

BATTLE OF TITANS: INTELLECTUAL PROPERTY REGIME  
v. UCC

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*The recent attempts to modernize Article 2 of the Uniform Commercial Code (“UCC”) have been met by contentious debates surrounding the appropriate scope and applicability of UCC in sale of goods embodying both corporeal and non-corporeal property rights. In the context of the genetically engineered seed industry, the competing interests between farmers and developers of genetically engineered seeds require a delicate balance to preserve their relative rights and encourage further innovation. This Note analyzes how these amendments to the UCC may affect the seed industry, taking into consideration various intellectual property laws, and attempts to provide means to balance these competing interests and rights.*

I. INTRODUCTION

The proliferation of technological advancements continuously tests the boundaries of the current understanding of how individuals perceive their environment and interact with one another. These technological advancements spur changes in relationship dynamics, thereby necessitating a reevaluation of existing law to define relative rights that are capable of addressing the changing circumstances.

One of the more fascinating effects of technology on law has been its transformation of the traditional bounds of property rights and integration of corporeal and non-corporeal conceptions of property. Advancements in genetic engineering are of particular importance because they have introduced unique and complex problems concerning genetically engineered seeds (“GES”) critical to the agriculture industry.<sup>1</sup>

The inherent biological capacity of a seed to produce a plant, that will in turn produce more GES, creates a tension between the desire of seed developers to protect their biological innovations and the interests of farmers to preserve their rights in their purchased seeds. A fundamental problem exists as to which laws should govern and address this conflict of interest. Biological innovations embodied in GES could

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1. See Neil D. Hamilton, *Legal Issues Shaping Society's Acceptance of Biotechnology and Genetically Modified Organisms*, 6 *DRAKE J. AGRIC. L.* 81, 84–85 (2001).

be protected under various federal laws that recognize intellectual property rights, such as the Patent Act of 1952<sup>2</sup> and the Plant Variety Protection Act ("PVPA") of 1970.<sup>3</sup> Alternatively, the sale of seeds could be construed as the sale of "goods" as defined by Section 2-105 of the UCC and therefore be subject to the provisions of Article 2, which governs such sales.<sup>4</sup> Because many seed developers use "technology agreements" and various post-sale restrictions in order to overcome limitations of the Patent Act and the PVPA, the legal issues involved in the sale of these GES implicate both federal and state laws.

To exacerbate the conflict, contentious debate surrounds the proposed amendments to Article 2 (Sales) of the UCC and the proposal for a new UCC Article 2B (Licenses).<sup>5</sup> Most of the opposition to these changes originates from the computer software industry's endeavor to distinguish licenses and "information" transactions from the traditional sale of goods transactions under the UCC. This Note suggests that the software industry's concern for its intellectual property rights mirrors that of the seed developers. It further cautions that changes in the UCC will have overarching implications for both intellectual property owners (i.e., seed developers) and users of GES. The intentional ambiguity created by the American Law Institute ("ALI")<sup>6</sup> as to the information exception to the definition of goods under Article 2 foreshadows an uncertain future for legal disputes concerning the relative rights of both parties.<sup>7</sup>

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2. See 35 U.S.C. § 101 (2000) ("Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.")

3. See 7 U.S.C. § 2481 (2000). It provides:

(a) If it appears that a certificate of plant variety protection should be issued on an application, a written notice of allowance shall be given or mailed to the owner. The notice shall specify the sum, constituting the issue fee, which shall be paid within one month thereafter.

(b) Upon timely payment of this sum, and provided that deposit of seed has been made in accordance with section 2422(3) of this title, the certificate of plant variety protection shall issue.

(c) If any payment required by this section is not timely made, but is submitted with an additional fee prescribed by the Secretary within nine months after the due date or within such further time as the Secretary may allow, it shall be accepted.

*Id.*

4. See U.C.C. § 2-105 (2003).

5. See Peter B. Maggs, *The Effect of Proposed Amendments to Uniform Commercial Code Article 2*, 2002 U. ILL. J.L. TECH. & POL'Y 311.

6. AMERICAN LAW INSTITUTE, ABOUT THE AMERICAN LAW INSTITUTE, at <http://www.ali.org/ali/thisali.htm> (last visited Mar. 10, 2004). The American Law Institute "was established in 1923 to promote the clarification and simplification of the law and its better adaptation to social needs, to secure the better administration of justice, and to encourage and carry on scholarly and scientific work." *Id.*

For more than half a century the Institute has collaborated with the National Conference of Commissioners on Uniform State Laws in developing and monitoring the Uniform Commercial Code, or UCC. The UCC, a comprehensive code addressing most aspects of commercial law, is generally viewed as one of the most important developments in American law; it has been enacted (with some local variations) in 49 states and in the District of Columbia and the Virgin Islands, as well as partially in Louisiana.

*Id.*

7. See Maggs, *supra* note 5, at 311.

## II. BACKGROUND

*A. The Development of the Seed Industry and the Introduction of GES*

Until a decade ago, when the genetic engineering of plants experienced radical advances, individual farmers in concert with governmental agencies throughout the world carried out the majority of crop and seed development.<sup>8</sup> In the mid-nineteenth century, the United States Department of Agriculture,<sup>9</sup> in conjunction with land grant colleges and local agricultural organizations, led the development and testing of the new seed varieties and distributed these seeds to farmers free of charge.<sup>10</sup> “[T]he government played an important role as collector and distributor of seed, [and] the farmer remained an essential functionary in the process of refining and developing the available germplasm in the United States.”<sup>11</sup> The result of this partnership was that “the practice of saving and trading seed in the agricultural community became commonplace in order to develop new seed varieties.”<sup>12</sup>

However, laws passed by Congress throughout the twentieth century encouraged and effectuated the eventual shift from governmental seed development to the privatization of the seed industry.<sup>13</sup> In 1924, Congress enacted legislation to end the free federal distribution of seeds to farmers and forced farmers to rely on seed varieties provided by private seed companies.<sup>14</sup> Congress provided intellectual property protection for the seed developers by enacting the Townsend-Purnell Plant Patent Act of 1930 (“PPA”) and the PVP Act of 1970.<sup>15</sup> Fueled by these federal laws, and as a result of tremendous advances in technology, private seed developers were successful in genetically engineering many staple crops and were able to establish a strong presence in the commercial seed market. By 1998, approximately 50% of U.S. cotton fields, 40% of soybean fields, and 20% of cornfields were planted with GES.<sup>16</sup>

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8. See Nathan A. Busch, *Jack and the Beanstalk: Property Rights in Genetically Modified Plants*, 3 MINN. INTELL. PROP. REV. 1, 5–20 (2002); Jeremy P. Oczek, Note, *In the Aftermath of the “Terminator” Technology Controversy: Intellectual Property Protections for Genetically Engineered Seeds and the Right to Save and Replant Seed*, 41 B.C. L. REV. 627, 631–34 (2000).

9. Busch, *supra* note 8, at 12 n.37.

10. *Id.* at 12–14.

11. *Id.* at 11–12.

12. Oczek, *supra* note 8, at 632.

13. *Id.* at 633; see Busch, *supra* note 8, at 31.

14. For a detailed history of the privatization of the seed industry, see generally Busch, *supra* note 8.

15. Oczek, *supra* note 8, at 633.

16. *Id.* at 635. See also Pesticide Action Network Updates Service, *Corporate Control of Food, Farming and Health*, at <http://www.safe2use.com/pesticides/foodownership.htm> (Apr. 25, 1999).

The commercial market for genetically engineered seeds has expanded dramatically in scale and geographic scope. From 1986 to 1997, approximately 25,000 transgenic crop field trials were

Despite the GES's higher prices, attributed to research and development costs, the improvements in quality and productivity offered by GES enticed farmers away from traditional varieties of seeds.<sup>17</sup> Some people, however, fear that delicately balanced ecosystems will be disrupted by the introduction of engineered genes into nature.<sup>18</sup> Concurrently, others hope and believe GES will lead to more nutritious, productive, and disease-resistant crops, capable of alleviating global hunger and reducing the expanse of land and amount of pesticides used in agriculture.<sup>19</sup> Accordingly, the appropriate solution to the problems posed by GES must not only weigh the competing interests of seed developers and farmers, but must also carefully evaluate the benefits of increased productivity against any harmful ecological ramifications.

### *B. Intellectual Property Rights in GES*

Although the sale of GES involves a physical transfer of the seeds in the traditional sense of corporeal property, the sale also embodies a transfer of distinct and independent non-corporeal property interests: biological innovation.<sup>20</sup> Recognition of distinct intellectual property rights in biological innovations, as embodied in GES, has been justified under various philosophical and economic grounds.<sup>21</sup> A corollary problem then arises in determining the extent to which intellectual property interests should be protected. This task poses complicated problems in balancing both private and public interests in GES. Rights must be defined so as to promote continued innovation and market efficiency and to protect both sellers' rights in their biological innovations and buyers' rights in the purchased goods.

Currently, several mechanisms exist through which developers of GES can protect their intellectual property rights by delineating permissible uses of GES by farmers: PVPA,<sup>22</sup> utility patent,<sup>23</sup> and contractual post-sale restrictions under various types of technology

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conducted in 45 countries on more than 60 crops and 10 traits. Of this total, nearly half (10,000) were conducted in the last two years. According to the International Seed Trade Federation, the world market for genetically engineered seed is expected to reach US\$2 billion by the year 2000 and will triple to US\$6 billion by 2005.

*Id.*

17. Oczek, *supra* note 8, at 635.

18. David G. Victor & C. Ford Runge, *Farming the Genetic Frontier*, FOREIGN AFFAIRS, May 1, 2002, at 107.

19. *Id.*; but see Anuradha Mittal & Peter Rosset, *Genetic Engineering and the Privatization of Seeds*, DOLLARS & SENSE, Mar. 1, 2001, at 24.

20. See Kojo Yelpaala, *Owning the Secret of Life: Biotechnology and Property Rights Revisited*, 32 MCGEORGE L. REV. 111, 124-36 (2000).

21. See generally *id.* (discussing various policy justifications for property rights in biotechnology, such as the first occupancy doctrine, Judeo-Christian property concepts, Locke's labor theory of property, and both traditional and economic utilitarianism).

22. See 7 U.S.C. § 2481 (2000). A plant variety must meet four requirements to qualify for PVPA protection: the variety must be (1) novel; (2) distinct; (3) uniform; and (4) stable. *Id.* § 2402(a).

23. See 35 U.S.C. § 101 (2001).

agreements. As Part III will indicate, existing laws do not provide adequate protection for the developers of GES. Status quo laws may actually present a potential conflict between federal intellectual property laws and state contract laws.

### *1. Federal Intellectual Property Regime*

Prior to the enactment of the PVPA and the recognition of utility patents for GES, Congress passed the PPA in 1930 to provide patent protection for asexually reproduced plants—those cloned by grafts, buds, or cuttings.<sup>24</sup> Under the PPA, the patentee held exclusive rights to the plant and all asexually reproduced clones of the parent plant as long as the unique characteristic for which the patent was granted remained with the plant.<sup>25</sup> The failure of the PPA to provide protection for the developers of new seeds prompted Congress to enact the PVPA to protect intellectual property rights in sexual varieties of plants grown from seed.<sup>26</sup> By providing patent-like protection, the PVPA authorizes the Plant Variety Protection Office<sup>27</sup> to issue certificates of protection which grant breeders “the right, during the term of the plant variety protection, to exclude others from selling the variety, or offering it for sale, or reproducing it, or importing it, or exporting it, or using it in producing (as distinguished from developing) a hybrid or different variety therefrom.”<sup>28</sup> The ease of application and the cost-effective protection of the PVPA have played significant roles in encouraging the development of seed breeding. However, the protections afforded by the PVPA, although lasting for a period of twenty years like patents, are curtailed by two significant limitations: the “research exemption”<sup>29</sup> and the “crop exemption.”<sup>30</sup>

In contrast, acquiring utility patents affords superior protection for GES developers, but subjects these developers to more stringent qualification requirements. After the Supreme Court in *Diamond v. Chakrabarty* held that living bacteria can be patentable subject matter, genetically altered living organisms have been considered patentable because they are “nonnaturally occurring manufacture or composition of matter—a product of human ingenuity ‘having a distinctive name, character [and] use.’”<sup>31</sup> It has been argued that, in enacting plant-specific

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24. Andrew F. Nilles, *Plant Patent Law: The Federal Circuit Sows the Seed to Allow Agriculture to Grow*, 35 LAND & WATER L. REV. 355, 359–60 (2000). “The PPA allows the plant breeder to patent a plant with a unique characteristic that can be physiological or anatomical. Therefore, the patentee protects one unique characteristic of a plant that can be cloned by grafts, buds, or cuttings, resulting in a new plant with the same characteristic.” *Id.* at 360.

25. *Id.*

26. Oczek, *supra* note 8, at 638.

27. See 7 U.S.C. §§ 2321, 2323 (2000).

28. *Id.* § 2483(a)(1).

29. See *id.* § 2544.

30. See *id.* § 2543.

31. 447 U.S. 303, 309–10 (1980) (citing *Hartranft v. Wiegmann*, 121 U.S. 609, 615 (1887)).

statutes, the intent of Congress was to exclude plants from utility patent protection.<sup>32</sup> This debate was ended by a 2002 Supreme Court decision, *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc.*<sup>33</sup> In upholding the viability of Pioneer's seed patents by a six-to-two majority, the Court stated that the PVPA did not exclude the possibility of utility patents.<sup>34</sup>

## 2. Sale of GES as Governed by Article 2 of the UCC

Because of the relatively burdensome process of patent infringement suits and the limited protection of the PVPA, seed developers have turned to various contractual limitations imposed by "Technology Use Agreements" to protect their intellectual property rights in GES.<sup>35</sup> It is currently standard practice in the seed industry for a farmer who wishes to purchase GES to sign a contract with a seed company relinquishing rights to seeds produced by the crop.<sup>36</sup> "Not only does the farmer agree not to sell seed from the crop to other farmers ('brown bagging'), but more revolutionary, the farmer is prohibited from using the next generation of seed to produce next year's crop on his or her own farm."<sup>37</sup> In doing so, these agreements effectively limit the use of GES to a single growing season.

As these technology agreements are effectuated during the sale of GES, which necessarily involves the transfer of seeds to the farmers, it could be argued that Article 2 of the UCC is applicable because the transactions involve a sale of goods. The UCC defines goods in Section 2-105:

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32. *Id.*

33. 534 U.S. 124 (2001), *reh'g denied*, 535 U.S. 1013 (2002).

34. *See id.*; Richard A. Shanks & Joseph Mendelson III, *Farmers Bear Risks Associated with Genetically Altered Seed Crops*, TEX. LAW., July 1, 2002, at 23.

35. *See generally* Monsanto Company, *Monsanto Technology Agreement*, at <http://www.mindfully.org/GE/Monsanto-Technology-Agreement-1998.htm> (last visited Mar. 10, 2004) (sample of a technology use agreement).

36. R.C. Lewontin, *The Maturing of Capitalist Agriculture: Farmer as Proletarian*, MONTHLY REV., July 1, 1998, at 72.

All farmers who buy seed of Monsanto's Roundup Ready soybeans, or that company's seed potatoes for a special variety that makes "light" potato chips with low oil retention, must, by the terms of the contract, return to Monsanto in the next season if they wish to continue production of those varieties . . . . The enforcement of such a contract depends on the ability of Monsanto to identify a crop, and this can easily be done from a single plant or even a single seed because the DNA of the engineered variety contains certain characteristic sequences, placed there deliberately by the genetic engineers, that are unique to the variety . . . . Nevertheless some brown bagging and replanting has been taking place. In reaction, Monsanto has placed full-page advertisements in magazines read by farmers, threatening and cajoling:

When a farmer saves and replants Monsanto patented biotech seed, he understands that what he is doing is wrong. And that, even if he did not sign an agreement at the time he acquired the seed [that is, replanted or bought "brown bag" seed from a neighbor], he is committing an act of piracy . . . . Furthermore, seed piracy could cost a farmer hundreds of dollars per acre in cash settlements and legal fees, plus multiple years of on-farm and business records inspection.

*Id.*

37. *Id.*

“Goods” means all things (including specially manufactured goods) which are movable at the time of identification to the contract for sale . . . . “Goods” also includes the unborn young of animals and growing crops and other identified things attached to realty as described in the section on goods to be severed from realty . . . .<sup>38</sup>

Most notably, farmers have raised complaints against seed companies alleging breach of express warranties or of the implied warranties of merchantability or fitness for a particular purpose under the UCC.<sup>39</sup> The question remains as to what extent Article 2 should apply in the case of GES when the goods consist of both tangible property (i.e., seed) and intangible property (i.e., biological innovations). Originally drafted as a joint project of the National Council of Commissioners on Uniform State Laws (“NCCUSL”) and the ALI in the 1950s,<sup>40</sup> the original UCC and its subsequent amendments have been widely adopted by state legislatures. However, recent efforts by NCCUSL and the ALI to modernize Article 2 have prompted heated debates concerning the proper role of the UCC in dealing with transactions involving information goods, particularly in the context of the computer software industry. A proposed addition to the UCC, Article 2B, had been specifically designed to address licenses but was abandoned after considerable opposition. Nonetheless, the other proposed amendments to the UCC did get approved at the ALI meeting in May 2003, and will carry important implications for intellectual property owners and users in general.<sup>41</sup> Part III examines an analogous problem faced by the software industry in order to evaluate the effect of the new UCC amendments on the GES industry.

### III. ANALYSIS

#### A. Analogous Conflicts: Software Industry

The software industry has alleged that the ALI has attempted to ban “pay now, terms later” contracts (e.g., shrink-wrap licenses)<sup>42</sup> and to incorporate into Article 2 as much information as possible, despite the

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38. U.C.C. § 2-105 (2003).

39. J.W. Looney, *Warranties in Livestock, Feed, Seed, and Pesticide Transactions*, 25 U. MEM. L. REV. 1123, 1124–29 (1995). For numerous examples of cases applying the UCC in the sale of seeds, see William K. Jones, *Product Defects Causing Commercial Loss: The Ascendancy of Contract over Tort*, 44 U. MIAMI L. REV. 731, 737 n.38, 741 nn.52–53 (1990).

40. Thomas L. Lockhart & Patrick A. Miles, Jr., *No More Pulp Fiction: Proposed UCC Article 2 Revisions Embrace Paperless Electronic Transactions*, 75 MICH. B. J. 516, 516 (1996).

41. Maggs, *supra* note 5, at 311; UNIFORM LAW COMMISSIONERS, NAT’L CONFERENCE OF COMMISSIONERS ON UNIFORM STATE LAWS, WORK CONCLUDES ON REVISION OF UNIFORM COMMERCIAL CODE ARTICLES 2 AND 2A, at <http://www.nccusl.org/nccusl/DesktopModules/NewsDisplay.aspx?ItemID=51> (May 14, 2003).

42. See Stephen Fraser, *Canada-United States Trade Issues: Back from Purgatory? Why Computer Software “Shrink-Wrap” Licenses Should Be Laid to Rest*, 6 TUL. J. INT’L & COMP. L. 183, 184 (1998).

fact that the traditional application of Article 2 rules regarding sales of goods seems to be inappropriate to govern the transaction of information included in software programs.<sup>43</sup> Others have urged that “the conceptual basis underlying certain fundamental rules governing contracts requires re-examination” as electronic signals replace paper as the preferred mode of commercial communication.<sup>44</sup> In response to these debates, a proposal for a new UCC Article 2B (Licenses) emerged to cover information transactions that would include “data, text, images, sounds, computer programs, software, databases, and the like, and any associated intellectual property rights.”<sup>45</sup>

The proposal was an attempt to overcome recent case law holding that Article 2 of the “UCC governs most software contracts whether they are called ‘sales’ or ‘licenses.’”<sup>46</sup> However, “many members [of the ALI] thought that [the] draft of Article 2B was unbalanced, tilting too far toward the interests of the computer software lobby.”<sup>47</sup> Anticipating that the controversial nature of Article 2B—namely, the perceived bias that it favors the software industry—would preclude the widespread adoption of the revised UCC, the ALI withdrew from the Article 2B project.<sup>48</sup> The NCCUSL renamed Article 2B as the Uniform Computer Information Transactions Act (“UCITA”), but the UCITA failed to gain acceptance from forty-eight states; the perceived bias of the UCITA even led four states to enact “bomb shelter” legislation voiding contract clauses choosing UCITA as the applicable law.<sup>49</sup>

The case law in regard to the sale of physical media containing information such as books, audio and video recordings, software, and databases is in accord; such a sale is considered to be governed by the

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43. E-mail from Holly Towle, Partner, Preston Gates & Ellis, to Jay Kesan, Professor of Law, University of Illinois College of Law (July 12, 2002, 21:38 CST) (on file with University of Illinois Journal of Law, Technology & Policy). Ms. Towle serves as chair of two Washington State Bar Association groups: the Business Section’s Committee on the Law of Commerce in Cyberspace and the subcommittee on Article 2 of the Uniform Commercial Code. *The Impact of Article 2B: Commentator Bios*, Berkeley Center for Law & Technology, at <http://www.law.berkeley.edu/institutes/bclt/events/ucc2b/panel4.html#Towle> (last visited Mar. 10, 2004).

44. Lockhart & Miles, *supra* note 40, at 516.

45. *Id.* at 518.

46. Douglas E. Phillips, *When Software Fails: Emerging Standards of Vendor Liability Under the Uniform Commercial Code*, 50 BUS. LAW. 151, 157 (1994). For a detailed history of the Article 2 revision process, see Robert E. Scott, *The Rise and Fall of Article 2*, 62 LA. L. REV. 1009 (2002) [hereinafter Scott, *Article 2*].

47. Maggs, *supra* note 5, at 311–12.

48. See Bruce H. Kobayashi & Larry E. Ribstein, *Uniformity, Choice of Law and Software Sales*, 8 GEO. MASON L. REV. 261, 262 (1999).

49. Maggs, *supra* note 5, at 312. The four states are Iowa, North Carolina, Vermont, and West Virginia. Michael D. Scott, *Ding, Dong the Witch is Dead . . . or Is She?*, 8 CYBERSPACE LAW. 1 (2003), WL 8 No. 5 GLCYLAW 1. As of August, 2003, the National Council of Commissioners on Uniform State Laws has indicated that it will abandon pushing UCITA, the successor to proposed UCC Article 2B. See Letter from K. King Burnett, President, National Conference of Commissioners on Uniform State Laws, to Fellow Commissioners (Aug. 1, 2003), available at [http://www.nccusl.org/nccusl/ucita/KKB\\_UCITA\\_Letter\\_8103.pdf](http://www.nccusl.org/nccusl/ucita/KKB_UCITA_Letter_8103.pdf).

UCC.<sup>50</sup> Accordingly, information producers have sought to avoid the effect of these rules in various ways:

(1) lobbying for Congressional narrowing of Section 109 of the Copyright Act and for passage for the Digital Millennium Copyright Act; (2) arguing that, under existing law, information on physical media is licensed, not sold; (3) lobbying for new legislation, such as UCITA, that would provide that such information is merely licensed; and (4) lobbying for legislation that would validate the use of shrink-wrap, “clickwrap,” and “webwrap” contracts.<sup>51</sup>

Although the proposed amendments sought to modernize Article 2 of the UCC, the drafters deliberately crafted these amendments to be neutral on key issues affecting rights in software and other computer information in order to ensure the passage of many other necessary amendments.<sup>52</sup> By avoiding the ultimate issue of whether to apply the UCC in transactions involving information exchange, the drafters of the revised UCC have provided, at best, incomplete or uncertain law that fails to put potential parties to a contract on notice. For example, the version of the amendments approved by the NCCUSL in August 2002, left the term “information” undefined. The drafters have delegated to the courts the task of demarcating the scope of the information exclusion from Article 2.<sup>53</sup> The proposed amendment regarding the exclusion of information from section 2-103 and the definition of goods still present an uncertain future to both the proponents and the opponents of the information industry.

Finally, commentators argue that transactions involving computer software must also consider the “controlling federal law that conditions, indeed preempts, the entire issue.”<sup>54</sup> For example, “[u]nder the Copyright Act, software—computer programs—are always separate from their physical embodiments.”<sup>55</sup> Some argue that § 202 states that “a

50. Maggs, *supra* note 5, at 312. *But see* Raymond T. Nimmer, *Images and Contract Law—What Law Applies to Transactions in Information*, 36 HOUS. L. REV. 1, 54–57 (1999).

[N]one of the decisions placing software within Article 2 discuss concepts of merchantability or other warranty with respect to the informational content contained in the software. None use merchantability to gauge the acceptability of the aesthetics of the information. None use goods-related concepts to measure whether the accuracy of the data in the software suffices.

*Id.* at 55. For examples of these cases, see *id.* at n.204.

51. Maggs, *supra* note 5, at 312.

52. *Id.* Professor Scott explains the compromise reached by competing interest groups:

Retail manufacturing interests (the so-called “strong” sellers), opposed to provisions that extended warranty liability for economic loss to remote sellers, were able successfully to block the adoption of the initial revisions to Article 2. In turn, consumer interests (including large firm licensees) opposed to the “seller-friendly” provisions in the proposed Article 2B, were able to separate the computer information article from the rest of the U.C.C. project.

Scott, *Article 2*, *supra* note 46, at 1052.

53. Scott, *Article 2*, *supra* note 46, at 1052.

54. Lorin Brennan, “*Embedded Software—Fact or Felony?*,” UCC BULLETIN, vol. 43, rel. 4, at 1 (May 2001) [hereinafter Brennan, “*Embedded Software*”].

55. *Id.*

Congress put it succinctly, H.R. Rep. No. 94-1476, 94th Congress, 2d. Sess., at 124 (1976) [“H.R. REP”]: “The principle restated in § 202 is a fundamental and important one: that copyright ownership and ownership of a material object in which the copyrighted work is embodied are

party gets no rights under the copyright in the computer program merely from obtaining a copy of 'embedded' software."<sup>56</sup> Such an overgeneralization fails to capture the limited nature of rights granted to copyright owners under § 106.<sup>57</sup> "The most significant rights absent from [§ 106] are the rights to control use and resale of the work once it has first been sold by the copyright owner or a licensee."<sup>58</sup> Section 2-401 of the UCC applies to the sale of goods that entails the passing of title in the goods to a buyer upon delivery of the goods. The difficulty in applying Article 2 to software transactions arises from the two independent components of such transactions: the sale of a copy and the transfer of the license of information embedded in the software.

In software transactions, the implied warranty of merchantability applies to the physical medium embodying the computer program but not to the licensed computer program.<sup>59</sup> However, these "implied warranties only apply to a 'contract' of a sale, not any 'transaction' in goods."<sup>60</sup> Therefore, it could be argued that "in a non-exclusive software license, there is as a matter of federal law no transfer of copyright ownership to begin with, hence no sale of the computer program ever occurs."<sup>61</sup>

Although the UCITA did not gain wide acceptance, it nevertheless attempts to reconcile an apparent inconsistency by expressly providing a conceptual framework more in conformity with the Copyright Act. "UCITA §501(b) says that transfer of ownership of a copy does not transfer ownership of informational rights, precisely what Section 202 [of the Copyright Act] says."<sup>62</sup> Furthermore, UCITA Section 502(a)(2) states that a licensee's right to use a copy provided under a license is determined by the license.<sup>63</sup> Again, this specifically incorporates the idea that the license stipulates the separation of ownership rights in the copyrighted work from its physical embodiment.<sup>64</sup>

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entirely separate things." This mandatory differentiation in Section 202 preempts contrary state law. H.R. REP. at 124.

*Id.* at 2.

56. *Id.* at 2 (citing *Saxon v. Blann*, 968 F.2d. 676, 680 (8th Cir. 1992); *Applied Info. Mgmt., Inc. v. Icart*, 976 F. Supp. 149, 153 (E.D.N.Y. 1977) (no software license from transfer of diskette)).

57. 17 U.S.C. § 106 (2000). "[G]iven the limited bundle of rights listed in section 106, a nearly unlimited number of copy owner 'rights' could be identified (for example, the right to destroy a copy, the right to extract ideas, the more limited rights associated with 'fair use,' the right to use a copy as a frisbee, etc.)." Joseph P. Liu, *Owning Digital Copies: Copyright Law and the Incidents of Copy Ownership*, 42 WM. & MARY L. REV. 1245, 1286 n.145 (2001).

58. Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 1039 n.242 (1997). As § 106 states, the exclusive rights of copyright owners are subject to exceptions under § 107 through § 122. 17 U.S.C. § 106. Note, in particular, the right of fair use under § 107, the right of resale under § 109 and the various § 118 rights. *Id.* §§ 107, 109, 118.

59. Lorin Brennan, *Why Article 2 Cannot Apply to Software Transactions*, 38 DUQ. L. REV. 459, 539 (2000).

60. *Id.* "A sale means 'the passing of title from the seller to the buyer for a price.'" *Id.*

61. *Id.*

62. Brennan, "Embedded Software," *supra* note 54, at 3.

63. UNIF. COMPUTER INFO. TRANSACTIONS ACT § 502 (2002).

64. *Id.*

*B. The Applicability of the Proposed Revision of Article 2 of the UCC to the GES Industry*

As seed developers increasingly use technology agreements to supplement the inadequate protections provided by the PVPA and utility patents, transactions involving sales of GES present even more acute problems than computer software because the sale of seeds is traditionally considered as falling within the ambit of the sale of goods as defined by the UCC.<sup>65</sup> Farmers are acquiring something more than traditional seeds when they purchase GES.<sup>66</sup> Just as the copyright in software confers distinctive intellectual property rights, the PVPA and the utility patent protect biological innovations in GES.<sup>67</sup> When farmers purchase GES, they acquire both the seeds and the genetic information encoded in the seeds. Given this duality of transaction, the predominant question is whether the sale of GES should trigger the transfer of title of the genetic information upon delivery of the seeds. Even before the advent of genetic engineering, new varieties of seeds were developed by selection and cross-breeding and the farmers indeed acquired something more than naturally occurring seeds; they also acquired the improvements that resulted from selection and cross-breeding. The critical difference between GES and these seeds is that developers own statutorily defined intellectual property rights in the biological innovation contained in the GES. Such distinct property rights do not exist in the context of seeds developed by selection and cross-breeding.

The examination of the potential effect of revised Article 2 failed to consider comparable problems posed by the sale of goods encapsulating genetic information technology, such as GES. Unlike the software industry, seed developers have not participated in the process of revising the UCC.<sup>68</sup> The relative lack of concern by seed developers regarding the revision of the UCC may be due to the belief that existing federal intellectual property regimes, such as utility patents and the PVPA certificates, will provide adequate protection for biological innovation in GES. However, the federal intellectual property protection may be limited and less adequate than expected. In using various technology agreements, seed developers may believe that GES transactions are governed by the common law of contracts rather than by Article 2 of the UCC.<sup>69</sup> Although it is true that the typical technology license agreement does not involve the sale of goods, and therefore falls outside the scope of Article 2,<sup>70</sup> technology agreements in the context of GES differ significantly because of the GES's inherent dualistic nature.

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65. See Jones, *supra* note 39.

66. See Yelapaala, *supra* note 20, at 124–36.

67. See 35 U.S.C. § 101(v) (2000) (utility patent); 7 U.S.C § 2481 (2000) (PVPA).

68. Towle, *supra* note 43.

69. *Id.*

70. See MARTIN J. ADELMAN ET AL., PATENT LAW 1233 (1998).

Because Article 2 of the UCC applies to “transactions in goods,” the scope of Article 2 is determined by the definition of “goods.” One notable proposed amendment to Article 2 states, “[t]he term [goods] does not include information.”<sup>71</sup> Although on its face the amendment expressly excludes “information” from Article 2, the term “information” is undefined because of the drafters’ intent to make the amendment and its comment ambiguous in order to reach a compromise between anti-UCITA views in THE ALI and pro-UCITA views in NCCUSL.<sup>72</sup> In dealing with contractual relationships involving subject matter, which is comprised both of goods as defined by the UCC and of non-goods, such as information, courts have taken three different approaches.<sup>73</sup> First, when the goods aspect is predominant, courts have typically applied Article 2 to the entire transaction.<sup>74</sup> Second, when the non-goods aspect is clearly predominant, courts have not applied Article 2 directly.<sup>75</sup> Third, in cases where no single aspect is dominant, courts have applied Article 2 to the goods issues and have applied other applicable laws, such as the laws of copyright, patent, trademark, and trade secret, to the non-goods issues.<sup>76</sup> The draft comment to Section 2-103(1)(k) supports these three approaches:

For example, the sale of “smart goods” such as an automobile is a transaction in goods fully within [Article 2] even though the automobile contains many computer programs. On the other hand, an architect’s provision of architectural plans on a diskette would not be a transaction in goods. When a transaction includes both the sale of goods and the transfer of rights in information, it is up to the court to determine whether the transaction is entirely within or outside [Article 2], or whether or to what extent [Article 2] should be applied to a portion of the transaction. While Article 2 may apply to a transaction including information, nothing in this Article alters, creates, or diminishes intellectual property rights. . . .<sup>77</sup>

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71. U.C.C. § 2-103(1)(k) (Proposed Official Draft 2002), available at <http://www.law.upenn.edu/blj/ulc/ucc2/annual2002.htm> (last visited Apr. 7, 2004).

72. Maggs, *supra* note 5, at 313. See also Ann Lousin, *Proposed UCC 2-103 of the 2000 Version of the Revision of Article 2*, 54 SMU L. REV. 913, 925–26 (2001); Gregory E. Maggs, *The Waning Importance of Revisions to U.C.C. Article 2*, 78 NOTRE DAME L. REV. 595, 603–04 (2003); Scott, *Article 2*, *supra* note 46.

73. Maggs, *supra* note 5, at 313. For cases in which courts distinguish between goods and non-goods to determine applicability of the UCC, see Bonna Lynn Horovitz, Note, *Computer Software as a Good Under the Uniform Commercial Code: Taking a Byte Out of the Intangibility Myth*, 65 B.U. L. REV. 129, 136–37 nn.50–51 (1985). The predominant factor test to evaluate which aspect of a contract—goods or non-goods—was more significant is one of several common methods used by courts to determine applicability of the UCC. *Id.* at 139 n.65.

74. Maggs, *supra* note 5, at 313. See, e.g., *Meyers v. Henderson Constr. Co.*, 370 A.2d 547, 549–50 (N.J. Super. Ct. Law Div. 1977) (holding that a contract for procurement of overhead garage doors was governed by the UCC despite a major “service” element of installation, but noting that there is a trend to characterize similar types of contracts as providing for services).

75. Maggs, *supra* note 5, at 313. See, e.g., *Tomb v. Lavalle*, 444 A.2d 666, 667–68 (Pa. Super. Ct. 1981) (liquor license, which is generally seen as an intangible, is not a good within Article 2 of UCC).

76. Maggs, *supra* note 5, at 313.

77. *New Prefatory Note and Language on Scope for UCC Article 2 Amendments Approved By*

Professor Peter B. Maggs<sup>78</sup> believes the architect example to be a “cleverly-drafted compromise” that allows arguments to be made in support of excluding information on computer-readable media from the UCC, or, conversely, applying the UCC to transactions of goods unless the predominant element of the contract is non-goods, such as information.<sup>79</sup> For example, “the predominant element of a contract with an architect is professional services, in contrast to the purchase of a mass-market CD, where no individualized services are involved.”<sup>80</sup>

Likewise, the same arguments can be made to include the sale of GES within the scope of the UCC under the first approach. In the case of GES, the physical goods involved are seeds that encapsulate biological innovation in the form of genetic information. Unlike the architectural plans included on the diskette, the genetic information included in the seeds involves mass-market distribution that differs from the individualized professional services offered by the architect. Moreover, unlike computer-readable media, the market value of which greatly exceeds the cost of the physical media because of the value of the information contained, seeds are traditional goods that have an inherent market value for the farmers. GES may be considered “smart goods,” like an automobile, and thus “fully within Article 2.”<sup>81</sup> Consequently, the revised Article 2 could be interpreted as preventing seed companies from executing technology agreements imposing post-sale restrictions on farmers because, under Section 2-401, upon the sale of GES, title to the seeds passes to the farmers.<sup>82</sup>

Similar arguments, such as those raised by the software industry, could be made for GES. Akin to physical media containing copyrighted computer software, GES contain a distinct intellectual property characteristic in the form of genetic information that is protected by either the PVPA or utility patents. The motivation for transactions involving GES is the biological innovation embodied in the seeds. That is, the only rational reason for purchasing Monsanto’s higher cost, post-sale restricted “Rootworm-Protected Biotech Corn”<sup>83</sup> seeds, as opposed to unmodified traditional corn seeds, is to benefit from the biological

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*NCCUSL*, The American Law Institute, available at <http://www.ali.org/ali/pr081402NCCUSL.htm> (last visited Mar. 10, 2004).

78. Maggs is the Clifford M. and Betty A. Carney Professor of Law at the University of Illinois. A member of ALI, he served on the advisory committees for the development of the Restatement (Third) of Unfair Competition and for the revision of Articles 2, 2A, and 2B of the UCC. *Faculty Directory: Peter B. Maggs*, University of Illinois College of Law, at <http://www.law.uiuc.edu/faculty/DirectoryResult.asp?Name=Maggs,+Peter> (last visited Mar. 10, 2004).

79. Maggs, *supra* note 5, at 314.

80. *Id.*

81. *New Prefatory Note and Language on Scope for UCC Article 2 Amendments Approved By NCCUSL*, *supra* note 77.

82. U.C.C. § 2-401 (2003).

83. See Press Release, Monsanto Co., Monsanto’s Rootworm-Protected Biotech Corn Receives Final Regulatory Clearance (Feb. 25, 2003), at <http://www.monsanto.com/monsanto/layout/media/03/02-25-03.asp>.

innovation promising to provide “better protection and reduced insecticide use for U.S. farmers battling the ‘billion-dollar bug.’”<sup>84</sup> “The corn rootworm has earned the nickname the ‘billion-dollar bug’ as the USDA estimates that this pest causes \$1 billion in lost revenue annually to the U.S. corn crop.”<sup>85</sup> GES serve as physical conduits for genetic information. The difference in price between the traditional seeds and GES represents the additional consideration given by the purchaser for the use of this biological innovation. Given the value of the non-goods (i.e., the genetic information, an aspect of GES that is inseparable and non-incidental to the transaction), this third approach is the most appropriate for legal analysis of GES sales. Consistent with this reasoning, intellectual property laws such as the PVPA and the Patent Act provide the essential framework under which post-sale restrictions in technology agreements should be evaluated.

*C. Inadequacies of Existing Intellectual Property Laws in Protecting the Rights of GES Developers*

The PVPA grants certificates to developers of plant varieties, including GES, and provides patent-like protection. However, the PVPA’s protection is limited by two notable exceptions: the “[r]esearch exemption” and the “[c]rop exemption.” The research exemption allows other breeders to use a protected seed variety in order to create new varieties of the seed without the permission of the PVPA certificate holder.<sup>86</sup> Potentially more troublesome for GES developers is the crop exemption, which allows farmers to save seeds from crops grown from a PVPA-protected variety of seed and use the seed without compensating the owner of the protected variety.<sup>87</sup> This exemption potentially allows farmers to engage in “brown-bag” sales of protected seeds in direct competition with the developers. In recognizing the potential for this abuse, Congress narrowed the scope of the provision for the sale of seeds in the crop exemption and allowed farmers to sell seeds only “for other than reproductive purposes,” including the sale of seeds as a food product or animal feed, but not including a sale for the planting of new crops by subsequent purchasers.<sup>88</sup>

Acquiring utility patents for GES offers more expansive protection because it does not impose restrictions similar to those of the PVPA. The Patent Act generally provides that “whoever without authority makes, uses, offers to sell, or sells any patented invention . . . infringes

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84. *Id.*

85. *Id.*

86. 7 U.S.C. § 2544 (2000).

87. *Id.* § 2543. For a detailed discussion regarding this exemption, see Sara B. Blanchard, Comment, *The Muddled Law of Biotechnology: Frustrating Agricultural and Biomedical Progress*, 5 SAN JOAQUIN AGRIC. L. REV. 179, 193–95 (1995).

88. Blanchard, *supra* note 87, at 195 n.127.

the patent.”<sup>89</sup> The patentability of GES was recognized in 1985 in *Ex parte Hibberd*,<sup>90</sup> in which the Patent and Trademark Office Board of Appeals ruled that the principles of *Chakrabarty* could be extended to allow patenting of genetically engineered plants, seeds, and plant tissue.<sup>91</sup> Although patent infringement imposes strict liability, the infringement action is complex and often invites alleged infringers to challenge the validity of the patent. Moreover, the first sale doctrine of patent exhaustion limits the scope of the patentee’s rights. According to this doctrine, when a patented product has been sold, the purchaser acquires “the right to use and sell it, and . . . the authorized sale of an article which is capable of use only in practicing the patent is a relinquishment of the patent monopoly with respect to the article sold.”<sup>92</sup>

In response to the substantive shortcomings of the PVPA (e.g., the research and crop exemptions) and utility patents (e.g., the first sale doctrine of patent exhaustion), seed developers use licensing agreements to impose contractual post-sale restrictions. By characterizing the transaction as licensing of the technology in GES, the seed developers seek to avoid triggering a “sale” of patented products and the concomitant doctrines of exhaustion.<sup>93</sup> In fact, federal courts have approved the use of licensing agreements to impose contractual restrictions in many cases.<sup>94</sup> But in a recent case involving a technology license, the Federal Circuit applied a somewhat different analysis. In *Monsanto Co. v. McFarling*, McFarling argued that once Monsanto sold the patented seeds—Roundup Ready® soybean seed<sup>95</sup>—to him, the “first sale doctrine prohibit[ed] the contractual restraint on producing his own seed.”<sup>96</sup> The Federal Circuit held that the first sale doctrine of exhaustion was not implicated because the new seeds, grown from the original batch, had never been sold by Monsanto.<sup>97</sup> Recognizing the technology agreement to be a license, the court reasoned that the price paid by the purchaser “reflects only the value of the ‘use’ rights

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89. 35 U.S.C. § 271(a) (2000).

90. *Ex parte Hibberd*, 227 U.S.P.Q. 443 (Bd. Pat. App. & Int. 1985).

91. *See id.*

92. *United States v. Univis Lens Co.*, 316 U.S. 241, 249 (1942).

93. E-mail from Jay Kesan, Professor of Law, University of Illinois College of Law, to Holly Towle, Partner, Preston Gates & Ellis (July 12, 2002, 16:31 CST) (on file with University of Illinois Journal of Law, Technology & Policy).

94. *See, e.g., Tripoli Corp. v. Wella Corp.*, 425 F.2d 932 (3d Cir. 1970); *Chemagro Corp. v. Univ. Chem. Co.*, 244 F. Supp. 486 (E.D. Tex. 1965).

95. Dore Burry, *Are We Roundup® Ready?*, University of California, Irvine, School of Biological Sciences, at <http://darwin.bio.uci.edu/~sustain/global/sensem/burry298.html> (Mar. 1998).

Monsanto’s Roundup Ready Soybean (RRS) is a genetically engineered variety of soybeans, which contains gene sequences from a cauliflower mosaic virus (CMV), a petunia, and a bacterium (*Agrobacterium sp.*) (Greenpeace, 1997). The two bacterial genes, in short, provide for resistance against Roundup, resulting in a crop of soybeans that can be sprayed with Roundup to protect it from weeds, while not injuring it.

*Id.*

96. *Monsanto Co. v. McFarling*, 302 F.3d 1291, 1297 (Fed. Cir. 2002).

97. *Id.* at 1299.

conferred by the patentee,”<sup>98</sup> and “the original sale of the seeds did not confer a license to construct new seeds.”<sup>99</sup> In addition to characterizing the nature of the original transaction as licensing of technology rather than as a sale, the Federal Circuit focused on the fact that McFarling did not acquire the new seeds from an authorized sale by Monsanto. The validity of such technology agreements in relation to the scope of patent rights is recognized; however, a question remains as to which law should govern this contractual relationship.

As indicated by the *McFarling* decision, patent exhaustion is irrelevant to the use or sale of seeds from the farmer’s crop, since the seeds at issue are not purchased from the developers. Instead, the doctrine of privity of contract<sup>100</sup> presents more acute problems for developers who have increasingly begun to rely upon on these post-sale contractual restrictions under the technology agreement. In its most basic form, this doctrine represents an inherent limitation of contractual restrictions in that it only binds those who are in privity of contract—those who signed the contract. If a farmer buys seeds and signs a restrictive agreement but then resells the seeds, it is quite possible under UCC Article 2 that a bona fide purchaser will acquire title to the seed without the contract binding the purchaser.<sup>101</sup> Conversely, the doctrine of privity of contract also dictates who should be liable for claims of breach of express or implied warranties, such as the warranties of merchantability or fitness for a particular purpose. Thus, understanding the appropriate scope of Article 2 of the UCC is crucial for determining the exact extent of relative contractual rights between the seed developers and the farmers. As explained earlier, the applicability of the revised Article 2 will depend on which of the three approaches courts adopt, given the UCC’s reluctance to provide a definite answer.<sup>102</sup>

#### IV. RESOLUTION

##### A. *Promise of New Technology: “Technology Protection System” (TPS)*

Technology is currently capable of blocking GES from germinating after one season by rendering the produced seeds sterile.<sup>103</sup> The use of

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

99. *Id.*

100. See generally R.D. Hursh, Annotation, *Privity of Contract as Essential to Recovery in Action Based on Theory Other Than Negligence, Against Manufacturer or Seller of Product Alleged to Have Caused Injury*, 75 A.L.R.2d 39 (1961).

101. Interview with Peter B. Maggs, Professor of Law, University of Illinois College of Law, in Champaign, IL (Aug. 6, 2003) [hereinafter Maggs, Interview].

102. See *supra* Part III.B; U.C.C. § 2-103(1)(k) (Proposed Official Draft 2002), available at <http://www.law.upenn.edu/blil/ulc/ucc2/annual2002.htm> (last visited Apr. 7, 2004).

103. See U.S. Patent No. 5,723,765 (issued Mar. 3, 1998); Bill Lambrecht, *Critics Vilify New Seed Technology that Monsanto May Soon Control; “Terminator” Would Prevent Saving Seeds by Making them Sterile*, ST. LOUIS POST-DISPATCH, Nov. 1, 1998, at A1.

this technology would achieve developers' desired result—protecting their intellectual property rights without the implementation problems of the PVPA, utility patent, and licensing agreements. By obviating technology agreements, TPS will also eliminate the need for examining the applicability of the UCC. Farmers vehemently oppose such technology, even though it has not yet been implemented by the developers. In 1998, “angry farmers burned Monsanto-owned fields in Karnataka, India, starting a nationwide ‘Cremate Monsanto’ campaign,” demanding that biotech corporations like Monsanto, Novartis, and Pioneer leave the country.<sup>104</sup> Farmers targeted Monsanto fearing that the field trials of the “terminator gene” created the danger of “genetic pollution” that would sterilize other crops in the area.<sup>105</sup> As a result, commercial exploitation of such technology by the seed developers will depend on whether the technology will be accepted both socially and economically.

### *B. Rights of the Farmers Versus Rights of the Developers of GES*

By enforcing the intellectual property rights of GES, developers encroach upon the traditional rights of the farmers to save and replant seeds. Enforcement raises concerns that allowing “private companies to claim ownership in plants further erodes public plant breeding and encourage[s] ‘industrialization’ of agriculture.”<sup>106</sup> As we approach this new era in which information technology increasingly dominates the market, the law must adequately balance conflicting interests to ensure continued incentives for technological advancements and concurrently protect new forms of property. Could it be argued that the farmers can no longer claim exclusive rights to the seeds purchased because the essential element of the transaction now involves genetic information developed and owned by the seed developers under intellectual property law? Without abandoning intellectual property rights accorded to GES altogether, any attempt to strike a balanced reconciliation of these competing interests will necessarily encroach upon farmers' rights to save and replant seeds. Because of the increasing scarcity of natural resources to sustain our needs, these technological advancements provide valuable public goods by efficiently using existing resources to maximize production. The intellectual property embodied in GES belongs to the developers, who should not be viewed as relinquishing their rights after the sale of physical goods.

Finding a proper balance presents a daunting task of examining the law and economics of intellectual property rights.<sup>107</sup> In recognizing the

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104. Mittal & Rosset, *supra* note 19, at 24.

105. *Id.*

106. Neil D. Hamilton, *Why Own the Farm If You Can Own the Farmer (and the Crop)?: Contract Production and Intellectual Property of Grain Crops*, 73 NEB. L. REV. 48, 101 (1994).

107. In general, there is agreement among academic analysts of law and economics that there

rights of developers, we may be arbitrarily shifting “the control of agricultural seeds . . . from farmers worldwide to just a few multinational biotechnology companies.”<sup>108</sup> Viewed in this light, the complexity of the controversy surrounding GES is further exacerbated by claims of perpetuated hegemony through “general universalistic individual-centered philosophy propagated by intellectual property and by the institutions created to enforce it worldwide.”<sup>109</sup> Is it necessarily true that unless the intellectual property rights of the seed developers are recognized and protected to allow them to receive appropriate returns on their research and development costs, development will be discouraged, and the public will not benefit from such technology?<sup>110</sup> For instance, the author of a program for burning CDs has a copyright on the program. This copyright has provided enough incentive for the production of excellent software for burning CDs. It would be excessive protection to give the author of the CD-burning program copyrights to all the CDs that were burned using it.<sup>111</sup>

### C. Promise of UCITA or Article 2B

The current trend of intellectual property systems around the world, particularly those espoused by developed countries, favors expanding the traditional notion of intellectual property.<sup>112</sup> This task of determining the proper balance between the competing rights of farmers and developers is arduous and highly contentious. The purpose of this Note is not to present a comprehensive analysis of this debate, but rather, to suggest that the conflict between GES developers and farmers mirrors that of the software controversy and the need for a critical re-evaluation of the

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needs to be a balance between the rights of the producer of intellectual property and the user. However, there is much less agreement on where the balance should be drawn or if such balance is possible at all. See, e.g., Stephen B. Brush, *Genetically Modified Organisms in Peasant Farming: Social Impact and Equity*, 9 IND. J. GLOBAL LEGAL STUD. 135, 156–59 (2001) (responding to claims of negative consequences of intellectual property protection); Lara E. Ewens, *Seed Wars: Biotechnology, Intellectual Property, and the Quest for High Yield Seeds*, 23 B.C. INT'L & COMP. L. REV. 285, 303–09 (2000). See generally, PAUL B. THOMPSON, *FOOD BIOTECHNOLOGY IN ETHICAL PERSPECTIVE* (1997).

108. Sean D. Murphy, *Biotechnology and International Law*, 42 HARV. INT'L L.J. 47, 63 (2001). See also Michael Woods, *Food for Thought: The Biopiracy of Jasmine and Basmati Rice*, 13 ALB. L.J. SCI. & TECH. 123, 127–28 (2002).

109. Ugo Mattei, *A Theory of Imperial Law: A Study on U.S. Hegemony and the Latin Resistance*, 10 IND. J. GLOBAL LEGAL STUD. 383, 404–05 (2003).

110. See *supra* note 107 and accompanying text.

111. Maggs, Interview, *supra* note 101.

112. In addition to recognizing patentability of GES, U.S. courts now recognize the patentability of business methods. The longstanding bar on the patentability of business methods reflected the patent system's fundamental emphasis on the requirement of physical instantiation and the longstanding belief that “an idea of itself is not patentable.” *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. 498, 507 (1874). In 1998, however, the Court of Appeals for the Federal Circuit radically altered the traditional bounds of patentable subject matter when it held that there is no “business method” exception to patentability in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.* 149 F.3d 1368 (Fed. Cir. 1998). For an excellent discussion regarding the recent development of business method patents, see generally John R. Thomas, *The Post-Industrial Patent System*, 10 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 3 (1999).

UCC. Article 2 of the UCC provides a conceptually inadequate foundation for commercial transactions involving information.<sup>113</sup> Perhaps an answer lies in the failed attempt of Article 2B and the ill-received UCITA.

The UCITA was promulgated in 1999 in order to provide coherent guidance relevant to transactions involving computer information by synthesizing contract law regimes based on a blend of common law, intellectual property, and UCC concepts.<sup>114</sup> Under licensing law, the UCITA governs both obvious computer information (i.e., in a computer or computer peripheral) and computer information sold or leased as part of goods, in which use of the information is the primary purpose of buying or leasing goods of that kind.<sup>115</sup> Although the UCITA has failed to gain wide acceptance from state legislatures,<sup>116</sup> it nevertheless provides a better analytical framework for addressing licensing agreements of intangibles and a statutory model more in conformity with intellectual property law. Likewise, a comparable approach within the context of GES will help to prevent “treating the intangible informational aspects of [GES] as if they were no more than a tangible commodity” under Article 2 of the UCC.<sup>117</sup> As the controversy surrounding UCITA demonstrates, the proper balance of relative rights between intellectual property owners and users of that property is, at best, elusive.

## V. CONCLUSION

We now live in a world in constant flux that inevitably transforms the social and cultural fabrics of our lives. The proliferation of technological developments has created a new demand for a line of demarcation between the possible and the impossible. Therefore, law must respond by evolving contemporaneously and must appropriately address the issues created by these new rights and new conflicts. The fear of failure should not deter us from devising a new comprehensive commercial code that best reconciles state contract law with federal intellectual property law. “After all, Article 2 was crafted in recognition of our transition from an agrarian to an industrial society, so a new code should carry us from an industrial to an informational one.”<sup>118</sup>

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113. U.C.C. art. 2 (2003).

114. See Raymond T. Nimmer, *Through the Looking Glass: What Courts and UCITA Say about the Scope of Contract Law in the Information Age*, 38 DUQ. L. REV. 255, 258 (2000).

115. UNIFORM COMPUTER INFORMATION TRANSACTIONS ACT § 103(c)(1) (2002).

116. See Maggs, *supra* note 5.

117. Brennan, “*Embedded Software*,” *supra* note 54.

118. *Id.*