WORLD INTELL. PROP. 218, 235 (2013) ("If a liability regime were not implemented, plant breeders would be forced to enter into negotiations in order to obtain commercial licensing. In this case, the costs involved in private bargain may overcome those of public intervention. This is mainly because negotiations may fail or involve higher transaction costs than governmental intervention. This risk is particularly urgent when plant breeders need to access genetic material which is owned by different patentees. Even if all the licenses were issued, the time dedicated to negotiation procedures would undoubtedly delay the coming of new varieties into the market. In a liability regime, this would not occur since breeders would be free to access relevant patented material subject to the reward mechanism.").

102. Jay P. Kesan, *Licensing Restrictions and Appropriating Market Benefits from Plant Innovation*, 16 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 1081, 1090 (2006).

103. *US-Latin Accord on GM Crops a Timely Warning for Australia*, GUARDIAN (Mar. 10, 2004), http://www.cpa.org.au/z-archive/g2004/1174gm.html.

104. *Id*.

105. *See* Broad. Music, Inc. v. Columbia Broad. Sys., Inc., 441 U.S. 1, 5 (1979). However, note that copyright collecting societies have thousands of members upstream, compared to few upstream trait distributors and even fewer trait owners.

the Department of Agriculture.[106] For instance, the Seed Availability and Competition Act of 2013 was shot down in Committee.[107] Another reason for its unsuitability is the considerable bureaucratic costs imposed by creating an agency to deal with the financial and administrative aspects of the royalties.

Bowman exemplifies the tension in patent law between inventors and the public.[108] The public desires to minimize the tax imposed by the patent system on the items they buy, sell, and use.[109] In the case of Roundup Ready, Monsanto's licensing restrictions on replanting, together with the widespread adoption of its seed, profoundly changed longstanding replanting practices. Inventors desire sufficient control of their invention to prevent free riding and appropriate rewards for their time and effort.[110] Patents allow patent owners to control the manufacture, use, and sale of the patented invention. For agrobiotech, patents are critical both to the existence and growth of the industry.[111] Studies show a strong correlation

106. These three occasions were in 2011, 2009, and 2004. *See* Seed Availability and Competition Act of 2013, H.R. 193, 113th Cong.; *see also* Kevin E. Noonan, *House Considers Alternative Patent Royalty Scheme for Genetically Engineered Seed*, PATENT DOCS (Jan. 14, 2013), *available at* http://www.patentdocs.org/2013/01/house-considers-alternative-patent-royalty-scheme-for-genetically-engineered-seed.html ("But regardless of which side has the better policy argument in that debate, Rep. Kaptur's bill is not a remedy required by the politics or economics of the situation. Indeed, it would just impose another government bureaucracy on U.S. agriculture that would not promote either agriculture or technological progress.").

107. Benjamin M. Cole, Brent J. Horton & Ryan Vacca, *Food for Thought: Genetically Modified Seeds as De Facto Standard-Essential Patents*, 85 U. COLO. L. REV. 313, 375 n.394 (2014) ("The Seed Availability and Competition Act of 2013 is unlikely to pass, as it has been stuck in the House Agriculture Committee since January 4, 2013."); Brent J. Horton, *How Corporate Lawyers Escaped Sarbanes-Oxley: Disparate Treatment in the Legislative Process*, 60 S.C. L. REV. 149, 171 (2008) ("[I]f committee members disfavor the bill for any reason, they can do nothing and allow the bill to languish in committee.").

108. WILLIAM M. LANDES & RICHARD A. POSNER, THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW 13-14 (2003).

109. In theory, the dynamic efficiency gains to society from the patent system should outweigh the static efficiency losses it imposes through higher market prices and lower market output. *See* RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW § 3.3, at 38 (7th ed. 2007).

110. Patents typically cover intangible knowhow with high costs of initial production and low unit costs of subsequent reproduction. Patent law confers limited exclusive rights to incentivize investment by allowing patent owners to appropriate the gains enjoyed by society attributable to the invention. *See id*. § 3.3, at 38-39.

111. James H. Davis & Michele M. Wales, *The Effect of Intellectual Property on the Biotechnology Industry*, *in* PERSPECTIVES ON PROPERTIES OF THE

between patent protection and the increase in yield and production.[112] Given that their livelihood depends on successful patent enforcement, we can expect agrobiotech to respond in a muscular way if their core interests are challenged.

The *Bowman* opinion masks a surprising fact. Monsanto's patents were due to expire in 2014, just over a year later.[113] Why would Monsanto take its fight to the Supreme Court over those soon-to-expire patents? One answer is the precedential value of the opinion. Monsanto obtained a court order for Bowman to pay $85,000 in damages[114]—an amount that does not even begin to cover its attorney fees.[115] What was truly valuable for Monsanto was the defense of the Federal Circuit's holding below, upholding the legality of its business model.

C. Roundup Ready Goes Generic: Why It's Business as Usual for Monsanto

Even with the expiry of its flagship product, Monsanto's fortunes are anything but on the wane. Monsanto spends $2.6 million

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HUMAN GENOME PROJECT 427, 433 (F. Scott Kieff ed., 2003) ("If other companies were permitted to copy biotechnology or pharmaceutical products as soon as they were approved, no rational drug company would expend the cost and effort of developing new drugs."); Jasemine Chambers, Note, *Patent Eligibility of Biotechnological Inventions in the United States, Europe, and Japan: How Much Patent Policy is Public Policy?*, 34 GEO. WASH. INT'L L. REV. 223, 224 (2002) (noting the critical role of the patent system in growing the biotechnology industry).

112. A. Bryan Endres & Carly E. Giffin, *Necessity Is the Mother, but Protection May Not Be the Father of Invention: The Limited Effect of Intellectual Property Regimes on Agricultural Innovation*, 14 COLUM. SCI. & TECH. L. REV. 203, 248 (2012) (noting that the United States, unlike the other countries studied, protected the process to develop the genetically improved seed and the plant itself under the utility patent regime).

113. *See* Hawker, *supra* note 94, at 140 n.15 ("Monsanto also relies on third party patents, however, including U.S. Patent No. 5,717,084 (filed June 6, 1995) (issued Feb. 10, 1998) and U.S. Patent No. 5,728,925 (filed Apr. 28, 1995) (issued Mar. 17, 1998), that do not expire until 2015.").

114. *See Vernon Bowman, Indiana Grain Farmer: Monsanto "Grabbing at Straws,"* HUFFINGTON POST (Feb. 20, 2013, 5:43 PM), http://www.huffingtonpost.com/2013/02/20/vernon-bowman-farmer-vs-monsanto_n_2727067.html.

115. *See* Jim Kerstetter, *How Much Is That Patent Lawsuit Going to Cost You?*, CNET (Apr. 5, 2012, 10:00 AM), http://www.cnet.com/news/how-much-is-that-patent-lawsuit-going-to-cost-you/.

a day on research and development.[116] In 2014, its seed and genomic sales are valued at $10.3 billion, and it owns traits covered by 1,700 patents.[117] It expects to double its profits by 2019 relying almost entirely on its seed and genomics businesses.[118]

Monsanto's continued success has much to do with American society's dependence on it. As with nearly every other industry, farming is heavily dependent on technology and will remain so for the foreseeable future. The days of agrarian self-sufficiency are largely a relic of the past. The Supreme Court noted the trend toward "a progressive division of labor and separation of function" as early as 1949 in *Farmers Reservoir & Irrigation Co. v. McComb*:

> Economic progress . . . is characterized by a progressive division of labor and separation of function. Tools are made by a tool manufacturer, who specializes in that kind of work and supplies them to the farmer. The compost heap is replaced by factory produced fertilizers. Power is derived from electricity and gasoline rather than supplied by the farmer's mules. Wheat is ground at the mill. In this way functions which are necessary to the total economic process of supplying an agricultural product, become, in the process of economic development and specialization, separate and independent productive functions operated in conjunction with the agricultural function but no longer a part of it.[119]

In short, farmers today buy seeds in the same way that they buy fertilizer and farming equipment through external sources.[120] Soybeans stacked with Roundup Ready makes weed control a simpler and cheaper chore.[121] Some farmers and their advocates equate seed saving with farming.[122] That notion is a mistaken one.

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116. *See Why Does Monsanto Sue Farmers Who Save Seeds?*, MONSANTO, www.monsanto.com/newsviews/Pages/why-does-monsanto-sue-farmers-who-save-seeds.aspx (last visited Apr. 13, 2015).

117. Dan Mitchell, *Why Monsanto Always Wins*, FORTUNE (June 26, 2014, 4:03 PM), http://fortune.com/2014/06/26/monsanto-gmo-crops/.

118. *Id*.

119. 337 U.S. 755, 761 (1949).

120. Chen, *supra* note 1, at 235 ("Farmers today often buy seed, just as they buy other agricultural inputs. That way lies the path of economic and technological progress.").

121. *Id*. at 260 ("The alternative to blanket applications of broad-spectrum herbicide readily explains the popularity of herbicide-resistant crops. Herbicides and herbicide-resistant crops are substitutes for physical labor of the most demoralizing sort. Without herbicides, the farmer has no choice but to remove weeds by raw force."); *see also* UW EXTENSION, *supra* note 50.

122. Chen, *supra* note 1, at 235.

Farmers routinely purchase new seeds for hybrid crops such as corn because they lose trait vigor in subsequent harvests.[123]

Farmers who wish to save their seed have the option of developing organic and heirloom varieties. These "offer none of the traits that make proprietary varieties so popular. But they can be saved."[124] More importantly, even though organic produce is sold at higher prices than their genetically modified counterparts, seed sellers are generally unwilling to invest in creating new and improved organic varieties, making them a poor source for trait innovation.[125] In the real world, hunger cannot be solved on an organic basis.

Market demand for row crops has risen dramatically due to desertification, crops being used as biofuel, and simply having more mouths to feed.[126] The demand for U.S. crops takes the form of direct exports or indirect exports, such as through products derived from animals that feed on the grains.[127] Estimates point to having to double grain production by 2050 to keep up with demand.[128] At the same time, rapid population growth has led to a halving of agricultural land per capita compared to fifty years ago.[129] Failure to keep pace will mean price shocks and economic volatility.

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123. Layla Katiraee, *Patents and GMOs: Should Biotech Companies Turn Innovations over to Public Cost-Free?*, GENETIC LITERACY PROJECT (Apr. 22, 2014), http://geneticliteracyproject.org/2014/04/22/patents-and-gmos-should-biotech-companies-turn-innovations-over-to-public-cost-free/.

124. Chen, *supra* note 1, at 256 ("For farmers whose self-actualization hinges on the ability to save seed, these varieties offer an emotional and philosophical refuge.").

125. *See* ORGANIC SEED ALLIANCE, STATE OF ORGANIC SEED 38 (2011), *available at* http://seedalliance.org/index.php?mact=DocumentStore,cntnt01,download_form,0&cntnt01pid=7&cntnt01returnid=139.

126. Neil D. Hamilton, *Harvesting the Law: Personal Reflections on Thirty Years of Change in Agricultural Legislation*, 46 CREIGHTON L. REV. 563, 567 (2013) ("The rapid change in the use of farm products is best reflected by the use of over forty percent of the U.S. corn crop for ethanol to burn as vehicle fuel."); *see also* Adam Garmezy, *Patent Exhaustion and the Federal Circuit's Deviant Conditional Sale Doctrine:* Bowman v. Monsanto, 8 DUKE J. CONST. L. & PUB. POL'Y SIDEBAR 197, 214 (2013) ("Providing the proper incentives for private investment in biotechnology is especially important because of rapid global population growth and increased desertification." (footnote omitted)).

127. *See* Matson, Tang & Wynn, *supra* note 1, at 11.

128. Deepak K. Ray et al., *Yield Trends Are Insufficient to Double Global Crop Production by 2050*, PLoS ONE, June 2013, at 1, *available at* http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0066428#pone---0066428---g002.

129. *See* Matson, Tang & Wynn, *supra* note 1, at 11.

This puts pressure on farmers to produce more per acre and work their fields through more difficult conditions to meet that demand.[130] Genetic modification provides the solution farmers need. A 2014 study revealed that herbicide and insect resistance increased yields by 9% and 25% respectively, raising profits by as much as 69% compared to farmers who did not use genetically modified crop.[131]

Farmers have been adopting Roundup Ready's successor, Roundup Ready 2 Yield (RR2Y) since 2009.[132] Monsanto developed better trait-insertion techniques to develop the RR2Y trait.[133] It offers higher yield, an average 4.5 bushels per acre over Roundup Ready soybeans, along with glyphosate resistance.[134] RR2Y was planted on fifty million acres in the first four years, was planted on an additional forty million acres in 2013,[135] and will be planted on an anticipated

130. Margo A. Bagley, *The Wheat and the (GM) Tares: Lessons for Plant Patent Litigation from the Parables of Christ*, 10 U. ST. THOMAS L.J. 683, 688 (2013) ("Other touted GM benefits include improved agricultural performance under poor conditions, higher yields, and an increased ability for farmers to meet the needs of a hungry world.").

131. *The Biggest Study So Far Finds That GM Crops Have Large, Widespread Benefits*, ECONOMIST (Nov. 8, 2014), http://www.economist.com/news/science-and-technology/21630961-biggest-study-so-far-finds-gm-crops-have-large-widespread-benefits-field; *see also* Brief for Economists as Amici Curiae Supporting Respondents at 3, Bowman v. Monsanto Co., 133 S. Ct. 1761 (2013) (No. 11-796) (noting a $3.3 billion increase in soybean-related income in 2010).

132. Andrew Pollack, *As Patent Ends, a Seed's Use Will Survive*, N.Y. TIMES (Dec. 18, 2009), http://www.nytimes.com/2009/12/18/business/18seed.html ("Monsanto said it was confident that most farmers and seed companies would move to Roundup Ready 2, which uses the same bacterial gene but places it in a different location in the soybean DNA. Monsanto said that Roundup Ready 2 crops would have higher yields, and that other desirable traits would be added to those crops over time.").

133. *Roundup Ready Soybean Patent Expiration*, MONSANTO, http://www.monsanto.com/newsviews/pages/roundup-ready-patent-expiration.aspx (last visited Apr. 13, 2015).

134. *Genuity® Roundup Ready 2 Yield® Soybeans*, GENUITY http://www.genuity.com/soybeans/Pages/Genuity-Roundup-Ready-2-Yield.aspx (last visited Apr. 13, 2015) ("Roundup Ready 2 Yield soybeans have developed more 3-, 4- and 5-bean pods per plant than the competition. . . . Studies show that Roundup Ready 2 Yield soybeans develop greater root biomass, more nodes on the main stem and larger shoot biomass than original Roundup Ready® soybean products.").

135. Sadfar Abbas, *Genuity Roundup Ready 2 Yield Soybeans*, AGRIBUSINESS (June 16, 2013), http://www.agribusiness.com.pk/genuity-roundup-ready-2-yield-soybeans/ ("After four years on the market, more farmers than ever are using [Genuity® Roundup Ready 2 Yield® soybeans] on their farms.").

hundred million acres by 2019.[136] Monsanto's next generation offerings include Roundup Ready 2 Xtend, with dicamba and glyphosate resistance, and VistiveGold, with oleic and omega-3 oils.[137]

The technology does not come cheap. The annual bill for seed technology alone is estimated to be $3.5 billion in R&D costs.[138] An argument may be made that if personal saving without selling were allowed, the seed need only be bought once. This was the arrangement envisioned by PVP protection. The overlay over utility patent rights seals up that exception.

In 2013, Monsanto announced a partnership with Novozymes, a biological company, to research and develop microbial-based products designed to use bacteria and fungi to protect the crops from weeds and pests.[139] Novozymes already has a biological called JumpStart containing a soil fungus that interacts with plant roots and

136. *See* Hawker, *supra* note 94, at 139-40 ("Monsanto has already placed its RR2Y soybean in commercial production and the product enjoys expanding acreage with each passing year."); *see also Monsanto's Expanded Set of Innovations Highlight Long-Term Opportunity and Continued Growth Outlook*, MONSANTO (Aug. 20, 2014), http://news.monsanto.com/press-release/corporate/monsantos-expanded-set-innovations-highlight-long-term-opportunity-and-conti.

137. MONSANTO, Q&A: PATENTS (n.d.), *available at* http://www.soybeans.com/pdf/soybeans.com-qa.pdf. Monsanto has also entered into cross-licensing agreements with other seed partners such as Dow AgroSciences to offer other RR2Y stacked products. *See* Press Release, Dow AgroSciences, Monsanto and Dow AgroSciences Reach New Licensing Agreement on Roundup Ready 2 Yield® Soybean Technology (June 2, 2010), *available at* http://www.dowagro.com/newsroom/corporate/2010/20100602a.htm; *see also Growth Through Technology Leadership*, DOW, http://www.dow.com/investors/reports/databook/health_agricultural_services.htm (last visited Apr. 13, 2015) (noting the "bringing together [of] Monsanto's Roundup Ready 2® technology with LibertyLink® herbicide tolerance").

138. Brief for the American Seed Trade Association as Amicus Curiae Supporting Respondents at 17, Bowman v. Monsanto Co., 133 S. Ct. 1761 (2013) (No. 11-796).

139. MONSANTO & NOVOZYMES, THE BIOAG ALLIANCE (n.d.), *available at* http://www.novozymes.com/en/about-us/brochures/Documents/BioAg-Alliance-factsheet.pdf ("Microbial-based products are derived from naturally-occurring microorganisms such as bacteria and fungi. They are normally applied to seeds before planting, in-furrow or sprayed on crops, and they protect crops from pests and diseases and enhance plant productivity and fertility. With faster development cycles compared to other agricultural innovations, as well as broad geographic and crop applicability, microbial solutions offer tremendous potential to deliver sustainable, cost-effective solutions that can increase yield using less input.").

increases yield through improved nutrient intake.[140] These biologicals complement or replace chemical products and represent a growing market segment worth $2.3 billion annually with double-digit growth each year.[141]

Monsanto is also offering FieldScripts, a prescriptive-planting system. FieldScripts uses soil and weather data from Climate Corporation, a Silicon Valley startup Monsanto bought for $1 billion, to predict which seed grows best in all twenty-five million fields in America.[142] The data is used to run machines by Precision Planting, another Monsanto acquisition. The machines steer themselves using global positioning system technology and plant fields with different crop varieties at different depths and spacings, according to weather conditions. Yields have increased 5% in just two years and added a substantial amount to farmers' incomes, "a feat no other single intervention could match."[143] Others have attempted to follow suit.[144]

Monsanto's rise reflects the technological revolution of agriculture in America. The progress of science has displaced old methods of commerce and reshuffled rights between actors and different points of a new value chain. Monsanto is representative of a breed of agrobiotech companies created by breakthroughs in gene and crop science. Syngenta, Dow, and DuPont also sell seed to farmers. These companies thrive on the thirst of farmers desiring crops stacked with traits to yield more cash per bushel and more crops per acre. Even critics of this revolution concede that those who choose to eschew traited crops risk being swept aside by market forces.[145]

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140. Carey Gillam, *Monsanto Deal with Novozymes Aims to Accelerate New Crop Products*, REUTERS (Dec. 10, 2013), http://www.reuters.com/assets/print?aid=USL1N0JP12U20131210.

141. MONSANTO & NOVOZYMES, *supra* note 139.

142. *Digital Disruption on the Farm*, ECONOMIST (May 24, 2014), http://www.economist.com/news/business/21602757-managers-most-traditional-industries-distrust-promising-new-technology-digital ("By 2010 its database contained 150 billion soil observations and 10 trillion weather-simulation points.").

143. *Id*. ("The seed companies think providing more data to farmers could increase America's maize yield from 160 bushels an acre (10 tonnes a hectare) to 200 bushels—giving a terrific boost to growers' meagre margins.").

144. *Id*. ("Last November another seed producer, Du Pont Pioneer, linked up with a farm-machinery maker, John Deere, to beam advice on seeds and fertilisers to farmers in the field. A farm-supply co-operative, Land O'Lakes, bought Geosys, a satellite-imaging company, in December 2013, to boost its farm-data business.").

145. *See* Ghoshray, *supra* note 4, at 513 ("[T]o eschew GE seeds is almost certainly illusory. Few farmers will be able to compete in the mass marketplace without using the hardier, pesticide-resistant GE products.").

Farmers benefit through Monsanto's win in less obvious ways. The certainty of reward over the life cycle of their products and potential for private and government antitrust enforcement may encourage greater support from patent owners, which will be crucial if farmers are to continue enjoying better seed varieties and access to foreign export markets.[146] The United States is the largest producer and exporter of transgenic grain and crops.[147] About 90% of U.S. soybeans, cotton, and corn are transgenic.[148] Grain traded globally accounts for over forty-billion dollars in export revenue annually.[149] Whole soybean exports to China alone are worth thirteen-billion dollars[150] and are expected to account for more than 90% of projected growth in global soybean imports.[151]

All genetically modified crops require regulatory approvals before they can be imported into key markets such as the European Union and China.[152] Monsanto has spearheaded Accord: The Generic Event Marketability and Access Agreement, which "sets out the rights and duties involved in commercializing patented single-gene plant products and encourages patent holders to continue developing and commercializing their technology while ensuring international regulatory and stewardship responsibilities are maintained."[153]

Adopting RR2Y may become crucial for farmers who seek to export their crop overseas. As seeds go off-patent, patentees rationally lose the incentive to maintain those stewardship

146. Lim, *supra* note 18, at 215 (noting that the patent system "encourages them to participate in the innovation and commercialization of products containing traits going off-patent. It also encourages licensing agreements without obliging farmers to pay post-expiration royalties, as well as destroy or return seed after licenses expire").

147. AM. SEED TRADE ASS'N & BIOTECHNOLOGY INDUS. ORG., FACTSHEET 1 (2012), *available at* http://www.agaccord.org/include/facts.pdf.

148. *Id*.

149. *Id*.

150. *Soy Stats 2014, U.S. Exports: Soy Exports by Customer*, AM. SOYBEAN ASS'N, http://soystats.com/u-s-exports-soy-exports-by-customersda/ (last visited Apr. 13, 2015).

151. U.S. DEP'T OF AGRIC., OCE-2013-1, USDA AGRICULTURAL PROJECTIONS TO 2022, at 31 (2013), *available at* http://www.ers.usda.gov/media/1013562/oce131.pdf.

152. Hawker, *supra* note 94, at 146 ("The failure to get approval overseas for such crops can lead to significant trade disruption and resulting liability risks."); Lim, *supra* note 18, at 216 ("Transgenic grain exports thus require periodic renewals. Approvals in the European Union expire after ten years, and those in China expire after three.").

153. *See* Lim, *supra* note 18, at 214.

responsibilities. While Monsanto has committed to maintaining regulatory approvals until 2021, farmers will have to switch to RR2Y or another approved variety to reach export markets.[154] In the long run, it will not be in Monsanto's interest to maintain a source of generic competition, and it will not likely do so.

Transgenic crops clearly have their disadvantages. Prior to the introduction of Roundup Ready, there were no glyphosate-resistant weeds. By 2005, there were six species.[155] The repeated use of glyphosate has also exerted selection pressure on weeds, giving rise to glyphosate-resistant "super weeds."[156] Farmers increase use of other types of herbicides and heavy tillage in an attempt to combat the problem.[157] Similarly, caterpillars have also adapted to toxins meant to kill them and were found feasting on Bt cotton crops.[158]

And there are other problems. The uptake of transgenic crops like those covered by Roundup Ready patents lead to biodiversity loss, contaminate organic sources, and cause socioeconomic upheavals.[159] In 2011, organic farmers sought a declaratory judgment

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154. K. Sauer, *Roundup Ready® Soybean Post-Patent Regulatory Commitment Extended Through 2021*, MONSANTO (July 8, 2010), http://www.monsanto.com/newsviews/pages/roundup-ready-soybean-post-patent-commitment-extended-through-2021.aspx.

155. CHRIS BOERBOOM & MICHEAL OWEN, FACTS ABOUT GLYPHOSATE-RESISTANT WEEDS 5 (2006), *available at* weedscience.missouri.edu/publications/gwc-1.pdf.

156. *See* Micheal D.K. Owen & Ian A. Zelaya, *Herbicide-Resistant Crops and Weed Resistance to Herbicides*, 61 PEST MGMT. SCI. 301, 301 (2005). "Super weeds" were detected as early as 1996 in Australia. Woolsey, *supra* note 24 ("Research shows that the super weeds are seven to 11 times more resistant to glyphosate than the standard susceptible population.").

157. *Eight Ways Monsanto Fails at Sustainable Agriculture*, UNION CONCERNED SCIENTISTS, http://www.ucsusa.org/food_and_agriculture/our-failing-food-system/genetic-engineering/eight-ways-monsanto-fails.html (last visited Apr. 13, 2015); Allyson Martin, *Seed Savers v. Monsanto: Farmers Need a Victory for Wilting Biodiversity*, 24 DEPAUL J. ART TECH. & INTELL. PROP. L. 95, 146 (2013) ("The need to manage glyphosate-resistance by using other herbicides alongside Roundup also undermines another advertised benefit of Roundup—the ability to control weeds with only one product.").

158. Woolsey, *supra* note 24.

159. *See* Ghoshray, *supra* note 4, at 503-04 ("The fallout of this invention has been well-documented through multiple instances of economic harm, fundamental reshaping of choice and lifestyle changes for farmers and consumers, irreversible loss of biodiversity, pervasive contamination within the environment, and irreparable harm to ecology through pollution." (footnotes omitted)); *see also id*. at 504 ("[G]enetically engineered crops propagate pollution via transgenic pathways by triggering widespread contamination as they alter and enhance gene flow from genetically engineered crops to target organic entities and species."). The loss of

against Monsanto. They argued that Monsanto's corn caused the loss of biological diversity due to crop contamination by genetically modified plants, the yet unknown toxic effects from the use of glyphosate and Bt toxin produced by Monsanto's corn.[160] The Federal Circuit found these concerns irrelevant to the narrow question of patent infringement it was asked to decide.[161]

The modern history of patent law is speckled with instances where courts have been asked to weigh extralegal questions of high social policy in determining questions of patent eligible subject matter and utility. Each time, the courts were content to focus the patent law inquiry based on its mandate—to promote the "useful Arts," deferring to Congress to legislate on those other issues.[162] As Professor Jim Chen noted, patent protection has become a "surrogate

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biodiversity has also been exacerbated by the consolidation of agro-biotech firms and exclusive dealing restrictions. *See* Lim, *supra* note 18, at 149, 201-20 (discussing antitrust and patent misuse claims against Monsanto).

160. First Amended Complaint at 1-2, Organic Seed Growers & Trade Ass'n v. Monsanto Co., No.11-cv-2163-NRB (S.D.N.Y. June 9, 2011), *available at* http://www.pubpat.org/assets/files/seed/OSGATA-v-Monsanto-Complaint.pdf; *see also* William Neuman & Andrew Pollack, *Farmers Cope with Roundup-Resistant Weeds*, N.Y. TIMES (May 3, 2010), http://www.nytimes.com/2010/05/04/business/energy-environment/04weed.html?; Aziz Aris & Samuel Leblanc, *Maternal and Fetal Exposure to Pesticides Associated to Genetically Modified Foods in Eastern Townships of Quebec, Canada*, 31 REPROD. TOXICOLOGY 528, 528-33 (2011).

161. Organic Seed Growers & Trade Ass'n v. Monsanto Co., 718 F.3d 1350, 1360 (Fed. Cir. 2013) ("Aside from the risk of suit by Monsanto, none of the alleged harms caused by contamination is traceable to Monsanto's enforcement of its patents, they could not be remedied by a declaratory judgment, and they cannot serve as a basis for jurisdiction in this case."), *cert. denied*, 134 S. Ct. 901 (2014).

162. U.S. CONST. art. I, § 8, cl. 8. *See, e.g.*, Diamond v. Chakrabarty, 447 U.S. 303, 316-17 (1980) ("We are told that genetic research and related technological developments may spread pollution and disease, that it may result in a loss of genetic diversity, and that its practice may tend to depreciate the value of human life. . . . The choice we are urged to make is a matter of high policy for resolution within the legislative process after the kind of investigation, examination, and study that legislative bodies can provide and courts cannot. That process involves the balancing of competing values and interests, which in our democratic system is the business of elected representatives. Whatever their validity, the contentions now pressed on us should be addressed to the political branches of the Government, the Congress and the Executive, and not to the courts."); Juicy Whip, Inc. v. Orange Bang, Inc., 185 F.3d 1364, 1368 (Fed. Cir. 1999) ("Of course, Congress is free to declare particular types of inventions unpatentable for a variety of reasons, including deceptiveness. *Cf.* 42 U.S.C. § 2181(a) (exempting from patent protection inventions useful solely in connection with special nuclear material or atomic weapons). Until such time as Congress does so, however, we find no basis in section 101 to hold that inventions can be ruled unpatentable for lack of utility simply because they have the capacity to fool some members of the public.").

for direct, meaningful engagement of uncomfortable environmental issues in agriculture."[163] Patent law is not a one-size-fits-all legal solution. It is a legal tool to promote innovation and should be left to deal with what it does best. Once that piece is in place, we can refocus on finding solutions that directly address the problem.[164]

One example is the concern over a dearth of competition and innovation in the seed market.[165] Commentators have traced this to "high concentration, single-firm dominance, and strategic conduct [that] forecloses rivals from the access to technology that is critical for intra-platform competition."[166] Part III examines the "scope of the patent" approach that courts have applied in condoning Monsanto's activities with scant scrutiny and explains why future cases must undertake a more thorough effects-focused analysis of that same conduct.

Separately, as Part II will show, the promise and peril of genetically modified crop technology can cause courts to defer excessively to patentees like Monsanto. Conversely, the courts may be overprotective of consumers like farmers. *Bowman* opened the floodgates to both types of mischief. They must be closed.

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163. Chen, *supra* note 1, at 253.

164. One that has been seriously considered in recent years is turning bugs into livestock. Insects are rich in protein and essential micronutrients. They need much less space, emit lower levels of greenhouse gases, are drought resistant, and yield more edible protein per unit of feed. Meal made from insects could also replace soybeans fed to farm animals, lowering the cost of livestock products and freeing up grains for human consumption. *See* Emily Anthes, *Lovely Grub: Are Insects the Future of Food?*, MOSAIC (Oct. 14, 2014), http://mosaicscience.com/story/eating-insects (noting that the key to selling the diet is to process, disguise, and rebrand the bugs). For example, wax worms that live in beehives and eat honeycombs taste "buttery" and "reminiscent of bacon." They have been rechristened "honey bugs" and "honeycomb caterpillars." *See id*. (noting that food preferences change, pointing to the fact that sushi was seen as a "strange foreign dish that showcased raw fish" that "became not just acceptable but trendy in the West").

165. DIANA L. MOSS, AM. ANTITRUST INST., TRANSGENIC SEED PLATFORMS: COMPETITION BETWEEN A ROCK AND A HARD PLACE? 11-12 (2009), *available at* http://www.antitrustinstitute.org/sites/default/files/AAI_Platforms%20and%20Transgenic%20Seed_102320091053.pdf ("Intra-platform competition involves rivalry *within* platforms whereby firms develop new transgenic seed products, in part, by obtaining access to rivals' patented traits.").

166. *Id*. at 14; *see also* Joseph M. Purcell, Jr., Note, *The "Essential Facilities" Doctrine in the Sunlight: Stacking Patented Genetic Traits in Agriculture*, 85 ST. JOHN'S L. REV. 1251, 1271 (2011) ("Given that the anti-stacking provisions in Monsanto's licenses had the clear effect of restricting competition in stacked traits, it stands to reason that these licenses count as denial for the purposes of essential facility analysis.").

II. UNINTENDED CONSEQUENCES

Early on, the Solicitor General had advised the Court not to take the *Bowman* case, warning that it might have unintended consequences.[167] The Court took the case anyway but tried to confine its holding as narrowly as possible. It noted that infringement might not be found when the replication occurred outside of the purchaser's control or where replication was a necessary but incidental step in using the item.[168] The opinion also gave particular emphasis to Bowman's premeditated conduct, leading commentators to question if the dicta could color the outcome in future cases.[169]

During oral arguments, the Supreme Court had also inquired about the conditional sale doctrine.[170] The government's response was that the Court need not rule on it because "[*Quanta Computer, Inc. v. LG Electronics., Inc.*] largely decided the issue" and "the Federal Circuit has not applied their previous version of the [c]onditional [s]ale [d]octrine to enforce the post-sale restrictions since this Court's decision in [*Quanta*]."[171] The Court ultimately

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167. Brief for the United States as Amicus Curiae Supporting Affirmance at 18, Bowman v. Monsanto Co, 133 S. Ct. 1761 (2013) (No. 11-796).

168. *Bowman*, 133 S. Ct. at 1769 ("Our holding today is limited—addressing the situation before us, rather than every one involving a self-replicating product.").

169. Kristen Salvaggio, *Patent Law—First-Sale Doctrine Does Not Extinguish Patentee's Rights in Self-Replicating Organisms*—Bowman v. Monsanto Co., *133 S. Ct. 1761 (2013)*, 47 SUFFOLK U. L. REV. 451, 459 (2014) ("While not requiring a showing of intent to prove patent infringement, the Supreme Court hinted that intent may be an important factor when analyzing cases involving self-replicating organisms and appeared strongly persuaded by Bowman's apparent intent . . . .").

170. Transcript of Oral Argument at 33-34, *Bowman*, 133 S. Ct. 1761 (No. 11-796), *available at* http://www.supremecourt.gov/oral_arguments/argument_transcripts/11-796-1j43.pdf ("There is this issue in the case where you disagree, which is the Conditional Sale Doctrine. I am just wondering, before you finish up, could you say a bit about whether that doctrine is causing trouble as it presently exists in the Federal Circuit? In other words, could we just ignore that doctrine if we wanted to, or is it a very problematic one that we should take this opportunity to do something about?").

171. *Id.* at 34 ("I think the Court does not need to do something about it in this case. I think Quanta largely decided the issue, even though it didn't say so explicitly, and as far as I'm aware the Federal Circuit has not applied their previous version of the Conditional Sale Doctrine to enforce the post-sale restrictions since this Court's decision in Quanta."); *see also id.* at 47 ("[W]e agree with the government that there's no need for the Court to address the question of conditional sales and the extent to which patent law recognizes under some circumstances conditional sales because in this case the Federal Circuit did not address that ground which we advocated and we still advocate . . . .").

declined to address it in its opinion. The Court's silence will only serve to embolden the use of restrictions to convert every sale into a license.[172] This is an unfair burden to users, who should be entitled to use, sell, or otherwise dispose of the items they buy as they wish.[173] Both of these issues should be addressed.

A. A Question of Inadvertence

The Court focused on Bowman's knowledge and intent to show how he could not have been an innocent infringer. It stressed that "Bowman devised and executed a novel way to harvest crops from Roundup Ready seeds without paying the usual premium."[174] Unlike other farmers, he bought seeds from a grain elevator anticipating that many would contain the Roundup Ready trait.[175] Bowman's spraying of his field with glyphosate would be irrational unless he knew a substantial percentage of soybeans had Roundup Ready traits. He "culled any plants without the patented trait" and then harvested Roundup Ready soybeans "at a chosen time; tended and treated them, including by exploiting their patented glyphosate-resistance."[176] The Court concluded that "it was Bowman, and not the bean, who controlled the reproduction (unto the eighth generation) of Monsanto's patented invention."[177]

The Court thus introduced inadvertence as a potentially relevant factor in the analysis. To dispel any notion that this focus was accidental, the Court went on to add that "[i]n another case, the article's self-replication might occur outside the purchaser's control. Or it might be a necessary but incidental step in using the item for

172. Stern, *supra* note 20, at 4 & n.5 (transferring of possession of a patented product was a sale regardless of whether or not it was "accompanied by what purported to be a license").

173. Guo, *supra* note 19, at 211 ("It remains unclear to what extent a patent owner can use a conditional license to impose restrictions on downstream purchasers to avoid patent exhaustion or whether the *Quanta* opinion has affirmatively rejected the view that one can contract around the doctrine."); Lim, *supra* note 18, at 195 ("The Court's express expunging of *Mallinckrodt* in *Bowman v. Monsanto* would have been helpful in clarifying the law. More importantly, it would have provided a critical avenue out for these farmers, whose rights must now be tested and defined by further litigation.").

174. *Bowman*, 133 S. Ct. at 1769.

175. *Id*. at 1763-64 ("Bowman conceded that he knew of no other farmer who planted soybeans bought from a grain elevator.").

176. *Id*. at 1769.

177. *Id*.

another purpose. . . . We need not address here whether or how the doctrine of patent exhaustion would apply in such circumstances."[178]

Why did the Supreme Court focus on inadvertence? One possibility is that it was anxious to reassure organic farmers and others who find genetically modified crops on their land that they would not be hauled into court to face an infringement suit. During oral arguments, the Justices seemed most concerned about them.[179] Another possibility is that it wanted to reassure the public that its ruling would not "prevent farmers from making appropriate use of the Roundup Ready seed they buy."[180]

Transgenic crops spread by a variety of means. This includes seed drift, animal droppings, and movement of humans and vehicles. These could lead the trait to spread widely.[181] *Bowman* results in a risk asymmetry. While farmers remain liable for infringement whether they desire the traited seeds or not, Monsanto appears to bear no responsibility for harmful changes in soil and potentially diminished yields.[182] In 1998, organic corn processed into tortilla

178. *Id*.

179. Justice Kagan wondered about traited seeds contaminating organic crop fields and schoolchildren growing soybean seeds for science projects being sued for infringement. Transcript of Oral Argument, *supra* note 170, at 41 ("[S]eeds can be blown onto a farmer's farm by wind, and all of a sudden you have Roundup seeds there and the person—farmer is infringing, or there's a 10-year-old who wants to do a science project of creating a soybean plant, and he goes to the supermarket and gets an edamame, and it turns out that it's Roundup seeds. . . . And, you know, these Roundup seeds are everywhere, it seems to me. There's, what, 90 percent of all the seeds that are around? So it seems as though—like pretty much everybody is an infringer at this point, aren't they?"). Justice Scalia was worried about farmers unintentionally growing contaminated seeds bought from grain elevators. *Id*. at 27-28 ("[L]et me give you another horrible result, and that is if—if we agree with you, farmers will not be able to do a second planting by simply getting the undifferentiated seeds from—from a grain elevator because at least a few of those seeds will always be patented seeds, and no farmer could ever plant anything from a grain elevator, which means—I gather they use it for second plantings where the risks are so high that it doesn't pay to buy expensive seed. Now they can't do that anymore because there's practically no grain elevator that doesn't have at least one patented seed in it.").

180. *Bowman*, 133 S. Ct. at 1768.

181. Bagley, *supra* note 130, at 689-90 (describing the spread of StarLink, a Bt pest-resistant corn from 1% of Iowan cornfields to more than half of the fields there in only a year, introducing traits that were approved only for animal consumption into the processed food supply).

182. Carey Gillam, *Roundup Herbicide Research Shows Plant, Soil Problems*, MOTHER NATURE NETWORK (Aug. 14, 2011, 3:32 PM), http://www.mnn.com/your-home/organic-farming-gardening/stories/roundup-herbicide-research-shows-plant-soil-problems (reporting that the use of glyphosate

chips was rejected by the European Union and destroyed because it had been contaminated by cross-pollination from a neighboring field.[183] The shipment was worth half a million dollars.[184] In addition to export bans, transgenic contamination results in market restrictions, lower crop prices, and the loss of organic certification.[185]

Focusing on intent and control as elements of infringement avoids or mitigates these consequences. However, there are at least three problems with this focus. Shortly after *Bowman* was decided, the Federal Circuit was presented with an appeal concerning Monsanto. The reported decision highlights these three problems. In *Organic Seed Growers & Trade Ass'n v. Monsanto Co*., about 300,000 farmers, seed producers, and agricultural organizations members sought a declaratory judgment against Monsanto.[186] The plaintiffs grew non-transgenic crops, often including certified organic corn, soybeans, and canola.[187] They had sought an express waiver from Monsanto against inadvertent infringement.

Monsanto refused, pointing them to its website declaration undertaking not to sue for inadvertent infringement based on trace amounts of patented seed or traits.[188] It maintained that it would be economically irrational to sue for trace infringement since damages would be minimal. The plaintiffs sued.

The first problem with focusing on inadvertence is that infringement is a strict-liability tort. The Federal Circuit noted that even one who "(replants) or sells even very small quantities of patented transgenic seeds without authorization may infringe any

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could be responsible for fungural root disease "that limit crop health and production," as well as "cancer, miscarriages and other health problems in people and livestock").

183. Richard A. Repp, Comment, *Biotech Pollution: Assessing Liability for Genetically Modified Crop Production and Genetic Drift*, 36 IDAHO L. REV. 585, 591 (2000).

184. *Id*.

185. Presumably such harms can be remedied under tort law. *See* Langan v. Valicopters, Inc., 567 P.2d 218, 222 (Wash. 1977) (finding substantial economic loss for loss of organic certification).

186. Aisha Mahmood Haley, Note, *The Blame the Beans Defense: Should Organic Farmers Look to Patent Exhaustion and Misuse for Protection Against Inadvertent Infringement?*, 96 J. PAT. & TRADEMARK OFF. SOC'Y 372, 377 (2014).

187. *Id*.

188. *Monsanto's Commitment: Farmers and Patents*, MONSANTO, http://www.monsanto.com/newsviews/pages/commitment-farmers-patents.aspx (last visited Apr. 13, 2015) ("It has never been, nor will it be Monsanto policy to exercise its patent rights where trace amounts of our patented seeds or traits are present in farmer's fields as a result of inadvertent means.").

patents covering those seeds."[189] Infringement would result "even though that compound's self-replicating properties might 'place potential infringers in the untenable position of never knowing whether their product infringes because even a single undetectable [molecule] would infringe.'"[190] Intent may be relevant as a defense to induced infringement when a defendant believes a patent is invalid, but that is a separate issue.[191]

Second, the Court's emphasis on intent and control makes the basis for infringement unclear.[192] While the Federal Circuit noted that *Bowman* "leaves open the possibility that merely permitting transgenic seeds inadvertently introduced into one's land to grow would not be an infringing use," it also hedged its opinion, deciding that it would "assume (without deciding) that using or selling windblown seeds would infringe any patents covering those seeds, regardless of whether the alleged infringer intended to benefit from the patented technologies."[193] At least one commentator has noted otherwise, arguing that *Bowman* emphasized the "importance of affirmative action in negating patent exhaustion. An exhaustion defense should thus still be available for a farmer who, unlike Bowman, only incidentally grew a patented self-replicating technology because of genetic drift and pollen blow over."[194]

The problem is particularly acute when it concerns traits that do not require overt action like Roundup Ready. Monsanto's glyphosate-resistant trait is valuable only when paired with

189. Organic Seed Growers & Trade Ass'n v. Monsanto Co., 718 F.3d 1350, 1356 (Fed. Cir. 2013), *cert. denied*, 134 S. Ct. 901 (2014).

190. *Id*. (alteration in original) (quoting SmithKline Beecham Corp. v. Apotex Corp., 403 F.3d 1331, 1335 (Fed. Cir. 2005)).

191. *See* Commil USA, LLC v. Cisco Sys., Inc., 720 F.3d 1361, 1368-69 (Fed. Cir. 2013), *cert. granted*, 135 S. Ct. 752 (2014) (mem.). 35 U.S.C. § 271(b) (2012) provides that "[w]hoever actively induces infringement of a patent shall be liable as an infringer." *See* Timothy R. Holbrook, *The Intent Element of Induced Infringement*, 22 SANTA CLARA COMPUTER & HIGH TECH. L.J. 399, 406 (2006) (arguing that good faith belief in invalidity should negate intent).

192. Peavey, *supra* note 66, at 486 ("The Court's focus on Bowman's active participation in selecting for Monsanto's technology leaves ambiguous whether Farmer X's use should be considered different from Bowman's, or if Farmer X's use, regardless of her passivity, would still entail making and thus infringing."); Haley, *supra* note 186, at 384 ("The emphasis on control suggests that it was the crux of the issue—and, potentially, a new gatekeeper to the patent exhaustion doctrine. In this rare situation in patent law, intent was relevant.").

193. *Organic Seed Growers*, 718 F.3d at 1356.

194. Haley, *supra* note 186, at 385.

glyphosate.[195] Farmers using that trait must do so by spraying glyphosate onto their crops, which makes it difficult for them to later argue that they did not have knowledge or intent to infringe. Bowman's strategic use of grain elevator seeds for late-season planting over eight years is an easy case to pin liability based on intent and control.

It will be considerably more difficult to prove intent and control where the patented technology fortifies the seed against environmental agents such as drought or insects.[196] The same might be said for traits that increase yield, such as Monsanto's own RR2Y. Professor Christopher Holman has suggested that farmers caught with patented seed could argue that they were trying to save money by obtaining cheap seed and had no intention of planting patented seed.[197] Holman also suggests that farmers could argue that the patentee's own actions rendered infringement unavoidable by encouraging widespread adoption of patented seed, "effectively pushing the technology into local grain elevators."[198] Given that seeds are not separated or marked by grain elevators, this could be a commonplace occurrence.

Third, the wrinkle introduced by the Court's dicta obfuscates the fact that farmers continue to face the threat of suit. It is true that Monsanto disclaimed any intent to sue inadvertent users or sellers of seeds that are inadvertently contaminated with up to 1% of seeds carrying Monsanto's patented traits.[199] This was probably intended to cover U.S. Department of Agriculture-certified organic farm or handling operations prohibited from using genetically modified

195. In theory, glyphosate can be used without a patented glyphosate-resistant trait. However, given that this has not been done in a widespread fashion, the issue is arguably academic.

196. Christopher M. Holman, *How Real Is the Concern That Seed Patents Will Turn Farmers into Inadvertent Infringers?*, 33 BIOTECHNOLOGY L. REP. 165, 169 (2014).

197. *Id*.

198. *Id*.

199. *See id*. at 168; *see also Food, Inc FAQs*, MONSANTO, http://www.monsanto.com/food-inc/pages/faqs.aspx (last visited Apr. 13, 2015) ("It has never been, nor will it be, Monsanto policy to exercise its patent rights where trace amounts of our patented traits are present in farmers' fields as a result of inadvertent means. We have no motivation to conduct business in this manner, nor have we ever attempted to conduct business in this manner—and we surely would not prevail in the courts if we did."); Organic Seed Growers & Trade Ass'n v. Monsanto, Co., 718 F.3d 1350, 1358 (Fed. Cir. 2013), *cert. denied*, 134 S. Ct. 901 (2014).

seed.[200] This was also ostensibly pegged to the 0.9% standard allowed for imports into the European Union.[201] It is true that the Uniform Commercial Code could provide downstream purchasers with a claim of derivative liability against the upstream seller, if not excluded.[202] It is also true that the Federal Circuit noted that Monsanto's declaration had an estoppel effect against it.[203]

However, the likelihood of transgenic contamination rising above that 1% level is real given how farming works in practice.[204] The disclaimer is also of limited value. As an initial matter, Monsanto would not exclude the possibility of suing famers who had no intent or control even if they did not use glyphosate.[205] The panel also noted "a substantial risk" that farmers "could be liable for infringement if they harvested and replanted or sold contaminated seed."[206] This was because "about one half of domestic cropland is

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200. *Organic Seed Growers*, 718 F.3d at 1358 ("While the USDA has not established an upper limit on the amount of trace contamination that is permissible, the appellants argue, and Monsanto does not contest, that 'trace amounts' must mean approximately one percent (the level permitted under various seed and product certification standards).").

201. Bagley, *supra* note 130, at 706.

202. *See* U.C.C. § 2-312(3) ("Unless otherwise agreed a seller who is a merchant regularly dealing in goods of the kind warrants that the goods shall be delivered free of the rightful claim of any third person by way of infringement or the like but a buyer who furnishes specifications to the seller must hold the seller harmless against any such claim which arises out of compliance with the specifications.").

203. *See Organic Seed Growers*, 718 F.3d at 1358 (stating Monsanto's representations not to sue would have estoppel effect). For a view that such pledges should be deemed enforceable under a reliance-based theory, see Jorge L. Contreras, *Patent Pledges* 4 (Univ. of Utah Coll. of Law, Research Paper No. 93, 2015), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2525947.

204. Brief for Farm & Ranch Freedom Alliance et al. as Amici Curiae Supporting Petitioner at 9, Organic Seed Growers & Trade Ass'n v. Monsanto Co., 851 F. Supp. 2d 544 (S.D.N.Y. 2012) (No. 1:11-cv-2163-NRB-RLE), *available at* http://cdn.woodprairie.com/downloads/Amici%20Brief%20on%20Standing.pdf ("Given the realities of farming . . . it is certain that at least some of the Plaintiff farmers already have contamination that exceeds any of those levels.").

205. *Organic Seed Growers*, 718 F.3d at 1359 (noting Monsanto was noncommittal on "whether it would assert its patents against a conventional grower who inadvertently uses or sells *greater* than trace amounts of modified seed, but who, for example, does not make use of the Roundup Ready trait by spraying the plants with glyphosate"). *But see id*. at 1356 (excluding farmers "whose crops become accidentally contaminated, and who do not treat their fields with Roundup, but who, knowing of the contamination, harvest and replant or sell the seeds" expressly).

206. *Id*.

sown with genetically modified crop varieties, and that some crops are ninety percent sown with Monsanto's genetically modified seed."[207]

Farmers who do not want to use Monsanto's seed run the risk of infringement simply by purchasing seeds from a third-party source, and it may be impossible for unwilling users to prevent the unauthorized "making" of patented seed given the widespread commingling of seed containing the Roundup Ready trait.[208] Even the Federal Circuit seemed resigned to the fact that the risk of infringement is inevitable.[209]

To protect inadvertent infringers, courts could rely on the fact that the farmers did not benefit from the infringement.[210] None of the 300,000 plaintiffs in *Organic Seed Growers* alleged that they had more than 1% of contaminated crop or that they planned "to selectively harvest and replant or sell contaminated seeds in a manner favoring the reproduction of transgenic seeds. To the contrary, the appellants are 'using their best efforts to avoid' contamination."[211]

Courts might also cap remedies in view of inadvertent infringement. In *Monsanto v. Swann*, the court awarded damages for current planting, but refused to extend those damages to potential future damages resulting from planting seed produced from the current infringing incident.[212] In *Monsanto Co. v. Scruggs*, the court

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207. *Id*. at 1357.

208. *Id*. ("Like any other seeds, transgenic seeds may contaminate non-transgenic crops through a variety of means, including seed drift or scatter, crosspollination, and commingling via tainted equipment during harvest or post-harvest activities, processing, transportation, and storage." (citation omitted) (internal quotation marks omitted)); *see also id*. ("[D]espite stringent precautionary measures meant to prevent any commingling of modified and conventional seed crops, a large majority of conventional seed samples have become contaminated by Monsanto's Roundup resistance trait.").

209. *Id*. ("The genetically modified seeds cannot easily be separated from conventional seeds; thus, a grower who harvests and uses or sells contaminated crops risks incurring infringement liability.").

210. Salvaggio, *supra* note 169, at 460 ("For example, if Bowman had not sprayed his late-season crop with a glyphosate-based herbicide, he would not have utilized the benefit of the invention, thus leaving both parties in the same position they would have been in if there had been no unauthorized use at all."); *see also* Peavey, *supra* note 66, at 485.

211. 718 F.3d at 1359 (citation omitted).

212. 308 F. Supp. 2d 937, 944-46 (E.D. Mo. 2003); *see also* Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 23 (1997) (noting that the jury, on finding that the defendant had not intentionally infringed, awarded only 20% of the damages sought by the patentee).

only allowed injunctive relief and not monetary damages that were based on speculative claims.[213] Following from the Court's decision in *eBay, Inc. v. MercExchange L.L.C.*, courts are now more willing to deny injunctive relief in appropriate cases, particularly where an injunction would impose substantial hardship on the defendant or the public interest.[214]

While the existence and extent of benefits may impact the quantum of damages eventually awarded, the farmer remains liable for infringement.[215] Suits still cost farmers their legal fees and the cost of removing the contamination from their fields, leaving them without seed for the following years.[216] Risk-averse farmers may end up having to purchase a bundle of licenses to avoid inadvertent liability for infringement from multiple patentees.[217]

States such as California have enacted legislation to protect its citizens against infringement suits by trait owners. California's Seed Law exonerates farmers from contractual liability

> based on the presence or possession of a patented genetically [modified] plant on real property owned or occupied by the farmer when the farmer did not knowingly buy or otherwise knowingly acquire the genetically [modified] plant, the farmer acted in good faith and without knowledge of the genetically engineered nature of the plant, and when the genetically engineered plant is detected at a de minimis level.[218]

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213. *See* 249 F. Supp. 2d 746, 758 (N.D. Miss. 2001) (stating that quantification of "other damages, including that resulting from previous and potential future unlicensed brown bag sales of Monsanto's patented Roundup Ready® and Bollgard® technology, are far less easily determined and computed. Equally difficult to discern are the resulting damages due to loss of consumer good will, the effect on Monsanto's efforts to control and steward its technology, and the corresponding dampening effect on Monsanto's research and development activities in the agricultural arena" as well as finding that injunctive relief was appropriate rather than monetary relief).

214. 547 U.S. 388, 393-94 (2006).

215. *Organic Seed Growers*, 718 F.3d at 1356 ("[W]e will assume (without deciding) that using or selling windblown seeds would infringe any patents covering those seeds, regardless of whether the alleged infringer intended to benefit from the patented technologies.").

216. Jessica Lynd, Comment, *Gone with the Wind: Why Even Utility Patents Cannot Fence in Self-Replicating Technologies*, 62 AM. U. L. REV. 663, 679-80 (2013).

217. *Id*. at 680 ("[P]ermitting infringement suits even when the court does not award damages creates a system through which the high risk of using conventional seeds and being sued due to unintended pollen drift incentivizes farmers to use GM seeds.").

218. CAL. FOOD & AGRIC. CODE § 52305 (West 2009).

Maine law has a variation that prohibits a claim for damages from farmers found to have infringed based on *de minimis* amounts of traited crop.[219] However, commentators agree that such laws are vulnerable to federal preemption.[220] Less robust state laws stipulate procedures patentees have to comply with in order to enter crop fields to investigate or provide instructions to prevent cross-contamination.[221]

Any real solution must come from Congress. It could enact a sector-specific legislative exemption based on the principle of *de minimis non curat lex* to protect against trace infringement. Additionally, the Supreme Court in *Bowman* noted, incidental uses could be exempt, citing a legislative exemption for copyright infringement for transitory copies made in the course of using a computer.[222]

European Union law offers an interesting alternative, framing the issue as one of statutory subject matter. European law confers patent protection only where "the product [is] incorporated and in which the genetic information is contained and performs its function."[223] In *Monsanto Tech, LLC v. Cefetra BV*, Monsanto sued importers of soymeal prepared from Roundup Ready soybeans.[224] Since the patented trait was glyphosate resistance, the soymeal did not enjoy patent protection.[225] This would not have availed the organic farmers who brought their grievance before the Federal

219. ME. REV. STAT. tit. 7, § 1053(1) (2009).

220. Heimes, *supra* note 36, at 150 ("To the extent mere possession of a patented gene or sequence in the form of a living plant can constitute 'use' or 'making' of the patented material, and therefore infringement, these laws would be preempted by federal law."). The Biotechnology Industry Organization's successful challenge of Montana's Bill with a provision similar to the Californian law on the basis that the bill would "'improperly restrict federal patent and plant variety protection rights established by the U.S [sic] Constitution and federal intellectual property law' and would likely 'be preempted by federal law.'" *Id*. at 120 (quoting *Hearing on H.B. 445 Before the H. Agriculture Comm*., 1999 Leg., Reg. Sess. (Mont. 2009) (statement in opposition)).

221. *See*, *e.g*., CAL. FOOD & AGRIC. CODE § 52301(a), N.D. CENT. CODE § 4-24-13(2)(a) (2009); S.D. CODIFIED LAWS § 38-1-45 (2002).

222. Bowman v. Monsanto Co., 133 S. Ct. 1761, 1769 (2013) (stating that reproduction "might occur outside the purchaser's control" or "might be a necessary but incidental step in using the item for another purpose").

223. Council Directive 98/44, art. 9, 1998 O.J. (L 213) 13, 19 (EC).

224. Case C-428/08, Monsanto Tech, LLC v. Cefetra BV, 2010 E.C.R. I-06765.

225. *See* Bagley, *supra* note 130, at 707 (discussing the case).

Circuit, but it does identify yet another bog of patent infringement that awaits the unwary.

For now, however, the best farmers can do is not to plan their commercial affairs assuming that the Federal Circuit's decision offers any safe haven. They should instead marshal their considerable lobbying prowess and push for a legislative safe harbor—and hope they are not worth Monsanto's time.

B. The Conditional Sale Doctrine

Monsanto and other seed companies impose "bag-tag" licenses on farmers, so called because of tags printed on each bag of seed stating prohibitions, including the resale of seed or replanting of saved seed.[226] The district court in *Bowman* found that neither the grain elevator nor farmers who sold their seeds to it could confer these rights to Bowman since they did not have those rights themselves.[227] The Federal Circuit affirmed.[228]

This restricted or "conditional sale" doctrine sprang from the Federal Circuit's opinion in *Mallinckrodt, Inc. v. Medipart, Inc.*, a case decided at the height of patent expansionism.[229] At issue was a "single use" restriction on a patented medical nebulizer. The patentee placed a notice of the restriction on the device as well as its packaging. Hospitals paid the defendant to recondition used

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226. Bruce Stutz, *Companies Put Restrictions on Research into GM Crops*, ENVIRONMENT360 (May 13, 2010), http://e360.yale.edu/feature/companies_put_restrictions_on_research_into_gm_crops/2273/ ("Farmers don't simply buy a bag of GM seed from Monsanto, Syngenta, or DuPont. Scientists found their research ultimately subject to seed company approval. Instead, they enter into a 'Technology/Stewardship Agreement' with the company that developed it, the fine print of which lays out, among other things, the terms under which the seed can be used, where it can be grown, where it can be sold (many international governments do not allow the sale of GM crops or products made with them), and the brand of herbicides that can be used. This 'bag-tag,' as it's known, also specifically restricts any use of the seed for research.").

227. Monsanto Co. v. Bowman, 686 F. Supp. 2d 834, 839 (S.D. Ind. 2009) (citing Monsanto Co. v. Scruggs, 459 F.3d 1328, 1336 (Fed. Cir. 2006)).

228. Monsanto Co. v. Bowman, 657 F.3d 1341, 1347-48 (Fed. Cir. 2011).

229. 976 F.2d 700 (Fed. Cir. 1992); Daryl Lim, *Patent Misuse and Antitrust: Rebirth or False Dawn?*, 20 MICH. TELECOMM. & TECH. L. REV. 299, 336 (2014) ("From the 1980s through to early 2000s, the pendulum swung in the direction of strong patent rights."). *See generally* Herbert Hovenkamp, *IP and Antitrust Policy: A Brief Historical Overview* 4 (Univ. of Iowa Legal Studies, Research Paper No. 05-31, 2005), *available at* http:// papers.ssrn.com/sol3/papers.cfm?abstract_id=869417 ("[W]e once again live in an era of IP expansionism.").

nebulizers in violation of those restrictions.[230] The district court held that exhaustion applied, reasoning that allowing patentees to impose conditions on patented articles post-sale would turn what was in substance a sale into a license.[231] The Federal Circuit reversed, holding that parties were free to structure their dealings as long as it was within the scope of the patent rights.[232] Since a patent confers a basket of rights to the patentee to sell, use, make, import, and offer to sell the invention, patentees could also sell patented articles with conditions.[233]

While unconditional sales give patentees "an amount equal to the full value of the goods," with conditional sales "it is more reasonable to infer that the parties negotiated a price that reflects only the value of the 'use' rights conferred by the patentee."[234] Any anticompetitive effects extending beyond that scope would not be prohibited as long as the restrictions did not violate antitrust law or amount to patent misuse.[235] Under Federal Circuit jurisprudence, only an authorized, *unconditional* sale exhausts the patentee's rights in the item.[236]

The conditional sale doctrine has kept exhaustion at bay, allowing patentees to sue downstream users who breached these restrictions for infringement based on unauthorized uses of the item sold.[237] The quasi-sale model, upon which the conditional sale doctrine rests, derives from the use of licenses to convey the right to

230. *Mallinckrodt*, 976 F.2d at 702.

231. *Id*. at 703 ("The court stated that policy considerations require that no conditions be imposed on patented goods after their sale and that Mallinckrodt's restriction could not 'convert what was in substance a sale into a license.'" (citation omitted)).

232. *Id*. at 708-09 (finding post-sale restrictions such as field-of-use restrictions enforceable by patent infringement if within the patent scope, and per se unenforceable only in cases of price-fixing or tying).

233. Hovenkamp, *supra* note 93, at 529 ("One possible justification for the single use only restriction rests on the observation that inherent in the patent grant is the right to limit output. A patentee has the right to produce any amount of the patented good it pleases, right down to zero. A single use restriction is in fact a type of output reduction." (footnote omitted)).

234. B. Braun Med., Inc. v. Abbott Labs., 124 F.3d 1419, 1426 (Fed. Cir. 1997).

235. *Mallinckrodt*, 976 F.2d at 708.

236. *Id*. at 706; *see also* Monsanto Co. v. Scruggs, 249 F. Supp. 2d 746, 753 (N.D. Miss. 2001) ("The exhaustion doctrine only applies where the sale or license of the patented invention is an *unconditional* one."). This was not the Federal Circuit's first attempt to restrict the scope of a patent defense. *See* Lim, *supra* note 229, at 333.

237. *Mallinckrodt*, 976 F.2d at 708-09.

use the software but not to reproduce it in contravention of licensing terms.[238]

The seed-trait industry adopted this business model, creating a chain of licenses from trait developers to propagators, distributors, and farmers, all the while leaving that leash in the hands of the patentee.[239] Since a license historically also involves the return of the good at the end of the license term, Monsanto cherry-picked the convenient characteristics of licenses while protesting in its brief to the Supreme Court that selling soybeans to farmers was "[t]he only practical way to license the Roundup Ready® trait commercially."[240] In contrast with "more traditional technologies" where patentees can license uses while transferring title, the seeds "delivering the patented technology to licensees are fully consumed when used; they cannot be leased or rented because Monsanto could not require return of those articles upon completion of the licensed use."[241] Neither was a pure license appropriate, Monsanto asserted, because traited beans are produced "only through propagation and cross-breeding of a seed that already contains the patented invention."[242]

As a matter of economic theory, parceling out rights and charging users based on the nature and extent of use is generally efficient.[243] Parties generally settle upon terms reflecting the value a buyer places on the bundle of rights the seller is offering. However, there are three problems with using the conditional sale doctrine to achieve this.

The first problem is that the Federal Circuit misapplied Supreme Court precedent. The Supreme Court last spoke on patent

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238. Elizabeth I. Winston, *Why Sell What You Can License? Contracting Around Statutory Protection of Intellectual Property*, 14 GEO. MASON L. REV. 93, 101 (2006) ("Owners of intellectual property now use licenses to transfer chattels without transferring many presumed rights, including the right to transfer the chattel to another, the right to possession and use without temporal limit . . . .").

239. Winston, *supra* note 36, at 453 ("This broad range of control allows the seed developer to maintain privity and to ensure that the title to the seed never leaves the developer's hands."); *see also* Winston, *supra* note 238, at 103 ("The impact of this circumvention on the public's rights is startling. For example, by licensing instead of selling seed, Monsanto can impose significant post-transfer restrictions on the use of the seed, as it did in the *McFarling* case discussed above, thereby completely vitiating the first sale doctrine.").

240. Brief for Respondents, *supra* note 92, at 13, 35 n.21.

241. *Id*. at 46.

242. *Id*. at 47.

243. Kesan, *supra* note 102, at 1085 ("Differential pricing allows many more transactions to clear in the marketplace than is the case if only unconditional sales were allowed.").

exhaustion in *Quanta Computer, Inc. v. LG Electronics, Inc*.[244] The patentee granted Intel a chip manufacturing license to its method patents that unconditionally authorized Intel to sell the microprocessors.[245] Intel made microprocessors, which it sold to the defendant manufacturer, Quanta, who in turn made computers using Intel chips.[246] The Court held Intel's patents were exhausted with respect to the chips despite the license expressly forbidding third parties from practicing the patents by combining them with non-Intel parts.[247]

Some commentators have characterized *Quanta* narrowly, arguing that defter contract language would impose a post-sale restriction on downstream purchasers.[248] Had LG prohibited Intel from making those sales, the process patents in suit would not have been exhausted. However, at least two signs point in the opposite direction.

The first indication comes from the exchange during oral arguments in the *Bowman* case itself. When Justice Kagan invited the government to speak to the conditional sale doctrine, the basis for it declining to do so was that "*Quanta* largely [settled] the issue" and "the Federal Circuit has not applied their previous version of the Conditional Sale Doctrine to enforce the post-sale restrictions since this Court's decision in *Quanta*."[249] That is not quite correct, since the Federal Circuit did rely on the conditional sale doctrine to find patent infringement in *Bowman*.[250] Monsanto's counsel also declined to address the issue, wisely preferring to focus liability simply on the new "making" as the basis for infringement.[251] However, the key takeaway here is the government's basis for not speaking on the doctrine: *Quanta* had set the Federal Circuit right.

The second indication lies in the reasoning from the oft-cited district court opinion in *Static Control Components, Inc. v. Lexmark International, Inc*.[252] The district court in that case noted that "from the beginning the Supreme Court has recognized a difference

244. 553 U.S. 617 (2008).
245. *Id*. at 623-24.
246. *Id*. at 624.
247. *Id*. at 637-38.
248. *See, e.g*., Robert W. Gomulkiewicz, *The Federal Circuit's Licensing Law Jurisprudence: Its Nature and Influence*, 84 WASH. L. REV. 199, 237 (2009).
249. *See* Transcript of Oral Argument, *supra* note 170, at 34.
250. Monsanto Co. v. Bowman, 657 F.3d 1341, 1347 (Fed. Cir. 2011).
251. *See supra* note 171.
252. *See* 615 F. Supp. 2d 575 (E.D. Ky. 2009).

between end users of patented articles and licensees of the right to make and/or sell those articles."[253] The basis for this distinction lay in the fact that manufactures make and sell the item containing the patentees' technology and share its exclusive rights.[254] In contrast, end users obtain the right to use a patented article "'in the ordinary pursuits of life.'"[255] They do not exercise any rights directly under the Patent Act via a license from patentee. Thus, "when the machine passes to the hands of the purchaser, it is no longer within the limits of the monopoly. It passes outside of it, and is no longer under the protection of the act of Congress."[256]

At this point, the item becomes "private, individual property, not protected by the laws of the United States, but by the laws of the State in which it is situated."[257] The court concluded that "[t]he Supreme Court's broad statement of the law of patent exhaustion simply cannot be squared with the position that the *Quanta* holding is limited to its specific facts."[258] Commentators agree that the conditional sale doctrine is no longer good law post-*Quanta*.[259]

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253. *Id*. at 579, 582 ("In sum, the Supreme Court's overview of its history of statements on the law of patent exhaustion reveals that the Court has consistently held that patent holders may not invoke patent law to enforce restrictions on the post-sale use of their patented products. After the first authorized sale to a purchaser who buys for use in the ordinary pursuits of life, a patent holder's patent rights have been exhausted."); *see also* Adams v. Burke, 84 U.S. (17 Wall.) 453, 456 (1873) (noting that while the right of licensee–manufacturers to make and sell the coffin lids was restricted to the circle often miles around Boston, the right of their customers to use the coffin lids was not).

254. *Static Control Components, Inc*., 615 F. Supp. 2d at 582 ("Language in the *Mitchell* opinion, however, suggests the Court considered the restriction at issue to be a condition limiting the right to sell, rather than a post-sale restriction on the right of use. For example, the Court wrote that 'the grantor under whom the respondents claim never acquired the right to sell the machines and give their purchasers the right to use the same . . . beyond the term of the original patent . . . .' In this way, *Mitchell* is distinguishable from the Court's other cases dealing with the doctrine of patent exhaustion." (alteration in original) (citation omitted) (quoting *Mitchell v. Hawley*, 83 U.S. (16 Wall.) 544, 550 (1872))); *see also id*. ("[In] *General Talking Pictures Corp. v. Western Electric Co*., . . . the license from the patent owner prohibited the manufacturer from making its initial sales of the patented amplifiers to commercial users. Sales to commercial users were thus unauthorized and did not result in patent exhaustion." (citations omitted)).

255. *See* Quanta Computer, Inc. v. LG Elecs., Inc., 553 U.S. 617, 625 (2008) (quoting Bloomer v. McQuewan, 55 U.S. (14 How.) 539, 549 (1852)).

256. *Bloomer*, 55 U.S. (14 How.) at 549.

257. *Id*. at 550.

258. *Static Control Components, Inc*., 615 F. Supp. 2d at 586; *see also* Samuel F. Ernst, *Patent Exhaustion for the Exhausted Defendant: Should Parties Be Able to Contract Around Exhaustion in Settling Patent Litigation?*, 2014 U. ILL. J.L.

An intermediary manufacturer licensee remains liable for both contractual remedies for breaching the terms of the license and patent remedies since a license is nothing more than a covenant not to sue.[260] In *General Talking Pictures Corp. v. Western Electric Co.*, the case the Federal Circuit used as the basis for its conditional sale doctrine, the Supreme Court was presented with a license to make a sound system subject to a post-sale field-of-use restriction for noncommercial use.[261] It did not concern the sale of a patented item. The licensee sold the finished product without restriction in violation of the license agreement. Since the first sale of a completed good in the transaction was not "authorized" by the patentee, exhaustion did not apply.

As between two corporate entities, the manufacturer and patent owner are better placed to bear the burden of allocating risks and determining a market-clearing price.[262] It may also be asked why

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TECH. & POL'Y 445, 448 ("[I]n the years since the *Quanta* decision, the lower courts have generally adopted the broader reading of *Quanta*.").

259. Hovenkamp, *supra* note 93, at 528 ("The Federal Circuit's now overruled *Mallinckrodt* decision had departed from Supreme Court precedent by permitting a patentee to enforce a post-sale restraint on some patented articles by distinguishing unconditional from conditional sales."); Thomas G. Hungar, *Observations Regarding the Supreme Court's Decision in* Quanta Computer, Inc. v. LG Electronics., Inc., 49 IDEA 517, 532-33 (2009); Sheff, *supra* note 95, at 234; Li, *supra* note 19, at 205 ("While the Federal Circuit's conditional sale doctrine provides broad protection to the patent owner by allowing post-sale restrictions to prevent exhaustion of the patent owner's rights, the Supreme Court appears to reject the conditional sale doctrine in *Quanta* by providing downstream purchasers, not patent owners, with more protection under the patent laws."); Heimes, *supra* note 36, at 118 ("Since the *Scruggs* case was decided, the U.S. Supreme Court broadened the patent exhaustion doctrine in *Quanta Computer, Inc. v. LG Electronics, Inc.*, reversing the Federal Circuit's narrow application of the [exhaustion] doctrine." (footnote omitted)).

260. Hovenkamp, *supra* note 93, at 522 ("When the patentee sells an unfinished article that requires application of the patentee's method patents in order to make that particular copy of the article useable or marketable the first sale doctrine also applies. Further, both the technology embodied in the article and the process patents needed to finish it are exhausted as to that copy."); *see also id.* at 521 ("By contrast, when the patentee licenses production rights to someone else there is no inherent limit on the number of patented articles that the licensee can make or what their disposition will be. That means that post-transfer conditions are essential and generally enforceable, including by means of infringement actions, unless they are anticompetitive or in violation of patent policy.").

261. 304 U.S. 175, 176-77 (1938).

262. Hovenkamp, *supra* note 93, at 524 ("A pure manufacturing license without a post-contract restriction would place no limit on the licensee's ability to produce as much as it wished and sell wherever and to whomever it pleased.").

contractual remedies against distributors would be insufficient to make aggrieved patentees whole. It may be that agreements between them require careful drafting to better allocate risks, but that burden should not be placed on consumers who live under the threat of a patent infringement suit.

District courts have chafed at being forced to apply the conditional sale doctrine.[263] As one noted:

> *Quanta* itself reaffirms the Supreme Court's articulation of the doctrine of patent exhaustion as set forth in the cases discussed in the previous section. It represents a change in the law, however, because the Court reasserted a broad understanding of patent exhaustion in the face of Federal Circuit case law that had narrowed the scope of the doctrine. That Federal Circuit case law had been followed as binding precedent by the district courts, including this one.[264]

The second problem with the Federal Circuit's conditional sale doctrine is that it over rewards patentees. Exhaustion is a doctrinal safety valve to prevent extension of the patent right beyond the first sale.[265] Under the conditional sale doctrine, unauthorized uses of the article sold would itself be patent infringement as long as the patent was in force, giving patentees an end-run around exhaustion.[266]

Licensing models more commonly found in software and e-commerce should only be applied to tangible goods with considerable caution. Consumers in the online world show a

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263. Monsanto Co. v. Scruggs, No. 3:00CV-161-P-D, 2009 WL 536833, at *2 (N.D. Miss. Mar. 3, 2009) ("[T]he Court is fully cognizant of the wealth of persuasive authority which posits the opposite conclusion, e.g. that *Quanta's* holding on the doctrine of patent exhaustion is a substantial limitation on the rights of patent holders.").

264. Static Control Components, Inc. v. Lexmark Int'l, Inc., 615 F. Supp. 2d 575, 582-83 (E.D. Ky. 2009).

265. Garmezy, *supra* note 126, at 198 (noting that patent exhaustion "works to counterbalance the patentee's monopoly power and prevent anticompetitive abuse").

266. *See* Eric J. Rogers, *The Inexhaustible Right to Exclude Reproduction Doctrine*, 14 COLUM. SCI. & TECH. L. REV. 389, 406 (2013) ("[T]he Federal Circuit's reasoning in *Mallinckrodt* allows patentees to use contracts to prevent patent exhaustion via terms defining an authorized sale and enforce post-sale restrictions using patent infringement actions."); Garmezy, *supra* note 126, at 198 ("The Federal Circuit, however, has developed an opposing doctrine, the conditional sale doctrine, under which a patentee may use an enforceable contract to restrict the rights of a buyer using a patented article, even after a subsequent sale."); Ghoshray, *supra* note 4, at 506 ("Implicit in the *Bowman* scenario, then, is Monsanto's quest for an assurance that would seem to go against this basic principle, as it attempts to apply the conditional sale exception to the future sale of its patented seed technology in perpetuity.").

preference for acquiring subscriptions for streaming services. Zip cars and bike share schemes are also increasingly popular. However, in all these instances, consumers are clearly licensing only the rights to use the items and have not acquired ownership rights over them. Once consumers stop paying subscription fees, access ceases.

Seeds sold by Monsanto and its authorized seed partners are physically transferred without an expectation for their return. The *Quanta* Court found patents over methods and processes exhausted upon an authorized sale. With seeds that contain patented traits, the argument that patent exhaustion should apply to resale and uses of the seeds that fall short of replication is even more compelling than for methods or processes. If the price tag on the seed indeed inadequately reflects the cost of the bundle of rights farmers obtain as a result, the burden should rest on Monsanto, as the price-setter, to justify that it deserves more.[267] If patentees can reach deep into the tributaries of downstream commerce, they can sue any number of downstream buyers who used the item in a manner contrary to the conditions placed upon the sale for the duration of the patent.[268] Watering down exhaustion to safeguard specific uses from exhaustion results in a regime that is both arbitrary and unfair.[269]

More recently, the Supreme Court in *Kirtsaeng v. John Wiley & Sons, Inc.* unequivocally noted the "absurd result" that would exist if a copyright owner could exercise downstream control even when it authorized the first sale.[270] Giving patentees the ability to meter downstream uses under the threat of infringement goes against the expectation that buyers own the rights to use the invention as long as

267. Heimes, *supra* note 36, at 132 ("A patent on a genetically modified plant is commonly a composition of matter patent, the embodiment of which is typically in an article or tangible thing (seed) and thus even more likely to fall under exhaustion principles upon sale than something more ephemeral like methods or processes.").

268. 2 WILLIAM C. HOLMES, INTELLECTUAL PROPERTY AND ANTITRUST LAW § 17:4 (2015) (labelling as "problematic" the Federal Circuit's "rationale that since the patentee had imposed express license restrictions on authorized sales of its patented seeds, an 'unrestricted sale' for purposes of the exhaustion doctrine had not occurred").

269. Heimes, *supra* note 36, at 132 ("They must as well accept the consequences, which include being subject to the exhaustion doctrine. Arguments that innovation in plant technologies will be stifled if their self-replicating nature is not given special status for exhaustion purposes are not likely to carry the day with this Court. The *Quanta Computer* opinion reflects the Court's skepticism of creating exhaustion-free categories for patent protection, as they invite clever claims drafting in an attempt to 'end run' around the doctrine." (footnote omitted)).

270. 133 S. Ct. 1351, 1366 (2013).

it does not impinge on recoupment in the owner's primary market. Patentees should turn to upstream sellers for redress.

Third, by turning every sale into a license, the conditional sale doctrine impedes the formation of a secondary market for seeds sold by Monsanto or its seed partners.[271] The U.S. District Court in the Northern District of Mississippi noted that the defendants would secure "an unfair advantage over all growers who have acted in good faith in compliance with their licenses" if a "'black market'" for crop seed were "allowed to exist and to thrive."[272] It concluded that "to have patented technology pirated" would "discourage future investment in innovative technology" and "is not in the public's best interest."[273] Another court analogized a farmer to a "car-lessor crying foul upon discovering he cannot retain the car after his lease expires."[274]

These are remarkable statements. Not all uses that derogate from restrictions patentees placed on users are illegitimate. Farmers with the audacity to grow new seed will face the sting of patent infringement. In other instances, patentees who authorized the initial sale have been rewarded and cannot control subsequent uses.[275] It is the "ability of buyers to transact in patented articles without fear of patent infringement liability" that "encourages vibrant downstream market competition."[276]

Allowing patentees to control downstream users would erode the property rights in the purchased goods and raise the risk of

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271. *See* Mark R. Patterson, *Contractual Expansion of the Scope of Patent Infringement Through Field-of-Use Licensing*, 49 WM. & MARY L. REV. 157, 204 (2007) ("Part of the problem here may stem from the Federal Circuit's failure to distinguish between contracts and licenses.").

272. Monsanto Co. v. Scruggs, 249 F. Supp. 2d 746, 760 (N.D. Miss. 2001).

273. *Id*. at 760-61.

274. Monsanto Co. v. Swann, 308 F. Supp. 2d 937, 942 (E.D. Mo. 2003) ("They are not in the position of new-car purchaser obliged to purchase a new car every year. Rather, they are in the position of a car-lessor crying foul upon discovering he cannot retain the car after his lease expires.").

275. Elsewhere, I have suggested a framework for delineating unauthorized "making" from authorized "uses." In essence, it should fulfill a public notice function by being sufficiently clear and certain for patentees and others. Second, it should protect the patentee's monopoly while not stifling reasonable competition by taking into account customary expectations. Third, the actor or factor allegedly creating the new article is irrelevant. Also irrelevant is how the defendant views or markets its products. What is relevant is the relative life expectancies of the patented and unpatented portions of the article. *See* Lim, *supra* note 18, at 170.

276. *Id*. at 168.

infringement to an intolerable level.[277] It can be difficult for consumers to determine whether the item was obtained as a result of a license or sale and that the attendant rights of the original buyer accrue to the user.[278] According to Professor Herbert Hovenkamp, the conditional sale doctrine is "excessive given the self-deterring nature of harmful reuse restrictions and the alternative explanations for at least some of them."[279] It could also lead to "a significant problem of hold-up."[280]

This hold-up could occur because patentees can sue downstream users with sunk investments for patent infringement on any number of activities that would have otherwise been allowed by patent exhaustion. As it is, suits against customers have been on the rise.[281] While cases thus far have either required notice to be given or observed that notice was in fact given, in theory "innocent subsequent purchasers could be sued for patent infringement for violating conditions they knew nothing about."[282] The restraints also harm competition by reducing output, increasing prices, and excluding rivals from the market.[283]

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277. Winston, *supra* note 238, at 108-09 ("As private legislation seeks to circumvent established case law on the restraints available after the first sale of an article that benefits from the protection given to patents, the balance between public rights and owners' rights tilts in favor of the owners and away from the public."); Lim, *supra* note 18, at 167-68 ("If patent owners like Monsanto could control every use, sale or making of the seeds in the marketplace, the property rights of end-consumers such as farmers would be eroded, and intermediate service providers such as seed cleaners and grain elevators could become contributory infringers.").

278. Winston, *supra* note 238, at 121.

279. Hovenkamp, *supra* note 93, at 531 ("A patentee could certainly warn against reuse, but it could not restrain reuse by means of a patent infringement suit.").

280. *Id*. at 542.

281. Brian J. Love & James C. Yoon, *Expanding Patent Law's Customer Suit Exception*, 93 B.U. L. REV. 1605, 1606-15 (2013).

282. Hovenkamp, *supra* note 93, at 542; *see also* Love & Yoon, *supra* note 281, at 1606-15; Winston, *supra* note 238, at 121-28 (suggesting five factors to make that determination: (1) the terms of the contract; (2) the nature of the right and its commercial embodiment; (3) the price structure and time of transfer; (4) IP owners' policies or marketing program; (5) economic realities).

283. Hovenkamp, *supra* note 93, at 493 ("The principal harms that can result from post-sale conditions are restraints on competition and restraints on innovation. Restraints on competition occur when a practice reduces output, increases prices, or unreasonably excludes firms from a market. Restraints on innovation occur when a practice acts to hinder rather than to promote innovation, typically by imposing limitations on the innovations of others.").

Hence, one may conclude that the law on patent exhaustion provides that an authorized sale extinguishes *all* rights to that item.[284] In the context of *Bowman*, the farmer had bought the seeds from a grain elevator. The seeds should have been sold clear of any title or lien to Monsanto. Patent exhaustion would allow Bowman to sell the seeds, even for third-party replanting, without fear of infringement inasmuch as he could have used it for feed or resold the seeds.[285]

Patent orthodoxy would hold that in that case, the third-party would be liable only when the progeny seeds bearing the transgenic traits were *created*, and Bowman would be guilty of inducing that third-party's infringement, assuming the required elements were made out.[286] It is the emergence of the progeny seed bearing the patented trait to which infringement attaches, not the use of the seed bought from the grain elevator to create new seed that is infringing. However, Bowman should not be guilty of direct infringement simply for making the sale in breach of the licensing terms.

Similarly, end users may be liable for "making" a new item because patent liability arises from the unauthorized new creation and not because of an unauthorized use of the item to effect that creation. End users remain outside the reach of patent remedies for breaches falling short of that. As Hovenkamp noted, "[i]f the original purchaser breached an agreement to provide notice to downstream purchasers, then the appropriate remedy would be a breach of contract action against the first purchaser."[287]

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284. Quanta Computer, Inc. v. LG Elecs., Inc., 553 U.S. 617, 638 (2008).

285. *See* Ghoshray, *supra* note 4, at 506 ("Under the traditional patent exhaustion principle, upon the consummation of the sale from the third party to Bowman, the patent holder Monsanto would not be conferred any residual control over the use of those seeds, including their subsequent distribution.").

286. In *McFarling*, the Federal Circuit actually endorsed the view that infringement runs from the moment of new creation, not the use of the item against contractual restrictions. *See* Monsanto Co. v. McFarling, 363 F.3d 1336, 1342-43 (Fed. Cir. 2004) ("Based on the record before us, McFarling plants and grows the first-generation seed in an identical fashion whether he intends to sell the second-generation seed as a commercial crop for consumption or whether he intends to replant it. Thus, the Technology Agreement does not impose a restriction on the use of the product purchased under license but rather imposes a restriction on the use of the goods made by the licensed product."); *see also* Global-Tech Appliances, Inc. v. SEB S.A., 131 S. Ct. 2060 (2011) (setting out the requirements for inducement).

287. Hovenkamp, *supra* note 93, at 520; *see also* Static Control Components, Inc. v. Lexmark Int'l, Inc., 615 F. Supp. 2d 575, 586-87 (E.D. Ky. 2009) ("This is not to say, however, that state contract law may not be invoked. In the Order at Record 1008, this Court addressed Static Control's argument that, regarding Prebate, Lexmark could not show any meeting of the minds as required by Kentucky contract

A recent Federal Circuit case expressed a more moderate view. In *LifeScan Scotland, Ltd. v. Shasta Technologies, LLC*, the court stated that the "basic principle" underlying exhaustion is that "the authorized transfer of ownership in a product embodying a patent carries with it the right to engage in that product's contemplated use."[288] Absent were references to the requirement of the sale being unconditional and even the requirement of a sale. Rather than be bound by formalistic line drawing delineating sales and licenses, the court held that exhaustion was triggered when the transferee acquired title to the patented item, even if the transaction fell short of a sale.[289] Neither was the adequacy of the patentee's reward a necessary condition to triggering exhaustion. To do so "'would cast a cloud of uncertainty' over every transaction and every patented product."[290]

Instead, the court expressed concern that "barring the use of the meter with strips manufactured by the accused infringer would bar the use of the meters for their contemplated function and extend the patent monopoly improperly."[291] What was material was that the

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law, and, therefore, Prebate terms could not constitute valid, enforceable contracts between Lexmark and it customers." (citation omitted)); Brief for the United States as Amicus Curiae Supporting Petitioners at 5, *Quanta Computer, Inc*., 553 U.S. 617 (No. 06-937) ("Restrictions on downstream use or resale may arise as a matter of state contract law, but not patent law . . . . ."); *id*. at 7 ("The doctrine bars the use of patent law (but not contract law) to enforce restrictions on a purchaser's use or resale of a patented article that was purchased from the patentee or from someone authorized by the patentee to sell the article."); Hovenkamp, *supra* note 93, at 521-22 ("Under the first sale doctrine, when a finished patented article is sold to the first purchaser the patentee's interests in that copy of the article are at an end; any limitations on further disposition of the article are governed by contract law and state public policy concerning restraints on alienation.").

288. 734 F.3d 1361, 1373-74 (Fed. Cir. 2013). The perimeters of "contemplated use" are bounded by the contractual language on permissible uses as well federal preemption by the patent laws.

289. *Id*. at 1374 ("Thus, despite frequent references to 'sales' and 'purchasers,' the Court has more fundamentally described exhaustion as occurring when the patented product 'passes to the hands' of a transferee and when he 'legally acquires a title' to it. . . . Each of these formulations is broad enough to include a transfer of title that does not amount to a sale.").

290. *Id*. at 1377 (quoting Tessera, Inc. v. Int'l Trade Comm'n, 646 F.3d 1357, 1370 (Fed. Cir. 2011) (holding that patent exhaustion applied even though the seller failed to pay promised royalties to the patentee)); *see also Static Control Components, Inc*., 615 F. Supp. 2d at 586 ("[T]his Court is now persuaded that, regardless of the fact that Lexmark may not have received the full value of its Prebate cartridges, after *Quanta* Lexmark may not invoke patent law in order to enforce its Prebate terms.").

291. *LifeScan Scotland, Ltd*., 734 F.3d at 1373.

items sold were constructed with the patentee's permission.[292] To hold otherwise "would be inconsistent with the doctrine's underlying rationale—to permit the owner of an item who received it in an authorized transfer to use it."[293] While *LifeScan* did not address the conditional sale doctrine directly, it creates a rift in the court's jurisprudence on licensing restrictions. This rift should be properly addressed in a future case either by the Federal Circuit sitting en banc or by the Supreme Court.

Restoring the full scope of exhaustion is an important step to circumscribe overreaching by patentees. At the same time, Hovenkamp pointed out that exhaustion had a key disadvantage: "[O]nce such a sale is found enforcement of the post-sale restraint is denied automatically, with no consideration of the restraint's purpose or effect. This means that market power, competitive effects and implications for innovation are all irrelevant."[294] Here, he notes that antitrust law and patent misuse are more finely calibrated instruments better suited to the task.[295]

III. EXHAUSTION, ANTITRUST, AND PATENT MISUSE

In addition to patent exhaustion, Monsanto has been involved in cases where allegations of patent misuse or antitrust violations have been raised.[296] Even though courts recite that patents "do not

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292. *Id*. at 1374-75 ("A 'sale' limitation would indeed be inconsistent with the Supreme Court's decision in *McQuewan*, where the particular machines at issue had never been sold, but had instead been manufactured by the accused infringer with the permission of the patentee. Yet that lack of a 'sale' was no barrier to the application of patent exhaustion. Because the machines had been constructed with the patentee's authorization and were the 'private, individual property' of the accused infringer, they were 'no longer under the protection of' the Patent Act." (citations omitted)).

293. *Id*. at 1375.

294. Hovenkamp, *supra* note 93, at 541.

295. *Id*. at 531 ("Rule of reason analysis under the antitrust laws or perhaps patent misuse doctrine seems more appropriate to the task.").

296. *See*, *e.g*., Monsanto Co. v. Spray-Rite Serv. Corp., 465 U.S. 752 (1984) (discussing how a distributor of agricultural herbicides brought antitrust suit against the manufacturer alleging Monsanto conspired with other distributors to fix resale prices and terminated plaintiff for price-cutting); Monsanto Co. v. Scruggs, 459 F.3d 1328, 1339 (Fed. Cir. 2006) (discussing a farmer accusing Monsanto of misuse and antitrust violations through its "seed grower incentive programs, its seed partner license agreements, its grower license agreements, and its alleged refusal to sell Roundup Ready® cotton seeds without the Bollgard trait"); Monsanto Co. v. McFarling, 363 F.3d 1336, 1342 (Fed. Cir. 2004) (discussing a farmer accusing Monsanto of misuse and antitrust violations by refusing to allow the "untying" of

confer a privilege to violate the antitrust laws,"[297] challenges against Monsanto have fared dismally. Courts rejected antitrust accusations on the basis of the "scope of the patent" approach unless there was a per se violation, which only happened once.[298] Misuse allegations fared even worse. No court applying the "scope of the patent" test has found Monsanto guilty of misuse.[299]

Like the law on patent exhaustion, the law on patent misuse has been misapplied by the Federal Circuit. According to the Federal Circuit, for misuse to be found, the patentee had to have broadened "'the scope of the patent grant with anticompetitive effect.'"[300] In doing so, the Federal Circuit imported antitrust law's requirement of anticompetitive effects into misuse and reformulated it as an "antitrust-lite" doctrine, despite Supreme Court precedent expressly rejecting an antitrust basis for misuse and turning instead to patent policy for that basis.[301]

"the seed and the trait by permitting the farmer to save and replant ROUNDUP READY® seed each year, provided the farmer still pays directly to Monsanto the required technology fee, rather than requiring a farmer to purchase both the seed and the genetic technology together at the beginning of each growing season").

297. *In re* Indep. Serv. Orgs. Antitrust Litig. v. Xerox Corp., 203 F.3d 1322, 1325 (Fed. Cir. 2000); Simpson v. Union Oil Co. of Cal., 377 U.S. 13, 24 (1964) ("The patent laws . . . are *in pari materia* with the antitrust laws and modify them *pro tanto*.").

298. Based on a Westlaw search of all reported cases where Monsanto was named as a party in an antitrust suit. *See, e.g.*, Schoenbaum v. E.I. Dupont De Nemours & Co., 517 F. Supp. 2d 1125, 1143-44 (E.D. Mo. 2007) (rejecting Monsanto's justification that it was "simply exercising its rights under its patent grant," noting instead that "[w]hile a patent holder enjoys certain statutory rights, those rights are not unbounded," and that conspiring with rivals to fix prices can result in an antitrust violation).

299. A Lexis opinion search was conducted in the Lexis Federal Court Cases, Combined database: "patent misuse" or patent w/3 misuse and date (geq (1/1/1953) and leq (12/31/2013)) and parsed for cases where Monsanto was a named party.

300. *McFarling*, 363 F.3d at 1341 (quoting C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1372 (Fed. Cir. 1998)). Only where the conduct exceeded that scope would conduct be judged under per se rules or the rule of reason for categories of conduct mirroring antitrust law.

301. Morton Salt Co. v. G. S. Suppiger Co., 314 U.S. 488, 492 (1942) ("But the public policy which includes inventions within the granted monopoly excludes from it all that is not embraced in the invention. It equally forbids the use of the patent to secure an exclusive right or limited monopoly not granted by the Patent Office and which it is contrary to public policy to grant."), *abrogated on other grounds by* Ill. Tool Works Inc. v. Indep. Ink, Inc., 547 U.S. 28 (2006); *see also* Hovenkamp, *supra* note 93, at 493 ("The competitive rationale for the 'misuse' doctrine has never been articulated properly in the courts, except for attempts to

The Federal Circuit's proviso that "[i]n the cases in which the restriction is reasonably within the patent grant, the patent misuse defense can never succeed"[302] meant that the test, while appearing to be a hybrid test, essentially still adopted the "scope of the patent" approach. The Federal Circuit affirmed the approach in subsequent cases.[303] Anticompetitive effects that result, whether in the context of an allegation of misuse or antitrust, are excused as being within their scope of the rights.

A. A Primer on Antitrust and Patent Misuse

Professor John Duffy noted that "[t]he patent system can best be understood in reference to the theories and policies undergirding property, competition, and natural monopoly regulation."[304] Exhaustion, antitrust law, and misuse overlap like three circles in a Venn diagram.[305] Screwdrivers can be used to hammer or pry if necessary, but other tools are better suited for the task. It follows that exhaustion should be used as part of a legal toolbox.

The antitrust and patent laws both seek to correct market failure: antitrust law by restraining anticompetitive harm and patent

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identify it with antitrust policy or to identify the harm as an improper 'extension' of an IP right.").

302. *McFarling*, 363 F.3d at 1341; *see also* HERBERT HOVENKAMP ET AL., IP AND ANTITRUST: AN ANALYSIS OF ANTITRUST PRINCIPLES APPLIED TO INTELLECTUAL PROPERTY LAW § 3.2c (2d ed. Supp. 2011 & 2012) (noting that with this statement in "*Monsanto Co. v. McFarling*, the Federal Circuit elevated the broadening rationale to a bright-line rule" (citation omitted)).

303. Monsanto Co. v. Scruggs, 459 F.3d 1328, 1340-41 (Fed. Cir. 2006) ("[P]atent misuse covers only activity falling outside of the patent grant, and Scruggs did not point to any activity falling outside Monsanto's patent."); *see also*, *e.g.*, Monsanto Co. v. Ralph, 382 F.3d 1374, 1384 (Fed. Cir. 2004) (describing Monsanto's licensing restrictions as its "prerogative"); *In re* Indep. Serv. Orgs. Antitrust Litig. v. Xerox Corp., 203 F.3d 1322, 1327 (Fed. Cir. 2000) (concluding that an antitrust claim "does nothing to limit the right of the patentee to refuse to sell or license in markets within the scope of the statutory patent grant"); Va. Panel Corp. v. MAC Panel Co., 133 F.3d 860, 873 (Fed. Cir. 1997) ("[B]ecause we determine that the conduct underlying the allegations of misuse does not amount to patent misuse, the same conduct cannot support a judgment that [the patentee's/licensor's] conduct violated the Sherman Act.").

304. John F. Duffy, *Rethinking the Prospect Theory of Patents*, 71 U. CHI. L. REV. 439, 510 (2004).

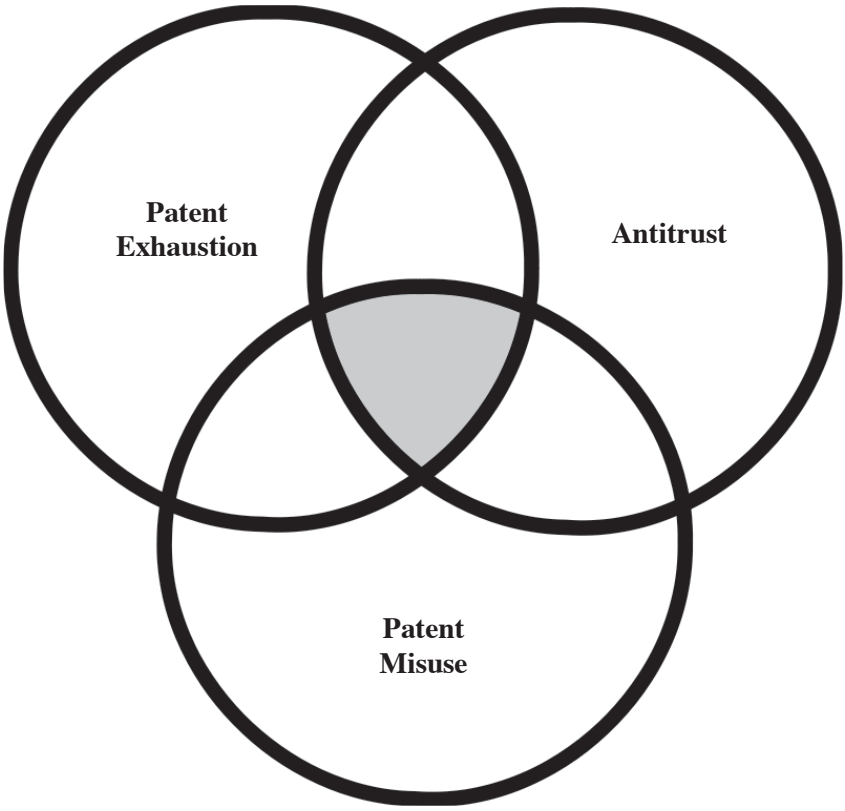
305. Hovenkamp, *supra* note 93, at 493 ("While these three doctrines—first sale, antitrust, and misuse—originated at different times and addressed different issues, they largely merged during the first half of the twentieth century.").

law by ensuring sufficient returns to inventors.[306] Yet, post-sale restraints or litigation to prevent resale in the absence of those restraints can give rise to all three.[307] As discussed in Part II, exhaustion seeks to sever the bonds that would otherwise encumber end users downstream and overcompensate patentees beyond the revenue earned from their first sale.[308]

306. *See* Herbert Hovenkamp, *Antitrust and the Patent System: A Reexamination*, OHIO ST. L.J. (forthcoming 2015) (manuscript at 8), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2486633 ("Antitrust Law's principal purpose is to correct market failures brought about by lack of competition or to discipline activities that seek to limit it. The patent system is intended to correct market failures that result when inventors cannot effectively appropriate the returns to their inventions.").

307. *See, e.g.*, Quanta Computer, Inc. v. LG Elecs., Inc., 553 U.S. 617, 638 (2008) (holding an infringement suit defeated because patentee's method patents exhausted by first sale); United States v. Univis Lens Co., 316 U.S. 241, 252 (1942) (holding that resale price maintenance was barred by authorized first sale of item that sufficiently embodies patents); Broadcom Corp. v. Qualcomm Inc., No. 08cv1829 WQH (LSP), 2009 WL 684835, at *3 (S.D. Cal. Mar. 12, 2009) (stating that the defendant sought declaratory judgment of patent misuse from violation of the patent exhaustion doctrine by seeking royalties on wireless communication devices).

308. Ernst, *supra* note 258, at 479 (noting that patent exhaustion is concerned about "innovation because it limits the right of exclusion from being passed down the chain of production and distribution. To the extent the right of exclusion spreads through the chain of production to prohibit parties who are remote from the patent holder from using a licensed product, it can inhibit such third parties from innovating by combining the licensed product with their own innovations").



Antitrust law is primarily concerned with protecting consumer welfare from anticompetitive acts or agreements between entities with appreciable market power by maintaining the robustness of market competition.[309] Antitrust policy believes consumers profit from economic growth and are hurt by restrictions that exclude rivals without providing offsetting benefits.[310] It looks at the world through the lens of price theory and seeks direct or circumstantial evidence of anticompetitive harm that reduces consumer welfare.[311] Antitrust law therefore seeks to expand output, increase quality and variety, and

309. Jacobs v. Tempur-Pedic Int'l, Inc., 626 F.3d 1327, 1339 (11th Cir. 2010) ("[C]onsumer welfare, understood in the sense of allocative efficiency, is the animating concern of the Sherman Act.").

310. *See generally* Herbert Hovenkamp, *Consumer Welfare in Competition and Intellectual Property Law*, 9 Competition Pol'y Int'l 53 (2014).

311. ROBERT BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF 116 (1978) (noting that antitrust is based on price theory, which "assures us that economic behavior . . . is *primarily* directed toward the maximization of profits").

reduce costs.[312] Allowing patentees to control prices in goods sold could result in allocative inefficiency. In contrast to patent law, which proactively encourages promoting innovation through the conferment of exclusive rights, antitrust law does not goad patent owners to promote competition, only to refrain from injuring it.[313]

While antitrust law explicitly invites courts to consider the effects of firm conduct, the Patent Act is silent about requiring courts to do the same with patentees.[314] Patent policy stems from the belief that consumers benefit from a well-functioning patent system that promotes innovation. It is primarily concerned about the generation of new ideas, and fostering competition is a beneficial side effect of that.[315] It "reflects a [careful] balance between the need to encourage innovation and the avoidance of monopolies which stifle competition without any concomitant" technological advancement.[316] Thus, the right balance is to narrowly construe patent rights: "Since patents are privileges restrictive of a free economy, the rights which Congress has attached to them must be strictly construed so as not to derogate from the general law beyond the necessary requirements of the patent statute."[317]

Other aspects of patent law also reflect this quid pro quo. Patents must be novel, nonobvious, and adequately disclosed; are limited to specific forms of subject matter; and must be useful.[318] The patent system rewards the first inventor to file, and the patent term is generally limited to twenty years from the effective filing date. It

312. *See* Hovenkamp, *supra* note 306 (manuscript at 14).

313. I am grateful to Professor Mike Jacobs for this insight.

314. For one view on this, see Hovenkamp, *supra* note 306 (manuscript at 32) ("To say this more bluntly, the only time patent law pays much attention to markets is when the law incorporates antitrust principles.").

315. Christina Bohannan, *IP Misuse as Foreclosure*, 96 IOWA L. REV. 475, 499 (2011) ("IP law's role as the engine of innovation also gives it an independent interest in enhancing competition. Competitive conditions affect a firm's incentives and ability to enter the market with new and innovative products.").

316. Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 146 (1989); Atari Games Corp. v. Nintendo of Am., Inc., 897 F.2d 1572, 1576 (Fed. Cir. 1990) ("[A] patent owner may not take the property right granted by a patent and use it to extend his power in the marketplace improperly, i.e. beyond the limits of what Congress intended to give in the patent laws."); *see also* Bohannan, *supra* note 315, at 479 (noting that the Federal Circuit's reformulation "undervalues the fact that the roots of misuse doctrine lie in IP policy, not in antitrust policy, and IP policy has its own reasons for limiting overreaching in IP").

317. *See* United States v. Masonite Corp., 316 U.S. 265, 280 (1942).

318. 35 U.S.C. §§ 101-03, 112 (2012).

incentivizes early and complete disclosure, and it moves the technology into the public domain.[319]

Patent misuse is a defense that shields defendants from patentees who attempt to run roughshod over patent policy. While also concerned about competition, patent misuse focuses on deterring harm to the integrity of the patent system. For instance, patent misuse prohibits arrangements that tie up property rights post-patent expiration.[320] If a patented machine had been sold, royalties are due under the pain of patent remedies until expiration and under the pain of contractual remedies thereafter.[321] Parties may agree to post-expiration royalties for pre-expiration use of the invention.[322] It is the extension of the patent right, not the royalty, that is prohibited by patent policy.[323] Just as in the case of exhaustion, allowing patentees to extend their right to sue for patent infringement gives them a bargaining chip in negotiations to inflate the royalties they can accrue during the life of their patent. The analysis and result is

319. John F. Duffy et al., *2013 National Lawyers Convention: Intellectual Property: Intellectual Property, Free Markets, and Competition Policy*, 37 HAMLINE L. REV. 523, 524 (2014) (observing that patent law "always permits free entry into the race to obtain patents. Patent systems encourage technological races to invent, and that is one of the major benefits of the patent system. . . . [R]acing to obtain patent rights also has a benefit that many people forget about, which is that the sooner that the technology is patented, the sooner it enters into the public domain").

320. Brulotte v. Thys Co., 379 U.S. 29, 30 (1964) (holding a license requiring royalty payment on a machine post-patent expiration unenforceable "insofar as" it required such royalties); Hovenkamp, *supra* note 306 (manuscript at 70).

321. *Brulotte*, 379 U.S. at 32.

322. *See, e.g.*, ABA SECTION OF ANTITRUST LAW, INTELLECTUAL PROPERTY AND ANTITRUST HANDBOOK 496 (2007) (stating that patent misuse "does not prohibit intellectual property owners from allowing licensees to satisfy payment obligations on a deferred schedule that extends beyond the life of the patent"); DARYL LIM, PATENT MISUSE AND ANTITRUST LAW: EMPIRICAL, DOCTRINAL AND POLICY PERSPECTIVES 107 (2013) (stating that *Brulotte* is sensitive to "the need to allow parties to contract freely").

323. *Brulotte*, 379 U.S. at 32 (holding that the patentee made "a bald attempt to exact the same terms and conditions for the period after the patents have expired as . . . for the monopoly period"); *id*. at 31-32 (holding that the patentee attempted to prevent machines from being removed from Yakima County before and after patent expiration); *see also* Lim, *supra* note 229, at 336 (stating that *Brulotte* should remain good law).

consistent in both instances.[324] Misused patents are rendered unenforceable until the "baleful effects" of the misuse are purged.[325]

Patent misuse differs from exhaustion because it applies to sales, leases, and licenses, thereby reaching corners of commerce where exhaustion would not.[326] The recent Ninth Circuit decision in *Omega S.A. v. Costco Wholesale Corp.* provides a useful illustration of how patent misuse could operate on facts that would also give rise to exhaustion but with a different basis from antitrust law.[327]

B. Lessons from Copyright Misuse

Omega sued Costco for copyright infringement because it sold forty-three genuine Omega watches engraved with a copyrighted Omega design without Omega's authorization. The district court found that attempting to control the importation and downstream sale of Omega watches following an authorized sale amounted to copyright misuse. However, the majority of the Ninth Circuit panel chose to find for Costco on the basis of copyright exhaustion because Costco raised the defense in a filing prior to oral argument.[328]

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324. *See* Hovenkamp, *supra* note 306 (manuscript at 77) ("*Brulotte* is really nothing more than a variant of the first sale doctrine, applied to post-expiry royalties.").

325. U.S. Gypsum Co. v. Nat'l Gypsum Co., 352 U.S. 457, 465-66 (1957) ("It is now, of course, familiar law that the courts will not aid a patent owner who has misused his patents to recover any of their emoluments accruing during the period of misuse or thereafter until the effects of such misuse have been dissipated, or 'purged' as the conventional saying goes. The rule is an extension of the equitable doctrine of 'unclean hands' to the patent field." (citations omitted)).

326. Hovenkamp, *supra* note 93, at 511 ("Misuse, another judge-made doctrine that was not fully developed until the 1942 *Morton Salt* decision, could apply to both sales and leases of a patented good as well as licenses; thus it applied in many situations when the first sale doctrine would not." (footnote omitted)).

327. 776 F.3d 692 (9th Cir. 2015).

328. *Id.* at 695 ("[A]pplication of the first sale doctrine disposes of Omega's claim, resolves this case in Costco's favor, and conclusively reaffirms that copyright holders cannot use their rights to fix resale prices in the downstream market."); *see also id.* at 694 n.1 (noting Costco raised the argument based on the Supreme Court's intervening decision in *Kirtsaeng v. John Wiley & Sons, Inc.*, 133 S. Ct. 1351 (2013)). Copyright exhaustion also provides guidance to the extent of patent exhaustion. The Copyright Act provides that copyright exhaustion "modifies the copyright owner's *distribution* right, but not his *reproduction* right." Sheff, *supra* note 95, at 252 & n.106 (citing 17 U.S.C. § 109(a) (2012) ("qualifying the distribution right of 17 U.S.C. § 106(3), but not the reproduction right of 17 U.S.C. § 106(1)")).

Judge Wardlaw issued a concurring opinion on finding for Costco on the basis of copyright misuse[329] and found misuse because Omega attempted to use its copyright in its design to restrict downstream competition in its watches.[330] She began by noting that the constitutional policy and sole rationale for granting copyright protection was "'to stimulate artistic creativity for the general public good.'"[331]

According to Judge Wardlaw, both antitrust and copyright policies were relevant in determining the proper scope of the owner's exclusive rights[332] and that copyright misuse was judicially crafted "to combat the impermissible extension of a copyright's limited monopoly."[333] Thus, copyright misuse "is not limited to discouraging anti-competitive behavior," but to restrain copyright from "'being used in a manner violative of the public policy embodied in the grant of a copyright.'"[334] She concluded that "Omega's expansion of its

329. *Omega*, 776 F.3d at 696 (Wardlaw, J., concurring) (chiding the majority for "fail[ing] to do justice to the facts presented by this unique lawsuit"); *see also id*. ("The district court granted summary judgment and awarded attorney's fees to Costco based on the defense of copyright misuse. The majority affirms the district court relying upon the *Kirtsaeng*-resurrected first sale doctrine; a doctrine we held inapplicable the first time around, and which the parties did not brief or argue in this appeal.").

330. *Id*. at 701 ("Omega attempted to use the copyrighted Globe Design to decrease competition in the U.S. importation and distribution of its watches by it and its authorized dealers—an obvious leveraging of a copyright to control an area outside its limited monopoly on the design.").

331. *Id*. at 698 (quoting Twentieth Century Music Corp. v. Aiken, 422 U.S. 151, 156 (1975)); *see also id*. ("'Implicit in this rationale is the assumption that in the absence of such public benefit, the grant of a copyright monopoly to individuals would be unjustified.'" (quoting 1 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 1.03[A] (2014)); *id*. (quoting United States v. Paramount Pictures, 334 U.S. 131, 158 (1948) ("The copyright law, like the patent statutes, makes reward to the owner a secondary consideration.").

332. *Id*. at 699 ("An owner's attempt to impermissibly expand his lawful protection from competition contravenes not only the policy of the copyright laws, but also the central purpose of the antitrust laws.").

333. *Id*.

334. *Id*. (quoting Lasercomb Am., Inc. v. Reynolds, 911 F.2d 970, 978 (4th Cir. 1990)); *see also* Assessment Techs. of WI, LLC v. WIREdata, Inc., 350 F.3d 640, 647 (7th Cir. 2003) ("The argument for applying copyright misuse beyond the bounds of antitrust, besides the fact that confined to antitrust the doctrine would be redundant, is that for a copyright owner to use an infringement suit to obtain property protection, here in data, that copyright law clearly does not confer, hoping to force a settlement or even achieve an outright victory over an opponent that may lack the resources or the legal sophistication to resist effectively, is an abuse of process.").

copyright-like monopoly eliminated competition from unauthorized watch retailers like Costco, thereby allowing [it] to control . . . the retail pricing of Seamaster watches sold in the United States. . . . [S]uch an outcome directly controverts the aims of copyright law."[335]

Judge Wardlaw's reasoning stands in contrast to the Supreme Court's antitrust opinion in *Leegin Creative Leather Products, Inc. v. PSKS, Inc.*, which overturned its own per se prohibition against resale price maintenance in favor of a rule of reason analysis.[336] The majority justified its decision on the basis that antitrust policy favored interbrand competition over intrabrand competition, which was promoted by the resale price maintenance restrictions.[337] Also in contrast to antitrust law, intent was relevant to the determination of liability.[338] Judge Wardlaw rejected Omega's argument that anticompetitive motives were irrelevant on the basis that the "definition [of] 'use' includes an inquiry into [its] purpose."[339] The facts showed that customers could buy Omega's watches at 35% less at Costco but for Omega's lawsuit. This "reduction of intrabrand price competition for uncopyrightable Omega watches" constituted misuse.[340]

In essence, Judge Wardlaw undertook an effects-based analysis of Omega's conduct. This echoes the Supreme Court's decision in *Federal Trade Commission v. Actavis*, requiring lower courts to apply the rule of reason in determining whether settlements between patentees and potential generic rivals violated antitrust law.[341] There,

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335. *Omega*, 776 F.3d at 704 (Wardlaw, J., concurring).

336. 551 U.S. 877 (2007).

337. *Id.* at 890-92. According to the Court, intrabrand competition encouraged retailers to invest in services or promotional efforts that aid manufacturers in competing against their rivals. Resale price maintenance also gave consumers more tiered price and quality options, which free riding retailers might eliminate. *Id.*

338. *In re* Indep. Serv. Orgs. Antitrust Litig. v. Xerox Corp., 203 F.3d 1322, 1327-28 (Fed. Cir. 2000) (refusing to inquire into the patentee's intent "so long as that anticompetitive effect is not illegally extended beyond the statutory patent grant").

339. *Omega*, 776 F.3d at 701 (Wardlaw, J., concurring).

340. *Id.*

341. 133 S. Ct. 2223, 2238 (2013); Cont'l T.V., Inc. v. GTE Sylvania Inc., 433 U.S. 36, 49 (1977); *see also* United States v. Brown Univ., 5 F.3d 658, 668-72 (3d Cir. 1993) (noting that the plaintiff bears the initial burden of showing the alleged anti-competitive effects through direct evidence via raised prices, lower output or quality, or in the alternative, circumstantial evidence of market power; then the defendant must offer pro-competitive justifications; and then the plaintiff can refute that the restraint is unnecessary to achieve the stated objective). In

the Court debunked the notion that conduct within the "scope of the patent" circumscribes antitrust scrutiny only to instances where there was sham litigation or fraud on the patent office. The Court was clear that even if the patents in suit were valid and infringed, it wanted explanations for those settlements.[342] Like Judge Wardlaw, the *Actavis* Court also stated that the appropriate scope of patent rights was defined with reference to both patent and antitrust policies.[343]

It is worth pausing briefly to deal with the objection that *Actavis* only applies to cases within the Hatch–Waxman framework.[344] As an initial matter, just because the Court articulated

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contrast, per se prohibitions condemn specific practices such as horizontal price fixing or market divisions that are "conclusively presumed to be unreasonable." *See* N. Pac. Ry. Co. v. United States, 356 U.S. 1, 5 (1958).

342. *Actavis*, 133 S. Ct. at 2230 ("Solvay's patent, if valid and infringed, might have permitted it to charge drug prices sufficient to recoup the reverse settlement payments it agreed to make to its potential generic competitors. And we are willing to take this fact as evidence that the agreement's 'anticompetitive effects fall within the scope of the exclusionary potential of the patent.' But we do not agree that that fact, or characterization, can immunize the agreement from antitrust attack." (citation omitted) (quoting Fed. Trade Comm'n v. Watson Pharm., Inc., 677 F.3d 1298, 1312 (11th Cir. 2012))); *id*. at 2237 ("Although the parties may have reasons to prefer settlements that include reverse payments, the relevant antitrust question is: What are those reasons? If the basic reason is a desire to maintain and to share patent-generated monopoly profits, then, in the absence of some other justification, the antitrust laws are likely to forbid the arrangement."); *see also id*. at 2244 (Roberts, C.J., dissenting) ("The majority seems to think that *even if* the patent is valid, a patent holder violates the antitrust laws merely because the settlement took away some chance that his patent would be declared invalid by a court.").

343. *Id*. at 2225 (majority opinion) ("[T]o refer simply to what the holder of a valid patent could do does not by itself answer the antitrust question. . . . [I]t would be incongruous to determine antitrust legality by measuring the settlement's anticompetitive effects solely against patent law policy, and not against procompetitive antitrust policies as well. Both are relevant in determining the scope of monopoly and antitrust immunity conferred by a patent . . . .").

344. The Hatch–Waxman Act was designed to encourage entry by generics who would assert drug patents that were invalid or not infringed by their bioequivalent offering. To incentivize challenges, the Act allowed the first successful challenger to share a 180-day duopoly with the patentee. Studies indicate that prices fall by as much as 80% compared to those pre-generic entry. *See* UNITED STATES, GENERIC PHARMACEUTICALS (2014), *available at* http://www.ftc.gov/system/files/attachments/us-submissions-oecd-other-international-competitionfora/generics_us_oecd.pdf (updating statistics on pharmaceutical pricing in the wake of generic entry); *see also, e.g*., Kevin D. McDonald, *Because I Said So: On the Competitive Rationale of* FTC v. Actavis, ANTITRUST, Fall 2013, at 36, 42 ("Perhaps the only good news for these courts is that the *Actavis* 'analysis' by its terms applies only to Hatch-Waxman patent cases.").

its holdings within Hatch–Waxman litigation does not automatically mean that they do not have more general application. Recently in *Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc.*, the Court rejected the Federal Circuit's long-standing practice of reviewing district court patent claim construction rulings without deference.[345] *Teva* involved drug patents litigated under the same Hatch–Waxman framework as *Actavis*.[346] Notwithstanding this, commentators have noted that "Teva could have broad-ranging implications for clients in the procurement and enforcement of their patent rights."[347]

Similarly *Actavis* was hailed by Professor Michael Carrier as potentially "one of the most important patent/antitrust rulings of all time."[348] Professor Mark Lemley also observed that the Court's conclusion that patent scope is defined by both patent and antitrust policy is "a very different conception of the rule of antitrust vis-à-vis patents than we've had in certainly the last 40 years, which has been that patent law decides what its scope is and then antitrust polices the boundaries to make sure you don't extend that scope."[349] Based on this, he predicted that "patent and antitrust are headed for a much more dynamic interaction . . . in trying to decide what the proper

345. 135 S. Ct. 831, 833 (2015).

346. *See, e.g.*, Daniel E. Yonan & Jon E. Boljesic, *Practice Considerations Post* Teva v. Sandoz, NAT'L L. REV. (Jan. 30, 2015), http://www.natlawreview.com/article/practice-considerations-post-teva-v-sandoz ("Sandoz, as a generic pharmaceutical challenger under the Hatch–Waxman Act, attacked the patent as indefinite because it contained claim language describing an active pharmaceutical ingredient having a 'molecular weight of 5 to 9 kilodaltons.'").

347. *Id.*; *see also* David C. Berry, *Supreme Court Limits Federal Circuit's Ability to Revise Claim Construction on Appeal*, PATLIT BLOG (Jan. 21, 2015), https://www.primaryopinion.com/articles/supreme-court-limits-federal-circuit%E2%80%99s-ability-revise-claim-construction-appeal ("[Teva] is likely to introduce important strategic issues in patent cases, especially relating to conduct of claim construction proceedings.").

348. Michael Carrier, *The U.S. Supreme Court Issues First Ruling on Antitrust Legality of Reverse-Payment Drug Patent Settlements (*Actavis*)*, E-COMPETITIONS (July 2013), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2293867; *see also Supreme Court Issues Significant Patent Antitrust Decision Rejecting the "Scope of the Patent" Rule*, Perkins Coie (June 18, 2013), http://www.perkinscoie.com/news/pubs_Detail.aspx?publication=869018d4-0267-49b4-8c26-991255646b19 (describing *Actavis* as "the most significant patent antitrust decision in decades . . . The implications of the decision beyond reverse payment cases are yet to be determined").

349. *IP Law and Innovation with Mark A. Lemley and A. Douglas Melamed*, STAN. LAW. (Nov. 14, 2014), http://stanfordlawyer.law.stanford.edu/2014/11/ip-law-and-innovation-with-mark-a-lemley-and-a-douglas-melamed/.

scope of a patent right is."[350] Since *Actavis* is the first patent/antitrust ruling the Court made in the Hatch–Waxman context these observations would make no sense at all if observations about the "scope of the patent" test were limited only to that context.

Looking at the opinion itself, the Court dealt with the "scope of the patent" issue in the first portion of Part II.A of its opinion before moving to settlement agreements generally in the second potion of Part II.A. In Part II.B, the court applied its analysis to reverse payments within the Hatch–Waxman framework. In summing up its analysis and dismissing the "scope of the patent" approach in Part II.A (prior to dealing with settlement agreements), it stated that

> In short, rather than measure the length or amount of a restriction solely against the length of the patent's term or its earning potential . . . this Court answered the antitrust question by considering traditional antitrust factors such as likely anticompetitive effects, redeeming virtues, market power, and potentially offsetting legal considerations present in the circumstances, such as here those related to patents. Whether a particular restraint lies "beyond the limits of the patent monopoly" is a *conclusion* that flows from that analysis and not . . . its starting point.[351]

None of the precedents cited by the Court itself in justifying its preference for an effects-focused analysis over the "scope of the patent" approach had anything to do with Hatch–Waxman litigation. Finally, a careful reading of both the majority and dissent shows that both sides were gridlocked over the broader question—whether settlements within the patent scope should be scrutinized at all.[352] Further afield in *Lundbeck*, the European Commission recently concluded in the context of a regime that did not operate under Hatch–Waxman framework that patent settlements between drug patentees and their generic rivals were subject to scrutiny under competition law.[353] All these signs point to a change in a shift away

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350. *Id*.

351. Fed. Trade Comm'n v. Actavis, Inc., 133 S. Ct. 2223, 2231-32 (2013) (citation omitted).

352. *Id*. at 2238 (Roberts, C.J., dissenting) ("The point of antitrust law is to encourage competitive markets to promote consumer welfare. The point of patent law is to grant limited monopolies as a way of encouraging innovation. Thus, a patent grants 'the right to exclude others from profiting by the patented invention.' In doing so it provides an exception to antitrust law, and the scope of the patent—*i.e*., the rights conferred by the patent—forms the zone within which the patent holder may operate without facing antitrust liability." (citation omitted) (quoting Dawson Chem. Co. v. Rohm & Haas, 448 U.S. 176, 215 (1980))).

353. *See* Bernardine Adkins & Samuel Beighton, *Paying for Delay and Patent Settlement Arrangements - the European Commission (at Last) Publishes the* Lundbeck *Decision*, WRAGGE LAWRENCE GRAHAM & CO. (Jan. 29, 2015),

from the "scope of the patent" approach beyond the Hatch–Waxman framework.

Patents are rarely coextensive with monopoly power. To the extent they create barriers to competition, these barriers may simply be a function of the exclusionary rights conferred by the patent. At the same time, it is remarkable that the application of antitrust law to patentee conduct within the scope of their patents should be remarkable at all. It is hornbook law that even validly obtained patent rights are subject to other laws, whether they are health and safety regulations imposed under the Food and Drug Authority or consumer protection laws enforced by the Federal Trade Commission.

In surveying the history of judicial scrutiny of patent rights, Professor Jorge Contreras observed the twentieth century is full of instances where companies were found to have abused patent rights despite acting within their "scope."[354] Just like any other property-owning business, they must account for their actions even when they fall within the scope of the patents. The Court of Appeals for the D.C. Circuit in *United States v. Microsoft Corp.* deemed Microsoft's argument that lawfully acquired intellectual property rights cannot give rise to antitrust liability as "border[ing] upon the frivolous."[355] It explained that it "is no more correct than the proposition that use of one's personal property, such as a baseball bat, cannot give rise to tort liability."[356] The Supreme Court has also been unequivocal that patent cases should not treated differently from their non-patent counterparts.[357]

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http://www.wragge-law.com/insights/paying-for-delay-and-patent-settlement-arrangements-the-european-commission-(at-last)-publishes-th/ ("The fact that a patent (if found to be valid and infringed) grants the patent holder a right to exclude products falling within the scope of the patent does not mean that the patent holder necessarily complies with EU competition law by using any method to achieve the same exclusionary outcome." (emphasis omitted)).

354. Jorge L. Contreras, *A Brief History of FRAND*, ANTITRUST L.J. (forthcoming 2015), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2374983.

355. 253 F.3d 34, 63 (D.C. Cir. 2001).

356. *Id.*

357. *See, e.g., Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831 (2015) (requiring the Federal Circuit to give deference to claim construction determinations based on findings of fact); *Octane Fitness, LLC v. ICON Health & Fitness, Inc.*, 134 S. Ct. 1749 (2014) (clarifying that an "exceptional case" within meaning of the Patent Act's fee-shifting provision was the same as the standard generally applicable in civil actions); *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391-92 (2006)

Post-*Actavis*, formalistic line drawing based on the "scope of the patent" approach is past its legal shelf life.[358] And it is for the better. Any approach carving out broad zones of immunity risks being both over- and under-inclusive. One treatise author warned that

> a patentee could circumvent the patent exhaustion doctrine altogether by simply imposing resale price, territorial, or other competitive restrictions on what subsequent purchasers can do with its patented product even after they have paid full value for the product, and then argue that the restraint is immune from antitrust challenge because the product is patented.[359]

On the one hand, conduct outside of the scope that may benefit consumers or promote innovation may be condemned. On the other hand, judges' hands are tied if faced with restrictions that distort market competition or hurt innovation. The term "scope" also nothing to provide courts with a rule that can be comprehensively and consistently applied, particularly with licensing agreements that contain terms that are not expressly stated in the patent instrument.[360]

Actavis reflects the maturity and confidence of a court willing to eschew treating patentees with kid-gloves in favor of a more challenging but doctrinally robust approach. Courts no longer have the option of tiptoeing around calls to address harmful effects of activity taking place within the scope of patents owned by Monsanto or another patentee.[361] The treatment of patent misuse allegations

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(holding that injunctions in patent law should be granted in accordance with the principles of equity common to other areas of the law).

358. *See* Eastman Kodak Co. v. Image Technical Servs., Inc., 504 U.S. 451, 466-67 (1992) ("Legal presumptions that rest on formalistic distinctions rather than actual market realities are generally disfavored in antitrust law."); Lim, *supra* note 18, at 202-03 ("Since patent misuse analysis typically starts with the analysis of patent scope, the doctrine will likely have to be rethought in light of *Actavis* as well.").

359. HOLMES, *supra* note 268, § 17:4.

360. Bohannan, *supra* note 315, at 496 ("Most contract terms cover practices that technically fall outside the scope of the patent grant—otherwise, a contract would be unnecessary—but certainly not all of these practices are harmful to IP policy."); *see also id*. (noting that the beyond-the-scope test does not provide a meaningful way to determine which of these terms lies within the scope of the grant and which do not). Courts have applied "patent scope" at least three different ways. First, it can be defined by the claims in a patent instrument. Second, it can be defined physically by the embodiment of the invention, quintessentially in tying cases. Third, it can be defined temporally by the duration of the patent. *See* LIM, *supra* note 322, at 391-404.

361. *See*, *e.g*., Salvaggio, *supra* note 169, at 460-61 ("While antitrust and patent misuse were not issues on appeal in this case, Monsanto has gained an extreme amount of market power and has received favorable treatment in the courts

against Monsanto tracking the "scope of the patent" approach also requires rethinking.

IV. MONSANTO THROUGH THE LENS OF *ACTAVIS*

We owe much to Monsanto and other agrobiotech companies. Calls for greater scrutiny are understandably met with reservation. After all, as the adage goes, "if it ain't broke, don't fix it." But those skeptics need only look as far as other corporate leviathans—from tech giants like IBM,[362] Microsoft,[363] and Qualcomm[364] to drug companies like Servier,[365] Reckitt,[366] and Solvay[367]—to know that innovation and patent abuse are not mutually exclusive.

How can vigilance against harm to competition or innovation policy goals be balanced against preserving incentives to innovate and freedom to conduct business? One approach is to carve out a zone of immunity, intervening only in narrow instances such as fraud, sham litigation, or tying.[368] The alternative is to look at

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while maintaining a high degree of control over its goods following sale; the inability of existing limiting doctrines to capture or apply to the nature of Monsanto's goods yields a prime example of whether new limiting doctrines would need to be created to reign in the almost unconditional protection the company currently enjoys.").

362. *See* Rachel Konrad, *IBM and Microsoft: Antitrust Then and Now*, CNET NEWS (June 7, 2000, 2:50 PM), http://news.cnet.com/IBM-and-Microsoft-Antitrust-then-and-now/2100-1001_3-241565.html.

363. *See id*.

364. *See* Qualcomm Inc. v. Broadcom Corp., 548 F.3d 1004 (Fed. Cir. 2008); Daryl Lim, *Misconduct in Standard Setting: The Case for Patent Misuse*, 51 IDEA 559, 582 (2011) (discussing the case).

365. *See* Mark Rosman & Seth Silber, *DOJ's Investigation into Generic Pharma Pricing Is Unusual*, LAW360 (Nov. 12, 2014, 5:44 PM), http://www.law360.com/articles/595444/doj-s-investigation-into-generic-pharma-pricing-is-unusual.

366. *See* Jonathan H. Hatch & Robert P. LoBue, *Court Allows "Product Hopping" Claims to Proceed in Suboxone Litigation Based on Allegations of Removal of Prior Formulation and Disparagement of Generic Competition*, ANTITRUST UPDATE (Dec. 8, 2014), http://www.antitrustupdateblog.com/blog/court-allows-product-hopping-claims-to-proceed-in-suboxone-litigation/.

367. Fed. Trade Comm'n v. Actavis, Inc., 133 S. Ct. 2223, 2229 (2013).

368. *In re* Indep. Serv. Orgs. Antitrust Litig. v. Xerox Corp., 203 F.3d 1322, 1327-28 (Fed. Cir. 2000) ("In the absence of any indication of illegal tying, fraud in the Patent and Trademark Office, or sham litigation, the patent holder may enforce the statutory right to exclude others from making, using, or selling the claimed invention free from liability under the antitrust laws. We therefore will not inquire into his subjective motivation for exerting his statutory rights, even though his refusal to sell or license his patented invention may have an anticompetitive effect,

whether the patentee's justification in exercising its rights was merely a pretextual front for anticompetitive conduct as the Court did in *Actavis*.[369]

The former is easy to administer since drawing a large box and refusing to act on anything happening inside it means mostly doing nothing. A rule is clearer and provides certainty; a standard more precisely tracks policy goals, but its administration is more complex.[370] Operationalizing a standard "tread[s] a fine line between detailed prescription and inchoate principle."[371] Managing what is inside the box—moving from rules to a standards-based approach—involves more dicey determinations of why, when, and how. But it is more likely to bring about nuanced outcomes better aligned with policy goals.

This Part uses past cases where Monsanto had been accused of patent misuse or antitrust violations as an anecdotal canvas to illustrate how the effects-based standard can be successfully operationalized. It focuses on three critical features of that standard.

The first feature is that the standard must be supported by a coherent theory of harm to competition or innovation. Monsanto was most vulnerable under a theory of foreclosure. Antitrust commentators accuse Monsanto of leveraging its market power in the trait market to foreclose competition in the traited seed market through its anti-stacking provisions.[372] In comparison to antitrust

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so long as that anticompetitive effect is not illegally extended beyond the statutory patent grant.").

369. *See Actavis, Inc*., 133 S. Ct. at 2231 (noting that the reverse payments at issue were "unusual"); Image Technical Servs., Inc. v. Eastman Kodak Co., 125 F.3d 1195, 1219 (9th Cir. 1997) ("Neither the aims of intellectual property law, nor the antitrust laws justify allowing a monopolist to rely upon a pretextual business justification to mask anticompetitive conduct."); *see also* Data Gen. Corp. v. Grumman Sys. Support Corp., 36 F.3d 1147, 1188 (1st Cir. 1994) (stating that the presumption of legitimacy can be rebutted by evidence that the monopolist acquired the protection of the intellectual property laws in an unlawful manner).

370. Allen R. Kamp, *Jurisprudence: A Beginner's Simple and Practical Guide to Complex Legal Theory*, 2 CRIT: CRITICAL STUD. J. 62, 76, 78-81 (2009) (discussing the "good" and "bad" attributes of rules and standards).

371. *Id*. at 77 (citation omitted).

372. *See* Lina Khan, *How Monsanto Outfoxed the Obama Administration*, SALON (Mar. 15, 2013, 9:37 AM), http://www.salon.com/2013/03/15/how_did_monsanto_outfox_the_obama_administration/ ("Several experts agree that the strongest case the DOJ could have brought against Monsanto would focus on how it has used its monopoly in one market—the provision of genetic traits—both to exclude rivals and to gain advantage in another market: the breeding and retail of seeds.").

harm, patent misuse harm focuses on abuses of the patent right in contravention of patent policy. There is no need to show market power unless it is related to the tying of patented and unpatented goods, where the Patent Act specifically requires it.[373] Under both antitrust and misuse theories of harm from foreclosure, access is based on circumscribing the patentee's right based on supervening patent or antitrust policy. The terms of access may be determined by expert opinion, as they routinely are.

The second feature is that the one alleging the harm must show that patentees like Monsanto have or are at least capable of effecting that harm. Antitrust law requires the showing of actual harm or, in the alternative, market power. Patent misuse does not require a showing of market power. The ability to effect the harm alleged thus rises and falls with the credibility of the theory of foreclosure alleged as long as the conduct supporting that theory is undisputed. The third feature is that the approach should contain heuristics to make it administrable, such as harm to competition and innovation, and a shifting of burdens informed by judicial experience and economic learning in appropriate cases.

A. Developing a Theory of Harm

By the time *Actavis* prohibited market division agreements in the market for the patentee's drugs, its primary market, lower courts had already prohibited activities that foreclosed competition in related secondary markets in a number of antitrust cases.[374] But how do these precedents inform past cases involving Monsanto?

As an initial matter, restrictions on seed saving, the restriction at issue in *Bowman*, are the least controversial. Since future generations of seeds would rely on Monsanto's patents, no-replanting restrictions could simply be another way of saying that unauthorized "making" of new seeds would attract patent

373. 35 U.S.C. § 271(d) (2012) ("No patent owner otherwise entitled to relief for infringement or contributory infringement of a patent shall be denied relief or deemed guilty of misuse or illegal extension of the patent right by reason of . . . condition[ing] the license of any rights to the patent or the sale of the patented product on the acquisition of a license to rights in another patent or purchase of a separate product, unless, in view of the circumstances, the patent owner has market power in the relevant market for the patent or patented product on which the license or sale is conditioned.").

374. *See, e.g.*, United States v. Microsoft Corp., 253 F.3d 34, 84-85 (D.C. Cir. 2001) (finding tying Internet browser to operating system to be illegal).

infringement.[375] However, as discussed in Section II.B, the restrictions should add nothing to Monsanto's right to sue for infringement under the conditional sale doctrine. These private servitudes cannot be readily identified nor their value ascertained. Such costs and uncertainties should not be borne by end users but rather by a manufacturer and patentee negotiating at arm's length.[376] Suits against consumers previously sanctioned under the conditional sale doctrine should now attract scrutiny and, where appropriate, condemnation.[377]

Monsanto's other restrictions, previously sanctioned by courts, should be reexamined. These include technology fee payments,[378] restrictions on seed use,[379] offering discounts for carrying its seeds as a proportion of the distributors' inventory, restrictions preventing seed distributors from carrying or marketing rivals' seeds,[380] and anti-stacking provisions.[381] These restrictions undercut the argument that

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375. *See*, *e.g.*, Monsanto Co. v. McFarling, 302 F.3d 1291, 1298-99 (Fed. Cir. 2002); Monsanto Co. v. Scruggs, 459 F.3d 1328, 1340 (Fed. Cir. 2006) ("Monsanto has a right to exclude others from making, using, or selling its patented plant technology, and its no replant policy simply prevents purchasers of the seeds from using the patented biotechnology when that biotechnology makes a copy of itself. This restriction therefore is a valid exercise of its rights under the patent laws." (citation omitted)); Monsanto Co. v. Scruggs, 249 F. Supp. 2d 746, 753 (N.D. Miss. 2001) ("Without the prohibition against the saving of seed for replanting or resale, Monsanto's patent would soon be rendered useless by virtue of the potential for exponential multiplication of the seed containing its patented technology.").

376. *See* Love & Yoon, *supra* note 281, at 1631-35 (arguing that it would be more efficient for patentees and manufacturers to litigate the patent lawsuit).

377. *See* Molly Shaffer Van Houweling, *The New Servitudes*, 96 GEO L.J. 885, 932-50 (2008) (discussing why licensing servitudes running with personal property are harmful, even in the absence of anticompetitive effects sufficient to result in antitrust violations).

378. *See*, *e.g.*, Schoenbaum v. E.I. Dupont De Nemours & Co., 517 F. Supp. 2d 1125, 1137 (E.D. Mo. 2007) ("Courts considering the issue have held generally that the technology fee payments required by Monsanto's licensing agreements with seed growers, restrictions stipulated in the licensing agreements and restrictions on seed growers' use of the seed incorporating Monsanto's traits, are within the scope of Monsanto's patent rights and therefore do not violate antitrust law."); *Scruggs*, 459 F.3d at 1340-41 ("Monsanto's uniform technology fee is essentially a royalty fee, the charging of which is also within the scope of the patent grant.").

379. *See Scruggs*, 459 F.3d at 1340-41 (requiring the use of Roundup with Roundup Ready).

380. Christopher Leonard, *Monsanto Stomps Down Budding Seed Competitors*, USA Today (Dec. 14, 2009, 10:51 AM), http:// www.usatoday.com/money/industries/food/2009-12-14-monsanto-practices_N.htm.

381. *See* Monsanto Co. v. Scruggs, 342 F. Supp. 2d 568, 575 (N.D. Miss. 2004) (holding that such restrictions were "clearly field of use restrictions which fall

farmers want Monsanto's seed for its own sake, weakening the nexus between the commercial success of Roundup Ready and justifications based on rewarding innovation.

Anti-stacking restrictions seem particularly pernicious because they threaten to foreclose precisely the sort of cumulative innovation that injects competition through new and better products. This theory of harm has received significant traction. DuPont had intended to commercialize its Optimum GAT (OGAT) trait, which improved yields stacked with Monsanto's Roundup Ready trait.[382] Monsanto sued DuPont for patent infringement, obtaining a billion dollars in damages even though not a single stacked soybean had been sold because it was based on a hypothetical negotiation.[383] Monsanto and DuPont settled with the latter dropping its antitrust suit against Monsanto in exchange for stacking rights.[384]

Monsanto had also been the target of antitrust investigations by state and federal antitrust agencies for anticompetitive licensing restrictions involving patented traits and herbicides and refusing to allow varietal trait stacking.[385] State and federal agencies eventually closed their investigations after Monsanto made several commitments.[386] While Monsanto's private settlements are a move in the right direction, they have no precedential value and do nothing to clarify when and how access should be granted as well as on what terms.

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within the scope of the patent monopoly and are, therefore, lawful"); *Scruggs*, 459 F.3d at 1339.

382. *See* Bernard Chao & Jonathan R. Gray, *A $1 Billion Parable*, 90 DENV. U. L. REV. ONLINE 185, 185 (2013) ("DuPont had made no money for any sales of infringing seeds and Monsanto had lost no sales of its seeds because of DuPont's infringement. Nevertheless, the jury awarded one billion dollars in damages to Monsanto.").

383. *Id*. at 186-88 (discussing the reasonable royalty calculation).

384. Andrew Pollack, *Monsanto and DuPont Settle Fight over Patent Licensing*, N.Y. TIMES (Mar. 26, 2013), http://www.nytimes.com/2013/03/27/business/monsanto-and-dupont-settle-fight-over-roundup-ready-technology.html?_r=0 ("Under the terms of the agreement, announced Tuesday, DuPont will pay Monsanto at least $1.75 billion over 10 years for the rights to technology for genetically engineered soybeans that are resistant to herbicides.").

385. Pollack, *supra* note 132 ("Critics, including some competitors, say that Monsanto has great leverage over the seed business and growers through restrictive contracts that must be signed to use Monsanto's genes or to grow the genetically modified crops.").

386. Khan, *supra* note 372 ("Those close to the investigation also note that it became easier for officials to justify inaction because Monsanto cleaned up its act as soon as authorities came knocking.").

As a matter of antitrust law, one plausible theory of harm is the essential facilities doctrine. Generally, there is no duty to license rivals.[387] However, antitrust law prohibits vertically integrated companies from creating or maintaining their market power through limiting access to patented technology needed to compete in a secondary market.[388]

In *MCI Communications Corp. v. American Telephone & Telephone Co.*, the Court of Appeals for the Seventh Circuit held that where the owner denies access to competitors of an essential facility it controls that cannot be practically or reasonably duplicated, and that it can feasibly provide access to, antitrust law can require compulsory sharing of that facility.[389] In *Bellsouth Advertising v. Donnelly Information*, the court noted that although the essential facilities doctrine has been applied predominately to tangible assets, there is no reason why it could not apply to intellectual property.[390] While the Supreme Court is agnostic about an "essential facilities doctrine,"[391] it has recognized terminating a profitable course of prior dealing is evidence of the profit sacrifice element of a monopolization claim.[392]

An alternative antitrust theory of harm is Monsanto's refusal to license facilitates monopolization. In *Data General v. Grumman Systems Support*, the Court of Appeals for the First Circuit used an

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387. *See* United States v. Colgate & Co., 250 U.S. 300, 307 (1919).

388. United States v. Paramount Pictures, Inc., 334 U.S. 131, 141-44, 156-59 (1948) (tying patented machines and copyrighted films); Image Technical Servs., Inc. v. Eastman Kodak Co., 125 F.3d 1195, 1219-20 (9th Cir. 1997) (holding that Kodak's refusal to sell patented parts to ISOs constituted monopoly leveraging from parts to servicing). *But see In re* Indep. Serv. Orgs. Antitrust Litig. v. Xerox Corp., 203 F.3d 1322, 1329 (Fed. Cir. 2000) (holding that Xerox's refusal to sell patented parts to ISOs did not violate the antitrust laws).

389. 708 F.2d 1081, 1132-33 (7th Cir. 1983) (condemning AT&T's refusal to grant competing suppliers of long distance telephone services access to local telephone facilities that it controlled).

390. 719 F. Supp. 1551, 1566 (S.D. Fla. 1988), *rev'd on other grounds*, 999 F.2d 1436 (11th Cir. 1993).

391. Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398, 411 (2004) ("We have never recognized such a doctrine, and we find no need either to recognize it or to repudiate it here." (citation omitted)). *But see* 1 HERBERT HOVENKAMP ET AL., IP AND ANTITRUST: AN ANALYSIS OF ANTITRUST PRINCIPLES APPLIED TO INTELLECTUAL PROPERTY LAW § 13.3c1 (2d ed. Supp. 2014) (calling out the Court for engaging in "revisionist history").

392. *Trinko*, 540 U.S. at 409 ("[U]nilateral termination of a voluntary *(and thus presumably profitable)* course of dealing suggested a willingness to forsake short-term profits to achieve an anticompetitive end.").

approach that seemed prescient of *Actavis*.[393] It sought to read the copyright and antitrust statues in light of each other by scrutinizing the exercise of the exclusionary rights under copyright law, but requiring the antitrust plaintiff to rebut the presumption that the copyright owner's refusal to license was justified.[394] This approach was also endorsed by the Court of Appeals for the Ninth Circuit in *Image Technical Services v. Eastman Kodak Co*.[395] In *Kodak*, the Ninth Circuit found the justification pretextual and adopted long after the fact.[396]

In either case, an argument for court-mandated access will soon run into resistance. The Supreme Court in *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP* warned that compelling firms "to share the source of their advantage" is in "tension" with antitrust policy for three reasons.[397] First, it "may lessen the incentive for the monopolist, the rival, or both to invest in those economically beneficial facilities."[398] Denying a lawful monopolist the fruits of its monopoly could diminish its incentive to innovate in the first place.[399] Thus, as Judge Learned Hand cautioned, "[t]he successful competitor, having been urged to compete, must not be turned upon when he wins."[400] Second, it "requires antitrust courts to act as central planners, identifying the proper price, quantity, and other terms of dealing—a role for which they are ill suited."[401] Third, it could "facilitate the supreme evil of antitrust: collusion."[402]

The third objection may be swiftly dealt with. Catastrophic side effects are a possible but rare occurrence in medical treatment.

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393. Data Gen. Corp. v. Grumman Sys. Support Corp., 36 F.3d 1147 (1st Cir. 1994).

394. *Id*. at 1187.

395. 125 F.3d 1195, 1218 (9th Cir. 1997).

396. *See id*. at 1219-20.

397. 540 U.S. at 407-08.

398. *Id*. at 408.

399. *Id*. at 407 ("The mere possession of monopoly power, and the concomitant charging of monopoly prices, is not only not unlawful; it is an important element of the free-market system. The opportunity to charge monopoly prices—at least for a short period—is what attracts 'business acumen' in the first place; it induces risk taking that produces innovation and economic growth. To safeguard the incentive to innovate, the possession of monopoly power will not be found unlawful unless it is accompanied by an element of anticompetitive *conduct*.").

400. United States v. Aluminum Co. of Am., 148 F.2d 416, 421, 430 (2d Cir. 1945).

401. *Trinko*, 540 U.S. at 408.

402. *Id*.

Doctors, informed by experience and scientific knowledge, make a call on whether intervention is better than inaction. Similarly judges, informed by experience and legal knowledge, make a call on whether collusion is likely and whether its effects would be so extreme as to warrant inaction. In the real world, it is difficult to imagine warring litigants suddenly becoming conspirators-in-arms when one of the parties was compelled to share its competitive advantage because the other squealed to the courts.

The first objection is particularly pronounced with patent law because "[t]he tension between the objectives of preserving economic incentives to enhance competition while at the same time trying to contain the power a successful competitor acquires is heightened tremendously when the patent laws come into play."[403] According to Hovenkamp, the basis for the "scope of the patent" test was a response to "unreasonably hostile" antitrust policy.[404] This "walled garden" thus "protected the patent from significant antitrust overreaching."[405]

The "walled garden" approach echoes the broad patent scope advocated by Professor Edmund Kitch.[406] Under Kitch's "prospect theory," broad patents that allow patentees to coordinate their activities with other firms post-grant will encourage patentees to invest in development without fear that rivals would steal their work.[407] The patent right should extend beyond the reward commensurate to the disclosure in the patent but rather "reaches well beyond what the reward function would require."[408] Enhanced efficiency "turns not upon the size of the firm, but its dominance over a fruitful technological prospect."[409]

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403. SCM Corp. v. Xerox Corp., 645 F.2d 1195, 1205 (2d Cir. 1981).

404. *See* Hovenkamp, *supra* note 306 (manuscript at 10, 11) ("The 'beyond the scope' formulation is a relic of a bygone approach to antirust and regulation . . . which regarded regulation as 'ousting' antitrust from the regulated market altogether.").

405. *Id*. (manuscript at 10).

406. Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 271-75 (1977) (analogizing patents to mining claims over minerals). I am grateful to Professor Josh Sarnoff for an illuminating discussion on Kitch.

407. *See id*. at 266, 276-77; Duffy, *supra* note 304, at 440 ("Kitch's justification for the patent system was thus forward-looking: The function of the patent system is to encourage investment in a technological prospect *after* the property right has been granted.").

408. Kitch, *supra* note 406, at 267.

409. *Id*. at 286.

Kitch is correct that patent scope influences technological development, both in the sense of individual inventions like Roundup Ready and a future line of improvements extending from it, such as stacked traits. However, contrary to what Kitch suggests, granting broad rights to an initial inventor like Monsanto may not induce more effective development and future invention.

The work of Professors Robert Merges and Richard Nelson provides doctrinal justification for access. They expressed concern that "broad patents could discourage much useful research."[410] This is because "[o]nce a firm develops and becomes competent in one part of a 'prospect,' it may be very hard for it to give much attention to other parts, even though in the eyes of others, there may be great promise there."[411] They therefore concluded that "many independent inventors will generate a much wider and diverse set of explorations than when the development is under the control of one mind or organization,"[412] and advocate that "[it] is much simpler to grant roughly identical licenses to all who will pay a standard rate."[413]

Roundup Ready through widespread adoption has become an industry standard or de facto standard essential patent. A trait like Roundup Ready may appear to be a product of discrete innovation by Monsanto. However, where it has a variety of new applications, its innovation trajectory is more cumulative, and dissemination can be improved through licensing and cross-licensing. In short, a wider talent pool can only be brought in with real competition.

DuPont had argued that by refusing to license those traits for "stacking" within the seeds sold, Monsanto unlawfully excluded competition, allowing it to set the minimum prices for seed without

410. Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 870 (1990).

411. *Id*. at 873; *see also id*. at 875 ("In our own research, we have not found a single case where the holder of a broad patent used it effectively through tailored licensing to coordinate the R&D of others.").

412. *Id*. at 873 ("The only way to find out what works and what does not is to let a variety of minds try. If a property right on a basic invention covers a host of potential improvements, the property right holder can be expected to develop the basic invention and some of the improvements.").

413. *Id*. at 874-75; *see also id*. at 907 ("The holder of a patent on a broad prospect opened by advances in science need not attempt to control the development of that prospect in any detail. Instead, she could license widely and collect royalties. . . . This approach is normally more conducive to the development of multiple applications than where the patent holder restricts entry.").

significant impact on its market share.[414] Access to the Roundup Ready trait would allow DuPont and others to offer stacked seed. Seen in this light, the argument that the essential facilities doctrine could apply to require compulsory access to traits like Roundup Ready becomes more compelling.[415]

Alternatively, an argument for access may be made on the basis of patent misuse. While patent misuse can be difficult to navigate,[416] it ameliorates the disadvantages in antitrust enforcement because it renders the affected patent unenforceable. As one treatise noted, "[i]t may be that the pressure to use the essential facilities doctrine to compel licensing of patents on reasonable and nondiscriminatory terms will be lessened by the availability of equitable remedies that can achieve the same end in appropriate cases without invoking the mechanism of antitrust law."[417]

With patent misuse, there is usually no need to set conditions for access. By rendering the patent temporarily unenforceable, the patentee has every incentive to reach a licensing agreement with the potential entrant. Courts can arrest attempts at patent hold-outs by unwilling licensees in the same way they can prevent hold-outs by opportunistic licensors. By focusing on unfair competition and harm to innovation, misuse can give a more flexible and holistic treatment to the misconduct.

Professor Christina Bohannan has argued that foreclosure is misuse's main mandate.[418] This includes foreclosure that results in unfair competition, restraints on innovation, and impinges on the

414. Defendants' Amended Answer & Counterclaims at 19, Monsanto Co. v. E.I. DuPont De Nemours & Co., No. 4:09-cv-00686 (ERW) (E.D. Mo. Nov. 16, 2012).

415. Cole, Horton & Vacca, *supra* note 107, at 320 (arguing that "patents governing GM seeds should be deemed de facto standard-essential patents (de facto SEP), when certain requirements are met" with the result that "[o]nce the GM seed has been labeled a de facto SEP, courts can find an implied license between Monsanto and farmers" (footnote omitted)); *see also* Purcell, *supra* note 166, at 1271 ("Given that the anti-stacking provisions in Monsanto's licenses had the clear effect of restricting competition in stacked traits, it stands to reason that these licenses count as denial for the purposes of essential facility analysis.").

416. Lim, *supra* note 229, at 363 ("[C]ritics argue that the vagueness of misuse detracts from commercial certainty needed by businesses and innovators.").

417. HOVENKAMP ET AL., *supra* note 391, § 13.3c3.

418. Bohannan, *supra* note 315, at 478 ("I argue that if misuse is really to be used as an instrument to effectuate IP policy and is to be confined to those practices that are serious enough to warrant its severe remedy, misuse should be focused on *foreclosure*.").

public domain.[419] In these areas, patent and copyright policies share the same wellspring.[420]

Foreclosure has been a particular pernicious problem because it impedes the advance of technical progress that is the *raison d'être* of patent rights. The Constitution mandates that exclusive rights granted under patent law promote technological progress, but those rights occasionally impede that very progress.

The Supreme Court noted that "a page of history is worth a volume of logic."[421] Vested business interests have resisted derivative, incremental, and sometimes exponentially disruptive use of their intellectual property. Just as photocopies did not decimate the printing business and the online music stores did not destroy the recording industry, circumscribing the intellectual property owner's control over the emergence of new and useful products can only promote the kind of technological progress inimical to economic prosperity. Unlike Bowman, who merely sought to replicate the trait to avoid paying Monsanto for its seed, those that license traits like Roundup Ready that have become de facto standards can only serve to expand the universe of possible offerings to consumers and foster more vigorous competition between seed companies.

Other commentators have identified other harms, including preventing economic loss that occurs in defensive research activities in patent circumvention and impediments to innovation from awarding patents to early stage inventors at the expense of late-stage inventors.[422]

In practice, this means that, as with Judge Wardlaw's opinion in *Omega*, the presence of contractual or antitrust issues should not derail parallel considerations of patent misuse. An action for breach

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419. *Id*. at 500 (describing misuse "that foreclose[s] others from (1) competing in a particular market; (2) producing technology that they are otherwise lawfully entitled to develop (i.e., restraints on innovation); or (3) accessing information or technology that rightfully belongs in the public domain" (footnote omitted)); *see also id*. at 501-25 (describing how they are applied to tying, restraints on innovation and non-compete agreements, post-expiration royalties, reach-through agreements, and licenses restricting access to public domain technology).

420. For another area where the two streams of intellectual property have commingled, see Metro-Goldwyn-Mayer Studios Inc. v. Grokster, Ltd., 545 U.S. 913, 936-37 (2005) (importing the theory of harm from inducement patent infringement into the copyright context).

421. N.Y. Trust Co. v. Eisner, 256 U.S. 345, 349 (1921).

422. Robin C. Feldman, *The Insufficiency of Antitrust Analysis for Patent Misuse*, 55 HASTINGS L.J. 399, 400 (2003).

of contract or an exclusive dealing restraint flows from a licensing provision empowered by the patent right.

Patent misuse proscribes abuses, which include physical or temporal extensions, causing anticompetitive effects, as well as other abuses such as vexatious litigation, which do not.[423] Patentees who place a burden on downstream innovation through an overextension of their patent rights contravene patent policy in a similar way that a claim covering an abstract idea would preempt use of the approach in all fields and would effectively grant a monopoly over the idea.[424] The technological merits of the invention are irrelevant.[425]

In the context of stacking, an argument may be made that patent policy allows derogation from patentees' right to appropriate returns.[426] Where the party seeking access is offering "a different, better product," commentators have argued that this kind of competition is consistent with patent policy.[427] Where the patentee

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423. *See* LIM, *supra* note 322, at 374-76.

424. Alice Corp. Pty. Ltd. v. CLS Bank Int'l, 134 S. Ct. 2347, 2354 (2014) ("We have described the concern that drives this exclusionary principle as one of pre-emption."); *see also* Mayo Collaborative Servs. v. Prometheus Labs., Inc., 132 S. Ct. 1289, 1293 (2012) ("[M]onopolization of those tools through the grant of a patent might tend to impede innovation more than it would tend to promote it."); *id*. at 1301 (expressing "concern that patent law not inhibit further discovery by improperly tying up the future use of" building blocks of human ingenuity).

425. *See, e.g*., Ass'n for Molecular Pathology v. Myriad Genetics, Inc., 133 S. Ct. 2107, 2117 (2013) ("Groundbreaking, innovative, or even brilliant discovery does not by itself satisfy the § 101 inquiry."); Giles S. Rich, *Infringement Under Section 271 of the Patent Act of 1952*, 14 FED. CIR. B.J. 117, 133 (2005) ("The misuse doctrine was a special form of punishment devised for over-reaching patentees who were using their patents to monopolize something other than the invention.").

426. Madey v. Duke Univ., 307 F.3d 1351, 1362 (Fed. Cir. 2002) (allowing experimental use for "'amusement, to satisfy idle curiosity, or for strictly philosophical inquiry'" (quoting Embrex, Inc. v. Serv. Eng'g Corp., 216 F.3d 1343, 1349 (Fed. Cir. 2000))); *see also* Monsanto Co. v. E.I. Dupont De Nemours & Co., No. 4:09cv00686 (ERW), 2010 WL 3039210, at *10 (E.D. Mo. July 30, 2010). The defendants argued that experimental use allowed them to study and improve upon or design around the Roundup Ready trait. *Id*. at *7. The court found that the exemption was "very narrow" and "strictly limited" to "'amusement, to satisfy idle curiosity, or for strictly philosophical inquiry.'" *Id*. at *10 (quoting *Madey*, 307 F.3d at 1361-62). It found the defense "plainly inapplicable" because the stacked soybean and corn seed had commercial implications and is directly in line with the defendants' business operations in making seed products. *Id*.

427. Jeanne C. Fromer & Mark A. Lemley, *The Audience in Intellectual Property Infringement*, 112 MICH. L. REV. 1251, 1255 (2014) ("Market substitution is important because a use that does not interfere with the plaintiff's market in some way generally does no relevant harm. Technical similarity is also important because

refuses to offer a new product in a secondary market for which there is potential consumer demand without a legitimate justification, the foreclosure could impede technological progress by denying a potential entrant the input necessary for it to do so.[428] Restrictions on one inventor to take the next step forward because of another inventor's overreaching disrupts the balance envisioned by patent policy.

Mention should be made about 35 U.S.C. § 271(d)(4), which has potential for mischief on this issue of refusals to license. The Federal Circuit in *Scruggs* relied on § 271(d)(4), which immunizes patentees who refuse to license their technology from "misuse or illegal extension of the patent right."[429] As an initial matter, it should be noted that § 271(d)(4) applies only to unilateral and unconditional refusals to license. Refusals to license that involve price-fixing and other conditions are subject to ordinary antitrust and misuse rules.[430] One overlooked point is that patent policy requires any refusal relying on § 271(d)(4) to be constitutional. Since the Patent Act subsists on the constitutional mandate to promote technological progress, cases interpreting § 271(d)(4) to sanction refusals to license hamper that progress and must themselves be unconstitutional.[431]

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not all acts that interfere with a plaintiff's market are problematic. A defendant who enters the market with a different, better product, for instance, may erode the market for the plaintiff's product, but the law should not prohibit that competition." (footnote omitted)).

428. Daryl Lim, *Standard Essential Patents, Trolls, and the Smartphone Wars: Triangulating the End Game*, 119 PENN ST. L. REV. 1, 70 (2014) ("[C]ourts are increasingly intolerant of hold-ups and hold-outs.").

429. Monsanto Co. v. Scruggs, 459 F.3d 1328, 1339 (Fed. Cir. 2006).

430. *See* Hovenkamp, *supra* note 306 (manuscript at 10) ("As a matter of competition policy, the 'beyond the scope' formulation makes little sense. Antitrust is concerned with practices that are not authorized by other statutory provisions and realistically reduce output and raise price."); *see also id*. (manuscript at 14) ("[T]he Patent Act does not authorize product price fixing, market divisions unrelated to production licenses, predatory pricing in patented goods, anticompetitive acquisitions, resale price maintenance of patented goods, ties in the presence of market power, exclusive dealing, or infringement suits based on patents that the owner knows or should know are invalid or unenforceable under the circumstances. The Patent Act expressly permits unilateral refusals to license, but does not say anything about concerted refusals to licenses . . . ." (footnote omitted)); HOVENKAMP ET AL., *supra* note 391, § 6.5.

431. Where there are multiple reasonable interpretations of a statute, the one that avoids constitutional issues would be chosen. *See, e.g.*, Clark v. Martinez, 543 U.S. 371, 381 (2005) ("[The canon of constitutional avoidance] is a tool for choosing between competing plausible interpretations of a statutory text, resting on the reasonable presumption that Congress did not intend the alternative which raises

That settles the first objection to requiring access. What of the second objection—the difficulty of setting a rate for access and the task of ongoing supervision? The reluctance to undertake a more onerous inquiry led courts adopting the "scope of the patent" approach to assume without supporting data that the price paid to Monsanto reflected only the cost for their specific "use."[432] For example, in *Monsanto Co. v. Ralph*, the district court concluded that Monsanto "would apparently never permit Ralph to save seed for replanting or transfer at any price" because it had not done so before.[433] Since courts had always given Monsanto carte blanche to dictate its terms, it never had to do otherwise.[434]

A patent is not a fiat to extract every iota of value from the invention, only a means to appropriate what is necessary to incentivize innovation. For the court in *Ralph* to reach its conclusion based only on the absence of past conduct ducks the more pertinent question of what it costs the agrobiotech industry to produce new traits and varieties as well as what it ought to cost. This opaque revenue structure makes it difficult to judge whether the price charged is commensurate with the particular use right conferred.

There is little, if any, information about how patents perform in the agrobiotech industry, how patents are valued, and how the welfare of users and licensees can be improved. Here, parallels may be drawn between the drug and agrobiotech industries.[435] Both have similar cost and market structures: high sunk costs and barriers to entry, with few market players. The cost of developing new products and the ease of misappropriation have been touted as the backbone argument for a robust application of patent rights.

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serious constitutional doubts."); *see also* United States v. Harris, 106 U.S. 629, 635 (1883) ("Proper respect for a co-ordinate branch of the government requires the courts of the United States to give effect to the presumption that [C]ongress will pass no act not within its constitutional power.").

432. Monsanto Co. v. McFarling, 302 F.3d 1291, 1298-99 (Fed. Cir. 2002).

433. 382 F.3d 1374, 1384 (Fed. Cir. 2004); *see also* Monsanto Co. v. Scruggs, 342 F. Supp. 2d 568, 574-75 (N.D. Miss. 2004), *aff'd*, 459 F.3d 1328 (Fed. Cir. 2006).

434. *Ralph*, 382 F.3d at 1384.

435. Amanda Welters, Note, *Striking a Balance: Revising USDA Regulations to Promote Competition Without Stifling Innovation*, 13 MINN. J.L. SCI. & TECH. 407, 423, 426 (2012) ("The Hatch-Waxman Act is a viable regulatory framework for the agricultural industry. The similarities between the pharmaceutical and agriculture industries, and the effectiveness of the Hatch-Waxman Act in the pharmaceutical industry, suggest that use of such a framework would be successful." (footnotes omitted)).

Agrobiotech companies invest an estimated fifty to a hundred million dollars annually to research, develop, and market traits and varieties.[436] A study by the Center for the Study of Drug Development at Tufts University pegs the cost of drug development at $2.6 billion annually.[437] Observers say the figure is so high because it includes the cost of drugs that failed to win regulatory approval, trial complexity and scale, a focus on chronic and degenerative diseases, and higher failure rates.[438]

A similar study for the agrobiotech industry will better allow calibration of royalties between various uses and a better allocation of rights between patentees and users. Indeed, the Court had instructed that "[a]ntitrust analysis must always be attuned to the particular structure and circumstances of the industry at issue."[439] More information on the cost and revenue structure of the agrobiotech industry would help courts have a better sense of whether the restraint was necessary. Courts and antitrust enforcers can take the presence of those irregularities into consideration in their deliberations without dictating prices sold.[440]

Where appropriate, the courts can use that information to set the terms for access as well. The excuse that judges cannot set those terms is simply unconvincing. Courts are regularly faced with the task of quantifying both past and future damages, whether in patent or antitrust law. They are aided in this task by economic experts who provide technical and economic data that help courts understand how markets and technologies work. Antitrust agencies today boast small armies of economists, and private parties regularly seek the assistance of economic consultants. Similarly, judges and juries in

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436. *Sorting Out the Facts Behind Stacks*, MONSANTO, http://www.monsanto.com/newsviews/pages/gene-stacks-facts.aspx (last visited Apr. 13, 2015).

437. *The Price of Failure*, ECONOMIST (Nov. 29, 2014), http://www.economist.com/news/business/21635005-startling-new-cost-estimate-new-medicines-met-scepticism-price-failure.

438. One example is Gilead, which was recently sued in a class action lawsuit where it was accused of charging "exorbitant" prices for its blockbuster hepatitis C drug Sovaldi. Each pill costs $1,000 and each twelve-week course $84,000, compared to between $50,000 and $70,000 for the same twelve-week course in some European countries. Andrew Pollack, *AbbVie Deal Heralds Changed Landscape for Hepatitis Drugs*, N.Y. Times (Dec. 22, 2014), http://www.nytimes.com/2014/12/22/business/pharmacy-deal-heralds-changed-landscape-for-hepatitis-drugs.html?_r=0.

439. Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398, 411 (2004).

440. *Id*. at 408 (observing that courts are "ill suited" to act as "central planners, identifying the proper price, quantity, and other terms of dealing").

patent cases rarely have any technical background and yet must deal with construing claims over complex technology with the help of experts. The reliance on experts is routine. It stretches credulity to think that the combined brainpower of experts cannot offer courts an educated determination on what fair terms for granting access might look like.

Assuming that the terms of access need to be judicially determined, the system is largely self-policing once they have been set. The aggrieved party can determine if the deviation from prevailing cost limitations is so egregious that it warrants the cost of bringing a complaint for contempt. Its interests are aligned with the public and stand as their proxies. Courts thus need not actively supervise patentees. They need only respond to charges of contempt, which they are again well-versed to rule upon.

The more accurate reason for judicial restraint is harder to prove. Foreclosure cases can be difficult to adjudicate because they invariably involve tradeoffs. When patentees such as Monsanto control technology that rivals could use to make different or better products, the case for granting access is a strong one. Where the harm to competition and innovation are likely to be present, shielding the patentee's conduct from scrutiny is dangerous. If innovation plays a central role in economic growth, legal outcomes that harm innovation also dampen it significantly.[441] At the same time, weakening the patentee's control over its primary market, and even secondary ones, may dampen its incentive to invest in further innovation. Ill-defined boundaries of legality may deter efficiency-enhancing novel business practices.[442]

Even though antitrust law relies heavily on economic evidence, how that evidence is interpreted will be influenced by individual values.[443] Professor Marina Lao observed that ideological differences

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441. *See* Hovenkamp, *supra* note 306 (manuscript at 45-46) (giving the example of how the Wright brothers used doctrine of equivalents to "shut down the superior technology contained in the Curtiss airplane . . . [which] may have delayed the development of a military-worthy United States aircraft until after World War One was over").

442. Thomas A. Lambert, *Defining Unreasonably Exclusionary Conduct: The "Exclusion of A Competitive Rival" Approach*, 92 N.C. L. REV. 1175, 1192 (2014).

443. Harold Demsetz, *Two Systems of Belief About Monopoly*, *in* INDUSTRIAL CONCENTRATION: THE NEW LEARNING 164, 164 (Harvey J. Goldschmid, H. Michael Mann & J. Fred Weston eds., 1974) ("The old adage 'seeing is believing' contains a double measure of truth, for there also is much merit in the notion that 'believing is

have a particularly strong influence with exclusionary conduct "because the competitive effects of various forms of dominant firm conduct are often unclear, and the theories offered to support either permissive or restrictive standards are inconclusive."[444]

For instance, the appropriate amount of deference courts should give to patentees like Monsanto will turn to a significant extent on the position one takes in the Schumpeter–Arrow debate. Schumpeterians believe that dominant firms are more innovative than firms in competitive markets.[445] In contrast, Arrow argued that dominant firms were already earning supra-competitive profits and had little to gain from innovation, making competition the real driver of innovation as firms innovate to remain competitive.[446] Unfortunately, neither economic theory nor empirical evidence conclusively supports either side.[447]

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seeing.' Facts must be placed into a system of belief before they yield to interpretation.").

444. Marina Lao, *Ideology Matters in the Antitrust Debate*, 79 ANTITRUST L.J. 649, 653 (2014) ("In this context, it is almost inevitable that a policymaker's values will influence which theoretical models she will choose, whether her default is to intervene or not intervene if the theories and the evidence are indeterminate, what types of evidence she would consider relevant, and so forth. Her core economic and political beliefs will also likely affect her perspective on the aggregate social costs of false negatives relative to false positives, which will impact her judgment on whether liability should be found in a particular case or, indeed, whether a particular case should be brought in the first place." (footnote omitted)).

445. JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM, AND DEMOCRACY 81-106 (3d ed. 1950) (arguing that a monopolist has less concern that rivals would be able to appropriate its innovative ideas and successfully compete with the monopolist, and this incentivizes the monopolist to engage in research and development); *see also* Spencer Weber Waller & Matthew Sag, *Promoting Innovation*, 100 IOWA L. REV. (forthcoming 2015) (manuscript at 5), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2479569 ("Taking Schumpeter seriously means designing a legal and regulatory system which maximizes the incentives and opportunities for challengers to innovate to displace incumbents while minimizing incentives and opportunities for incumbents (who may have once been challengers) from engaging in exclusionary conduct that degrades the opportunities and incentives for future challengers to dislodge them.").

446. Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, *in* THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS 609, 609 (1962).

447. *See, e.g.*, Richard J. Gilbert, *Competition and Innovation*, *in* 1 ABA SECTION OF ANTITRUST LAW, ISSUES IN COMPETITION LAW AND POLICY 577, 583 (Wayne Dale Collins et al. eds., 2008) ("Economic theory does not provide unambiguous support either for the view that market power generally threatens innovation by lowering the return to innovative efforts or for the Schumpeterian view that concentrated markets generally promote innovation . . . ."); Douglas H. Ginsburg & Joshua D. Wright, *Dynamic Analysis and the Limits of Antitrust*

Another ideological strain underlying the "scope of the patent" approach and decisions like *Trinko* may be represented by the Chicago school of antitrust and its concern that proscribing excessive pricing could interfere with markets' price-setting mechanism and with the signaling and rationing functions it carries out.[448] In contrast, the post-Chicago school advocates a more interventionist brand of antitrust.[449] One specific concern is the ability to raise rivals' costs, which forces the rivals affected to raise prices and reduce output, in turn profiting the dominant firm whose goods suddenly seem cheaper or more readily available.[450] Foreclosure is one manifestation of this strategy.[451] Those who subscribe to Schumpeter and the Chicago school will counsel against intervention while those who subscribe to Arrow and the post-Chicago school will favor it.

The case for acting against allegations of foreclosure will be stronger where the party alleging the harm can show that the patentee has the ability to effect that harm. Antitrust law measures this ability through direct and circumstantial evidence of anticompetitive effects. Patent misuse does not require market power, except in tying cases. Instead, similar to the analysis for copyright misuse seen in *Omega*, the analysis focuses more on the plausibility of a coherent theory of harm to innovation resulting from an abuse to the patent system.

Institutions, 78 ANTITRUST L.J. 1, 4-5 (2012) (arguing that the empirical literature supports neither Schumpeter's nor Arrow's hypothesis); Michael L. Katz & Howard A. Shelanski, *Mergers and Innovation*, 74 ANTITRUST L.J. 1, 22 (2007) ("The literature addressing how market structure affects innovation (and vice versa) in the end reveals an ambiguous relationship in which factors unrelated to competition play an important role.").

448. *See* Lim, *supra* note 229, at 331-34 (tracing the influence of the Chicago school on the self-restraint exhibited by judges in antitrust and patent misuse cases); ANDREW I. GAVIL, WILLIAM E. KOVACIC & JONATHAN B. BAKER, ANTITRUST LAW IN PERSPECTIVE: CASES, CONCEPTS AND PROBLEMS IN COMPETITION POLICY 66 (2d ed. 2008) (noting that the Chicago school viewed most markets as self-correcting, and supernormal profits would induce entry and erode market share).

449. *See* Steven C. Salop, *Economic Analysis of Exclusionary Vertical Conduct: Where Chicago Has Overshot the Mark*, *in* HOW THE CHICAGO SCHOOL OVERSHOT THE MARK: THE EFFECT OF CONSERVATIVE ECONOMIC ANALYSIS ON U.S. ANTITRUST 141, 143, 145-52 (Robert Pitofsky ed., 2008) (summarizing the post-Chicago rebuttal to the Chicago school on exclusionary conduct).

450. *See* Thomas G. Krattenmaker & Steven C. Salop, *Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power over Price*, 96 YALE L.J. 209, 213-14 (1986).

451. *See*, *e.g.*, Jonathan B. Baker, *Promoting Innovation Competition Through the* Aspen/Kodak *Rule*, 7 GEO. MASON L. REV. 495, 511-15 (1999) (arguing that the net harms from foreclosure are worse the allowing the refusal to grant access).

B. Ability to Effect the Harm

Prior to *Actavis*, the Supreme Court in *Illinois Tool Works Inc. v. Independent Ink, Inc.* opened a crack to an effects-focused analysis when it eliminated the presumption that patents necessarily confer market power.[452] *Illinois Tool Works* shifted the analysis from one of per se illegality to a rule of reason analysis. This made it more difficult for antitrust plaintiffs, who now had to prove market power through economic evidence. The Court also identified a synergistic relationship between antitrust law and patent misuse since the market power presumption migrated from the latter into antitrust law.[453]

Actavis shifted the analysis from one of per se legality to a rule of reason analysis. How would this have changed the approach taken in earlier cases involving Monsanto? The District Court for the Northern District of Mississippi in *Monsanto Co. v. Scruggs* found Monsanto could not have market power in the trait market because it was synonymous with the market encompassed by its patent scope.[454] It dismissed the claim that Monsanto had market power in the market for traited seeds because it refused to include the sales of any of its

452. Ill. Tool Works Inc. v. Indep. Ink, Inc. 547 U.S. 28, 45-46 (2006); *see also, e.g.*, Broadcom Corp. v. Qualcomm Inc., 501 F.3d 297, 314 (3d Cir. 2007) ("Although a patent confers a lawful monopoly over the claimed invention, its value is limited when alternative technologies exist." (citation omitted)).

453. *Ill. Tool Works*, 547 U.S. at 39 ("Our opinion in *International Salt* clearly shows that we accepted the Government's invitation to import the presumption of market power in a patented product into our antitrust jurisprudence."); *see also id.* at 42 ("While the 1988 amendment does not expressly refer to the antitrust laws, it certainly invites a reappraisal of the *per se* rule announced in *International Salt*.").

454. 342 F. Supp. 2d 568, 582 (N.D. Miss. 2004) (finding that Monsanto "cannot be held liable under the antitrust laws for the natural monopoly afforded under the Patent Act" for "monopoliz[ing] and/or attempt[ing] . . . monopoliz[ation of] the market for Roundup Ready soybean and cotton [traits]"), *aff'd*, 459 F.3d 1328 (Fed. Cir. 2006); *see also* Monsanto Co. v. McFarling, 488 F.3d 973, 978 (Fed. Cir. 2007) ("Although [the '605] patent does not explicitly claim seed containing a Roundup Ready genetic trait, it claims plant cells having that genetic trait, and farmer-grown Roundup Ready soybeans undisputedly contain such cells. Thus, as in the case of the '435 patent, Monsanto's '605 patent reads on both purchased and farmer-grown Roundup Ready soybeans. There is no patent misuse in the license terms for either patent."). Monsanto Co. v. Swann, No. 4:00-CV-1481 CEJ, 2001 WL 34079480, at *2 (E.D. Mo. Sept. 19, 2001) ("The Roundup Ready® technology that is involved in this litigation is owned by the plaintiff. The plaintiff does not violate the Sherman Act by reason of a monopoly it has over its own product.").

licensees.[455] In its view, Monsanto only had 25.6% of the soybean market and 0% of the cotton market.[456] Finally, without separately undertaking analysis of the glyphosate market, the court proceeded to dismiss monopolization claims related to that market because "none of Monsanto's conduct . . . could reasonably be considered anti-competitive."[457] The Federal Circuit affirmed without reference to the court's analysis of market power.[458]

As a matter of antitrust law, Monsanto's admission in an earlier case that it could unilaterally dictate prices to seed partners and farmers based on its patents should give antitrust enforcers cause for pause.[459] Market definition is only necessary as part of the inquiry about circumstantial effects of market power if there is no evidence of direct effects.[460] Direct evidence of harm includes rising prices and restricted output, while circumstantial evidence of harm depends on finding high market shares in a properly defined market coupled with anticompetitive conduct through exclusionary or exploitative conduct.[461]

Antitrust law does not condemn high prices per se and indeed condones monopolists charging "as high a rate as the market will

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455. *Scruggs*, 342 F. Supp. 2d at 583 ("Monsanto's market share must be determined solely on the quantity of goods and/or services Monsanto sold to consumers. At best, only the market shares of Monsanto's wholly owned subsidiaries are to be included." (citation omitted)).

456. *Id*.; *see also* Monsanto Co. v. Trantham, 156 F. Supp. 2d 855, 864 (W.D. Tenn. 2001) (making similar findings).

457. *Scruggs*, 342 F. Supp. 2d at 583.

458. Monsanto Co. v. Scruggs, 459 F.3d 1328, 1328 (Fed. Cir. 2006).

459. *See, e.g*., Monsanto Co. v. McFarling, 302 F.3d 1291, 1297 (Fed. Cir. 2002) ("Monsanto states that as the patent holder it decides unilaterally the terms on which its patents are licensed and its product sold under the Technology Agreements. Monsanto explains that the seed companies that are licensed by Monsanto to produce and sell the modified soybean seed have no control over the terms of the Technology Agreements that Monsanto requires of farmers who choose to purchase the Monsanto seed.").

460. Toys "R" Us, Inc. v. Fed. Trade Comm'n, 221 F.3d 928, 937 (7th Cir. 2000) ("The Supreme Court has made it clear that there are two ways of proving market power. One is through direct evidence of anticompetitive effects. The other, more conventional way, is by proving relevant product and geographic markets and by showing that the defendant's share exceeds whatever threshold is important for the practice in the case." (citation omitted)).

461. Market power, the ability to raise prices above those that would prevail in a competitive market, Jefferson Parish Hosp. Dist. No. 2 v. Hyde, 466 U.S. 2, 27 n.46 (1984), is essentially a "'surrogate for detrimental effects.'" Fed. Trade Comm'n v. Ind. Fed'n of Dentists, 476 U.S. 447, 460-61 (1986) (quoting 7 P. AREEDA, ANTITRUST LAW 429 (1986)).

bear."[462] Despite the rhetoric that patentees like Monsanto can charge as much as they wish,[463] the government is clearly concerned about price irregularities.[464] Between 1995 and 2011, Monsanto's soybean seed prices increased 325%, largely due to licensing fees.[465] While higher prices do not in themselves indict an antitrust defendant, they are probative of direct anticompetitive effects.[466] Ostensibly, any company that can profitably increase prices 325% without fear consumers will switch to a substitute warrants further investigation as to the nature and extent of its market power.[467]

Further, while Monsanto has cross-licenses with 200 seed companies, competition has been described as a "fiction."[468] Seed

462. Berkey Photo, Inc. v Eastman Kodak Co., 603 F.2d 263, 297 (2d Cir. 1979).

463. Monsanto Co. v. Scruggs, 342 F. Supp. 2d 568, 574-75 (N.D. Miss. 2004) ("Monsanto urges its technology fees are simply royalties and that the patent laws permit it to charge any royalty it chooses. Monsanto's position is correct. The patent laws permit a patentee to 'exact royalties as high as he can negotiate with the leverage of that [patent] monopoly.'" (alteration in original) (citation omitted) (quoting Brulotte v. Thys Co., 379 U.S. 29, 33 (1964))), *aff'd*, 459 F.3d 1328 (Fed. Cir. 2006).

464. *See, e.g.*, Luke M. Olson & Brett W. Wendling, *The Effect of Generic Drug Competition on Generic Drug Prices During the Hatch-Waxman 180-Day Exclusivity Period* (Fed. Trade Comm'n, Working Paper No. 317, 2013), *available at* http://www.ftc.gov/sites/default/files/documents/reports/estimating-effect-entry-generic-drug-prices-using-hatch-waxman-exclusivity/wp317.pdf; Gillian Mohney, *Generic Drug Price Sticker Shock Prompts Probe by Congress*, ABC News (Nov. 21, 2014, 10:45 AM), http://abcnews.go.com/Health/generic-drug-prices-skyrocketing-lawmakers-warn/story?id=27060992.

465. CTR. FOR FOOD SAFETY & SAVE OUR SEEDS, SEED GIANTS VS. U.S. FARMERS 16 (2013), *available at* http://www.centerforfoodsafety.org/files/seed-giants_final_04424.pdf.

466. *See Berkey Photo, Inc.*, 603 F.2d at 296; Martin, *supra* note 157, at 144-45 ("The exorbitant increase in the cost of Monsanto seeds claims a greater share of farmers' operating costs, gross crop income, and net return per acre."); CTR. FOR FOOD SAFETY & SAVE OUR SEEDS, *supra* note 465, at 18 (quoting Dr. Charles Benbrook, agricultural economist: "'If these GE seed price and income trends continue, the consequences for farmers will be of historic significance, as dollars once earned and retained by farmers are transferred to the seed industry'").

467. McEowen, *supra* note 94, at 652 ("Anticompetitive concerns are heightened if the licensing agreements operate as a substantial barrier to potential competition in trait and transgenic seed markets or have the effect of increasing the price of seed while simultaneously concentrating the seed market amongst fewer firms." (footnote omitted)).

468. Elizabeth I. Winston, *A Patent Misperception*, 16 LEWIS & CLARK L. REV. 289, 305 (2012); *see also* MOSS, *supra* note 165, at 24 (describing joint venture agreements "that restrict the licensing of one partner's technology outside the

companies are tied by licensing restrictions much in the same way as farmers are.[469] The high cost of research and development as well as regulatory barriers make entry by rival developers of traited seeds difficult.[470] Other circumstantial indicia of market power include the presence and degree of barriers to entry as well as barriers to expansion.[471] The Justice Department had released a report in May 2012 highlighting the fact that farmers faced high prices and increasingly limited options for seeds as a result of companies' merger activities.[472]

It is appropriate to define the market for patented traits, as opposed to the market for traited seed, when those rights are marketed separately from the products in which they are used.[473] Courts have rarely done so and only when the patent is itself an industry standard.[474] The fact that Monsanto commanded the market

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agreement, thus impeding rivals' access to that technology for the purposes of developing competing products").

469. *See* John Hession, *Biotech Consolidation: Is There Light in the Tunnel?*, MASS HIGH TECH (June 25, 2009, 3:39 PM), http:// www.bizjournals.com/boston/blog/mass-high-tech/2009/06/biotech-consolidation-is-there-light-in.html?page=all; *see also* Matson, Tang & Wynn, *supra* note 1, at 44 ("A few big multinationals (led by Monsanto and DuPont) dominate the club. Each of the oligopoly firms controls a network of subsidiary firms. The remaining 'independent' seed companies are tied by patent licensing and other arrangements to the oligopoly networks, and rely on those networks for patented seed varieties and GMO traits.").

470. Ronald & McWilliams, *supra* note 26, at A19 (noting that regulatory costs have been pushed up "to the point where the technology is beyond the economic reach of small companies or foundations that might otherwise develop a wider range of healthier crops for the neediest farmers").

471. Rebel Oil Co. v. Atl. Richfield Co., 51 F.3d 1421, 1434 (9th Cir. 1995).

472. DEP'T OF JUSTICE, COMPETITION AND AGRICULTURE: VOICES FROM THE WORKSHOPS ON AGRICULTURE AND ANTITRUST ENFORCEMENT IN OUR 21ST CENTURY ECONOMY AND THOUGHTS ON THE WAY FORWARD 18 (2012), *available at* http://www.justice.gov/atr/public/reports/283291.pdf; *see also* Tom Philpott, *DOJ Mysteriously Quits Monsanto Antitrust Investigation*, MOTHER JONES (Dec. 1, 2012, 7:03 AM), http://www.motherjones.com/tom-philpott/2012/11/dojs-monsantoseed-industry-investigation-ends-thud (warning that firm dominance in the agrobiotechnology industry promotes a "high degree of concentration, high and rising prices, limited choice, [and] stagnant innovation").

473. U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY § 3.2.2, at 9 (1995), *available at* http://www.justice.gov/atr/public/guidelines/0558.pdf (defining the relevant market for traits involves identifying "the smallest group of technologies and goods over which a hypothetical monopolist of those technologies and goods likely would exercise market power—for example, by imposing a small but significant and nontransitory price increase").

474. Broadcom Corp. v. Qualcomm Inc., 501 F.3d 297, 314, 316 (3d Cir. 2007).

for glyphosate-resistant traits and licensed numerous seed partners for trait stacking satisfies this requirement. The Court should also have taken into account glyphosate-resistant traits deemed substitutable with Roundup Ready.[475]

Commonly recited figures for Monsanto's market share in traited seeds are as follows: soybean seeds at 90%, corn at 80%, and cotton at 90%.[476] Monsanto also controls 60% of the wholesale licensing market for patented seed varieties.[477] It did not make a difference whether farmers bought the seed from Monsanto or its licensees. This was probably because, unlike the court who was blinkered by the "scope of the patent" approach, they understood that the dynamics of the traited-seed market were such that Monsanto would commandeer the material terms of their sales to farmers.

With respect to the market for glyphosate herbicides, the Supreme Court had found Monsanto guilty of price-fixing in that market just over a decade before based on Monsanto having 15% of the corn herbicide market and 3% of the soybean herbicide market.[478] While anticompetitive harm still needs to be proven, this should have at least given the Court cause to consider that Monsanto may well still have market power in the glyphosate market owing to patents, other intellectual property rights, or other market advantages.[479]

Finally, the fact that farmers have a variety of other seed choices to pick from does not by itself answer the question of

475. U.S. DEPT. OF JUSTICE & FED. TRADE COMM'N, *supra* note 473, § 3.2.2, at 10. Technology substitutes include "other technologies and goods which buyers would substitute at a cost comparable to that of using the licensed technology" if a monopolist raised the price of its technology. *Id*.

476. Mitchell, *supra* note 117 (noting that Monsanto owns "about 80% of U.S. corn and more than 90% of U.S. soybeans are grown with seeds containing Monsanto's patented seed traits (whether sold by Monsanto itself or by licensees)"); April Davila, *Monsanto's Cotton Strategy Wears Thin*, OUR WORLD (Aug. 26, 2011), http://ourworld.unu.edu/en/monsantos-cotton-strategy-wears-thin.

477. DUPONT/PIONEER HI-BRED INT'L, COMMENTS OF DUPONT/PIONEER HI-BRED INTERNATIONAL REGARDING AGRICULTURE AND ANTITRUST ENFORCEMENT ISSUES IN OUR 21ST CENTURY ECONOMY 4 (2010), *available at* http://www.justice.gov/atr/public/workshops/ag2010/comments/254990.pdf.

478. Monsanto Co. v. Spray-Rite Serv. Corp., 465 U.S. 752, 755-56 (1984).

479. *Id*. at 765 (finding Monsanto and its distributors agreed to maintain resale prices and terminate price-cutters). The case was also significant in laying down "plus factors" that required plaintiffs to show direct or circumstantial "evidence that tends to exclude the possibility" that the parties were acting independently. *Id*. at 764.

whether those products are true substitutes to traited seed.[480] In an age where rivals are planting crops supercharged with modified traits, farmers that rely on conventional seed risk "being left in the dust."[481] A farmer eschewing those traits could no more compete against rivals using traited seeds than a horse and buggy could substitute the planes, trains, and automobiles we take for granted today. Indeed, the reason for the significant price decrease in conventional seeds is precisely because its technological irrelevance has led to a precipitous fall in demand. Even though consumers may find organic and genetically modified produce interchangeable, high production costs prevent organic farmers from offering large-scale, competitively priced alternatives.[482]

Patent misuse does not require its complainant to show market power. It is sufficient to prove that the conduct supporting the theory of harm had in fact occurred. Thus according to Judge Wardlaw in *Omega*, the defendant simply had to show that the copyright owner had in fact used its copyright to prevent parallel importation to raise the defense of copyright misuse.[483] The inquiry is obviously fact-specific, and the ingredients required to validate the defendant's narrative will depend on the theory of harm alleged.

The price of a more sophisticated discourse is complexity. Critics have noted that the antitrust rule of reason can be confusing and even inconsistent, giving lower courts and litigants few clear rules.[484] It turns on economic analysis that is sometimes

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480. *See*, *e.g.*, Monsanto v. McFarling, 302 F.3d 1291, 1298 (Fed. Cir. 2002) (finding no sale of future seed not conditioned to buying seed in suit or impediments preventing switching to "over two hundred commercial sources of soybean seed, including several herbicide-resistant soybeans" available); *see also id*. ("[A] purchaser's desire to buy a superior product does not require benevolent behavior by the purveyor of the superior product. Nor does an inventor of new technology violate the antitrust laws merely because its patented product is favored by consumers.").

481. Tempe Smith, Note, *Going to Seed?: Using Monsanto as a Case Study to Examine the Patent and Antitrust Implications of the Sale and Use of Genetically Modified Seeds*, 61 ALA. L. REV. 629, 647 (2010) ("In order for farmers in today's society to survive, they must be willing to embrace these technological advances, or they risk being left in the dust because of their inability to produce product at the same rate and at the same cost as those farmers who do embrace technology.").

482. I am grateful to Professor Mark Patterson for this insight.

483. Omega S.A. v. Costco Wholesale Corp., 776 F.3d 692, 695 (9th Cir. 2015).

484. *See* Ortho Diagnostic Sys., Inc. v. Abbott Labs., Inc., 920 F. Supp. 455, 465 (S.D.N.Y. 1996) ("Unfortunately, the *Grinnell* test is not of much assistance in resolving particular cases. Every competitor seeks to capture as much business as

"impenetrable."[485] Jurors have been "overwhelmed, frustrated, and confused by testimony well beyond their comprehension," and "at no time did *any* juror grasp—even at the margins—the law, the economics, or any other testimony."[486] These are legitimate concerns, but they are not intractable. The framework can be made sufficiently clear so that businesses can operate without complicated and uncertain balancing exercises, except at the fringes.

C. Improving Administrability

Since the beginning, Congress tasked the courts to build the analytical framework for antitrust law.[487] Since "the means of illicit exclusion, like the means of legitimate competition, are myriad," this was necessary.[488] In the hundred years since the antitrust laws were enacted, they have adopted doctrines linked to market performance or expectations.[489] The antitrust rule of reason has to make the

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possible."); Einer Elhauge, *Defining Better Monopolization Standards*, 56 STAN. L. REV. 253, 255 (2003) (noting that these verbal formulae "are not just vague but vacuous" because they "are utterly conclusory, failing to identify a coherent norm that provides any real help in distinguishing bad behavior from good or even in knowing which way certain factual conclusions cut").

485. Bill Baer, *Connecting the Antitrust Dots: In Praise of Herb Hovenkamp*, 100 IOWA L. REV. BULL. 1, 3 (2014).

486. Arthur Austin, *The Jury System at Risk from Complexity, the New Media, and Deviancy*, 73 DENV. U. L. REV. 51, 54 (1995).

487. Diane P. Wood, *The Responsibility of the Judiciary in the Implementation of Competition Policy*, *in* POLICY ROUNDTABLES: JUDICIAL ENFORCEMENT OF COMPETITION LAW 27, 27 (1996), *available at* http://www.oecd.org/daf/competition/prosecutionandlawenforcement/1919985.pdf ("From the time the Sherman Act was passed in 1890, it has been understood as a 'common law' type of statute, a statute setting forth very general propositions, that the Judges in common law fashion would implement and develop on a case by case basis."); *see also* Fed. Trade Comm'n v. Raladam Co., 283 U.S. 643, 648 (1931) (describing the Federal Trade Commission Act's prohibition on "unfair methods of competition" as a phrase that "do[es] not admit of precise definition," and that "the meaning and application . . . [would] be arrived at by . . . 'the gradual process of judicial inclusion and exclusion'" (quoting Davidson v. New Orleans, 96 U.S. 97, 104 (1877))); United States v. Columbia Pictures Corp., 189 F. Supp. 153, 182 (S.D.N.Y. 1960) (noting that the Clayton Act "was deliberately couched in general and flexible terms" and that it was incumbent on the judiciary to fashion "a coherent body of substantive law out of the [c]ongressional policy and language").

488. United States v. Microsoft Corp., 253 F.3d 34, 58 (D.C. Cir. 2001) (en banc) (per curiam).

489. Baer, *supra* note 485, at 3 ("This consensus on how best to maximize consumer welfare owes much to the contributions of economists and legal scholars who, beginning in the 1950s, argued that many of the antitrust decisions of that

analysis more administrable, and these can be adapted to patent misuse analysis.

The first way is through the filter of an antitrust injury. Weeding out frivolous antitrust claims or misuse defenses at an early stage can protect patentees while ensuring that legitimate complaints are given full and fair consideration. The second is through the use of a truncated analysis where judicial experience and economic learning give courts the confidence to shift the burden of explaining the conduct to the patentee.

The "antitrust injury" was devised by courts to filter out complaints by injured rivals that do not hurt consumers, and it requires a nexus between the anticompetitive effects and the act.[490] That conduct must go beyond excluding rivals and harm the competitive structure.[491] Courts focus on evidence of competitive effects and efficiencies in the motion to dismiss and summary judgment stages in burdens of pleading, production, and proof.[492]

The antitrust injury requirement aligns private litigation to antitrust law's interest in promoting consumer welfare. It prevents plaintiffs from using antitrust suits as a means to impair rivals.[493] Other factors in assessing antitrust standing include "the directness

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period lacked sound economic foundations."); Duffy, *supra* note 319, at 542 ("[W]hat a move from *per se* legality or *per se* illegality towards the rule of reason means is something like what it is meant in every other area of antitrust law that has moved from *per se* treatment to the rule of reason: more rigorous economic analysis, more attention to economic evidence rather than less.").

490. Brunswick Corp. v. Pueblo Bowl–O–Mat, Inc., 429 U.S. 477, 489 (1977) (explaining that antitrust injury is "injury of the type the antitrust laws were [designed] to prevent and that flows from that which makes the defendants' acts unlawful"); Andrew I. Gavil, *Moving Beyond Caricature and Characterization: The Modern Rule of Reason in Practice*, 85 S. CAL. L. REV. 733, 735 (2012) ("Oftentimes, the filtering process commences with challenges to standing that evaluate the plaintiff's ability to allege '*antitrust* injury,' and many cases fail to overcome even this first hurdle." (footnote omitted)); *see also Brunswick Corp.*, 429 U.S. at 488 (holding that plaintiffs had not established antitrust injury where they sought to recover for "profits they would have realized had competition been reduced" but for the defendant's pro-competitive activities); Atl. Richfield Co. v. USA Petroleum Co., 495 U.S. 328, 334 (1990) (stating that an injury "causally related to an antitrust violation . . . will not qualify as 'antitrust injury' unless it is attributable to an anticompetitive aspect of the practice under scrutiny").

491. *Brunswick Corp.*, 429 U.S. at 488.

492. Bell Atl. Corp. v. Twombly, 550 U.S. 544, 557 (2007) (requiring the complaint to "possess enough heft to 'sho[w] that the pleader is entitled to relief'" (quoting FED. R. CIV. P. 8(a)(2))).

493. Sprint Nextel Corp. v. AT&T Inc., 821 F. Supp. 2d 308, 313-14 (D.D.C. 2011).

of the injury, whether the claim for damages is 'speculative,' the existence of more direct victims, the potential for duplicative recovery and the complexity of apportioning damages."[494]

The antitrust injury requirement has been applied in the essential facility context. As the court in *The David L. Aldridge Co. v. Microsoft Corp.* put it, "[a] facility is essential under the antitrust laws only when it is vital to both the plaintiff's individual competitive viability and the viability of the market in general."[495]

Plausibility is the key, as the allegation must nudge the claim "across the line from conceivable to plausible."[496] The complaint must contain "more than labels and conclusions, and a formulaic recitation of the elements of a cause of action will not do."[497] Commentators have noted that the "antitrust injury" filter "generally works well to sort the strong cases from the weak cases," preventing plaintiffs from proceeding to trial.[498]

Even though courts are already throwing out misuse defenses for sloppy lawyering, the process can be improved. Motions to strike or dismiss in misuse cases have risen from 3% between 1953 and 1962 to 31% between 2003 and 2012.[499] A survey of reported misuse cases between 1953 and 2012 "showed an astounding lack of awareness" on what is required for defendants to survive dismissal.[500] For example, in *Monsanto Co. v. Boggs Farm Centers, Inc.*, the district court struck the defendants' misuse claim because it did "nothing more than make a conclusory allegation of patent misuse," "omitted any short and plain statement of facts and failed totally to allege the necessary elements of the alleged claim."[501]

Patent misuse could incorporate a similar heuristic to safeguard against "innovation injury." In patent misuse cases, the defendant

494. Andrx Pharm., Inc. v. Biovail Corp. Int'l, 256 F.3d 799, 806 (D.C. Cir. 2001).

495. 995 F. Supp 728, 753 (S.D. Tex. 1998).

496. *Twombly*, 550 U.S. at 570.

497. *Id.* at 556; *see also* Ashcroft v. Iqbal, 556 U.S. 662, 678 (2009) (explaining that a complaint falls short when it does not "contain sufficient factual matter, accepted as true, to 'state a claim to relief that is plausible on its face'" (quoting *Twombly*, 550 U.S. at 570)).

498. *See, e.g.*, Gavil, *supra* note 490, at 735-36.

499. *See* LIM, *supra* note 322, at 305-06.

500. *Id.* at 307.

501. No. 4:10CV286 (HEA), 2010 WL 4792103, at *3 (E.D. Mo. Nov. 18, 2010); *see also* Monsanto Co. v. Swann, No. 4:00-CV-1481 (CEJ), 2001 WL 34079480, at *3-4 (E.D. Mo. Sept. 19, 2001) (dismissing the defendant's misuse claim for failure to identify with specificity allegations claimed to constitute patent misuse).

similarly stands before the court as a proxy for the public interest.[502] Like the fair use defense, patent misuse safeguards the public domain and restrains overreaching.[503] Over time, an effects-focused framework should better help patent attorneys offer courts better articulated grounds for raising the misuse defense.[504] This is important because a patent defendant raising a misuse defense is standing as proxy for the public interest. Hence, the more information the court has, the better position it will be in adjudicating between the parties while taking into account the public interest.

The second way an effects-focused analysis can be made more administrable is through the use of a truncated approach. Truncation provides an efficient method of addressing conduct that can be condemned without costly argument and deliberations.[505] Courts adopt an approach similar to truncation when there is direct evidence of anticompetitive effects.[506] Conversely, where a restraint is

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502. *See* Lim, *supra* note 229, at 379 (reporting a judicial interviewee's observation that "even a rogue infringer does the public a service by exposing a patentee's egregious conduct").

503. *Id*. at 319 ("Patent misuse may be analogized to the fair use defense in copyright law.").

504. Procter & Gamble Co. v. CAO Grp., Inc., No. 1:13-CV-337, 2013 WL 5353281, at *4-6 (S.D. Ohio Sept. 24, 2013) (noting it is the adverse effect upon the public interest that disqualifies patentees from maintaining the suit, regardless of whether the particular defendant has suffered from the misuse of the patent).

505. Timothy J. Muris & Brady P.P. Cummins, *Tools of Reason: Truncation Through Judicial Experience and Economic Learning*, ANTITRUST, Summer 2014, at 46, 50 ("Truncation remains an important tool, both to promote efficient antitrust enforcement against those few restraints that can be condemned based on prior judicial experience and current economic learning without detailed and expensive consideration of market issues, and to prohibit restraints that are shown through appropriate direct evidence to cause substantial anticompetitive effects.").

506. *See, e.g*., Polygram Holding, Inc. v. Fed. Trade Comm'n, 416 F.3d 29, 34-38 (D.C. Cir. 2005). Truncated analysis falls along the continuum between a full rule of reason and *per se* treatment. Cal. Dental Ass'n v. Fed. Trade Comm'n, 526 U.S. 756, 779 (1999) ("The truth is that our categories of analysis of anticompetitive effect are less fixed than terms like '*per se*,' 'quick look,' and 'rule of reason' tend to make them appear. We have recognized, for example, that 'there is often no bright line separating *per se* from Rule of Reason analysis . . . .'" (quoting Nat'l Collegiate Athletic Ass'n v. Bd. of Regents of Univ. of Okla., 468 U.S. 85, 104 n.26 (1984))); *see also* David Eisenstadt & James Langenfeld, *The Role of Economics in Truncated Rule of Reason Analysis*, ANTITRUST, Summer 2014, at 52, 52 ("Typically, reference to economic theory or published quantitative evidence is used to demonstrate that such restraints will harm consumers by increasing price or reducing output, absent some clear offsetting efficiency explanation.").

ancillary and necessary for the procompetitive effect, courts have also blessed it in a "'twinkling of an eye.'"[507]

The burden shifting may be critical for courts to obtain the information they need to fully decide on the merits of a case. An empirical study conducted by Professor Michael Carrier found that courts in antitrust cases did not balance anything 96% of the time when they applied the rule of reason.[508] Rather, courts "typically dismiss[ed] the case at any one of the three stages that precedes the ultimate balancing."[509] A decade later, Carrier's updated study noted that courts disposed of 97% of their cases at the first stage on grounds that the plaintiff failed to show anticompetitive effects.[510] Only in 2% of the cases does the balancing actually take place, and it was done in "a cursory fashion."[511] This is anecdotally affirmed by case commentators.[512]

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507. *See, e.g.*, Am. Needle, Inc. v. Nat'l Football League, 560 U.S. 183, 203-04 (2010) (quoting *Nat'l Collegiate Athletic Ass'n*, 468 U.S. at 109 n.39) (finding the shared interest in the success of the football league and in maintaining a competitive balance among athletic teams justified a "defendant's quick look approach").

508. *See* Michael A. Carrier, *The Real Rule of Reason: Bridging the Disconnect*, 1999 BYU L. REV. 1265, 1267-68 (reviewing all 495 rule of reason cases between 1977 and 1999).

509. *Id*. at 1268-69 (finding that 84% of cases are disposed of at the initial stage, where the plaintiff must show a significant anticompetitive effect resulting from the restraint; 3% of cases found the restraint illegal because the defendant failed to show procompetitive justifications for the restraint; 1% of cases were dismissed because the plaintiff could not show the restraint was unnecessary to achieve the objectives or that the objectives could be achieved by alternatives "less restrictive" of competition).

510. Michael A. Carrier, *The Rule of Reason: An Empirical Update for the 21st Century*, 16 GEO. MASON L. REV. 827, 828, 831 (2009).

511. *Id*.

512. *See, e.g.*, Mark S. Popofsky, *Defining Exclusionary Conduct: Section 2, the Rule of Reason, and the Unifying Principle Underlying Antitrust Rules*, 73 ANTITRUST L.J. 435, 445-47 (2006) ("The [*Microsoft*] court actually compared effects *only* when analyzing Microsoft's restrictions on computer manufacturers' modifications of the Windows start-up screens. This conduct, which impeded rivals but the court found justified by substantial efficiencies, involved agreements also subject to Sherman Act Section 1's rule of reason. By contrast, when analyzing Microsoft's unilateral 'product design' conduct . . . the court, while using the language of comparing effects, in fact *avoided* that inquiry. Rather than compare effects, the court found in some instances no anticompetitive effect, in some no justification, and in others no rebuttal to the justification. . . . Revealingly, the *Microsoft* court also appeared to protect certain conduct as essentially per se lawful. . . . In other words, the court determined that impeding rivals through conduct deemed to reflect only efficiency was, in effect, protected 'superior skill, foresight, and industry.'" (footnote omitted)).

Commentators studying the Court's *Actavis* decision explain why it makes sense in certain cases to place the burden of production on antitrust defendants.[513] They note that

> [a]llocating the burden to the defendant to provide justifications for a settlement also makes sense: it would be unreasonable and inefficient to expect a plaintiff to prove the absence of any convincing justification without requiring the defendants first to narrow the scope of the facts and justifications at issue by making their case.[514]

Where the patentee made a sufficient sizable payment, the court will accept that as a proxy for possible anticompetitive harm and require the patentee to justify that payment.[515]

The Supreme Court had instructed that "it is normally not necessary to litigate patent validity."[516] Rather, courts can turn to the presence of a payment from the patentee to the generic as circumstantial evidence of anticompetitive effects.[517] Hovenkamp described the sort of reverse payments described in *Actavis* as a "prime example" of conduct "highly likely to harm consumer welfare."[518] They create little duopoly cartels between the patentee and potential generic entrant by shielding the patent from challenge, no matter how weak it is.[519] These payments contravene antitrust

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513. Aaron Edlin et al., Actavis *and Error Costs: A Reply to Critics*, 14 ANTITRUST SOURCE 1, 4 (2014) ("The Court's repeated use of the terms 'unexplained' or 'unjustified' to modify 'large reverse payments' suggests that such payments are not illegal if appropriately justified, *and* that the burden is on the defendant to justify (i.e., explain) them.").

514. *Id*.

515. Fed. Trade Comm'n v. Actavis, Inc., 133 S. Ct. 2223, 2236-37 (2013) ("The owner of a particularly valuable patent might contend, of course, that even a small risk of invalidity justifies a large payment. But, be that as it may, the payment (if otherwise unexplained) likely seeks to prevent the risk of competition. And, as we have said, that consequence constitutes the relevant anticompetitive harm. In a word, the size of the unexplained reverse payment can provide a workable surrogate for a patent's weakness, all without forcing a court to conduct a detailed exploration of the validity of the patent itself.").

516. *Id*. at 2236.

517. *Id*. ("[W]here a reverse payment threatens to work unjustified anticompetitive harm, the patentee likely [has] the power to bring that harm about in practice. . . . [T]he 'size of the payment from a branded drug manufacturer to a prospective generic [challenger] is itself a strong indicator of [such] power . . . .'" (citation omitted)); *see also id*. at 2236-37 (noting that a large, "unexplained reverse payment can provide a workable surrogate for a patent's weakness, all without forcing a court to conduct a detailed exploration of the [patent's] validity").

518. *See* Hovenkamp, *supra* note 306 (manuscript at 19).

519. *Id*. (manuscript at 26) (noting that most reverse payments occur over "secondary . . . patents on new dosages, new treatments or new combinations of

policy because the market division agreements provide no cognizable procompetitive justifications such as joint production, distribution, or sharing of technology. Nor are there "legitimately conflicting" litigation claims where parties could act as proxies for the public; here their interests in settling are merely pre-textual.[520]

Actavis rejected a truncated approach simply on the existence of a reverse payment and advocated one that placed the burden on the patentee and generic drug company receiving that payment to account for disparities between the payment and expected litigation costs. In doing so, the Court used an unexplained large payment as circumstantial evidence of anticompetitive harm.[521] Similarly, patentees in Monsanto's position would be made to bear the burden of justifying their conduct once conduct consistent with possible anticompetitive harm is shown. This incentivizes patentees to adduce evidence for courts to more fully consider the merits of the case which would not have been made available had the burden of production not shifted.

Courts have occasionally paid more attention to analyzing licensing restraints. For instance in *Scruggs*, the district court rejected an allegation of tying on the basis that Monsanto had required use of Roundup and Roundup Ready crops because Roundup "was the only EPA-approved herbicide that *could* be used on Roundup Ready crops during that period."[522] Once competing glyphosate herbicides met EPA labeling requirements for "over-the-top" use, Monsanto's license agreements allowed those to be used.[523] The Federal Circuit affirmed on appeal.[524] Similarly, in *Trantham*, the court found that Monsanto offered a "superior product . . . that has been warmly received by the seed producers, retailers, and individual farmers."[525]

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well-established drugs," which are declared invalid or not infringed 70% of the time); *see also id*. (manuscript at 19) ("This is why the Supreme Court acted correctly when it held that such agreements could be condemned without necessarily inquiring into questions about patent validity or infringement.").

520. Standard Oil Co. (Ind.) v. United States, 283 U.S. 163, 171 (1931).

521. *Actavis*, 133 S. Ct at 2236-37.

522. Monsanto Co. v. Scruggs, 342 F. Supp. 2d 568, 577 (N.D. Miss. 2004), *aff'd*, 459 F.3d 1328 (D.C. Cir. 2006)).

523. *Id*.

524. Monsanto Co. v. Scruggs, 459 F.3d 1328, 1341 (Fed. Cir. 2006) ("The record shows that Monsanto's competitors sought and obtained regulatory approval and that when they did, Monsanto modified its contracts accordingly.").

525. Monsanto Co. v. Trantham, 156 F. Supp. 2d 855, 863 (W.D. Tenn. 2001).

However, these are exceptions rather than the norm. There may indeed be good reasons for prohibiting stacking, such as a gene or trait degradation.[526] If Monsanto or another patentee refuses to license a patent covering a technology standard because doing so would threaten its reputation or the integrity of its products, it will be best placed to proffer that evidence. The key is whether the patentee is leveraging control over patented traits to control ancillary spheres that fall outside of its primary market. Similarly, if the EPA revokes product registrations for failing to meet stewardship standards or if targeted pest or weeds develop resistance to the traits in question, the patentee should also be required to produce evidence supporting that assertion.[527] In *Scruggs*, the district court assumed those assertions warranted the grant of an injunction against the infringer–farmer.[528]

This mirrors a similar "rule of reason" approach advocated by patent law commentators and used by the Supreme Court when deciding patent cases. For example, Professor Peter Lee observed that multifactor balancing tests set out by the Supreme Court in patent law can impose high information costs on lower courts and suggested that those costs can be mitigated by clearly structuring the expected inquiry.[529] One example, Lee suggests, is to delineate a set of weighted factors with a view that a later decision provides the base from which to build a better vantage point for the next court.[530] It also signals to litigating parties the factors to focus on or how to conduct business to preemptively avoid a challenge.[531]

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526. VANDY HOWELL ET AL., COMPETITION AND INNOVATION IN AMERICAN AGRICULTURE 42 (2009), *available at* http://www.corporatecrimereporter.com/documents/monsanto.pdf (noting that Monsanto has argued that "stacking" its GMO traits with GMO traits from competing sources may impair the performance of its GMO traits in some cases).

527. *Scruggs*, 342 F. Supp. 2d at 576-77 (finding the restriction was necessary to comply with the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) 7 U.S.C. § 136 et seq. (2012)); *see also id*. at 577 ("Because Roundup was the only product labeled for use 'over-the-top' of Roundup Ready crops between 1996 and 1998, it was the only EPA-approved herbicide that *could* be used on Roundup Ready crops during that period. Beginning in 1999, Monsanto's license agreements and/or technology use guides authorized the use of any competing glyphosate herbicide which met EPA labeling requirements for 'over-the-top' use as a permissible alternative to Roundup.").

528. Monsanto Co. v. Scruggs, 249 F. Supp. 2d 746, 758 (N.D. Miss. 2001).

529. Peter Lee, *Patent Law and the Two Cultures*, 120 YALE L.J. 2, 66-68 (2010).

530. *Id*.

531. Other areas of complex litigation such as those involving FRAND-encumbered patents have benefitted from well-reasoned decisions that both provide

Patentees who argue that defendants have infringed on their claimed invention because variations between the two are insubstantial may be prevented from doing so if the prosecution history of the patent shows that they had surrendered the equivalent during prosecution.[532] In order to overcome this bar, patentees need to show that the amendment was due to reasons that were unforeseeable, affected the claim tangentially, or was made due to some other reason owing to linguistic constraints.[533] The goal is to get relevant information from the parties and to place the burden on the one best suited to provide that information.

Like antitrust law, a truncated approach to patent misuse can be developed through economic and judicial learning. One instance where burden shifting might be appropriate is where a defendant can show that a patentee controlling an industry standard is using through antistacking restrictions to prevent the emergence of a new product not offered by the patentee itself. Once the defendant shows that access to the patent technology is required, the burden should shift to the patentee to show why refusing access is justified by patent policy considerations. Unlike with antitrust law, impact on market competition, while relevant, is not essential to the analysis.

A second instance could be the use of the conditional sale doctrine to curtail patent exhaustion. The Federal Circuit's intention to infuse a balancing mechanism into the misuse doctrine was directionally correct, but cabining it within the antitrust rule of reason was doctrinally indefensible and the Federal Circuit was simply wrong in its application of Supreme Court precedent.[534] Where the presence of a conditional sale clause is proven, the burden should shift to the patentee to explain it. In an appropriate case, the

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the basis for further refinement and minimize the cognitive burdens involved in the inquiry. *See id*.

532. Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722, 740 (2002) ("[W]hen the court is unable to determine the purpose underlying a narrowing amendment—and hence a rationale for limiting the estoppel to the surrender of particular equivalents—the court should presume that the patentee surrendered all subject matter between the broader and the narrower language.").

533. *Id*. at 740-41 ("The equivalent may have been unforeseeable at the time of the application; the rationale underlying the amendment may bear no more than a tangential relation to the equivalent in question; or there may be some other reason suggesting that the patentee could not reasonably be expected to have described the insubstantial substitute in question. In those cases the patentee can overcome the presumption that prosecution history estoppel bars a finding of equivalence.").

534. Lim, *supra* note 229, at 332-34.

court could decide to sever the offending clause, uphold the rest of the license, and leave the patent's enforceability intact.[535]

A third instance could be based on classic forms of misuse such as tying, post-royalty extensions and market division agreements. Each of these instances finds justification for intervention based on judicial experience.[536] Again, the court could spare the patentee from the consequences of misuse if it can show that patent policy is furthered by siding with the patentee. Since patent policy favors the public benefit over private interests, the burden on the patentee will predictably be a heavy one, but at least for the patentee, it will be preferable to the swift condemnation it would currently face.

In assessing the consistency of an explanation to patent policy, economics can help the analysis. Innovation economics is a growing branch of economics doctrine that pursues higher productivity through greater innovation and looks beyond input resources and price signals to economic growth.[537] An empirical study shows that misuse is most often alleged in cases involving tying, licensing restrictions, and vexatious litigation.[538] Future studies parsing through those cases can identify the features that lead to their condemnation or acquittal and identify appropriate instances where the burden shifting may be shifted based on economic theory. These studies can assist courts in articulating more analytically robust opinions that are also better aligned to policy goals.

As much as predictability is a desired trait, liability determinations under misuse or antitrust cannot be formulaically

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535. For an example in the context of royalty extensions, see Cordance Corp. v. Amazon.com, Inc., 727 F. Supp. 2d 310, 336-37 (D. Del. 2010) ("[E]ven assuming that Cordance's contractual agreements did constitute patent misuse *per se* under *Brulotte*, it does not follow that the court need render the '710 patent unenforceable in its entirety. The court might invalidate only the post-expiration passive royalties. And here, any final extension that would put the GSP Agreement beyond the term of the '710 patent has not yet been and might never be exercised.").

536. Lim, *supra* note 229, at 309. ("Examples of patent misuse include tying, package licensing, and horizontal price-fixing and territorial allocationsunder the guise of sham patent licenses.").

537. *See* ROBERT D. ATKINSON & STEPHEN J. EZELL, INNOVATION ECONOMICS: THE RACE FOR GLOBAL ADVANTAGE 297 (2012) ("Innovation economists focus on the actual processes of production and innovation, such as trying to determine why firms develop and adopt new technologies and what policies can spur them to do more. . . . [I]nnovation economics holds that while markets are important, left to themselves they will not produce the amount of innovation and growth possible without supplementation by strong public innovation policies.").

538. LIM, *supra* note 322, at 6, 14.

applied. As Justice Holmes reminded us, the life of the law is experience, not logic.[539] Those who emphasize the paramount importance of certainty at the expense of justice must realize that the law on patent misuse and the antitrust laws are advanced by judges.[540] Each time there was an advance in the law, it was because of "the bold spirits who were ready to allow it if justice so required."[541]

Ultimately, an effects-focused approach requires litigants to provide more information and invites judges to think a little harder in light of judicial experience and economic learning.[542] As cases are litigated, the boundaries of permissible payments will be mapped out, guiding settling parties and allowing antitrust agencies to plan their resources more efficiently.[543] The framework itself must adjust and adapt itself to the changing circumstances of life, for the avenues by which the progress of innovation and competition may be stalled, but are never closed.

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539. OLIVER WENDELL HOLMES, JR., THE COMMON LAW 3 (John Harvard Library 2009) (1881).

540. Leegin Creative Leather Prods., Inc. v. PSKS, Inc., 551 U.S. 877, 898-99 (2007) ("As courts gain experience considering the effects of these restraints by applying the rule of reason over the course of decisions, they can establish the litigation structure to ensure the rule operates to eliminate anticompetitive restraints from the market and to provide more guidance to businesses. Courts can, for example, devise rules over time for offering proof, or even presumptions where justified, to make the rule of reason a fair and efficient way to prohibit anticompetitive restraints and to promote procompetitive ones."); Gavil, *supra* note 490, at 734-35.

541. Candler v. Crane, Christmas & Co., [1951] 2 KB 164 ("On the one side there were the timorous souls who were fearful of allowing a new cause of action. On the other side there were the bold spirits who were ready to allow it if justice so required. It was fortunate for the common law that the progressive view prevailed.").

542. 7 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION 382 (3d ed. 2010) ("We thus have no choice except to make the best judgments we can, guided by the statutory purpose, our knowledge of the economy, generally accepted economic principles, and the facts of the case.").

543. Brenna E. Jenny, *Information Costs and Reverse Payment Settlements: Bridging the Gap Between the Courts and the Antitrust Agencies*, 30 SANTA CLARA HIGH TECH. L.J. 231, 299 (2014) ("By broadcasting a range of payments that they will generally consider to be low risk, courts allow parties to react accordingly when structuring a settlement."); *see also* William E. Kovacic, THE FEDERAL TRADE COMMISSION AT 100: INTO OUR 2ND CENTURY: THE CONTINUING PURSUIT OF BETTER PRACTICES 59 (2009), *available at* https://www.ftc.gov/sites/default/files/documents/public_statements/federal-trade-commission-100-our-second-century/ftc100rpt.pdf (describing how the FTC's ability to achieve its mission of protecting consumers depends on efficient allocation of agency resources).

CONCLUSION

The new normal is one where American farmers no longer save their seed. It resulted from declining government funding and the rise of private interests in meeting the demands placed on modern agriculture. The advances in agricultural technology will benefit farmers and consumers of their produce.

While the Supreme Court correctly found for Monsanto in *Bowman*, future cases must iron out the two kinks it left behind. First, inadvertence cannot shield a farmer from patent infringement. Second, authorized sales exhaust all rights to seed sold, even when they are transacted conditionally. In cases involving antitrust and misuse, patentees can no longer rely on courts applying a formalistic analysis of patent scope.

Post-*Actavis*, courts will look to both antitrust and patent policies in determining whether the restraint is legal. Whether *Actavis* succeeds in catalyzing a more careful balance between the rights of agrobiotech patentees and the rest of society depends on litigants and judges. They will have to understand the logic and limits of an effects-focused framework and have the confidence to push those limits when necessary. While the task will not be easy, stakeholders can do no worse than squander the opportunity given to them by failing to try. Our future depends on it.

Postscript: Acting *sua sponte*, the Federal Circuit on April 14, 2015 ordered *en banc* briefing on the issue of patent exhaustion in *Lexmark International, Inc. v. Impression Products, Inc.*, 785 F.3d 565 (Fed. Cir. 2015), *sua sponte hearing en banc* Nos. 2014-1617, 2014-1619. One of the two questions it has posed for itself is to consider whether to overrule *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700 (Fed. Cir. 1992), in light of *Quanta Computer, Inc. v. LG Electronics, Inc.*, 553 U.S. 617 (2008), "to the extent it ruled that a sale of a patented article, when the sale is made under a restriction that is otherwise lawful and within the scope of the patent grant, does not give rise to patent exhaustion[.]"