5-1-2013

Bowman v. Monsanto: Agriculture's Implications for… Technology?

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I. Introduction

The decision in the agricultural battle between Monsanto and Bowman has implications beyond agriculture. Experts in the technology sector are observing the decision the Supreme Court is set to issue soon. That very decision will decide the path that software and technology will take to protect any infringement of their intellectual property. The agricultural biotechnology giant Monsanto is once again embroiled in a lawsuit, this time against seventy-five year old Indiana farmer Hugh Bowman. Monsanto is accusing Bowman of infringing on its genetically modified seed patents. Bowman allegedly used second-generation seeds to plant his crops for a period of eight years. The company says that by not buying seeds for each generation, Bowman violated its patents and the technology Monsanto has with Bowman.

Bowman is arguing that the patent exhaustion doctrine should apply. Bowman purchased the patented seeds from a third party; specifically, a grain elevator. Bowman's legal team claims that Monsanto does not have patent rights in the resale of its product from a third party. The doctrine is derived from old common law cases, to be discussed below; there judges found that a resale of an item exhausts or extinguishes a patent owner's rights in the intellectual property.

The implications for each side are huge. A victory for Monsanto would secure its patents against other infringers who similarly use Monsanto's self replicating generation seeds and strengthen its position as the primary supplier of agricultural products. A victory would strengthen Monsanto's position since now every supplier of Monsanto's patented seeds and

every purchaser would be required to remit royalty payments to Monsanto. A victory for Bowman would ensure that companies find alternative methods to protect their intellectual property; companies may resort to the development of terminator technology as a result of a Bowman victory. Terminator technology ensures that seeds would not be able to produce second-generation offspring. Currently, Monsanto rejected the use of terminator seeds. The ramifications of Bowman's victory would also spill over into software, where technology firms are concerned that a Supreme Court decision in favor of Bowman would facilitate software piracy.

Both Bowman and Monsanto argued their respective points before the Supreme Court in February. During oral argument, the Supreme quickly jumped on Bowman's attorney mere seconds into his argument. The Supreme Court concerned itself and Bowman's attorney with the question as to what motivation would intellectual property producers have to develop new technologies and even bother patenting them if their rights evaporate so quickly. Shortly thereafter, members of the Supreme Court openly stated, in a matter of fact way, that Bowman openly infringed Monsanto's patent. While questioning is often inconclusive and it is impossible to predict the Supreme Court's determination, it appears from oral argument that Bowman's ship is quickly sinking. In turn, technology patent owners are rejoicing.

II. Science Behind Genetic Modification

While information on the history of early genetic modification is sparse, it is historically known that humans have played a role in plant and animal breeding since they made a transition

from the hunter-gatherer societies to the Neolithic domestication period around 10,000 B.C.[1] According to a study of early man by Australia National University's academic historian William Gammage, people selectively bred animals such as dogs on their farms.[2] Humans selectively bred other animals for their diets and chose plants that produced a favorable yield in the conditions in which they lived.[3] This allowed people to have more prosperous harvests and increased their chances of having food, which hunting did not offer.[4]

If we fast-forward to modern times, we see that the origins of genetically modified organisms began with the discovery of DNA and the understanding of recombinant DNA. The pairing of bases in DNA, which was brought to light by Watson and Crick in 1953[5], provided a clear mechanism of the methodology that organisms use to copy their genetic information.[6] Without this vital piece of information, scientists such as Paul Berg, who in 1972 created the first recombinant DNA molecule by combining genes from two different virus organisms, would not have otherwise been possible.[7]

Once scientists were able to discover the model and basis for DNA, they were able to alter the instructions of any cell and organism that they needed to.[8] Thus, they engineered plants

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[1] WILLIAM GAMMAGE, LONDON PAPERS IN AUSTRALIAN STUDIES 1-27 (Menzies Centre for Australian Studies eds., 2005).
[2] *Id.*
[3] *Id.*
[4] *Id.*
[5] *The Discovery of the Molecular Structure of DNA - The Double Helix*, *available at* http://www.nobelprize.org/educational/medicine/dna_double_helix/readmore.html?referer=www.clickfind.com.au (last visited Mar. 21, 2013).
[6] *Id.*
[7] *Id.*
[8] National Human Genome Research Institute (NHGRI), *Deoxyribonucleic Acid*, *available at* http://www.genome.gov/25520880 (last visited Mar. 21, 2013).

to have the traits that were desirable for Monsanto.[9] A cell that is genetically modified will pass on those traits to its offspring just as any other cell would because the instructions that were programmed into the DNA are part of the organism.[10]

The DNA molecule or deoxyribonucleic acid molecule contains instructions and both are passed down from the previous generation to the next. During the process of replication as well as protein synthesis, the DNA molecule unwinds from its tightly wound form from within the nucleus, exposing the sequence which instructs the cell to perform the required process. The DNA molecule is composed of varying sequences of nucleotides, which contain one of four nitrogenous bases called adenine, thymine, guanine, and cytosine.[11] In addition to a base, the nucleotide contains a phosphate group and a deoxyribose sugar group on the outside of the base.[12] The nucleotide is considered to be a building block of the genome because it is a component of the instructions for the organism.[13] Each sequence of the nucleotides containing the different bases has different instructions for every individual organism.[14] Two chains of nucleotides join together to form a double helix with the attaching bases being complimentary to each other.[15] The adenine joins the thymine and the guanine joins the cytosine.[16] The double helix of the DNA is like a winding ladder, and this trait contributes to the DNA's ability to pass instructions to the next generation and or create a protein.[17] A single complementary base pair

[9] History of Monsanto Corp., *available at* http://www.monsanto.com/whoweare/Pages/monsanto-history.aspx (last visited Mar. 21, 2013).
[10] *NHGRI*, *supra* note 8.
[11] *Id.*
[12] *Id.*
[13] *Id.*
[14] *Id.*
[15] *Id.*
[16] *Id.*
[17] *Id.*

can be likened to that of a single step of the ladder.[18] The complementary pairs are joined by either two or three hydrogen bonds.[19] The cytosine and guanine are bonded together via three hydrogen bonds and have a stronger link together than the two hydrogen bonds that keep adenine and thymine bonded.[20]

The two chains of the helix run in opposite directions and are anti-parallel.[21] One side runs in the five prime to three prime direction, while the complimentary strand runs the same, but in the opposite direction.[22] The three and five indicate the directions in which the carbons on the sugars face.[23] A phosphodiester linkage connects the sugars of the DNA to each other, which is a phosphate group that connects the third carbon on one nucleotide to the fifth on the next sugar. [24] Yet, only one strand can be used as a template strand during the process of proteins synthesis.[25] It is from that strand and not its complimentary one that DNA is transcribed into mRNA, which is used to construct proteins.[26] This process requires great precision because there are twenty different amino acids that can be used to make up the protein.[27]

These revolutionary ideas were the predecessor for and allowed the US to have the ability to mass-produce and sell the first genetically modified crops called the Flavr-Savr tomatoes in

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[18] *Id.*
[19] *Id.*
[20] *Id.*
[21] *Id.*
[22] University of Illinois at Chicago, *DNA Structure*, *available at* http://www.uic.edu/classes/phys/phys461/phys450/ANJUM04/ (last visited Mar. 21, 2013).
[23] *Id.*
[24] *Id.*
[25] *Id.*
[26] *NHGRI*, *supra* note 8.
[27] *Id.*

1994.[28] These tomatoes synthesized less products that otherwise would cause them to spoil in shorter periods of time.[29] Although China preceded the US in releasing a transgenic crop to the masses since the 1980s, today, America is the market leader in genetically engineered agricultural products. [30] Countries worldwide purchase and grow transgenic seeds from companies like Monsanto. These genetically modified crops include, but are not limited to: insecticide sweet corn, which produces a toxin that eliminates the need for insecticide spraying, golden rice, which contains beta-carotene that is essential for the human body to make vitamin A, as well as potatoes, among many others that people include in their diets each day.[31]

The process of genetically engineering seeds is a complex one, but it begins with the simple step of isolating a desired trait to incorporate into a plant.[32] After one obtains the desired trait, the goal is to incorporate the novel gene into the genome of the plant seed.[33] This can be done via several different methods. One way of doing this is by implementing the gene gun, which shoots fragments of desired DNA sequences using a .22-caliber charge with the DNA covering a particle of metal.[34] Companies may implement another method that uses heat to make the seeds vulnerable to *Agrobacterium tumefaciens*.[35] Scientists use this organism to incorporate

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[28] Food and Water Watch, *Genetically Engineered Food, available at* http://documents.foodandwaterwatch.org/doc/GeneticallyEngineeredFood.pdf, (last visited Mar. 21, 2013).
[29] *Id.*
[30] Genetic Modification Education, *A Brief History of Genetic Modification, available at* http://www.gmeducation.org/faqs/p149248a%20brief%20history%20of%20genetic%20modification.html (last visited Mar. 21, 2013).
[31] Bionet, *4 Examples of Genetically Modified Crops, available at* http://www.bionetonline.org/english/content/ff_cont3.htm (last visited Mar. 21, 2013).
[32] Rebecca Boyle, *How to Genetically Modify a Seed, Step by Step*, POPSCI (Jan. 24, 2011, 2:56 PM), *available at* http://www.popsci.com/science/article/2011-01/life-cycle-genetically-modified-seed (last visited Mar. 21, 2013).
[33] *Id.*
[34] *Id.*
[35] *Id.*

novel genes into the plant's genome.[36] The benefit of implementing this method is that it is able to evade the plant's natural defenses, and the seed will recognize the novel gene as part of its genetic makeup.[37] Future seeds that will come from this altered seed will possess the new trait that the scientists have incorporated into the plant.[38]

In the case of the disputed Roundup Ready soybean seeds produced by Monsanto, scientists discovered a gene in a soil agrobacterium CP4 strain called the CP4 EPSPS gene located near their factory in St. Louis, Missouri.[39] The bacterium has 5-enolpyruvoyl-shikimate-3-phosphate synthetase (EPSPS), which is an enzyme that provides resistance against glyphosate found in Roundup.[40] The scientists then cloned the gene found in these organisms using *Escherichia coli* in order to increase their numbers.[41] Finally, they used *A. tumefaciens* to insert the desired isolated gene into the soybean seed genome along with a promoter to aid in recognition and copying of the genetic information by the seed's natural mechanisms.[42] This completes the work done by the company, but it is up to the seeds to continue the work from there.

Once the scientists obtain the desired sequence, the seed takes over upon planting and performs two important steps in order to regulate the plant's behavior in the growth and maintenance of its life.[43] They are the transcription and translation of the genetic sequence

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[36] *Id.*
[37] *Id.*
[38] *Id.*.
[39] International Service for the Acquisition of Agri-Biotech Applications (ISAAA), *Roundup Ready Soybean*, *available at* http://www.webcitation.org/60hS1x2BS (last visited Mar. 21, 2013).
[40] Jeremy McDermott, *New Super Strain of Coca Plant Stuns Anti-Drug Officials*, The Scotsman (Aug. 8, 2004, 12:56 AM), *available at* http://www.scotsman.com/news/international/new-super-strain-of-coca-plant-stuns-anti-drug-officials-1-550814 (last visited Mar. 21, 2013).
[41] *Boyle*, *supra* note 32.
[42] *ISAAA*, *supra* note 39.
[43] *Id.*

necessary for producing needed proteins. The plant's modified DNA is the instruction guide, which directs the plant to make necessary proteins for the plant to function properly.[44] Yet, the DNA needs to be transcribed or copied into a temporary form of RNA called mRNA or messenger RNA.[45] This is done using an enzyme called an RNA polymerase, which forms the sequence of mRNA.[46] In order for this to occur, the transgenic seeds use Monsanto's 35S promoter from the *Cauliflower mosaic virus* (CaMV) in order to activate foreign genes, which were inserted from the *A. tumefaciens* into the soybean seed.[47] The benefit of implementing CaMV promoter is that it can transcribe the whole genome and leads to high levels of gene expression in soybean plants.[48] This results in the incorporation of genetic information that codes for EPSPS. Transcription is followed by a step called translation. In this process, the ribosome within the plant cell reads the mRNA, which dictates the exact amino acids that are to be assembled to form a protein.[49] If there is no protection against the glyphosate toxin, also known as N-phosphonomethylglycine by its chemical name, the plant would be unable to perform these necessary steps to produce proteins.[50] The EPSPS is essential in producing resistance in crops against the glyphosate in the Roundup herbicide intended to kill weeds.[51] Without this protection, it would normally kill soybean crops after contact with the toxin.[52] This allows the farmers to

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[44] *Id.*
[45] *Id.*
[46] *Id.*
[47] *Id.*
[48] Wei Pelechano, Al Jaervelin, and Lars Steinmetz, *Functional Consequences of Bidirectional Promoters*, US National Library of Medicine (May 24, 2011), *available at* http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3123404 (last visited Mar. 21, 2013).
[49] *ISAAA*, *supra* note 39.
[50] *Id.*
[51] Herbicide Tolerance and GM Crops (Jun. 2011), *available at* http://www.greenpeace.org/international/Global/international/publications/agriculture/2011/363%20-%20GlyphoReportDEF-LR.pdf (last visited Mar. 21, 2013).
[52] *Id.*

prevent weeds from infesting their fields because they are able to continue implementing their desired herbicide.[53] They can also protect their crops at the same time without losing money and crops to the herbicides.[54]

III. Applicable Patent Law

A. Statutory Law and Common Law

In the United States, patent law is codified under Title 35 U.S.C. §101 et seq. Patent law is authorized by the United States Constitution from Article One, section 8(8), which reads [t]*he Congress shall have power...To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.*[55]

Title 35 is split into four parts with numerous additional provisions allocated within each part. The first part establishes the United States Patent and Trademark Office (USPTO) and authorizes the USPTO to grant and issue patents and register trademarks.[56] The second part governs what is patentable and what requirements a particular invention must meet to be eligible to receive a patent.[57] The third part deals with the protection of patents and holder's rights.[58] The fourth part concerns itself with the Patent Cooperation Treaty; an international document to protect patents rights oversees.[59] However, Bowman v. Monsanto involves a principle not found codified in in Title 35. Patent owners generally have the entire statutory patent term, currently set

[53] *ISAAA*, *supra* note 39
[54] *Id.*
[55] U.S. Const. article 1, § 8, cl. 8.
[56] 35 U.S.C. §§ 1–42 (2012)
[57] 35 U.S.C. §§ 100-212 (2012).
[58] 35 U.S.C. §§ 251–329 (2012).
[59] 35 U.S.C. §§ 351–376 (2012).

at 20 years from filing under 35 U.S.C. §154(a)(2), over which to recover their research and development costs.

A modern U.S. patent consists of two basic parts: a specification and one or more claims.[60] The specification portion includes a written description and diagram with information depicting the proposed patent.[61] The specification and diagram describe the proposed patent and serves to inform those proficient in the particular area of the proposed patent on how to utilize the invention.[62] The final sentences of the proposed patent end with one or more claims about the patent[63], which consist of a single sentence describing what the patent owner defines as the patented invention.[64] The claim must "particularly point out and distinctly claim the subject matter which the applicant regards as his invention."[65] Patent law requires both the specification and at least one patent claim.[66] Once granted by the USPTO, the patent, containing the specification and one or more patent claims, becomes publicly available.[67]

There are two purposes served by the submission of a patent claim to the USPTO. First, the claim acts as a notice function.[68] The claim puts the entire world on notice about what is seeking to be patented and by whom.[69] The claim seeks to inform the public of the exact scope ofexclusivity granted by the patent.[38] Second, the patent claim performs a substantive function that goes beyond what is available to the public.[70] The patent claim uses patent law to define the scope of protection that is

[60] 35 U.S.C. § 112 (2012).
[61] *Id.*
[62] *Id.*
[63] *Id.*
[64] *Id.*
[65] *Id.*
[66] *Id.*
[67] 35 U.S.C. § 122(b)(1) (2012).
[68] Texas Digital Sys. Inc. v. Telegenix, Inc., 308 F.3d 1193, 1202 (Fed. Cir. 2002).
[69] *Id.*
[70] Aro Mfg. Co. Inc. v. Convertible Top Replacement Co., 365 U.S. 336, 339 (1961).

being sought.[71] This functions to outline the subject matter that only the patentee may practice.[72] Therefore, submission of a patent claim performs both definitional and public-notice functions. [73]

That being said, a significant part of Bowman v. Monsanto involves the common law theory of exhaustion rights, otherwise known as the first sale doctrine. The Supreme Court first recognized the patent exhaustion doctrine in 1873 in the seminal case of Adams v. Burke.[74] This common law patent doctrine represents the proposition that once an unrestricted authorized sale of the patented material occurs, the patent holder's exclusive right to control the subsequent use and sale of that article is gone, or exhausted.[75] An unrestricted authorized sale is defined as a sale where the patent holder cannot suppress the sale of the item.[76] In other words, since the patent holder no longer has rights to the patented device, the purchaser of the patented material is free to use or resell the patented material without consideration of the patent holder's rights in that article.[77] Under the current state of the law the purchaser is expressly forbidden from re-growing or re-creating the patented article, unless specifically authorized by the patent holder.[78] With the first unrestricted sale of a patented article, the patent holder's voluntary introduction of that into commerce prevents the patent holder from exercising his or her right to exclude others from using or reselling the patented material.[79]

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[71] *Id.*
[72] McClain v. Ortmayer, 141 U.S. 419, 424 (1891).
[73] *Texas*, *supra* note 68.
[74] Adams v. Burke, 84 U.S. 453 (1873)
[75] Monsanto Co. v. Scruggs, 459 F.3d 1328, 1336 (Fed. Cir. 2006).
[76] Interdigital Technology Corp. v. OKI America Inc., 803 F.2d 684, 687 (Fed. Cir. 1986).
[77] *Scruggs*, *supra* note 75.
[78] *Id.*
[79] United States v. Univis Lens Co., 316 U.S. 241, 251 (1942).

There are two important limitations of the patent exhaustion doctrine. The first limitation is the sale of an incomplete article.[80] An incomplete article is one that is a component of a greater part. For example, in *Univis Lens*, the court held that a single lens blank that was used in producing more lenses was incomplete.[81] In these situations, exhaustion is applicable to the authorized sale of an incomplete article if: (1) its "only reasonable and intended use was to implement the patent, and (2) it "embodies essential features" of the patented invention.[82] For example, in *Quanta* Computer, the court said that patented LG components in Intel processors were useless without connecting them to other components, which is what Quanta did.[83] In clearer language, the supplier of components of cannot claim patent rights in the finished device.[84]

The next significant limitation is known as the sales limitation. The body of law setting forth the scope of this limitation restricts the sale or use of the patented material beyond the first sale when the patented material is actually in the possession of the customer or purchaser of the patented material.[85] In addition to being found in Monsanto's technology agreement, this limitation is commonly seen in software agreements. This limitation arose in the 1992 case of Mallinckrodt, Inc. v. Medipart.[86] Unfortunately, the extent of this limitation is unclear under current law. Bowman v. Monsanto should be the deciding case whether Mallinckrodt is still good law.

B. Case law

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[80] *Id.*
[81] *Id.*
[82] Quanta Computer, Inc. v. LG Electronics, Inc., 553 U.S. 617, 631-32 (2008).
[83] *Id.*
[84] *Id.*
[85] General Talking Pictures Corp. v. Western Electric Co., 304 U.S. 175 (1938).
[86] Mallinckrodt, Inc. v. Medipart, Inc., 976 F.2d 700 (Fed. Cir. 1992).

A number of cases were brought up above relevant to the law at issue in Monsanto v. Bowman. This section will introduce the facts and holdings of several key cases.

The first to be discussed is *Monsanto Co. v. Scruggs, 459 F.3d 1328 (Fed. Cir. 2006)*. *Scruggs* has facts closely relating to the facts in the instant case of Bowman v. Monsanto. Like in Bowman, Monsanto licensed the patents for herbicide and insecticide resistant soybeans to seed companies.[87] Under the license agreement, those seed companies were permitted to incorporate the genetic material into their own germplasm to produce herbicide resistant and insect resistant seeds.[88] The licensing agreement also had a provision that the seed companies could sell the resulting genetically modified seeds only to farmers who entered into license agreements with Monsanto.[89] Additionally, the license agreements with farmers prohibited the farmers from replanting the genetically modified seed from the crops grown.[90]

The defendant, Scruggs, a farm limited liability company run by its namesake farmer and his family, bought seeds containing Monsanto's patented technology but never signed the license agreement.[91] Scruggs planted the first generation seeds, and then replanted the second-generation seeds after the first harvest.[92] Scruggs did not sell any of the seeds.[93] Monsanto then sued Scruggs for infringing on its herbicide and insecticide patent.[94] Scruggs denied any infringement and argued that the patents at issue were invalid.[95] Scruggs also retaliated with antitrust and

[87] *Scruggs*, *supra* note 75.
[88] *Id.*
[89] *Id.*
[90] *Id.*
[91] *Id.*
[92] *Id.*
[93] *Id.*
[94] *Id.*
[95] *Id.*

patent misuse claims.[96] Scruggs also denied infringement and claimed that the patents at issue were invalid. The trial court granted summary judgment on all issues for Monsanto, and the Federal Circuit affirmed on most of the issues.[97]

Part of the argument in the Scruggs case was the exhaustion doctrine.[98] Scruggs argued that argued that he purchased the Monsanto seeds in an unrestricted sale, and that he was therefore entitled to use those seeds in an unencumbered fashion under the doctrine of patent exhaustion.[99] Scruggs claimed that under the doctrine of patent exhaustion, he could use or sell the purchased seeds in whatever fashion he wanted.[100] Unfortunately for Scruggs, the court quickly rejected his argument.[101] The court stated that the doctrine was inapplicable in that case.[102] The court went on to say "[t]here was no unrestricted sale because the use of the seeds by seed growers was conditioned on obtaining a license from Monsanto. Furthermore, the 'first sale' doctrine of exhaustion of the patent right is not implicated, as the new seeds grown from the original batch had never been sold."[103] Thus, it appears that unless there is an actual sale of the second-generation seeds, the patent exhaustion doctrine is not implicated. Merely being able to replicate a patented technology does not give the copier a right to use that replicated technology.[104] The Scruggs court was aware that opening the floodgates by applying the

[96] *Id.*
[97] *Id.*
[98] *Id.*
[99] *Id.* at 1336.
[100] *Id.*
[101] *Id.*
[102] *Id.*
[103] *Id.*
[104] *Id.*

exhaustion doctrine to subsequent generations of self-replicating technology would kill the rights of the patent holder.[105]

The next case to tackle is *Quanta Computer, Inc. v. LG Electronics, Inc., 553 U.S. 617 (2008)*. In that case, LG, an electronics manufacturer, owned several patents on methods and systems for processing information.[106] LG then entered into several agreements with Intel, a major computer component manufacturer and developer.[107] Embodied within the agreement, Intel would be permitted to use LG's patents in creating and selling its microprocessors.[108] Also writing into the agreement, LG included a provision that its patent would not be exhausted in subsequent sales of Intel processors using LG's patented methodology.[109]

Quanta, the world's largest manufacturer of laptops and hardware, purchased Intel processors and included them in its computers.[110] In incorporating Intel processors in its machines, Quanta used LG's patented methodology, since that was the only way Intel designed its processors to be included in computers.[111] Unfortunately, the record is sparse with facts and information, apparently in an attempt to protect trade secrets. Regardless, LG sued Quanta for violating its patents.[112]

In trial court, Quanta prevailed on the patent exhaustion claims.[113] In federal court, the court reversed the patent exhaustion claims.[114] The Supreme Court reversed the federal court,

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[105] *Id.*
[106] Quanta Computer, Inc. v. LG Electronics, Inc., 553 U.S. 617 (2008*).*
[107] *Id.*
[108] *Id.*
[109] *Id.*
[110] *Id.*
[111] *Id.*
[112] *Id.*
[113] *Id.*
[114] *Id.*

and allowed Quanta's patent exhaustion claim.[115] The court found that all the patents were already incorporated into the Intel microprocessors, which embody the essential features of the patents because they carry out all the inventive processes when combined with standard components.[116] In effect, the court stated that LG's patent was exhausted when Intel sold its processor to Quanta.[117]

The next significant case is United States v. Univis Lens Co., 316 U.S. 241 (1942). In *Univis*, the Univis Lens Company owned method and product patents on optical lenses.[118] Univis developed lens blanks, which would then be sold and ground and polished to become the final patented product.[119] The final product was then sold at prices that were fixed by Univis.[120] The entire point of selling the blanks was to manufacture the patented lenses.[121] The court held that the exhaustion doctrine exhausted the patent protection of the blanks.[122] The court wrote that the patent is exhausted "[w]hether the licensee sells the patented article in its completed form or sells it before completion for the purpose of enabling the buyer to finish and sell it."[123] The *Univis* case has been upheld in later decisions such as *Quanta*.[124]

IV. Bowman vs. Monsanto

a. Facts

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[115] *Id.*
[116] *Id.*
[117] *Id.*
[118] *Univis*, *supra* note 79.
[119] *Id.*
[120] *Id.*
[121] *Id.*
[122] *Id.*
[123] *Id.* at 244.
[124] Quanta Computer, Inc. v. LG Electronics, Inc., 553 U.S. 617 (2008*).*

Monsanto Company ("Monsanto") is a publicly traded American agricultural biotechnology corporation headquartered in Missouri. Monsanto is one of the leading producers of genetically engineered seeds and herbicides. In 1983, Monsanto was one of the first companies to create a genetically modified plant cell.[125] Four years later, in 1987, the company was able to actually conduct field trials using its genetically modified seeds.[126] The first field trials used soybeans with Roundup Ready resistance.[127]

Monsanto's business model focuses heavily on research and development.[128] Through heavy spending on researching and developing new products, the company develops herbicides and patents genetically modified seeds.[129] The company then recovers its costs from the sale of its products to the agricultural sector and strict enforcement of its patents.[130] Due to Monsanto's austere enforcement measures, farmers and advocates have heavily criticized the company.[131]

Monsanto is known as the firm that designs herbicide resistant soybeans, which are called "Roundup Ready", due to the soybeans' resilience to Roundup, an herbicide created by the company.[132] The two patents at issue, Patent No. 5,352,605 ("605") and Patent No. RE39, 247

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[125] Colorado State University, *available at* http://cls.casa.colostate.edu/transgeniccrops/how.htm (last visited Mar. 21, 2013).
[126] History of Monsanto Corp., *available at* http://www.monsanto.com/whoweare/Pages/monsanto-history.aspx (last visited Mar. 21, 2013).
[127] *Id.*
[128] Keith Schneider, *Betting the Farm on Biotech* (Jun. 10, 1990), *available at* http://www.nytimes.com/1990/06/10/magazine/betting-the-farm-on-biotech.html?pagewanted=all&src=pm (last visited Mar. 21, 2013).
[129] *Id.*
[130] *Id.*
[131] Vandana Shiva, *The Seed Emergency: The Threat to Food and Democracy* (Feb. 6, 2012), *available at* http://www.aljazeera.com/indepth/opinion/2012/02/201224152439941847.html (last visited Mar. 21, 2013).
[132] History of Monsanto Corp., *available at* http://www.monsanto.com/whoweare/Pages/monsanto-history.aspx (last visited Mar. 21, 2013).

("247E"), involve different parts of the herbicide resistance technology.[133] The 605 patent applies to a process by which Monsanto combined two different sequences of DNA to create a new gene called a chimeric gene.[134] These chimeric genes then give the plant new characteristics, such as herbicide resistance.[135] The 247E patent uses the process in the 605 patent to create chimeric genes in soybean plants that makes them compatible with herbicides.[136]

Monsanto sells these herbicide resistant soybeans to suppliers and licenses the herbicide resistance technology to seed producers.[137] In their Technology Agreement, Monsanto limits the use of their seeds and technology to a single season and prohibits supplying it to a third party or replanting second generation seeds.[138] Second generation seeds are the product of soybean plants grown from original seeds.[139] Although the Agreement generally prohibits growers from selling second-generation seeds for replanting, Monsanto does allow growers to sell them to local grain silos to be used as animal feed or to be sold as a commodity.[140] Commodity seeds are a collection of many different types of seeds from local growers that are purchased for a variety of uses, such as livestock feed.[141]

Under the agreement, the licensed grower or farmers agree to a number of provisions.[142] The first relevant provision is to use the seed with Monsanto's patents for planting a commercial

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[133] U.S. Patent No. 5,352,605 (issued Oct. 4, 1994); U.S. Patent No. RE39, 247 (issued Aug.22, 2006).
[134] *Id.*
[135] *Id.*
[136] *Id.*
[137] Monsanto Co. v. Bowman, 657 F.3d 1341 (Fed. Cir. 2011).
[138] *Id.*
[139] *Id.*
[140] *Id.*
[141] *Id.*
[142] Monsanto Technology Agreement, *available at* http://thefarmerslife.files.wordpress.com/2012/02/scan_doc0004.pdf (last visited Mar. 21, 2013).

crop for only a single season.[143] Second, the licensee agrees to not supply the seed to anyone else for planting.[144] Third, the licensee agrees that it will not save any crops produced from Monsanto's seed for replanting or share the saved seed with anyone else for replanting.[145] Fourth, no one shall use this seed for crop breeding, research, or seed production.[146] As mentioned before, Monsanto does permit licensees to sell the second generation of the seeds for commodity purposes.[147]

At issue in Monsanto v. Bowman, Indiana farmer Vernon Hugh Bowman purchased seeds from Pioneer, a registered seed producer of Monsanto.[148] As required by Monsanto, Pioneer had Bowman sign an agreement identical to Monsanto's Technology Agreement, which limited the use of the seeds to a single season and mandated that Bowman comply with Monsanto's terms and conditions.[149] Monsanto also sent Bowman a letter directly, which informed Bowman that he could not replant any form of Monsanto's herbicide resistant seeds.[150] Bowman regularly purchased seeds from Pioneer from approximately 1999 until 2007.[151] In following the terms and conditions of the agreement with Monsanto and Pioneer, Bowman did not save his seeds from the first planting or in any subsequent year.[152]

In 1999, Bowman also purchased seeds from a local commodity seed provider, who sold seeds for solely for the purpose of feed, not planting, and planted a second crop against the terms

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[143] *Id.*
[144] *Id.*
[145] *Id.*
[146] *Id.*
[147] *Id.*
[148] Monsanto Co. v. Bowman, 657 F.3d 1341 (Fed. Cir. 2011).
[149] *Id.*
[150] *Id.*
[151] *Id.*
[152] *Id.*

and conditions of Monsanto.[153] Since Bowman considered the second-crop to be a higher risk for planting, he purchased the commodity seed from the grain elevator to avoid paying the significantly higher price for Roundup Ready seeds.[154] That same year, Bowman applied the Roundup herbicide to the fields in which he had planted the second-hand grain elevator seeds to control weeds and to determine whether the plants would exhibit herbicide resistance.[155] He confirmed that many of the plants were, indeed, resistant.[156] Thereafter, with each subsequent year, from 2000 through 2007, Bowman treated his second crop with Roundup herbicide.[157] With this second crop, Bowman saved the seed harvested for replanting additional second crops in later years.[158] He also supplemented his second crop planting supply with additional purchases of commodity seed from the grain elevator.[159] Bowman did not attempt to hide his activities, and he candidly explained his practices with respect to his second-crop soybeans in various correspondences with Monsanto's representatives between 2006 and 2007.[160]

In winter of 2006, Monsanto became aware of Bowman's planting practices and investigated his use of herbicide resistant seeds.[161] Monsanto investigated eight fields that Bowman owns, totaling approximately 299 acres and confirmed that the second crop seeds that Bowman was planting contained their Roundup Ready gene.[162] Upon confirmation that

[153] *Id.*
[154] *Id.*
[155] *Id.*
[156] *Id.*
[157] *Id.*
[158] *Id.*
[159] *Id.*
[160] *Id.*
[161] *Id.*
[162] *Id.*

Bowman's second crops displayed herbicide resistance, Monsanto sued him for patent infringement of its 605 and 247E patents.[163]

b. Procedural History

In the Federal District Court, the Southern District Court of Indiana dismissed Bowman's claims on summary judgment.[164] Bowman brought a defense of patent exhaustion and that Monsanto failed to provide actual notice of infringement to him.[165] The court found Bowman's argument compelling, yet decided that the case relied on by Bowman, *Scruggs*[166], was distinguishable from Bowman's situation.[167] In Bowman's case, there was a license agreement that Monsanto had him sign whereas there was no license agreement in *Scruggs* or the other cases Bowman relied on.[168] The court additionally made a policy judgment that agreeing with Bowman would eviscerate patent holders' rights in their technology and hard work.[169] Furthermore, the court held that the patent exhaustion is inapplicable.[170] Bowman argued that the seeds from one generation are identical to the next generation, thus adopting a robust exhaustion doctrine that encompasses the progeny of seeds and other self-replicating technology.[171] Monsanto counters this by arguing that the seeds are governed by the technology agreement and are not intended for planting.[172]

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[163] *Id.*
[164] Monsanto Co. v. Bowman, 686 F.Supp.2d 834 (S.D.Ind. 2009).
[165] *Id.*
[166] Monsanto Co. v. Scruggs, 459 F.3d 1328 (Fed.Cir. 2006).
[167] *Id.*
[168] *Id.*
[169] *Id.*
[170] *Id.*
[171] *Id.*
[172] Monsanto Co. v. Bowman, 657 F.3d 1341 (Fed. Cir. 2011)

The Court of Appeals for the Federal Circuit found that Monsanto's patent rights in the seeds were not exhausted once sold to a commodity dealer.[173] The Federal Circuit further reasoned that although Monsanto's patented technology can replicate itself, a buyer could not use the product of replication because it would eliminate Monsanto's patent rights.[174] The court concluded that Bowman retained the right to sell second-generation seeds as feed or for any other number of uses, but he was prohibited from replanting them in any form.[175]

On December 20th, 2011, Petitioner Hugh Bowman filed a writ of certiorari to the United States Supreme Court. After both sides filed supporting and opposing briefs, with twenty-five amicus briefs filed[176], the Supreme Court granted the writ of certiorari on October 12, 2012.[177] On February 19, 2013, oral arguments were heard before the Supreme Court.[178] As of this writing, a decision is still pending with an uncertain release date.[179]

During oral argument, the court hinged on why anyone would want to develop patents if they would lose rights to them after the first generation.[180] Good answers to that question would be to use contract law to supplement patent law and to argue that not all seeds are fungible. The second argument is exactly what Bowman's counsel replied to the court.[181] Next, the court inquired as to whether the exhaustion doctrine even applies. The court stated that the law never allows one to make a copy of the seed and use it without a license, since the progeny would be a

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[173] *Id.*
[174] *Id.*
[175] *Id.*
[176] SCOTUS Blog, *available at* http://www.scotusblog.com/case-files/cases/bowman-v-monsanto-co/ (last visited Mar. 21, 2013).
[177] *Id.*
[178] *Id.*
[179] *Id.*
[180] Bowman v. Monsanto Co. Official Transcript (Feb. 19, 2013), *available at* http://www.supremecourt.gov/oral_arguments/argument_transcripts/11-796.pdf (last visited Mar. 21, 2013).
[181] *Id.*

new item.[182] In reference to Buck v. Bell, Justice Breyer humorously replied, "three generations of seed are enough."[183] Bowman's lawyer answered the inquiry into the exhaustion doctrine by replying that this is a new case involving the exhaustion doctrine with self-replicating technology.[184]

V. Implications for Software

The question in Bowman v. Monsanto involves second-generation seeds that were *not* the subject of an authorized sale. As the court of appeals correctly concluded, once a grower, such as Bowman, plants the commodity seeds that contain Monsanto's Roundup Ready technology and the next generation of seed develops, the grower has created a newly infringing article.

Any tampering with patent rights in Bowman v. Monsanto would effectively shorten the patent term for patents covering artificial, software, biotechnology, and progenitive technologies, thus making it much more difficult, if not impossible, for patent owners and their licensees to recover the costs of development and research for the market. This would reduce or perhaps eliminate any incentive for innovation of new software, biotech, or progenitive technologies. The public and private sectors would certainly be harmed under this scenario. To recoup its costs, software companies would have to drastically increase the prices at a level unaffordable to many consumers.

Bowman cannot persuasively argue that he did not plant the second generation of seeds. Certainly there is no reason that one action cannot simultaneously use a patented good and make another patented article. Similarly, Bowman is wrong in contending that, because the self-replication of the first-generation seeds is a consequence of their normal use, that he may use the

[182] *Id.*
[183] *Id.*
[184] *Id.*

second-generation seeds, based on an analogy to the Supreme Court's determination in *Quanta* that the authorized sale of a product exhausts a patent when the only reasonable and intended use of the article sold was to practice the patent.[185]

To begin with, the question in *Quanta* involved the use of an article acquired through an authorized sale. In Bowman v. Monsanto, the issue relates to a new copy of the patented article. Moreover, the court below correctly concluded that there were uses of second-generation soybean seeds other than practicing the patent, namely that those seeds may be used as a commodity for feed or food. There simply is no argument that planting is the only reasonable and intended use of the second-generation seed copies resulting from the planting of the first-generation seeds.

When planted, the initial generation of seeds has become spent. Likewise, the second-generation seeds qualify as a wholly new article under patent law. Due to the important fact that the second-generation seeds were not the subjects of an authorized sale, Bowman's use of those seeds constitutes infringement.

Taking this argument a step further, any exception to the conventional exhaustion standards for self-replicating seeds should absolutely not extend to computer software. This is because *Bowman v. Monsanto* and the arguments contained within that case hinge on the particular features of soybean seeds. With soybean seeds, self-replication is a natural occurrence and a feature particular to soybean seeds. The use of computer software typically results in a temporary copy of the software on the computer's random access memory. This is necessary for the program to run. Although this appears to be self-replication in a literal sense, it is remarkably different. Soybean seeds replicating is a completely natural phenomenon with a singular reasonable use. Conversely, computer software replicating is to facilitate the operation of the

[185] *Quanta*, 553 U.S. at 631.

first-generation of software. The principal purpose of self-replication of software is only to make that particular software run. Its purpose is certainly not self-replication. Moreover, a software user acquires license to use the software with rights explicitly laid out in the end user license agreement, the user has not acquired the software through an authorized sale as required for the exhaustion doctrine to apply.

According to statistics presented by The Software Alliance, the technology industry is essential to the modern economy; it has, for example, played a critical role in the recovery from the recent recession.[186] Thus, the Bureau of Economic Analysis estimates that the technology, information, and communications sector (which includes computer hardware and software) grew by 6.9% in 2011, which accounted for approximately 20% of total national GDP growth that year.[187]

Moreover, U.S. technology companies are among the nation's leading exporters of products, significantly strengthening the U.S. economy.[188] Between January and November 2012, U.S. companies exported nearly $113 billion of computers and electronic products--about 8% of total U.S. exports. U.S. Census Bureau, U.S. International Trade in Goods and Services, FT-900 Supplement November 2012, at 1 Ex. 1 (2013).[189] Software products contribute approximately $36 billion in annual exports. See Robert W. Holleyman, BSA President and CEO, Testimony

[186] Brief of The Software Alliance as Amicus Curiae Supporting Respondents, Bowman v. Monsanto, __ US ___(2013) (No. 11-796).
[187] *Id.*
[188] *Id.*
[189] *Id.*

before the United States House of Representatives Committee on Energy and Commerce, Subcommittee on Commerce, Manufacturing and Trade, at 2 (Mar. 16, 2011).[190]

Investment in the technology industry reflects its critical importance to the American economy. [191] In 2008, companies invested approximately $46.9 billion in research and development for software and computer-related services--approximately 16% of total industrial research and development expenditures for the Nation. Nat'l Sci. Bd., Science and Engineering Indicators, at 4-21 & 4-23 (2012).[192] Companies invested about $45 billion in research for the computer and electronic products sector in 2008.[193] Together, hardware and software account for roughly 31% of total spending by businesses on research and development.[194] Software Alliance member companies each year spend in excess of $32 billion on research and development to expand their innovation portfolios.[195]

Technology firms also are leading innovators. Between 2006 and 2008, 77% of companies engaged in software development "report[ed] the introduction of a new product or service compared to the 7% average for all nonmanufacturing industries." Nat'l Sci. Bd., supra, at 6-47.[196] Computer manufacturers likewise far outstrip the national average for innovation, with over 50% of companies in the hardware market reporting the innovation of a new product or service.[197]

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[190] *Id.*
[191] *Id.*
[192] *Id.*
[193] *Id.*
[194] *Id.*
[195] Patent Reform: The Verdict Is In 4, *available at* http://tinyurl.com/nraoaf (last visited Mar. 21, 2013).
[196] Brief of The Software Alliance as Amicus Curiae Supporting Respondents, Bowman v. Monsanto, __ US ___(2013) (No. 11-796).
[197] *Id.*

The above statistics serve to highlight the tremendous importance of the software industry and the significance of intellectual property protection to software firms. The intellectual property protections provided by patent law are therefore critical for innovation. Additionally, with patent law left in an uncertain state, an ambiguous decision would subject software companies to opportunistic infringement suits. Due to the very high costs of defending these lawsuits, companies may choose to settle instead of fighting their battles in court, regardless of the merits of the case. The high lawsuit costs inhibit innovation and divert valuable resources away from research, development, and production.[198]

Technology firms argue that the court above properly concluded that exhaustion doctrine does not actually apply in this case. The longstanding doctrine of patent exhaustion provides that the initial authorized sale of a patented items terminates all patent rights to that item."[199] They cite to a case on point, namely, United States v. Univis Lens Co., 316 U.S. 241, 251 (1942) ("the purpose of the patent law is fulfilled with respect to *any particular article* when the patentee has received his reward for the use of his invention *by the sale of the article")* (emphases added). Additionally, the milestone case of Adams v. Burke provides guidance. In *Adams v. Burke*[200], the court states that a patent owner who sells a machine or instrument has received all the royalty or consideration, which he claims for the use of his invention *in that particular machine or instrument.* An authorized sale of seeds therefore would exhaust the patent rights in the particular seeds that were sold.

[198] KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 427 (2007)
[199] *Quanta*, 553 U.S. at 625
[200] Adams v. Burke, 84 U.S. 453, 456 (1873)

Piracy is already a scourge on the computer software industry, resulting in losses of $63.4 billion in 2011.[201] Any possible legal loophole or strict interpretation of the patent laws to further encourage piracy would be devastating. Therefore, it would be folly

for a case concerning soybean seed patents to affect the viability of a completely different industry relying on patents and copyrights. Furthermore, any restriction on a patent holder's rights would naturally lead to the patent holder developing a new way to protect its rights. In the case of technology, it is foreseeable that a software firm or hardware firm rely more on contract rights through its licensees. Moreover, when it comes to customers attempting to replicate its products, software can easily develop a digital distribution model with each user having a unique access code to limit piracy. Regardless, the consumers have to pay the price of tighter controls over patent holders' software. To keep things as they are, Bowman simply needs to lose.

VI. Conclusion

Bowman v. Monsanto can determine the fate of other products, such as computer software. Although agriculture and computer technology are very different, the concept that is being brought to court is a similar one. When people implement computer software, the computers create temporary copies of the program. Like the plant seeds, computer software would be characterized as self-replicating. If the case were ruled in favor of the farmers, it would allow and fuel widespread software piracy. Software users will be able to obtain temporary copies and replicate them with the intent to either sell or illegally share online because the court ruling will not extend the patent to these copied versions of the original software. Ultimately, farmers will not win. The Supreme Court appeared to side in favor of Monsanto during

[201] Shadow Market: 2011 BSA Global Piracy Study, *available at* http://globalstudy.bsa.org/2011/downloads/study_pdf/2011_BSA_Piracy_Study-Standard.pdf (last visited Mar. 21, 2013).

questioning. The court appeared skeptical of letting patent rights lapse and the effects it would have on the creation of new patents. Regardless, even if the court some how does find in favor of Bowman, farmers and consumers still lose. Monsanto will implement terminator technology. Technology would shift to prevent it from being replicated, such as digital distribution with unique keys for software. Hardware would be much closely guarded via contract law. The case must come out in favor of Monsanto to keep the status quo.