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**Patent Law**—First-Sale Doctrine Does Not Extinguish Patentee’s Rights in Self-Replicating Organisms—*Bowman v. Monsanto Co.*, 133 S. Ct. 1761 (2013)

Through the patent system, inventors are rewarded for their ingenuity with a limited monopoly to practice their inventions at the exclusion of all others for a finite period of time.<sup>1</sup> The grant of a monopoly is not taken lightly in the United States, resulting in a careful construction by the courts of limiting doctrines, including the patent-exhaustion (first-sale) doctrine and the related repair-reconstruction doctrine, to prevent overreaching on the part of the patent owner.<sup>2</sup> In *Bowman v. Monsanto Co.*,<sup>3</sup> the Supreme Court addressed the issue of how the patent-exhaustion doctrine and post-sale restrictions apply to patented seeds, which by their very nature self-replicate when planted and create new seeds that are genetically similar to the original patented seed.<sup>4</sup> The Court determined that Monsanto’s rights are not exhausted after the first sale of its patented seeds, solidifying the exception to the first-sale doctrine created by the United States Court of Appeals for the Federal Circuit.<sup>5</sup>

Monsanto is a chemical and agricultural biotechnology company and is the leading producer of genetically modified (GM) seeds in the United States, with ninety-three percent of American soybeans and eighty percent of American corn originating from Monsanto seeds.<sup>6</sup> Monsanto’s Roundup Ready seeds are

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1. See 35 U.S.C. § 154 (2012) (providing for content and term of patent grant). Patents are often referred to as “limited monopolies,” although the term is controversial. See 5 DONALD S. CHISUM, CHISUM ON PATENTS § 16.02 (2013) (citing references and contrasting patent as monopoly with patent as property right). Note that patent law confers no positive right to practice the patented invention; the patent owner may merely prohibit others from doing so. See *id.* § 16.02 (discussing right to exclude).

2. See *United States v. Masonite Corp.*, 316 U.S. 265, 280 (1942) (explaining restrictions on 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.” *Id.* at 280; see Seungwoo Son, *Selective Refusals To Sell Patented Goods: The Relationship Between Patent Rights and Antitrust Law*, 2002 U. ILL. J.L. TECH. & POL’Y 109, 110-11, 124-25, 128-29 (introducing tension between antitrust and intellectual property and limitations to patent owner rights).

3. 133 S. Ct. 1761 (2013).

4. *Id.* at 1764.

5. *Id.* at 1769 (stating “patent exhaustion provides no haven for [farmer’s] conduct”).

6. See *Company History*, MONSANTO, <http://www.monsanto.com/whoweare/Pages/monsanto-history.aspx> (last visited Feb. 26, 2014) (recapping company origins in agricultural chemicals and more recent efforts in agricultural biotechnology); see also Peter Whoriskey, *Monsanto’s Dominance Draws Antitrust Inquiry*, WASH. POST, Nov. 29, 2009, [http://www.washingtonpost.com/wp-dyn/content/article/2009/11/28/AR2009112802471\\_pf.html](http://www.washingtonpost.com/wp-dyn/content/article/2009/11/28/AR2009112802471_pf.html) (citing percentages of crops grown from Monsanto’s GM seeds). As a result of its monopoly on a critical component of the nation’s food supply, Monsanto is frequently the target of criticism from agricultural companies and outraged farmers decrying the lack of competition in the seed industry, to consumers fighting for proper labeling of foods containing genetically modified organisms (GMOs). See, e.g., Stephanie Strom, *Food Companies Claim Victory Against Labeling Initiative in Washington State*, N.Y. TIMES,

genetically engineered to withstand exposure to glyphosate, the active compound Monsanto developed for use as an herbicide and sold under the brand name Roundup.<sup>7</sup> To market its genetic technology, Monsanto sells Roundup Ready seeds directly and through licensed seed producers who insert the transgene into their own seed varieties.<sup>8</sup> Farmers wishing to purchase Roundup Ready seeds directly from Monsanto or from a Monsanto-licensed producer must sign the “Monsanto Technology Agreement,” characterized as a limited use license.<sup>9</sup> Under the agreement, the farmer may “use the seed . . . for planting a commercial crop only in a single season,” and may not “save any crop produced from this seed for replanting, or supply saved seed to anyone for replanting.”<sup>10</sup> Monsanto does permit farmers to sell second-generation seed to grain elevators without requiring restrictions on the elevators’ subsequent sales of such seed.<sup>11</sup>

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Nov. 6, 2013, [http://www.nytimes.com/2013/11/07/us/politics/food-companies-claim-victory-against-labeling-initiative-in-washington-state.html?\\_r=0](http://www.nytimes.com/2013/11/07/us/politics/food-companies-claim-victory-against-labeling-initiative-in-washington-state.html?_r=0) (describing recent state measures to require GMO-labeling and defeat by food industry); Alison Fitzgerald, *Monsanto 7-State Probe Threatens Profit from Gene in 93% of Soy*, BLOOMBERG (Mar. 10, 2010, 12:01 AM), <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aCK4Q3XZCpyw> (describing circumstances prompting previous investigations by state attorneys general); Tom Philpott, *DOJ Mysteriously Quits Monsanto Antitrust Investigation*, MOTHER JONES (Dec. 1, 2012, 3:03 AM), <http://www.motherjones.com/tom-philpott/2012/11/dojs-monsantoseed-industry-investigation-ends-thud> (questioning lack of information surrounding DOJ antitrust investigation results). The safety of GMOs was also called into question, with a recent, though ultimately retracted, study showing that rats fed Monsanto’s Roundup Ready corn experienced a higher incidence of cancer and other negative health effects as compared to a control group fed non-GM corn. See Gilles-Eric Séralini et al., *Long Term Toxicity of a Roundup Herbicide and a Roundup-Tolerant Genetically Modified Maize*, 50 FOOD & CHEMICAL TOXICOLOGY 4221, 4228-30 (2012) (reporting enhanced incidence of large tumors in GMO-fed rats and describing glyphosate-induced biological disruptions). But see Jonathan Amos, *French GM-Fed Rat Study Triggers Furore*, BBC NEWS (Sept. 19, 2012, 1:16 AM), <http://www.bbc.co.uk/news/science-environment-19654825> (summarizing criticism of study). The publishers of the Séralini et al. study ultimately retracted it in January 2014. See *Retraction Notice to “Long Term Toxicity of a Roundup Herbicide and a Roundup-Tolerant Genetically Modified Maize”*, 63 FOOD & CHEMICAL TOXICOLOGY 244 (2013). Several other negative consequences have been attributed to the widespread adoption of GM crops, including: use of GM crops actually results in an increased use of pesticides and herbicides, proliferation of “super weeds,” contamination of GM seed and pesticide/herbicide runoff into neighboring organic crops, and soil deterioration resulting in plants more susceptible to parasites and pathogens. See DEBBIE BARKER ET AL., CTR. FOR FOOD SAFETY & SAVE OUR SEEDS, SEED GIANTS VS. U.S. FARMERS 9-10 (2013), available at [http://www.centerforfoodsafety.org/files/seed-giants\\_final\\_04424.pdf](http://www.centerforfoodsafety.org/files/seed-giants_final_04424.pdf) (discussing environmental concerns); Stephanie Strom, *Misgivings About How a Weed Killer Affects the Soil*, N.Y. TIMES, Sept. 19, 2013, [http://www.nytimes.com/2013/09/20/business/misgivings-about-how-a-weed-killer-affects-the-soil.html?\\_r=2&](http://www.nytimes.com/2013/09/20/business/misgivings-about-how-a-weed-killer-affects-the-soil.html?_r=2&) (discussing superweeds, soil effects, and impact on neighboring non-GM crops).

7. See 133 S. Ct. at 1764; see also U.S. Patent No. 5,633,435 (filed Sept. 13, 1994) (protecting Monsanto’s technology for introducing glyphosate resistance in plants); U.S. Patent No. 5,352,605 (filed Oct. 28, 1993) (protecting Monsanto’s technology in incorporating new genetic material into plant cells). Monsanto applies its glyphosate resistance technology to soybeans, corn, cotton, alfalfa, spring canola, winter canola, and sugarbeets. See *Roundup Ready System*, MONSANTO, <http://www.monsanto.com/weedmanagement/Pages/roundup-ready-system.aspx> (last visited Feb. 26, 2014) (providing overview of Roundup Ready products).

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

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

10. *Monsanto Co. v. Bowman*, 657 F.3d 1341, 1344-45 (Fed. Cir. 2011), *aff’d*, 133 S. Ct. 1761 (2013).

11. *Monsanto Co. v. Bowman*, 657 F.3d 1341, 1345 (Fed. Cir. 2011), *aff’d*, 133 S. Ct. 1761 (2013).

At the time of the Supreme Court litigation, Vernon Hugh Bowman was a seventy-five-year-old farmer who purchased Roundup Ready soybean seeds annually from a Monsanto-licensed distributor beginning in 1999.<sup>12</sup> From 1999 to 2007, Bowman planted Roundup Ready seeds for his first crop each growing season and abided by the terms of his license agreement, saving no seeds from his first crop.<sup>13</sup> Unwilling or unable to shoulder the expense of Roundup Ready seeds for a riskier late-season crop, Bowman purchased and planted commodity seeds from a grain elevator.<sup>14</sup> Bowman applied a glyphosate-based herbicide to his crop; as one would suspect based on Monsanto's dominance in the marketplace, much of Bowman's crop survived, exhibiting a tolerance for glyphosate.<sup>15</sup> Throughout the years that he used Roundup Ready seed, Bowman maintained a fairly open line of communication with Monsanto, requesting clarification regarding the terms of his license agreement and providing candid information about his use of commodity grain for late-season planting.<sup>16</sup> Because the grain he purchased from the elevator was without restrictions and not subject to his license agreement with Monsanto, Bowman believed that he was acting legally.<sup>17</sup>

In October 2007, Monsanto sued Bowman for patent infringement based on his planting of commodity grain.<sup>18</sup> Bowman represented himself at the district court proceedings and argued that if Monsanto prevailed, commodity grain would be eliminated as a low-cost source of seeds for planting.<sup>19</sup> The district court found Bowman's arguments compelling but was unable to find for him based on existing Federal Circuit precedent, stating, "the 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."<sup>20</sup> On appeal, the Federal Circuit affirmed the judgment in

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Grain elevators are entities who "purchase grain from farmers and sell it for consumption" but may not package or market the grain as "agricultural seed." 133 S. Ct. at 1765 n.1. As described in the Federal Circuit opinion, commodity seeds sold to grain elevators are undifferentiated seeds from a variety of sources. *See* Monsanto Co. v. Bowman, 657 F.3d 1341, 1345 (Fed. Cir. 2011), *aff'd*, 133 S. Ct. 1761 (2013). According to Bowman, farmers have been using commodity grain from grain elevators for generations of growing, most frequently for risky late season plantings because commodity grain is a low-cost seed source. *See* Brief for Petitioner at 5-8, Bowman v. Monsanto Co., 133 S. Ct. 1761 (2013) (No. 11-796), 2012 WL 6063892, at \*5-6.

12. *See* Brief for Petitioner, *supra* note 11, at 6-7 (describing Bowman's planting activities).

13. *See* Monsanto Co. v. Bowman, 657 F.3d 1341, 1345 (Fed. Cir. 2011), *aff'd*, 133 S. Ct. 1761 (2013).

14. *See* Monsanto Co. v. Bowman, 657 F.3d 1341, 1345 (Fed. Cir. 2011), *aff'd*, 133 S. Ct. 1761 (2013).

15. Monsanto Co. v. Bowman, 657 F.3d 1341, 1345-46 (Fed. Cir. 2011), *aff'd*, 133 S. Ct. 1761 (2013).

Bowman also saved seeds from his second crop for use in future years, and supplemented with additional commodity grain. *Id.*

16. *See* Brief for Petitioner, *supra* note 11, at 8 (describing Bowman's communications with Monsanto).

17. *See id.*

18. *See id.* at 8-9.

19. *See* Monsanto Co. v. Bowman, 686 F. Supp. 2d 834, 836-37 (S.D. Ind. 2009), *aff'd*, 657 F.3d 1341 (Fed. Cir. 2011).

20. Monsanto Co. v. Bowman, 686 F. Supp. 2d 834, 837 (S.D. Ind. 2009), *aff'd*, 657 F.3d 1341 (Fed. Cir.

favor of Monsanto by relying on its own precedent in two recent, factually similar cases (also involving Monsanto), and established that patent exhaustion does not bar infringement because Bowman “created a newly infringing article.”<sup>21</sup> The Supreme Court granted certiorari and strongly affirmed the Federal Circuit holding, stating, “[b]ecause Bowman thus reproduced Monsanto’s patented invention, the exhaustion doctrine does not protect him.”<sup>22</sup>

The patent-exhaustion doctrine originated in case law from 1852 and stands for the principle that once a patented product is sold, the patentee holds no rights in *that particular product*—it becomes the personal property of the buyer.<sup>23</sup> The policy behind the doctrine is that while the patentee may separately grant away each of his substantive rights guaranteed by the patent, he receives consideration when he sells a product whose sole value is in its use; and thereafter, he should not be able to interfere in the buyer’s use of that product.<sup>24</sup> Historically, the patent-exhaustion doctrine is invoked upon any authorized sale; however, in recent years the Federal Circuit has imposed an additional requirement that the sale also be unconditional.<sup>25</sup> Conditional sales

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2011).

21. See *Monsanto Co. v. Bowman*, 657 F.3d 1341, 1347-48 (Fed. Cir. 2011) (recapping precedent on patent exhaustion and impermissible reconstruction); see also *Monsanto Co. v. Scruggs*, 459 F.3d 1328, 1333, 1341 (Fed. Cir. 2006) (holding for Monsanto against farmer who saved seed); *Monsanto Co. v. McFarling*, 302 F.3d 1291, 1299-1300 (Fed. Cir. 2002) (holding for Monsanto against farmer who saved seed).

22. 133 S. Ct. at 1767.

23. See *Bloomer v. McQuewan*, 55 U.S. (14 How.) 539, 550 (1853) (holding patented articles become personal property of buyer). The Court stated, “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 . . . .” *Id.* at 549; see *Adams v. Burke*, 84 U.S. (17 Wall.) 453, 457 (1873) (holding patentee cannot prohibit third-party purchaser from using patented article).

24. See *Adams v. Burke*, 84 U.S. (17 Wall.) 453, 456 (1873) (describing rights and characterizing principle as “the essential nature of things”). In *Adams v. Burke*, the patentee granted Lockhart & Seelye with a limited right to manufacture, sell, and use its patented coffin lids within a ten-mile radius of Boston, Massachusetts. *Id.* at 456-57. Lockhart & Seelye sold the coffin lids to an individual undertaker within the authorized area, who subsequently used the coffin lids for burials *outside* the ten-mile radius. *Id.* at 457. The plaintiff-patentee sued the undertaker for infringement. *Id.* The Supreme Court, in upholding the lower court’s dismissal, stated:

[T]he patentee or his assignee having in the act of sale received all the royalty or consideration which he claims for the use of his invention in that particular machine or instrument, it is open to the use of the purchaser without further restriction on account of the monopoly of the patentees.

*Id.* at 456.

25. See *United States v. Univis Lens Co.*, 316 U.S. 241, 251, 254 (1942) (holding patent exhaustion arose from authorized sale despite attempted post-sale restrictions); *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700, 709 (Fed. Cir. 1992) (holding restriction on reuse within patent grant and patent exhaustion not invoked for conditional sale). In *Univis*, the plaintiff-patentee authorized the sale of lens blanks by its licensee to a licensed finisher for grinding and polishing, and further imposed on the finisher restrictions on resale prices. *United States v. Univis Lens Co.*, 316 U.S. 241, 243-44 (1942). The United States brought suit under the Sherman Act for unlawful restrictions of sale. *Id.* at 242-43. The Supreme Court held that Univis had relinquished its monopoly with the sale of the lens blanks to the finisher, and therefore could not assert an

and other similar restrictions imposed by patent owners have received favorable treatment by the Federal Circuit but patent owners' continued control over sold products may still be curtailed through antitrust or patent misuse actions.<sup>26</sup> Federal Circuit precedent would lead one to believe that assertion of the patent-exhaustion doctrine is not an available defense in any case involving *conditional* sales, but the Supreme Court continues to cite precedent requiring only an *authorized* sale.<sup>27</sup> The Supreme Court stated the current test for proper invocation of an exhaustion defense in a relatively recent opinion, *Quanta Computer, Inc. v. LG Elecs., Inc.*,<sup>28</sup> and may be summarized as consisting of two requirements: an authorized sale of an item, and a sufficient embodiment of the patented invention in that item.<sup>29</sup>

While the patent-exhaustion doctrine provides a potential defense against

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exception to the Sherman Act based on its patent rights. *Id.* at 252. Despite the fact that the lens blanks were not complete at the time of sale, the Supreme Court stated that "where one has sold an uncompleted article which . . . embodies essential features of his patented invention . . . he has sold his invention so far as it is or may be embodied in that particular article." *Id.* at 250-51. In *Mallinckrodt*, the plaintiff owned rights to a patented medical device for delivering radioactive or therapeutic material to the lungs of a patient for diagnosis or treatment of lung conditions. *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700, 701-02 (Fed. Cir. 1992). It sold the devices directly to hospitals accompanied by a "single use only" notice. *Id.* at 702. Rather than disposing of the devices, hospitals shipped them to the defendant who sterilized and "reconditioned" them before shipping them back to the hospitals for reuse. *Id.* The lower court relied on patent exhaustion in finding that the sale exhausted the patentee's rights to control the device's future use. *Id.* at 706. The Federal Circuit disagreed, reasoning that, if the restriction was "reasonably within the patent grant," the sale was validly conditioned upon it, the effect of which was to both remove patent exhaustion as an available defense and permit remedy under patent infringement. *Id.* at 708-09. The Federal Circuit's treatment of patent exhaustion in *Mallinckrodt* has sparked some criticism and has been dubbed the "conditional sale doctrine." 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, 201 (2013), [http://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=1099&context=djclpp\\_sidebar](http://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=1099&context=djclpp_sidebar) (remarking on recent Federal Circuit strengthening of patentee protection).

26. See *supra* note 25 (describing Federal Circuit position in *Mallinckrodt*); see also *Princo Corp. v. Int'l Trade Comm'n*, 616 F.3d 1318, 1331 (Fed. Cir. 2010) (distinguishing anticompetition and patent misuse claims); *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1426 (Fed. Cir. 1997) (stating "field of use restrictions . . . are generally upheld" and discussing standards for proving patent misuse). Although related, the doctrines of patent misuse and antitrust serve separate objectives; patent misuse concerns a patent owner's attempt to acquire a monopoly not "embraced in the patent," while antitrust concerns the regulation of industry to prevent and/or remedy anticompetitive behavior generally. See *Transparent-Wrap Mach. Corp. v. Stokes & Smith Co.*, 329 U.S. 637, 643, 646-47 (1947) (describing patent misuse and antitrust doctrines); see also CRAIG ALLEN NARD, *THE LAW OF PATENTS* 613-14 (2d ed. 2011) (discussing differences between patent misuse and antitrust); Mark R. Carter, *A Patent and Its Continuation as an Antitrust Tying Arrangement*, 18 J. TECH. L. & POL'Y 37, 38, 43-44 (2013) (discussing patent misuse and antitrust).

27. See 133 S. Ct. at 1766 (defining patent exhaustion and utilizing "authorized sale"); *Quanta Computer, Inc. v. LG Elecs., Inc.*, 553 U.S. 617, 625 (2008) (stating "initial authorized sale of a patented item terminates all patent rights to that item"); *supra* note 25 (describing Federal Circuit precedent regarding conditional sales).

28. 553 U.S. 617 (2008).

29. See *Quanta Computer, Inc. v. LG Elecs., Inc.*, 553 U.S. 617, 625, 628 (2008). The Supreme Court also explicitly extended the patent-exhaustion doctrine to method claims in this case, correcting the Federal Circuit's earlier ruling. *Id.* at 624-25, 628-629. The effect of *Quanta* on *Mallinckrodt* and the patent-exhaustion doctrine for conditional sales is still unknown. See NARD, *supra* note 26, at 629-30 (highlighting Supreme Court's treatment of sale as unconditional but heavily relying on *Univis*).

patent owners attempting to exert post-sale control, it applies only to the use and sale of the particular article sold—the buyer does not obtain the right to make a new article unless that right is bargained for independently.<sup>30</sup> The repair-reconstruction doctrine draws the line between permissible repair and impermissible reconstruction of the sold article; while “[m]ere replacement of individual unpatented parts . . . is no more than the lawful right of the owner to repair his property,” reconstruction “as to in fact make a new article” is impermissible.<sup>31</sup> Despite extensive case law, the line between repair and reconstruction remains blurry and may be frustratingly difficult to apply—at one point driving the Supreme Court to consider the perishability of toilet paper while attempting to characterize its replacement in a patented dispenser as either repair or reconstruction.<sup>32</sup> Nonetheless, both doctrines offer important counterbalances to the patentee’s monopoly, ensuring that the public is protected from overreach; however, it is still unclear how these doctrines will apply to biological inventions, if they can be applicable at all, or if new limiting doctrines will grow to fill their space.<sup>33</sup> Providing utility patent protection to living organisms is a relatively recent development; one that had been prohibited before 1980, when the Court broadly classified living organisms as “products of nature.”<sup>34</sup>

Before 1980, attempts at providing intellectual property protection to plants included the Plant Patent Act (PPA) of 1930 and the Plant Variety Protection Act (PVPA) of 1970, both the result of lobbying by the seed industry.<sup>35</sup> Ultimately, however, neither act provided a significant amount of protection for

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30. See *Jazz Photo Corp. v. Int’l Trade Comm’n.*, 264 F.3d 1094, 1102 (stating “rights of ownership do not include the right to construct an essentially new article”); see also Eric J. Rogers, *The Inexhaustible Right To Exclude Reproduction Doctrine*, 14 COLUM. SCI. & TECH. L. REV. 389, 413-14 (2013) (describing right to “make” as “[r]arely [e]xhausted [p]atent [r]ight”).

31. See *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 346 (1961) (discussing scope of “reconstruction”).

32. See *Morgan Envelope Co. v. Albany Perforated Wrapping Paper Co.*, 152 U.S. 425, 432-33 (1894) (remarking renewal of toilet paper is “neither the one nor the other”); Mark D. Janis, *A Tale of the Apocryphal Axe: Repair, Reconstruction, and the Implied License in Intellectual Property Law*, 58 MD. L. REV. 423, 425 (1999) (pointing out Supreme Court’s toilet paper case and remarking on “idiosyncratic” history of repair-reconstruction dichotomy).

33. See *supra* note 2 and accompanying text (addressing importance of limiting doctrines for proper economic function).

34. See *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (holding live, human-made microorganism patentable subject matter). The patent statute defines patent-eligible subject matter as “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.” 35 U.S.C. § 101 (2012). The Supreme Court reasoned that, because the patentee’s engineered microorganism existed “with markedly different characteristics from any found in nature,” it could be considered a manufacture or a composition of matter under the statute. *Diamond v. Chakrabarty*, 447 U.S. 303, 309-10 (1980).

35. See Plant Patent Act of 1930, 35 U.S.C. §§ 161-164 (2012); Plant Variety Protection Act of 1970, 7 U.S.C. §§ 2321-2582 (2012); Debra L. Blair, Note, *Intellectual Property Protection and Its Impact on the U.S. Seed Industry*, 4 DRAKE J. AGRIC. L. 297, 310-14 (1999) (providing overview and discussing history of PPA and PVPA).

the seed industry; exceptions in both statutes made it nearly impossible to protect investments in new seed varieties, including an exception permitting farmers to save seed from year to year.<sup>36</sup> After 1980, the floodgates opened for biotechnology companies to seek greater protection on their inventions through utility patents; indeed, Monsanto filed its relevant patents in *Bowman* in the early 1990s, implying that most research and development on their GMOs occurred during the 1980s, after *Chakrabarty*.<sup>37</sup> Before long, the Supreme Court confronted the issue of whether plants would be eligible for utility patent protection given the enactment of the PPA and PVPA and held that protection may be granted under both Acts.<sup>38</sup> Armed with utility patents for its transgenic seeds, Monsanto has pursued aggressive enforcement techniques to ensure that farmers do not save seed from year to year, hiring investigators (often referred to as “seed police”) to obtain samples from farmers who purchase Roundup Ready seeds one year but not the next and suing farmers for “seed piracy;” in total, it is estimated that Monsanto has received approximately \$23.7 million from such suits against farmers.<sup>39</sup> The Federal Circuit has held favorably for

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36. See Blair, *supra* note 35 at 310-11 (explaining plant reproduction and effect of PPA). The PPA protected only plants reproduced asexually; breeders creating new varieties of crop plants, such as corn and soybeans, which are reproduced sexually, did not benefit from the act. *Id.* Congress intended the PVPA to correct this shortcoming and provide incentives and protection for seed companies. *Id.* at 312. The requirements for filing and obtaining a PVPA certificate somewhat mimic that of a utility patent and the PVPA provides for some similar protections including a right to exclude others from selling, reproducing, importing, or exporting the protected variety. See *id.* at 312 (describing novelty requirement and twenty-year protection). The PVPA contains two very important exceptions to the certificate-holder’s right to exclude: the “farmer’s exemption” and the research exemption. 7 U.S.C. § 2543 (covering “farmer’s exemption”); *Id.* § 2544 (covering research or “breeders exemption”); see Blair, *supra* note 35, at 313 (describing exemptions). The farmer’s exemption enabled farmers to save protected seed from year to year and even sell it to other farms, provided he met certain threshold requirements. See Blair, *supra* note 35, at 313 (describing farmer’s exemption).

37. See Robert Mazzoleni & Richard R. Nelson, *The Benefits and Costs of Strong Patent Protection: A Contribution to the Current Debate*, 27 RES. POL’Y 273, 276 (1998) (emphasizing importance of patents in growing biotechnology industry); *supra* note 7 (citing Monsanto patents and filing dates). “The collection of small and medium sized firms in the American biotechnology industry is . . . a striking example of enterprises that would not have come into existence without the prospect of a patent, and which depend on patent protection to make their profits, and to attract capital . . .” Mazzoleni & Nelson, *supra*, at 276. Before 1980, farmers grew roughly seventy to eighty-five percent of soybeans and wheat varieties with public sector seed, originating from publicly funded agricultural research and breeding. See BARKER ET AL., *supra* note 6, at 3 (providing history of public sector seed in United States).

38. See *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int’l, Inc.*, 534 U.S. 124, 127 (2001). Both the lower courts and the Supreme Court relied heavily on the *Chakrabarty* holding to establish that plants are clearly within the recent, broad interpretation of 35 U.S.C. § 101. See *id.* at 129-30, 134. The Supreme Court stated that neither the PPA nor the PVPA contain statements indicating they are the exclusive means of protecting, asexually-reproducing and sexually-reproducing plants, respectively. *Id.* at 138, 141. The Court buttressed its argument by pointing out that there is a much higher bar to obtaining a utility patent than there is to obtain a PVPA certificate, noting the greater rights obtained with a utility patent and supporting the idea that the two are not mutually exclusive. *Id.* at 142-43. The Court even highlighted that “[m]ost notably, there are no exemptions for research or saving seed under a utility patent.” *Id.* at 143.

39. See BARKER ET AL., *supra* note 6, at 6 (providing sum of awards to Monsanto in seed patent infringement suits through 2012); Blair, *supra* note 35, at 326-27 (describing Monsanto investigation

Monsanto in recent appeals involving such infringement suits, in part on the basis that patent exhaustion cannot be invoked due to the conditional sale of the seeds, even in the absence of a signed license agreement.<sup>40</sup>

In *Bowman*, the Supreme Court began its analysis by reiterating the definition of patent exhaustion, quoting both *Quanta* and *Univis Lens* for the propositions that “the initial authorized sale of a patented item terminates all patent rights to that item,” and the purchaser or any subsequent owner may “use [or] sell the thing as he sees fit.”<sup>41</sup> The Court also reiterated that the right to make new copies of the patented invention is not conferred through the sale of an item embodying the invention.<sup>42</sup> Applying the two principles, the Court determined that the exhaustion principle provides no protection for *Bowman* because he “made” additional patented soybeans without Monsanto’s permission.<sup>43</sup> The primary reasoning behind the Supreme Court’s opinion is that, to hold otherwise, Monsanto’s rights in its patents would effectively cease after the first sale of its seeds.<sup>44</sup>

The Supreme Court also recapped the effect of its holding in *J.E.M. Ag Supply*, where it distinguished between the exclusion rights afforded utility patent holders and PVP certificate holders—specifically, that under a PVPA certificate, the patentee could *not* prevent the buyer from saving harvested seed, but that a utility patent holder could prevent such activity.<sup>45</sup> The Court made a swift dismissal of *Bowman*’s argument that he was “using [seeds] in the normal

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activities); E. Freeman, *Seed Police? Part 4*, MONSANTO (Nov. 10, 2008), <http://www.monsanto.com/newsviews/Pages/Seed-Police-Part-4.aspx> (describing activities of hired investigators). Monsanto’s investigative practices have also prompted claims of harassment and intimidation, even by farmers who have never purchased their seed and do not wish to grow it. See BARKER ET AL., *supra* note 6, at 6-7 (describing tactics of seed companies against farmers). David Runyon, an Indiana farmer who does not buy Monsanto products, received an unannounced visit from Monsanto investigators in 2005 demanding all of his production records, including records listing from whom he had purchased herbicides and to whom he was selling his soybeans; he hired a lawyer to assist in his defense. See Jean Snedegar, *GM Battles Rage Down on the Farm*, BBC NEWS (Feb. 17, 2009, 12:06 AM), <http://news.bbc.co.uk/2/hi/business/7892328.stm>.

40. See *Monsanto Co. v. Scruggs*, 459 F.3d 1328, 1340-41 (Fed. Cir. 2006) (holding for Monsanto against farmer who saved seed); *Monsanto Co. v. McFarling*, 302 F.3d 1291, 1299-1300 (Fed. Cir. 2002) (holding for Monsanto against farmer who saved seed).

41. 133 S. Ct. at 1766 (alteration in original) (quoting *Quanta Computer, Inc. v. LG Elecs., Inc.*, 553 U.S. 617, 625 (2008); *United States v. Univis Lens Co.*, 316 U.S. 241, 249-50 (1942)). The decision was unanimous. *Id.* at 1764.

42. *Id.* at 1766.

43. See *id.* at 1767-68. The Court made a small fuss over the word “make,” using both a quoted phrase from *Bowman* himself and a dictionary definition, to “cause to exist, occur, or appear” or “plant and raise (a crop).” *Id.* at 1767 (citing Webster’s Third New International Dictionary 1363 (1961)). Both parties attempted to argue the word to their benefit. See Brief for Petitioner, *supra* note 11, at 37-42 (arguing that “planting” is not “making”); Brief for Respondents at 27-28, *Bowman v. Monsanto*, 133 S. Ct. 1761 (2013) (No. 11-796), 2013 WL 179941, at \*27-28 (arguing “using” also “making,” and two not mutually exclusive).

44. See 133 S. Ct. at 1767 (explaining exhaustion doctrine application would negate Monsanto’s reward). “The exhaustion doctrine is limited to the ‘particular item’ sold to avoid just such a mismatch between invention and reward.” *Id.*

45. See *id.* at 1767-68 (discussing differing protections and rights between patent and certificate holders).

way farmers do,” acknowledging the blurred line between “using” and “making” regarding plants, but reiterating that Bowman simply had no right to reproduce the patented seed.<sup>46</sup> The Court also refused to view the situation as one that creates an exception to the patent-exhaustion doctrine, instead remarking that “it is really Bowman who is asking for an unprecedented exception.”<sup>47</sup> The Court expressly limited the holding to this situation involving a self-replicating product, carefully remarking that self-replicating products may present other issues, such as replication outside of the purchaser’s control or replication as a necessary but incidental step in using the item for another purpose, and it declined to address how patent exhaustion would apply in such instances.<sup>48</sup>

Whether one views the Supreme Court’s decision in *Bowman* as an exception to the patent-exhaustion doctrine or a continuation of it, the effect is the same—exhaustion may not be an available defense in infringement actions involving self-replicating organisms, opening up the question of how inadvertent growers would argue against such allegations.<sup>49</sup> 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; specifically, the Court noted, that he anticipated much of the crop would be Roundup Ready and, as a result, sprayed his crop with a glyphosate-based herbicide.<sup>50</sup> Without considering intent, it would be difficult to exempt neighboring conventional and organic farmers (who have no desire to raise genetically-modified crops, yet inadvertently grow them due to pollen drift and seed contamination) from being liable under the strict liability

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46. See *id.* at 1768 (rejecting Bowman’s argument). When Bowman attempted to argue, a bit more philosophically, that due to the seeds’ self-replicating nature, he was not, himself, physically making new copies of the patented invention, the Supreme Court characterized it as a “blame-the-bean defense” and recapped all of Bowman’s activities leading up to the second crop. *Id.* at 1768-69. Important to the Court were the facts that Bowman anticipated much of the seed that he purchased from the grain elevator would be Roundup Ready and that he sprayed his fields with glyphosate-based herbicide. *Id.* at 1769.

47. *Id.* at 1768.

48. 133 S. Ct. at 1769. “Our holding today is limited—addressing the situation before us, rather than every one involving a self-replicating product.” *Id.*

49. See *supra* note 48 and accompanying text (holding patent owner’s rights not extinguished on sale of self-replicating seeds). Furthermore, as the Court suggests, if a farmer was to inadvertently raise plants carrying the patented genetic trait (for example, from wind-carried transgenic seed infecting his crop), exhaustion may still not be available to him as a defense based on the current requirement of an unconditional sale under existing Federal Circuit precedent. See *supra* notes 25-29 and accompanying text (explaining relationship between exhaustion doctrine and conditionality of sale). It is more likely that such a farmer could pursue a patent misuse defense for a patent owner’s attempt at receiving double payment from a downstream user. See *supra* note 26 and accompanying text (describing patent misuse).

50. See 35 U.S.C. § 271(a) (2012) (providing for infringement of patents with no intent requirement); 133 S. Ct. at 1765, 1769 (recapping Bowman’s activities twice and raising issue of self-replication outside of purchaser’s control); see also *In re Seagate Tech., LLC*, 497 F.3d 1360, 1368 (Fed. Cir. 2007) (stating “patent infringement is a strict liability offense”).

standard of patent infringement.<sup>51</sup> Monsanto has publically stated that it would not pursue infringement actions against accidental growers.<sup>52</sup> Monsanto's investigative tactics and litigious history suggest otherwise, however, and may still prompt an accidental grower to incur considerable time and expense defending himself against such an investigation.<sup>53</sup>

The Supreme Court struck a strong pro-patentee tone in *Bowman*, showing repeated concern that Monsanto should "receive its reward" for its invention and even vilifying Bowman as actively "depriving" the company of its due.<sup>54</sup> Historically, the Supreme Court has often curtailed the Federal Circuit's strong pro-patentee opinions.<sup>55</sup> Last term, however, the Court at times approached patent-related cases more squarely from the prerogative of the patent owner and affirmed the patent protections at issue.<sup>56</sup> To protect inadvertent infringers from overreach and avoid tackling the difficult examination of intent, an alternative approach more consistent with the Court's concern for the patentee may be to weigh the benefit received from use of the replicated article as a counterbalance to whether the use actually deprived the patentee of a sale.<sup>57</sup> 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.<sup>58</sup> The Court also did not address the nature of the sale and the effect of the license agreement on the patent-exhaustion doctrine, leaving open the question created by *Mallinckrodt* as to whether the Federal Circuit's conditional-sale doctrine further limits the general availability of patent exhaustion as a defense.<sup>59</sup>

The opinion in *Bowman* considers only the narrowest question of whether the patent-exhaustion doctrine can apply to self-replicating seeds and considers the answer only in terms of what the patent owner lost, and not the cumulative effect of its result on farming practices.<sup>60</sup> 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 while

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51. See *supra* note 50 (discussing strict liability for patent infringement).

52. See *Organic Seed Growers & Trade Ass'n v. Monsanto Co.*, 718 F.3d 1350, 1358 (Fed. Cir. 2013) (stating Monsanto's representations not to sue would have estoppel effect).

53. See *supra* note 39 (discussing Monsanto's investigative practices).

54. See 133 S. Ct. at 1767, 1769 (emphasizing "no gain" to Monsanto from Bowman's use).

55. See *Quanta Computer, Inc. v. LG Elecs., Inc.*, 553 U.S. 617, 628-29, 638 (2008) (reversing Federal Circuit while bolstering patent-exhaustion doctrine).

56. See *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2119 (2013) (holding cDNA patent-eligible subject matter); 133 S. Ct. at 1767, 1769 (focusing on patentee protection).

57. See 133 S. Ct. at 1769 (pointing out Bowman received benefit of invention without paying premium).

58. See *id.* at 1769 (suggesting benefit conferred by application of herbicide to seed, not seed itself).

59. See *supra* notes 27-29 (discussing lack of clarity around availability of patent exhaustion as defense for conditional sales).

60. See 133 S. Ct. at 1764, 1768 (introducing only one question for discussion and briefly addressing effect on farmers).

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.<sup>61</sup> Monsanto's products and their widespread use may very well pose several hazards to our health and economic welfare.<sup>62</sup> Ironically, Congress in 1970 seemed to understand that farmers required some protection against larger seed corporations and that the nation's food supply deserved special consideration when it inserted the farmer exemptions into the PVPA to *prevent* abuses from large seed corporations.<sup>63</sup>

There is no doubt that utility patent protection has supported significant and beneficial strides in the biotechnology arena and innovators should be rewarded for their contributions to society. New limiting doctrines to capture previously unforeseen technologies must nevertheless grow to protect inadvertent infringers. The Supreme Court's decision in *Bowman* settles the question of whether the defense of patent exhaustion is generally available for infringement actions regarding self-replicating organisms, but it leaves much to be desired in the larger context of how to protect the public from the overreach of patent holders asserting strong downstream control of their products, particularly with technology that has such a profound impact on our food supply and health. In the absence of further clarity, litigation involving such issues will continue to arise.

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61. See *supra* notes 6-7 and accompanying text (citing prevalence of Monsanto goods in marketplace and recent favorable treatment in Federal Circuit). Considering the effects of *Bowman*, existing Federal Circuit precedent, and the nature of GM seeds, neither the patent-exhaustion nor repair-reconstruction doctrines appear available as defenses to fend off overreaching patentees, leaving the patent-misuse doctrine, which is of more limited utility. See Son, *supra* note 2, at 190-91 (discussing patent misuse and suggesting excessive intellectual property protection raises new issues for high technology). But see Brief for Respondents, *supra* note 43, at 31 (asserting application of existing patent-exhaustion doctrine would disfavor innovations in biotechnology).

62. See *supra* note 6 (presenting numerous dangers from use of GM crops and citing prevalence of Monsanto GMOs).

63. See Robert P. Merges, *Intellectual Property in Higher Life Forms: The Patent System and Controversial Technologies*, 47 MD. L. REV. 1051, 1070 (1988) (discussing necessity of farmer's exemption). "[The PVPA] was drafted with a sensitivity to the practical problems of farmers who have to cope with intellectual property rights over their primary source of livelihood." See *id.*