

BOWMAN V. MONSANTO: BOWMAN, THE PRODUCER AND THE END USER

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I. INTRODUCTION

Since the mid-1980s, agricultural biotechnology firms have routinely received patent protection for genetically modified (“GM”) seeds.¹ Due to the self-replicating nature of GM seeds, the firms employ a combination of patent law and contract law to limit and control the use of patented seeds.² This practice is largely motivated by a desire to sidestep patent law’s exhaustion doctrine, under which the initial authorized and unrestricted sale of a patented article “exhausts” or terminates the patentee’s rights to that article with respect to its ordinary useful life.³

Exhaustion of patent rights is an affirmative defense to infringement claims concerning the use or resale of a patented good.⁴ Because any user of self-replicating technology becomes a potential producer, the exhaustion doctrine poses a substantial commercialization risk for patentees of self-replicating technologies. The U.S. Supreme Court confronted the scope of patent exhaustion in the context of self-replicating GM seeds for the first time in *Bowman v. Monsanto Co.*⁵

Seeds are among the most abundant example of patented self-replicating technologies,⁶ and as such, the *Bowman* opinion was highly anticipated.⁷

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1. *See* J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int’l, Inc., 534 U.S. 124, 131 (2001) (noting that the U.S. Patent and Trademark Office Board of Patent Appeals and Interferences held in *Ex parte* Hibberd, 227 U.S.P.Q. 443 (B.P.A.I. 1985) that “plants were within the understood meaning of ‘manufacture’ or ‘composition of matter’ and therefore were within the subject matter of § 101”).

2. Eric J. Rogers, *The Inexhaustible Right to Exclude Reproduction Doctrine*, 14 COLUM. SCI. & TECH. L. REV. 389, 391 (2013).

3. *See* Quanta Computer, Inc. v. LG Elecs., Inc., 553 U.S. 617, 625 (2008).

4. *ExcelStor Tech., Inc. v. Papst Licensing GMBH & Co.*, 541 F.3d 1373, 1376 (Fed. Cir. 2008) (specifying that “patent exhaustion is a defense to patent infringement, not a cause of action”).

5. 133 S. Ct. 1761, 1764 (2013).

6. *See* Rogers, *supra* note 2, at 402.

Scholars predict this opinion will have broad implications for the biotechnology and software industries.⁸ *Bowman* presented the Court with a new problem for the doctrine of patent exhaustion: the self-replicating nature of seeds inevitably makes the consumer of a patented article a producer of the article.

Ultimately, the Court decided *Bowman* narrowly and held that, as far as seeds are concerned, a patentee's exclusionary right is not exhausted as to subsequent generations of seeds.⁹ In other words, the patentee's right is not exhausted even where use of an article necessitates the making of new, patented articles. Notably, however, the Court placed an emphasis on the affirmative actions of Bowman—a farmer and the defendant in *Bowman*—that were designed to exploit the technology of Monsanto—the patentee and the plaintiff in this case—and avoid compensating Monsanto for using its technology.¹⁰

This Note addresses two critical issues. First, because the patentee's exclusionary right is exhausted with respect to other end users or consumers, does *Bowman* stand for the proposition that there are now uses of self-replicating technologies that are inexhaustible?¹¹ In other words, would this case have been decided differently if Bowman was not actively seeking Monsanto's patented technology, but was instead solely planting commodity soybeans en masse? Answering this question focuses on whether there is a meaningful distinction between making and using self-replicating technologies, and whether there exists an alternative to the make/use distinction that courts could otherwise explore.

Second, if certain uses of self-replicating patented goods are virtually inexhaustible, is the existing liability framework for patent infringement appropriate for self-replicating technologies that are amenable to inadvertent production of new articles?¹² Related to this question is consideration of the pervasiveness of genetically modified crops in farming and how

7. For example, twenty-nine amicus briefs were filed in this case.

8. See Adam Garmezy, Comment, *Patent Exhaustion and The Federal Circuit's Deviant Conditional Sale Doctrine: Bowman v. Monsanto*, 8 DUKE J. CONST. L. & PUB. POL'Y SIDEBAR 197, 216 (2013) ("The Court's decision will likely have a significant impact on innovation incentives through the entire biotechnology sector."). See generally Zachary Loney, Note, *Bowman's Beanstalk: Patent Exhaustion in Self-Replicating Technologies*, 15 VAND. J. ENT. & TECH. L. 949 (exploring the similarities between biotechnology and incidental copying in software systems); Daniel Winston et al., *How Bowman v. Monsanto May Wreak Havoc on Biotechnology*, LAW 360 (Apr. 15, 2013), <http://www.law360.com/articles/432230/print?section=appellate>.

9. See *Bowman*, 133 S. Ct. at 1769.

10. *Id.* ("Bowman was not a passive observer of his soybeans' multiplication")

11. See *infra* Part IV.

12. See *infra* Part V.

contamination by GM seeds is a tangible risk for organic and non-GM farmers. Contamination by GM seeds like Monsanto's Roundup Ready® seeds not only results in infringement liability, but also risks an organic farmer's organic certification,¹³ and can cause large cleanup costs and market restrictions.¹⁴ Although Monsanto has promised it will not sue farmers for infringement of this sort,¹⁵ the public should not be left to rely on promises made by producers of self-replicating technologies. Although it is currently unclear that any potent legal protections exist for the "infringing" organic farmer whose field becomes contaminated by GM seeds,¹⁶ this Note suggests a framework that, at least, can allow these farmers to avoid infringement liability.

Part II of this Note briefly examines the development of the patent exhaustion doctrine. Part III describes Monsanto's self-replicating seed technology and the *Bowman* case. Part IV explains how exhaustion applies to Bowman and other end users, and it further expands on the make/use distinction central to, but otherwise glossed over in, the Supreme Court's *Bowman* opinion. Because many self-replicating technologies are purchased for the purpose of using them in a way that necessitates self-replication, Part IV concludes that certain uses, even if they are expected and ordinary, are now inexhaustible in the wake of *Bowman*. These uses are inexhaustible regardless of whether the consumer licenses directly with Monsanto or is a downstream purchaser. Part IV further suggests that regardless of whether

13. See Complaint at 5, *Organic Seed Growers & Trade Ass'n v. Monsanto Co.* (*Organic I*), 851 F. Supp. 2d 544 (S.D.N.Y. 2012) (No. 11 Civ. 2163).

14. There are at least twenty-six countries that have total or partial bans on production and importation of genetically modified organisms ("GMO"). Germany, Greece, Switzerland, Austria, China, India, France, Luxembourg, Bulgaria, Poland, Hungary, Italy, and Mexico are among these countries. Walden Bellow & Foreign Policy In Focus, *Twenty-Six Countries Ban GMOs—Why Won't the US?*, THE NATION (Oct. 29, 2013, 10:59 AM), <http://www.thenation.com/blog/176863/twenty-six-countries-ban-gmos-why-wont-us>. Countries that do not have restrictions on GM foods may also be less likely to accept GM crops if those crops are intended to be processed for sale in countries that do restrict the use of GM foods.

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

16. The greatest perceived difficulty with common law tort remedies for field contamination is identifying a defendant. For example, where scholars suggest trespass and nuisance as potential remedies, farmers bringing those suits will likely be suing neighboring farmers rather than Monsanto itself. For discussions on remedies that could be made available to victims of field contamination, see Richard A. Repp, Note, *Biotech Pollution: Assessing Liability for Genetically Modified Crop Production and Genetic Drift*, 36 IDAHO L. REV. 585, 598–620 (2000). See also Drew L. Kershen, *Of Straying Crops and Patent Rights*, 43 WASHBURN L.J. 575, 582, 592 (2004).

the Court created an inexhaustible right to exclude reproduction¹⁷ or to exclude certain uses, the Court should have created an inexhaustible right to exclude exploitation. The distinction between exploitation and making/using better balances the concerns that drive the doctrine of patent exhaustion with the protection of Monsanto's patent rights and the property rights of end users. Finally, Part V considers a concern raised by the plaintiffs in *Organic Seed Growers and Trade Association v. Monsanto Co.*, who seek a declaratory judgment that would prevent Monsanto from suing them in the instance of field contamination. Part V also posits that a right of exploitation as discussed in Part IV can better help resolve infringement liability concerns for accidental infringers without having to drastically restructure the liability standard (i.e., adding an intent requirement).

II. THE PATENT EXHAUSTION DOCTRINE

A patent grants the inventor the right to exclude others from making, using, selling, and offering to sell or import her patented article.¹⁸ Thus, a patent does not grant affirmative rights to a patentee but grants negative, exclusionary rights.¹⁹ Because patent protection comes with the social cost of a monopoly,²⁰ the doctrine of patent exhaustion has come to exist as a matter of good public policy. It is intended to limit a patentee's rights with respect to a particular article sold and to discourage unwarranted compensation.²¹

The exhaustion doctrine stands for the principle that "the initial authorized sale of a patented item terminates all patent rights to that item."²² Patent exhaustion thus limits "a patentee's right to control what others can do with an article embodying or containing an invention" by exhausting the

17. See Rogers, *supra* note 2, at 391.

18. 35 U.S.C. § 271(a) (2012).

19. See generally *Bio-Tech. Gen. Corp. v. Genentech, Inc.*, 80 F.3d 1553, 1559 (Fed. Cir. 1996) (quoting *Vaupel Textilmaschinen KG v. Meccanica S.P.A.*, 944 F.2d 870, 879 n.4 (Fed. Cir. 1994)) ("It is elementary that a patent grants only the right to exclude others and confers no right on its holder to make, use, or sell.").

20. Thomas Jefferson once wrote, "I know well the difficulty of drawing a line between the things which are worth to the public the embarrassment of an exclusive patent, and those which are not." Letter from Thomas Jefferson to Isaac McPherson (Aug. 13, 1813), *in* 13 THE WRITINGS OF THOMAS JEFFERSON 326, 335 (Andrew A. Lipscomb ed., 1903); see also *Graham v. John Deere Co.*, 383 U.S. 1, 7–11 (1966) (discussing Thomas Jefferson's writings on the early patent system).

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

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

patentee's monopoly over a particular article sold.²³ When a patent is exhausted, the patentee no longer has the right to exclude the activities of ordinary use, resale (promoting the free movement of patented articles in commerce), and ordinary repair of the article.²⁴ Recognizing that a continued monopoly over a product would cause "inconvenience and annoyance to the public that . . . are too obvious to require illustration," the U.S. Supreme Court in *Keeler v. Standard Folding Bed Co.* articulated broadly that "one who buys patented articles of manufacture from one authorized to sell them becomes possessed of an absolute property in such articles, unrestricted in time or place."²⁵

Although the doctrine developed in response to skepticism about attaching permanent restrictions on personal property,²⁶ patent exhaustion is primarily rooted in the rationale that "[t]he purpose of the patent law is fulfilled with respect to any particular article when the patentee has received his reward . . . by the [authorized] sale of the article."²⁷ However, behind what appears to be a simply stated doctrine, even as articulated in *Keeler*, "lurks the complex task of identifying an authorized sale for the purposes of exhaustion."²⁸ Generally, a patent is exhausted, and a sale is authorized, when the patentee sold the patented article without placing any lawful restrictions on the sale.²⁹

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

24. Amelia S. Rinehart, *Contracting Patents: A Modern Patent Exhaustion Doctrine*, 23 HARV. J.L. & TECH. 483, 485 (2010).

25. 157 U.S. 659, 666 (1895). In *Keeler*, the territorial restriction the patentee was attempting to enforce was included in the manufacturing licenses under which the good was made, but the restrictions did not expressly apply to any subsequent purchasers of the good. *Id.*

26. See Molly Shaffer Van Houweling, *The New Servitudes*, 96 GEORGETOWN L.J. 885, 914 (2008) (noting that early case law "reflect[s] a special skepticism about chattel servitudes that . . . reflect[s] a somewhat different mix of the concerns with notice and information costs, dead-hand control over the future, and externalities that motivated skepticism of land servitudes").

27. *Bowman*, 133 S. Ct. at 1766 (citing *United States v. Univis Lens Co.*, 316 U.S. 241, 249–50 (1942)).

28. Rinehart, *supra* note 24. The exhaustion doctrine has also become entwined with other affirmative defenses, such as patent owner misuse and restriction in restraint of trade. See *United States v. Univis Lens Co.*, 316 U.S. 241 (1942). The Federal Circuit, however, recognized *Univis Lens* as primarily an antitrust case. See *Mallinckrodt, Inc. v. Medipart*, 976 F.2d 700, 708 (Fed. Cir. 1992). But see John W. Osborne, *A Coherent View of Patent Exhaustion: A Standard Based on Patentable Distinctiveness*, 20 SANTA CLARA COMPUTER & HIGH TECH. L.J. 643, 649 (2004) ("[A]lthough attempts have been made, and are still made today, to characterize *Univis Lens* as an antitrust or implied license decision, the fundamental holding was based entirely on the patent exhaustion doctrine.").

29. Osborne, *supra* note 28, at 658.

One of the earliest cases to explore exhaustion in patented articles was *Adams v. Burke* in 1873.³⁰ There the plaintiff's predecessor in interest made a partial assignment of patent rights to a Boston company.³¹ The Boston-based company was licensed to make and sell the patented product, coffin lids, in Boston and within a ten-mile radius of the city.³² Burke purchased coffin lids from the Boston company and used the lids in his business, which operated outside of the designated ten-mile area.³³ However, because Burke purchased the coffin lids in Boston, the right to use the patented lids was exhausted by that sale and he was free to use them anywhere, even beyond the ten-mile radius.³⁴ The Court explained that:

so far as the use of it was concerned, the patentee had received his consideration, and it was no longer within the monopoly of the patent. It would be to engraft a limitation upon the right of use not contemplated by the statute nor within the reason of the contract to say that it could only be used within the ten-miles circle.³⁵

Thus, a property owner's rights embodying patented inventions are such that they should be able to use their property without restrictions. And the patentee's power to limit the use of a product embodying a patent is exhausted once the product is sold. *Adams* was followed by *Keeler*, in which the Court articulated that a purchaser of a lawfully made and sold patented item has not only the right to use that item, but also the right to sell the item without restrictions.³⁶

Entering the twentieth century, in *Motion Picture Patents Co. v. Universal Film Manufacturing Co.*, the Court refused to enforce tying restrictions³⁷ expressed in a label attached to movie projectors.³⁸ The patent holders of the motion picture projectors licensed the right to manufacture the machines and required their licensees to project only the patentee's own motion pictures with the machines.³⁹ Additionally, the patentee required licensees to pay

30. See 84 U.S. 453 (1873).

31. *Id.* at 456.

32. *Id.*

33. *Id.* at 454.

34. *Id.* at 456.

35. *Id.*

36. See *Keeler v. Standard Folding Bed Co.*, 157 U.S. 659, 666 (1895).

37. Tying restrictions are restrictions that require consumers of a patented article to purchase necessary but unpatented components of that article from the patentee, thus effectively expanding the patent's scope to encompass the components. See 2 WILLIAM C. HOLMES, INTELLECTUAL PROPERTY AND ANTITRUST LAW § 20:1 (Thomson Reuters ed., 2014).

38. 243 U.S. 502, 518–19 (1917).

39. *Id.* at 506.

royalties beyond the purchase price during the life of the patent, and prohibited them from selling the projectors below the patentee's list price.⁴⁰

In holding that these restrictions went far beyond the permissible scope of the patent right, the Court explained that “it is undeniably true, that the limited and temporary monopoly granted to inventors was never designed for their exclusive profit or advantage; the benefit to the public or community at large was another and doubtless the primary object in granting and securing that monopoly.”⁴¹ Although this case was “complicated by the arguably anti-competitive effects of the specific restrictions at issue,”⁴² the Court's holding still reflected skepticism of running restrictions on the use of patented goods, and a desire to avoid unjustified patentee compensation through a strong patent exhaustion doctrine. The *Motion Picture Patents* ruling more firmly established a reluctance to enforce post-sale restrictions within Supreme Court jurisprudence.⁴³

However, in 1939 the Court briefly deviated from its tendency to endorse strong exhaustion principles by upholding a field-of-use restriction in *General Talking Pictures Corp. v. Western Electric Co.*⁴⁴ In *General Talking Pictures* the licensee had a license to sell the patented article only for private audio application (not commercial use) and was required to attach a notice of this restriction to the articles it sold.⁴⁵ *General Talking Pictures* was a commercial user but nonetheless purchased the patented article from the licensee with the sales notice, knowingly violating the license restriction. The Court dismissed the defense that *General Talking Pictures*'s purchases made through a licensed seller compensated the patentee and therefore exhausted the patents.⁴⁶ The Court held that patentees are entitled to grant licenses and that any sales subject to a restriction, so long as such restrictions do not stretch the patent beyond its scope, were not legally authorized sales that would exhaust the patentee's rights.⁴⁷

40. *Id.*

41. *Id.* at 509.

42. Van Houweling, *supra* note 26, at 915.

43. In *Henry v. A.B. Dick Co.*, the Court held that a patentee could use an express and conditional license to impose a running restriction on the patented item. 224 U.S. 1, 35–36 (1912). The Court distinguished *Adams* and *Keeler* as cases involving unconditional sales of the patented articles, whereas *A.B. Dick* involved a conditional sale. *Id.* at 12–19. However *A.B. Dick Co.* was expressly overruled by *Motion Picture Patents Co.*, 243 U.S. at 517.

44. 304 U.S. 175, *aff'd on reh'g*, 305 U.S. 124 (1939).

45. 304 U.S. at 180.

46. *Id.*

47. *Id.* at 181.

In *General Talking Pictures*, there was no authorized sale because the licensee was conveying a right he never had when the licensee knowingly sold the patented article for use in an unpermitted field. The Court emphasized not just the express nature of the restriction via the notice attached to the amplifiers (not unlike those in *Motion Picture Patents*), but also the purchaser's actual knowledge of the restriction and intentional plan to violate it.⁴⁸ Additionally, the Court declined to determine whether the notice restriction would be enforceable against purchasers had the licensee not violated the express restriction, and had the articles been "sold in the ordinary channels of trade"⁴⁹

In 1942, only a few years later, the Court heard *United States v. Univis Lens Co.* and held that price restrictions placed on downstream licensees were not enforceable because the patents on the finished articles were exhausted by initial sales of the unfinished article.⁵⁰ Univis Lens Company developed a licensing system whereby it licensed a lens manufacturer to make blank lenses, and then required wholesalers, finishing retailers, and prescription retailers (sellers) to acquire a license to purchase the blank lenses from the manufacturer and finish them as necessary for their customers.⁵¹ Although *Univis* was brought as an antitrust case, the Court ultimately decided it under the doctrine of exhaustion.⁵²

The issue before the Court in *Univis* was whether the Univis Company could fix resale prices through licenses on the downstream retailers and finishers after they purchased lens blanks from licensees licensed to manufacture the lens blanks.⁵³ The only use of these unfinished lens blanks, and the only reason for their purchase, was the eventual practice and manufacture of Univis's patented lenses.⁵⁴ The Court found exhaustion occurred, explaining that when a patent holder sells "an uncompleted article which . . . embodies essential features of [the] patented invention . . . and [i]s destined . . . to be finished by the purchaser in conformity to the patent, [the patent holder] has sold his invention so far as it is or may be embodied in that particular article."⁵⁵ Because the sale of the unfinished article exhausted

48. *Id.* at 182. On more than one occasion, the Court highlighted that "petitioner, when purchasing [the amplifiers] . . . had actual knowledge that the [seller] had no license to make such a sale." *Id.* at 180

49. *Gen. Talking Pictures Corp. v. Western Elec. Co.*, 305 U.S. 124, 125–27 (1939).

50. *United States v. Univis Lens Co.*, 316 U.S. 241 (1942).

51. *Id.* at 243–44.

52. *Id.*; see also Osborne, *supra* note 28, at 649.

53. *Id.*

54. *Id.* at 249.

55. *Id.* at 251.

Univis's patent rights with regard to the finishers, Univis was precluded from controlling subsequent sales.⁵⁶

Although Supreme Court precedent regarding the exhaustion doctrine seems to lack uniformity, the Federal Circuit has generally applied the doctrine more evenhandedly and conservatively. The Federal Circuit has taken the view that the Supreme Court cases skeptical of post-sale restrictions on patented articles were motivated by antitrust concerns. Under the Federal Circuit's view, the Supreme Court found those cases to lack application where the post-sale restrictions were not anticompetitive or otherwise unlawful. Historically, the Federal Circuit, unlike the Supreme Court, adopted a more favorable view of post-sale contractual restrictions on patented items.

In *Mallinckrodt, Inc. v. Medipart*, the Federal Circuit considered whether the manufacturer and patentee of a medical device could restrict purchasers to a "single use only" through notices on the device.⁵⁷ *Mallinckrodt* identified the reuse restriction as "a label license for a specified field of use, wherein the field is single (i.e., disposable) use."⁵⁸ Relying on *General Talking Pictures*,⁵⁹ the Federal Circuit upheld *Mallinckrodt*'s license as valid.⁶⁰ The *Mallinckrodt* court distinguished other Supreme Court patent exhaustion cases that deny the enforcement of post-sale restrictions, including *Univis Lens*, as being decided on other law or policy ground, and it maintained that parties retain the freedom to contract concerning the conditions of a sale.⁶¹ For some, the judicial enforcement of licenses in this case rightly reflects the preeminence of freedom of contract.⁶² Others, however, believe that *Mallinckrodt* and other cases recognizing a patentee's ability to contract around exhaustion using post-sale restrictions reflect a departure by the Federal Circuit from established Supreme Court jurisprudence.⁶³

56. *Id.* at 250–53.

57. 976 F.2d 700, 703 (Fed. Cir. 1992).

58. *Id.*

59. *Gen. Talking Pictures Corp. v. Western Elec. Co.*, 305 U.S. 124 (1939); *see supra* notes 44–49 and accompanying text.

60. *Mallinckrodt*, 976 F.2d at 704–05.

61. *Id.* at 708. This idea is also referred to as the "conditional sale doctrine."

62. *See, e.g.*, F. Scott Kieff, *Quanta v. LG Electronics: Frustrating Patent Deals By Taking Contracting Options Off the Table?*, 2008 CATO SUP. CT. REV. 315, 321–22 (2008) (arguing that strong patent exhaustion rules "interfere[] with the freedom of large commercial parties to strike the deals that are essential to avoiding and resolving disputes, and that help them better invest in new products and services").

63. *See, e.g.*, Richard H. Stern, *Post-Sale Patent Restrictions After Mallinckrodt—An Idea in Search of Definitions*, 5 ALB. L.J. SCI. & TECH. 1, 6–7 (1994).

Sixteen years following *Mallinckrodt*, the Supreme Court once again contributed to the exhaustion discourse with its decision in *Quanta Computer, Inc. v. LG Electronics, Inc.*,⁶⁴ an opinion which some believe nullified the Federal Circuit's conditional sale doctrine.⁶⁵ Some scholars argued that the ramifications of *Quanta* left patentees to use contract law as a way to remedy violations of post-sale restrictions on patented articles.⁶⁶ Others maintained that *Quanta* was overly expansive and a far more rigid application of the exhaustion doctrine than has ever been applied.⁶⁷

In *Quanta*, LG Electronics ("LGE") entered into a license agreement with Intel permitting Intel "to manufacture and sell microprocessors and chipsets that use the LGE patents."⁶⁸ Intel further agreed to give written notice to its customers explaining that they were not authorized to combine the Intel products they purchased with any non-Intel products in a manner that used LGE's method patents.⁶⁹ *Quanta* then did exactly what it was not authorized to do with the purchased Intel products.⁷⁰

Although the Federal Circuit found in LGE's favor on its patent infringement claims, holding that Intel's sales to customers were "conditional" and thus did not trigger patent exhaustion,⁷¹ the Supreme Court did not. The Court relied on *Univis Lens* in holding that exhaustion is triggered by the sale of an article embodying the "essential features of the patented invention," if the "only reasonable and intended use" of that article

64. 553 U.S. 617 (2008).

65. See, e.g., Jeremy N. Sheff, *Self-Replicating Technologies*, 16 STAN. TECH. L. REV. 229, 239 (2013). In explaining its decision, the Court stated that "the primary purpose of our patent laws is not the creation of private fortunes for the owners of patents but is 'to promote the progress of science and useful arts.'" 553 U.S. at 626 (quoting *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502, 511 (1917)). Commentators have noted that this statement signaled the *Quanta* Court's "intent to view the Patent Clause of the Constitution as erring on the side of utilitarianism, thus hoping to enrich the collective knowledge of society instead of simply promoting the natural rights of the inventor." Tod Leaven, *The Misinterpretation of the Patent Exhaustion Doctrine and the Transgenic Seed Industry in Light of Quanta v. LG Electronics*, 10 N.C. J.L. & TECH. 119, 132 (2008).

66. See, e.g., Leaven, *supra* note 65.

67. See, e.g., Kieff, *supra* note 62, at 318 ("This expansive approach converts a deal involving express contracting over a limited license to one party into a blanket license to a host of other commercial parties, regardless of the efforts by all parties to contract for a more modest result at a lower price.").

68. *Quanta Computer, Inc.*, 553 U.S. at 623.

69. *Id.*

70. *Id.*

71. *Id.* at 625.

is to practice the patent.⁷² But, the Court did acknowledge that exhaustion was only “triggered . . . by a sale authorized by the patent holder.”⁷³

Quanta did not overturn *Mallinkrodt*, and although the foregoing discussion may reveal a somewhat inconsistent body of case law where some restrictions trigger exhaustion and others do not, a fairly comprehensible rule emerges. Cumulatively, the case law establishes that exhaustion requires an authorized *and* unconditional sale of a chattel embodying the patent, for which the patentee has received full compensation.⁷⁴ Additionally, contractual conditions that the parties are aware of at the time of the sale will not be upheld if the condition “impermissibly broaden[s] the ‘physical or temporal scope’ of the patent grant with anticompetitive effect.”⁷⁵ It was speculated that the next time a court heard this kind of licensing case, “the application of the patent exhaustion doctrine [would] be much more stringent,” and *Quanta* would be a useful tool for farmers fighting seed-saving cases in particular.⁷⁶ As explained *infra* Part III.C, this prediction proved to be false.

III. **BOWMAN V. MONSANTO**

A. THE PATENTED TECHNOLOGY

Glyphosate is the active ingredient in many herbicides, including Roundup®, Monsanto’s bestselling product.⁷⁷ Glyphosate indiscriminately kills plants by inhibiting the metabolic activity of 5-enolpyruvylshikimate-3-phosphate synthase (“EPSPS”),⁷⁸ an enzyme found only in plants and certain bacteria.⁷⁹ EPSPS plays an important role in the

72. *Id.* at 631 (quoting *United States v. Univis Lens Co.*, 316 U.S. 241, 249–51 (1942)).

73. *Id.* at 636.

74. *See* Rogers, *supra* note 2, at 404.

75. Rinehart, *supra* note 24, at 497 (quoting *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1426 (Fed. Cir. 1997)).

76. 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, 637, 639 (2010).

77. *Bowman v. Monsanto Co.*, 133 S. Ct. 1761, 1764 (2013).

78. Laura F. Bradshaw, *Perspectives on Glyphosate Resistance*, 11 WEED TECHNOLOGY 189, 190 (1997).

79. Gerald D. Mill, *Glyphosate-Resistant Crops: History, Status, and Future*, 61 PEST MGMT. SCI. 219, 219 (2005).

conversion of sugars into amino acids necessary for growth.⁸⁰ Plants with inherent glyphosate-resistant EPSPS are virtually non-existent in nature.⁸¹

Monsanto invented and patented a genetic modification that enables plants to survive exposure to glyphosate.⁸² Monsanto's genetic modification creates the Roundup Ready® seed by inserting a gene that encodes a "glyphosate-tolerant enzyme" into a plant's genome.⁸³ Distinct from other genetically modified organisms, the traits in Monsanto's soybean seeds are "'true to seed,' meaning that the patented genetic material transfers to each successive generation of seeds."⁸⁴ Because the technology is easily replicated by simply planting one generation of seed, "sales" of Monsanto's technology to all growers, whether from Monsanto directly or its licensed producers, are subject to a limited use license called the "Monsanto Technology/Stewardship Agreement" (the "Technology Agreement").⁸⁵

Monsanto began marketing and selling Roundup Ready® soybean seeds in 1996.⁸⁶ The company also licenses its technology to seed producers who are then able insert glyphosate resistance into the germplasm of their own seeds.⁸⁷ Generally, Monsanto licenses the right to make and sell Roundup Ready® seeds to producers like Pioneer and Syngenta, who then sell seeds, pursuant to the Technology Agreement, to farmers.⁸⁸ Farmers planting Monsanto's Roundup Ready® soybean seeds are able to use glyphosate-based herbicides to control weed populations without damaging their crops.⁸⁹

However, pursuant to the Technology Agreement, the now "licensed" grower agrees, among other things, to use the Roundup Ready® seed for planting a commercial crop only in a single season, and not to save any crop

80. Bradshaw, *supra* note 78, at 190.

81. *Id.* at 195. However, following the introduction of glyphosate-resistant crops and thus, the increased use of glyphosate-based herbicides, scientists have discovered weed species with evolved resistance to glyphosate. *See, e.g.*, A. Stanley Culpepper et al., *Glyphosate-Resistant Palmer Amaranth (Amaranthus plameri) Confirmed in Georgia*, 54 WEED SCI. 620 (2006); Lim J. Lee & Jeremy Ngim, *A First Report of Glyphosate-Resistant Goosegrass (Eleusine indica (L.) Gaertn) in Malaysia*, 56 PEST MGMT. SCI. 336 (2000); Stephen B. Powels, *Evolved Glyphosate-Resistant Weeds Around the World: Lessons to be Learnt*, 64 PEST MGMT. SCI. 360 (2008).

82. *Bowman*, 133 S. Ct. at 1764.

83. *Monsanto Co. v. Bowman*, 657 F.3d 1341, 1344 (Fed. Cir. 2011), *aff'd*, 133 S. Ct. 1761 (2013).

84. Loney, *supra* note 8, at 955.

85. *See Monsanto*, 657 F.3d at 1344.

86. *Id.*

87. *Id.*

88. *See McIntosh v. Monsanto Co.*, 462 F. Supp. 2d 1025, 1028 (E.D. Mo. 2006).

89. *Monsanto*, 657 F.3d at 1344.

for replanting or to supply saved seed to anyone else for replanting.⁹⁰ Although the express terms of the Technology Agreement forbid growers from planting or selling the progeny of the licensed Roundup Ready® seeds, or “second-generation seeds,” Monsanto does allow growers to sell second-generation seed to local grain elevators⁹¹ as a commodity without further restrictions.⁹²

Monsanto invests over \$2.6 million a day in research and design.⁹³ In light of these high investment costs, Monsanto is not shy about protecting its patent rights.⁹⁴ Since it started licensing its patented seeds, the company has filed more than 144 patent infringement lawsuits involving 410 different farmers and fifty-six small farm businesses.⁹⁵ Of these lawsuits, approximately seventy ended in judgments for Monsanto, with aggregate damages totaling close to \$23.67 million.⁹⁶ The most recent of these cases, which made it to the Supreme Court, was *Bowman v. Monsanto Co.* In October 2007, Monsanto brought suit against farmer Vernon Hugh Bowman, alleging that Bowman “willfully infringed” two of Monsanto’s patents when he “planted the soybean seed he purchased from [a] grain elevator.”⁹⁷

90. *Id.* at 1345; *see also* 2011 Monsanto Technology/Stewardship Agreement (Limited Use License), *available at* http://thefarmerslife.files.wordpress.com/2012/02/scan_doc_0004.pdf. This restriction on seed saving is a controversial one. A farmer’s right to save, replant, and resell seeds with valuable traits was once a universal and unquestioned concept. As described by one commentator, “[s]eed saving is an ingrained part of agriculture, and today it is believed that over eighty percent of farmers in developing nations rely on saved seeds for survival.” Haley Stein, *Intellectual Property and Genetically Modified Seeds: The United States, Trade, and the Developing World*, 3 *NW. J. TECH. & INTELL. PROP.* 160, 162 (2005).

91. “Grain elevators are facilities at which grains are received, stored, and then distributed for direct use, process manufacturing, or export.” 1 U.S. ENVTL. PROT. AGENCY, *COMPILATION OF AIR POLLUTANT EMISSION FACTORS* § 9.9.1.1 (5th ed. 2009) *available at* <http://www.epa.gov/ttnchie1/ap42/ch09/final/c9s0909-1.pdf>.

92. *Monsanto*, 657 F.3d at 1345.

93. *Why Does Monsanto Sue Farmers Who Save Seeds?*, MONSANTO, <http://www.monsanto.com/newsviews/Pages/why-does-monsanto-sue-farmers-who-save-seeds.aspx> (last visited Dec. 15, 2013).

94. *Id.*

95. *CTR. FOR FOOD SAFETY, SEED GIANT VS. U.S. FARMERS* (2013), *available at* http://www.centerforfoodsafety.org/files/seed-giants_final_04424.pdf. This number does not take into account settlements; over seven hundred other matters have been settled out of court. *See* Jessica Lynd, *Gone With the Wind: Why Even Utility Patents Cannot Fence In Self-Replicating Technologies*, 62 *AM. U. L. REV.* 663, 666 (2013).

96. *CTR. FOR FOOD SAFETY*, *supra* note 95.

97. *See* Brief for Petitioner at 9, *Bowman v. Monsanto Co.*, 133 S. Ct. 1761 (2012) (No. 11-796).

B. BOWMAN'S ACTIONS

Vernon Bowman is a Knox County, Indiana farmer who grows wheat and soybeans on three hundred acres of land belonging to his family.⁹⁸ He typically planted two crops in one season, and the second crop of the season is a late-season harvest that is a financially risky endeavor.⁹⁹ The second crop of the season is riskier because “heat, drought, and floods” are all more likely to occur in late summer, and a good second crop requires farmers “to plant twice as many seeds.”¹⁰⁰

In 1999, because of the heightened risk associated with planting a second crop in one season, Bowman decided to try something a little different. For his first crop of the season, Bowman purchased Roundup Ready® soybeans seeds, paid the premium price, and signed Monsanto’s Technology Agreement. Abiding by the Technology Agreement, he used all the purchased seed for planting and sold his entire harvest to a grain elevator. However, for his second crop of that season he decided not to purchase the pricier Roundup Ready® seeds.¹⁰¹ Instead, Bowman decided to buy and plant cheaper “commodity grain,” which is grain stored in a grain elevator as an undifferentiated mixture of several different seed varieties from numerous farms.¹⁰² Commodity grain is generally sold for consumption.¹⁰³

Bowman anticipated that much of the commodity grain would contain Monsanto’s patented genetic trait and after planting the commodity soybean seeds, he treated his field with a glyphosate-based herbicide.¹⁰⁴ The result was a field of surviving plants that obviously contained Monsanto’s patented technology, glyphosate resistance.¹⁰⁵ This practice allowed Bowman to utilize Monsanto’s patented technology while avoiding the premium price for Roundup Ready® seeds. Bowman repeated this process for the next eight years, saving seeds for his late season harvest.¹⁰⁶ He added to his “stock of saved seeds by making periodic additional purchases of commodity soybeans

98. Andrew Pollack, *Farmer’s Supreme Court Challenge Puts Monsanto Patents at Risk*, N.Y. TIMES, Feb. 16, 2013, at B1.

99. *Id.*

100. Elliot Marshall, *Supreme Court to Review Scope of Monsanto’s Seed Patents*, 339 SCI. 639, 639 (2013).

101. Brief for Petitioner, *supra* note 97, at 6.

102. *Id.* at 5.

103. *Id.*

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

105. *Id.*

106. Brief for Respondents at 7, *Bowman*, 133 S. Ct. 1761 (2013) (No. 11-796).

from the grain elevator and killing off all plants that lacked the patented biotechnology.”¹⁰⁷

Although Bowman successfully evaded Monsanto’s Technology Agreement for his late season crops, he neglected to account for Monsanto’s patent rights. In October of 2007, Monsanto sued Bowman.¹⁰⁸

C. PROCEDURAL HISTORY AND THE SUPREME COURT DECISION

Monsanto sued Bowman to prevent further infringement of its patents and for damages arising from Bowman’s past infringement.¹⁰⁹ The two patents at issue were RE39,247E (the ‘247 patent) and 5,352,605 (the ‘605 patent).¹¹⁰ The ‘247 patent describes a DNA molecule containing a genetic code for an enzyme that enables Roundup Ready® crops to withstand glyphosate-based herbicides.¹¹¹ Monsanto asserted infringement of claims in the ‘247 patent for the DNA molecules coding for glyphosate-tolerant EPSPS themselves, glyphosate-tolerant plant cells comprising the DNA molecules, 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.¹¹² The ‘605 patent describes the use of certain viral vectors¹¹³ to form a chimeric gene¹¹⁴ for the incorporation of new genetic material into plant cells.¹¹⁵ Monsanto asserted infringement claims of the ‘605 patent for the chimeric gene expressed in plant cells and for the plant cells comprising that chimeric gene.¹¹⁶

Initially, Bowman did not raise patent exhaustion in his answer or pursue any discovery on the theory. However, after Monsanto moved for summary judgment, the district court ordered submissions regarding the patent

107. *Id.*

108. *Monsanto Co. v. Bowman*, 657 F.3d 1341, 1346 (Fed. Cir. 2011) *aff’d*, 133 S. Ct. 1761 (2013).

109. *Id.*

110. *Id.* at 1343.

111. Brief for Respondents, *supra* note 106, at 2 n.1.

112. *Monsanto*, 657 F.3d at 1343–44.

113. A simple explanation of this process may be helpful. First, genes of interest are isolated and inserted into appropriate vectors. Vectors are tools used to insert target genes into a host organism’s cells and to replicate that target gene in the cells. Viruses tend to be used as vectors when the genetic engineering of higher organism forms, such as plants, is being attempted. See DAVID P. CLARK, *MOLECULAR BIOLOGY* 627 (2009).

114. “A chimera is any hybrid molecule of DNA, such as a vector plus a cloned gene, which has been engineered from two different sources of DNA.” *Id.* at 619.

115. *Monsanto*, 657 F.3d. at 1343.

116. *Id.*

exhaustion doctrine and the implications of *Quanta* on Bowman's case.¹¹⁷ Even in light of *Quanta*, the district court found the exhaustion doctrine inapplicable because Monsanto never authorized any sale of the soybeans that Bowman harvested for his late-season crop.¹¹⁸ Relying on Federal Circuit law, the district court granted summary judgment, reasoning that

[n]o unconditional sale of the Roundup Ready® trait occurred because the farmers could not convey to the grain dealers what they did not possess themselves The grain elevator/dealer from whom Bowman bought the soybeans had no right to plant the soybeans and could not confer such a right on Bowman.¹¹⁹

The court granted summary judgment to Monsanto and entered final judgment awarding Monsanto compensatory damages of \$84,456.30 plus costs and interest.¹²⁰ The damage award was based on a reasonable royalty of acres planted with commodity soybeans.¹²¹ On appeal to the Federal Circuit, Bowman renewed his argument that Monsanto's patent rights in second—and subsequent—generation soybeans were exhausted, and that prior Federal Circuit decisions holding to the contrary—*Monsanto Co. v. McFarling*¹²² and *Monsanto Co. v. Scruggs*¹²³—were no longer valid after *Quanta*.¹²⁴

In *McFarling*, the defendant violated Monsanto's Technology Agreement by saving a quantity of his harvest to use as seed for the next season.¹²⁵ The Federal Circuit rejected the exhaustion argument and found liability because the "exhaustion of the patent right [was] not implicated, as the new seeds grown from the original batch had never been sold."¹²⁶ The court further reasoned that because Monsanto's patent read on all generations of soybeans, the restriction in the licensing agreement that prohibited the planting of

117. Brief for Respondents, *supra* note 106, at 8.

118. *Monsanto Co. v. Bowman*, 686 F. Supp. 2d 834, 837–39 (S.D. Ind. 2009) (“[D]espite Bowman’s compelling policy arguments addressing the monopolizing effect of the introduction of patented genetic modifications to seed producing plants on an entire crop species, he has not overcome the patent law precedent. . . . [T]he court may disagree with the decision to award unconditional patent protection to Monsanto for its genetically altered soybeans and their progeny, but this court does not make policy; rather, it interprets and enforces the law, which, in this case, does not support Bowman.”).

119. *Id.* at 839.

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

121. Brief for Petitioner, *supra* note 97, at 9.

122. *Monsanto Co. v. McFarling (McFarling II)*, 363 F.3d 1336 (Fed. Cir. 2004).

123. *Monsanto Co. v. Scruggs*, 456 F.3d 1328 (Fed. Cir. 2006).

124. *Quanta Computer, Inc. v. LG Electronics, Inc.*, 553 U.S. 617 (2008).

125. *Monsanto Co. v. McFarling (McFarling I)*, 302 F.3d 1291, 1294 (Fed. Cir. 2002).

126. *Id.* at 1299.

second-generation seed does not extend Monsanto's rights under the patent statute.¹²⁷

Unlike McFarling who signed a licensing agreement, Scruggs never did.¹²⁸ Prior to *Bowman*, *Scruggs* was the Federal Circuit's most recent decision involving patent exhaustion as applied to self-generating technology. *Scruggs* held that, as to the saved second-generation seeds, the patent applied as if no purchase occurred.¹²⁹ The Federal Circuit stated that "[t]he fact that a patented technology can replicate itself does not give a purchaser the right to use replicated copies of the technology."¹³⁰ Because it was understood that subsequent generations of seeds fall within the scope of Monsanto's patents, the court noted that, "[a]pplying the first sale doctrine to subsequent generations of self-replicating technology would eviscerate the rights of the patent holder."¹³¹ This statement is without exaggeration. The statutory duration of patent protection becomes irrelevant if Monsanto's market for its patented good could be so easily supplanted by subsequent generations of soybeans after a single round of initial sales.¹³²

Relying on *Scruggs* and *McFarling*, the Federal Circuit reasoned that "[e]ven if Monsanto's patent rights in the commodity seeds are exhausted, such a conclusion would be of no consequence because once a grower, like Bowman, plants the commodity seeds containing Monsanto's Roundup Ready® technology and the next generation of seed develops, the grower has created a newly infringing article."¹³³ Monsanto only allows seeds to be sold for planting subject to a limited license that delineates the allowable uses for its soybean seeds and their progeny. The first sale doctrine of patent exhaustion was not implicated because the new seeds, grown from the original batch, were never subject to an authorized sale.¹³⁴ Further, the court explained that the "right to use" a patented article, even following an authorized sale, "does not include the right to construct an essentially new

127. *Id.*

128. *See Scruggs*, 459 F. 3d at 1333.

129. *Id.* at 1336.

130. *Id.*

131. *Id.*

132. See Jason Savich, *Monsanto v. Scruggs: The Negative Impact of Patent Exhaustion on Self-Replicating Technology*, 22 BERKELEY TECH. L.J. 115, 120–21 (2007) (citing Peter Menell & Suzanne Scotchmer, *Intellectual Property*, in HANDBOOK OF LAW AND ECONOMICS (A. Mitchell Polinsky & Steven Shavell, eds. 2007)).

133. *Monsanto Co. v. Bowman*, 657 F.3d 1341, 1348 (Fed. Cir. 2011)

134. *Id.* at 1347 (quoting *Monsanto Co. v. McFarling (McFarling I)*, 302 F.3d 1291, 1299 (Fed. Cir. 2002)).

article on the template of the original, for the right to make the article remains with the patentee.”¹³⁵

The Federal Circuit had long defined the scope of one’s right to use a self-replicating patented article, holding that even an ordinary and expected use that necessitates a making will result in a newly infringing patented article. However, there had not yet been a definitive ruling on the issue by the Supreme Court, which has historically pushed for a stronger patent exhaustion doctrine than the Federal Circuit. In his petition for certiorari, McFarling argued that Supreme Court “precedents have long held that one who purchases a good from the patent owner or from a licensee is free to make the ordinary and expected use of that good.”¹³⁶ He also argued that it “defie[d] both common sense and the patent-exhaustion doctrine” to hold that a farmer who purchases seed for planting infringes Monsanto’s patent when the plant naturally produces new seeds.¹³⁷ Despite denying certiorari in both *McFarling*¹³⁸ and *Scruggs*,¹³⁹ the Supreme Court decided to hear Bowman’s case.

In affirming the Federal Circuit’s decision, the Court started with defining the doctrine of patent exhaustion as a limit on the patentee’s right to control what others can do with an article embodying or containing an invention.¹⁴⁰ However, the Court noted that the doctrine restricts the patentee’s rights only to a “particular article” sold.¹⁴¹ Thus, the doctrine leaves untouched the patentee’s ability to prevent a buyer from making new copies of the patented item. The Court concluded that because Bowman’s actions effectively made new copies of Monsanto’s soybean without its permission, the exhaustion doctrine did not protect him.¹⁴²

With this in mind, the Court rejected Bowman’s first argument that exhaustion should apply because “seeds are meant to be planted” and that “allowing Monsanto to interfere with that use would create an impermissible exception to the exhaustion doctrine for planted seeds and other self-

135. *Id.* at 1348 (quoting *Jazz Photo Corp. v. Int’l Trade Comm’n*, 264 F.3d 1094, 1102 (Fed. Cir. 2001)).

136. Petition for Writ of Certiorari at 23, *McFarling v. Monsanto Co. (McFarling III)*, 552 U.S. 1096 (2007) (No. 07-241), 2007 WL 2406828.

137. *Id.* at *22.

138. *McFarling III*, 552 U.S. 1096 (2008).

139. *Scruggs v. Monsanto Co.*, 549 U.S. 1342 (2007). In 2008, the Court also denied certiorari for *Monsanto Co. v. David*, 516 F.3d 1009 (Fed. Cir. 2008), *cert. denied*, 555 U.S. 888 (2008), another seed saving case.

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

141. *Id.*

142. *Id.* at 1767.

replicating technologies.”¹⁴³ The Court reasoned that, “if simple copying [like what Bowman did here] were a protected use, a patent would plummet in value after the first sale of the first item containing the invention.”¹⁴⁴ Furthermore, the Court also rejected Bowman’s second argument that “it was the planted soybean, not Bowman himself, that made replicas of Monsanto’s patented invention.”¹⁴⁵ The Court reasoned that Bowman was no passive observer of the soybean replication because he took multiple steps to produce glyphosate-resistance soybeans for his late-season crop eight years in a row.¹⁴⁶ In light of Bowman’s procurement, planting, harvesting, and usage of the patented seed, the Court found that Bowman himself made infringing copies of Monsanto’s patented invention and was liable for patent infringement.

Although the Court reached the correct outcome, it reached this outcome via the wrong route, neglecting to acknowledge that the distinction between making and using is ill-suited for approaching the question of patent exhaustion in self-replicating patented articles. Rather than Bowman asking for “an impermissible exception to the exhaustion doctrine for planted seeds and other self-replicating technologies,”¹⁴⁷ it seems that Monsanto in fact received that exception.¹⁴⁸ For instance, in *Quanta*, method patents were exhausted despite never being sold, but here the Court reasoned that patent exhaustion could not apply to second-generation seeds that were never purchased. In reality, patent exhaustion now applies to some uses of seeds, but not the ordinary use of planting because that use is now understood as a making.

As discussed *infra* Part IV, this murky distinction, or lack of distinction, between making and using is not only unsatisfying, but problematic. Rather than upholding an inexhaustible right to exclude certain uses, a better approach to the patent exhaustion doctrine, and its relationship to self-replicating technologies, would be the construction of an implied and inexhaustible right to exclude exploitation. The distinction between exploitation and making/using may be better able to balance the concerns that drive the doctrine of patent exhaustion with the protection of Monsanto’s patent rights and the property rights of end users. The creation

143. *Id.* at 1768 (internal quotations omitted).

144. *Id.*

145. *Id.* at 1769 (internal quotation and citation omitted).

146. *Id.*

147. *See id.* at 1768 (internal quotation omitted).

148. *See* Garmezzy, *supra* note 8, at 216 (arguing that when *Bowman* reached the Supreme Court, “the Court should [have] exempt[ed] self-replicating technologies from the exhaustion doctrine by construing subsequent generations as reconstructions”).

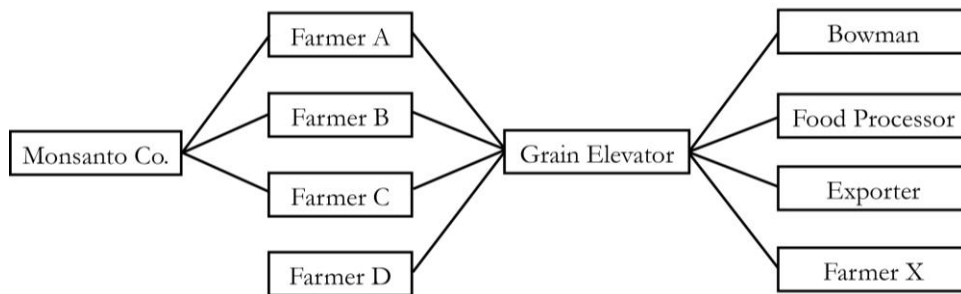
of a doctrine that focuses on exploitation of the patented technology, rather than making or using it, may also serve as a potential liability shield for accidental infringers of self-replicating technologies.

IV. CONSEQUENCES OF *BOWMAN*

A. MONSANTO'S PATENT RIGHTS ARE EXHAUSTED AS TO THE END USER

Just as any end user in a chain of distribution would have the right to use the article he or she purchased, Bowman had a right to use the seeds he purchased from the grain elevator. Figure 1 represents a very simplified chain of distribution where each line represents a sale to the entity immediately to the right of the line, from the entity on the immediate left of the line.

Figure 1: Chain of Distribution for Seeds



Monsanto licenses its technology to various farms, in this case Farmers A–C (in this example, Farm D does not purchase its seed from Monsanto, but from another supplier). Farmers A–D then sell their products to a grain elevator. Consumers then purchase commodity grain from the grain elevator for a variety of purposes. The Food Processor will use the grain to manufacture cereals or other grain-based food products, while the Exporter will sell or trade U.S. grain on a foreign market. Farmer X may buy commodity grain as feed for her livestock while Bowman buys the commodity for planting.

Neglecting for a moment Monsanto's Technology Agreement, it should be clear that Monsanto has patent rights that are exhausted with respect to each end user. The secondary market is strengthened by a consumer's confidence in his or her ability to resell the purchased article. Thus, the grain elevator must be able to sell to end users, and end users must be confident that the patentee no longer has the right to exclude activities that include the ordinary use of their purchased goods.

Even accounting for Monsanto's Technology Agreement, Monsanto's rights to its soybeans would still be exhausted at the point of reaching Bowman. The Technology Agreement permits the suppliers, the Farmers, to sell to a grain elevator without condition, and, as a matter of public policy, Monsanto's rights to sell and use the patented articles have been exhausted.¹⁴⁹ The distinctions among the Exporter, the Food Processor, and Farmer X all lie in the patent rights they would claim are exhausted. The Exporter would claim exhaustion of Monsanto's right to sell its patented article. Farmer X, who feeds her cattle, and the Food Processor, which makes grain-based food products, would claim exhaustion of Monsanto's right to an ordinary use of the patented article. However, the distinction in Bowman's case is that the ordinary use of planting these purchased seeds actually makes more seeds. This distinction is unique to self-replicating technologies, and here, Bowman's normal use of the seed necessarily makes new infringing articles.

It is well established that "a second creation" of a patented item "call[s] the monopoly, conferred by the patent grant, into play for a second time."¹⁵⁰ The exhaustion doctrine never authorizes a purchaser to "make" new copies of the invention.¹⁵¹ However, consider what the result would be if Farmer X, instead of merely using soybeans purchased from the grain elevator to feed her cattle, now decided to plant a field of commodity soybeans and grow her own feed. And unlike Bowman, she *did not* select for the Roundup Ready® soybeans. As a pesticide-free farmer, how would Farmer X be able to identify and remove the infringing crops without causing substantial harm to her harvest? Further, is Farmer X actually using Monsanto's technology if she is a pesticide-free farmer? By planting commodity soybeans indiscriminately and not selecting for Monsanto's patented biotechnology, is Farmer X simply making use of the natural properties of seeds that are not actually

149. See Rinehart, *supra* note 24, at 494 ("When the patent owner grants a license to sell the patented invention, his rights to resale and use are exhausted when the licensee sells the patented good" without violating any restrictions of the licensing agreement.).

150. See *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 346 (1961).

151. See *Microsoft Corp. v. AT & T Corp.*, 550 U.S. 437, 452–53 (2007) (finding that identical copies of software must be treated as separate components from the master disk used to make them, even those whose only use of the master disk was to create such copies); *American Cotton-Tie Co. v. Simmons*, 106 U.S. 89, 93 (1882) (holding that creating new cotton ties "by piecing together severed pieces of" old patented ties was impermissible reconstruction); see also *Husky Injection Molding Sys. Ltd. v. R&D Tool & Eng'g Co.*, 291 F.3d 780 (Fed. Cir. 2002) (finding that where molds employed in a patented injection molding machine were readily replaceable parts, replacement of the molds was akin to permissible repair and did not result in direct infringement of patent). *But see Aro Mfg. Co.*, 365 U.S. at 346 (holding that replacing the fabric portion of a car's convertible roof was permissible repair and not the construction of an infringing article).

patentable?¹⁵² 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.¹⁵³

B. MAKING AND USING SEEDS: A SELF-REPLICATING TECHNOLOGY

Consistently, courts have failed to acknowledge that the distinction between making and using is ill-suited for approaching the question of patent exhaustion as it applies to self-replicating technologies.¹⁵⁴ The patent exhaustion doctrine typically implicates the rights of sale and use. But because it is unlikely a product will be purchased without the intent to use or resell the product,¹⁵⁵ self-replicating technologies also implicate the patentee's right to exclude others from making the patented article. As Professor Rinehart points out, for consumers the "distinction between a product and the intellectual property embodied within it creates an uneasy tension."¹⁵⁶ This tension is heightened when there is a possibility that certain uses are virtually inexhaustible regardless of the purchaser's position on the chain of distribution or how the purchase was or was not structured.

It was not until relatively recently that making a patented article could be a necessary element of the ordinary and expected use of the patented article. This question first arose in the animal context, concerning the extent to which purchasers of transgenic organisms¹⁵⁷ should be able to use their property. In 1989, the Transgenic Animal Patent Reform Act was reintroduced to exempt the reproduction of genetically modified farm animals from the definition of infringement,¹⁵⁸ while a separate bill attempted to initiate a two-year moratorium on patent grants for genetically modified animals.¹⁵⁹ These bills were motivated by a fear that individuals would not be able to fully utilize their property, the animal, if farmers were not allowed to "utilize the animals in any farming operation," which included breeding and

152. "[Q]ualities [that] are the work of nature . . . are of course not patentable." *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948).

153. *See* *Bowman v. Monsanto Co.*, 133 S. Ct. 1761, 1766–67 (2013).

154. *See* *Sheff*, *supra* 65, at 238 ("[T]he application of the use/make distinction in the Roundup-Ready cases ignores the elephant in the room: the only and intended 'use' of seeds or any other self-replicating technology *necessarily* 'makes' a newly infringing article—this is the defining characteristic of self-replicating technologies.").

155. *See* *Adams v. Burke* 84 U.S. 453, 455–56 (1873).

156. Rinehart, *supra* note 24, at 484.

157. Transgenic organisms are organisms that have been genetically modified with the introduction of DNA sequences from another organism.

158. *See* Transgenic Animal Patent Reform Act, H.R. 1556, 101st Cong. (1989).

159. *See* H.R. 3247, 101st Cong. (1989).

selling.¹⁶⁰ 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.

There have been various attempts to define the proper role of patent exhaustion for subsequent generations of self-replicating technologies.¹⁶¹ However, the solution for both users and patentees needs more than the current binary approach of the make/use distinction. Further, not all self-replicating technologies are alike, and it is difficult to anticipate the future trajectory of patents on these kinds of technologies. Any solution should more carefully strike a balance between incentivizing innovation in self-replicating technologies, and aiming to avoid patent misuse and anticompetitive abuses.

With these considerations in mind, scholars have suggested ways to modify the common law doctrine for self-replicating technologies as a specific class. For example, Professor Sheff suggests patent exhaustion for self-replicating technologies “should depend on analysis of the relationship between demand for first-generation embodiments of a self-replicating technology and demand for subsequent-generation embodiments, and particularly the patentee’s ability to charge supracompetitive prices in its primary market where consumers are able to substitute secondary-market embodiments.”¹⁶² Making the doctrine of exhaustion far more fact-intensive, Sheff’s suggestion would incorporate into the doctrine a reliable and flexible analytic framework for self-replicating technologies.

Applying Sheff’s framework to *Bowman*, Monsanto’s inability to charge supracompetitive prices in the primary market (due to the existence of competitors and farmers’ inability to pay), along with the high demand for

160. Scott A. Chambers, *Exhaustion Doctrine in Biotechnology*, 35 IDEA 289, 292 (1995).

161. See Nathan A. Busch, *Jack and the Beanstalk: Property Rights in Genetically Modified Plants*, 3 MINN. INTELL. PROP. REV. 134–47 (2002) (arguing that because planting only allows a seed to grow, farmers are not making a patented seed the way a developer of the plant in the laboratory can). *But see* Kershen, *supra* note 16, 584–85 (acknowledging that construction of the “words ‘make’ and ‘use’ to exclude planting, growing, and harvesting as infringing actions . . . is to deny the validity of patents in crops,” and if courts wished “to deny the validity of patents in plants, courts can construe the patent statutes to exclude plants from patentable subject matter”); *Monsanto Co. v. Dawson*, No. 4:98CV2004, 2000 WL 33953542, at *2 (E.D. Mo. Nov. 24, 2000) (neglecting to discuss harvesting as a making as anticipated in § 271(a) but holding that “[t]he planting and harvesting of seeds is clearly a ‘use’ as anticipated in § 271(a),” even where defendant did not sign a licensing agreement and planted Roundup Ready® soybeans).

162. See Sheff, *supra* note 65, at 232. Supracompetitive prices are prices that are generally far higher than those that can be sustained in a competitive market.

second-generation embodiments of Monsanto's seeds, would render exhaustion inapplicable. Unfortunately, Sheff's suggestion leaves untouched the difficulties particular to patents on living things that reproduce independently, such as the current inability of the end user to freely utilize natural aspects of the organism without the intention or desire to exploit the patented biotechnology aspects of the same organism.

Addressing this concern, Douglas Fretty, drawing on the work of Tempe Smith, who examined the antitrust implications of Monsanto's Technology Agreements,¹⁶³ endorses creating a license reform that accepts Monsanto's rights as exhausted with respect to the second-generation seeds but also creates a rule that preserves the patentee's rights to the *exploitation* of its patents.¹⁶⁴ This suggestion was inspired by royalty schemes that Monsanto employs in other countries where the company receives fees from farmers who are permitted to save seed but who continue to exploit and use the technology.¹⁶⁵

As it stands now, where there are alternative uses, a use necessitating the replication of a patented technology is an inexhaustible use construed as a making.¹⁶⁶ Professor Rogers persuasively argues that the *Bowman* Court actually created a new, technology-specific doctrine of patent exhaustion called the "inexhaustible right to exclude reproduction."¹⁶⁷ Although the Court arguably did create a new patent right for holders of patents on self-replicating organisms, more broadly *Bowman* will likely be applied to future cases involving other self-replicating technologies to support the proposition that uses requiring replication, or copying, are themselves inexhaustible.

Recognizing a right of exploitation, therefore, would allow farmers to be unencumbered property owners of their seeds and would also protect Monsanto's patent rights. Under this scheme, if Monsanto retains the right to exploit its technology, *Bowman* would have full property rights in his commodity soybean seeds, but no property rights in Monsanto's patented technology. And because *Bowman* exploited Monsanto's technology using the patented glyphosate-resistant trait, a court can still find that he infringed Monsanto's patent rights. Importantly, a rule like this, focusing on exploitation of the technology rather than using/making the seed, separates

163. See Smith, *supra* note 76.

164. See Douglas Fretty, *Both a License and a Sale: How to Reconcile Self-Replicating Technology with Patent Exhaustion*, 5 J. BUS. ENTREPRENEURSHIP & L. 1, 11 (2011).

165. See Smith, *supra* note 76, at 641.

166. See *supra* Part III.

167. See Rogers, *supra* note 2, at 445.

aspects of a living organism that are patented biotechnology from aspects of the organism, like its ability to germinate, that are products of nature.¹⁶⁸

As self-replicating technologies become more common or even more complex, it is not difficult to imagine situations in which end users would be guilty of infringement but completely unaware that their purchased products contained patented technologies they did not intend to use. In addition to the unsuspecting end user, the Court's ruling also exacerbates the liability concerns for accidental infringers, like organic farmers, who without exploitation of Monsanto's technology are not only liable for infringement, but also incur property damage because of the infringement. Beyond the scope of this Note is a discussion of remedies and causes of action available to victims suffering property damage as a result of field contamination.¹⁶⁹ Part V limits its discussion to how creating a right-to-exploit rule would avoid the liability risks seeds create through their ability to contaminate fields by cross-pollination, the comingling of tainted equipment during harvest, seed drift or scatter, and volunteer plants.

V. ACCIDENTAL INFRINGERS AND ORGANIC FARMING

Although self-replicating technologies can be living and non-living (e.g., software),¹⁷⁰ a concern specific to seeds is field contamination.¹⁷¹ Motivated by fears of liability and economic loss, a group of seventy-three organic farmers recently sought a declaratory judgment that Monsanto could not sue them if their fields become contaminated.¹⁷² This case highlights a newly problematic area of patent law: infringement liability for "users" of patented

168. See generally *Diamond v. Chakrabarty*, 447 U.S. 303, 315 (1980).

169. See *supra* note 16.

170. Problems presented by *Bowman* can be similar for owners of intellectual property rights in self-replicating computer programs sometimes referred to as "quines." See Loney, *supra* note 8, at 955–56.

171. Elsewhere, this concern is incorrectly described using the phrase "genetic drift." See, e.g., Anthony Shadid, *Genetic Drift Threatens US Organic Farmers*, ORGANIC CONSUMER ASSOCIATION, <http://www.organicconsumers.org/Organic/geneticdrift.cfm> (last visited Nov. 20, 2013) (equating GMO contamination to genetic drift). This Note refrains from using the phrase genetic drift to describe field contamination or cross-pollination. Genetic drift is a complex biological concept, and it is primarily used to describe statistical fluctuations in allele frequency resulting from random sampling error in the choice of gametes. See Christine A. Andrews, *Natural Selection, Genetic Drift And Gene Flow Do Not Act In Isolation In Natural Populations*, 3 NATURE EDUCATION KNOWLEDGE 5 (2010), available at <http://www.nature.com/scitable/knowledge/library/natural-selection-genetic-drift-and-gene-flow-15186648>.

172. See *Organic Seed Growers & Trade Ass'n v. Monsanto Co.*, 718 F.3d 1350 (2d Cir. 2013).

goods who have no idea they are even in possession of a good that might be patented.

For Bowman, it was clear that he was trying to utilize Monsanto's patented technology without compensating Monsanto. However, the current doctrine does little to protect innocent and ignorant infringers from liability. Establishing a patent exhaustion rule focused on exploitation would better shield these accidental infringers, while purposeful or willful infringers (like Bowman) would remain liable. This alternative is especially helpful because an organic farmer has no way of identifying infringing plants without applying pesticides to her crop and destroying its value.¹⁷³

The prevalence of organic farming has grown quickly in the United States since the 1990s.¹⁷⁴ From 1992 to 2008, the increase in certified organic acreage was more than four-fold.¹⁷⁵ The economic losses that these farmers can incur due to contamination are quite large. For example, in 1998, a certified organic farm in Texas was contaminated by cross-pollination from a neighboring field of GM corn.¹⁷⁶ The contamination was not discovered until the corn had been processed and shipped to Europe as organic tortilla chips.¹⁷⁷ "When DNA testing revealed traces of GM corn in the chips, the entire shipment of 87,000 bags—valued at \$500,000—was rejected and destroyed."¹⁷⁸ Not only does field contamination cause market restrictions for organic farmers,¹⁷⁹ it results in lowered prices for the crop, and the possibility of losing organic certification.¹⁸⁰

The National Organic Program of the U.S. Department of Agriculture excludes production from certification if there are "methods used to

173. These concerns should be compelling because intellectual property policy has traditionally sought to strike a "balance between incentives or rewards to creators *and* the interest" of the public (users, consumers and competitors). Keith Aoki, *Neocolonialism, Anti-Commons Property, and Biopiracy in the (Not-so-Brave) New World Order of International Intellectual Property Protection*, 6 IND. J. GLOBAL LEGAL STUD. 11, 27 (1998).

174. See Hikaru H. Peterson et al., *The Motivation for Organic Grain Farming in the United State: Profit, Lifestyle or the Environment*, 44 J. AGRICULTURAL & APPLIED ECON. 2 (2012), available at <http://ageconsearch.umn.edu/bitstream/123783/2/jaae432.pdf>.

175. *Id.*

176. Repp, *supra* note 16, at 591.

177. *Id.*

178. *Id.* Luckily for the organic farmer, the tortilla chip manufacturer decided not to seek damages and, instead, joined Greenpeace and the Center for Food Safety as plaintiffs in a lawsuit filed against the EPA. *Id.*

179. Many European countries have blocked imports of GM crops. See *supra* note 14.

180. See *Langan v. Valicopters, Inc.*, 567 P.2d 218 (Wash. 1977) (finding a substantial economic loss for a farmer who lost his certification after trace amounts of pesticides were found on his crops). This is a high risk for farmers that engage in production for the purpose of becoming organic seed suppliers. See Kershen, *supra* note 16, at 605.

genetically modify organisms or influence their growth . . . by means that are not possible under natural conditions.”¹⁸¹ And “[o]nce an organic farmer learns of the inadvertent presence of transgenic crops, the organic farmer has the obligation to take responsible steps to avoid the contact.”¹⁸² However, a farmer is unlikely to be able to visually distinguish her crops from GM crops. To identify infringing crops, she would probably have to use the same test that the Monsanto investigators use: spraying her crops with Roundup®. By diligently trying to avoid a patent infringement claim or ensuring her field is clear of GM crops, the farmer is forced to destroy her property, and consequently threaten her livelihood.

Rather than construing Bowman’s actions as an impermissible *making*, if Bowman’s actions were instead construed as an impermissible *exploitation* of the trait specific to the patented good, the solution to the liability problem for the accidentally infringing farmer could be resolved without drastically rethinking the standard of liability for patent infringement.¹⁸³ Distinct from the addition of an intent standard for infringement of seeds, exploitation of a patent could mean only that there was some benefit to the infringer from possession, whether purposefully or accidentally, of the GM organism.¹⁸⁴ This suggestion further avoids a rule that requires courts to peer into the subjective motives of a defendant. Admittedly, this suggestion is only a minor improvement for farmers like those in *Organic Seed Growers & Trade Association*, because organic farmers that fall victim to field contamination still suffer significant property damage. At the very least, a rule focused on exploitation prevents adding insult to injury as it insulates these farmers from patent infringement liability.

181. 7 C.F.R. § 205.2 (2013).

182. See Kershen, *supra* note 16, at 609 (citing comments to Section 205.2).

183. See Hilary Preston, Note, *Drift of Patented Genetically Engineered Crops: Rethinking Liability Theories*, 81 TEX. L. REV. 1153, 1153 (2003) (arguing that courts should adopt an intent-to-acquire element for patents involving patented plants.) It has been argued that an actual knowledge standard should apply when the possibility of liability for “innocent” infringing seems particularly troubling. One example is an action against selling users who may lack knowledge that the manufacturer has infringed another’s patents. Roger D. Blair & Thomas F. Cotter, *An Economic Analysis of Seller User Liability in Intellectual Property Law*, 68 U. CIN. L. REV. 1, 15–27 (1999).

184. An example would be contamination on a pesticide-free farm by a plant engineered to be heartier than natural plants. This farmer, with no certification or markets to lose, would have benefitted from the heartier GM plants.

VI. CONCLUSION

The patents at issue in *Bowman* expire in 2014, after which Monsanto will not be enforcing its technology licenses.¹⁸⁵ Once these patents expire, farmers will be free to plant and save these GM seeds without licensing from Monsanto. Although this may obviate the worry over accidental infringers of Monsanto's Roundup Ready® soybeans and the property rights of end users, it is unlikely that the challenges posed by self-replicating technologies will end here. The *Bowman* Court expressly narrowed its holding to the facts at hand, but appeared to be alert to the consequences of its ruling, not just for the value of Monsanto's soybean patents, but also for technologies like cell lines, software, and vaccines. Self-replicating technologies, by their nature, easily "destabilize" the make/use distinction.¹⁸⁶ But a rule focused on the exploitation of a patentable trait, as suggested here, is more easily realized and provides a more favorable rule for the public, as consumers, users, and competitors.

185. Andrew Pollack, *As Patent Ends, a Seed's Use Will Survive*, N.Y. TIMES, Dec. 18, 2009, at B3.

186. Sheff, *supra* note 65, at 238.