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Wilbur's Conundrum: Property in the DNA of Selectively Bred Animals

by

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Wilbur's Conundrum: Property in the DNA of Selectively Bred Animals*

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Advances in technology are changing what it means to own. Consider the science of genetic cloning, which is proceeding at a rapid pace. Only ten years ago, scientists in Scotland announced the birth of Dolly, a sheep cloned from the mammary glands of an adult ewe.[1] By 2003 scientists in the United States and Europe had successfully created healthy clones of mules and horses.[2] The successful cloning of a human may not be far off.[3]

As cloning technology progresses, it will have increasing consequences for the enjoyment of traditional legal rights. Courts and legislatures will have to address these consequences as they arise. Legal academics are uniquely placed, however, to anticipate areas in which the new science will conflict with existing law and to suggest ways in which the law might change to adapt to or reflect the new reality.

This Note is one such effort. In four parts, it discusses the legal impact of recent advances in the science of "somatic cell nuclear transfer" (SCNT) cloning of selectively bred animals.[4] Focusing on selectively bred horses, I suggest that advances in cloning technology threaten to undermine traditional property rights in a manner that common law and statutory remedies are unable to address. I conclude that the law should be adapted—either by legislatures or by courts—to recognize a property right in the DNA of selectively bred animals.

Part I provides the scientific and factual context for my legal discussion, suggesting a hypothetical use of SCNT cloning that would undermine traditional notions of ownership, and then discussing the economic and scientific circumstances that may turn the hypothetical into reality. Subpart I(A) discusses the horse industry in America. The size of the industry in economic terms is staggering, and the value of top Thoroughbred horses makes the otherwise costly procedure of cloning a commercially viable investment for owners of elite, selectively bred animals. Subpart I(B) discusses the science of somatic cell nuclear transfer. Subpart I(C) notes the recent successful application of this technology in the field of horse breeding.

Part II discusses certain traditional common law remedies that might be available to an owner who finds himself the victim of an unauthorized use of

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1. Gina Kolata, *Scientist Reports First Cloning Ever of Adult Mammal*, N.Y. TIMES, Feb. 23, 1997, at 1.

2. Andrew Pollack, *Another Milestone of Cloning Is Reached as a Mule Is Born in Idaho*, N.Y. TIMES, May 30, 2003, at A22; *Scientists Clone Mule*, HORSE & RIDER, Aug. 2003, at 30, 30; Rick Weiss, *First Cloned Horse Created in Italy: Scientists Could Copy Prizewinners, Preserve Rare Breeds*, WASH. POST, Aug. 7, 2003, at A1.

3. *See* Nicholas Wade & Choe Sang-Hun, *Human Cloning Was All Faked, Koreans Report*, N.Y. TIMES, Jan. 10, 2006, at A1 (reporting that several research groups worldwide were reentering the field of human cloning after a Korean scientist's announcement of successful human clones was discovered to be based on fabricated research).

4. By "selectively bred animals," I refer to animals produced by the practice of selectively breeding certain species over a number of generations in order to create individual animals manifesting certain specifically selected genetic characteristics.

animal DNA. Subpart II(A) considers a potential action for conversion and finds it wanting. Subpart II(B) considers a potential action for trespass to chattel, finding it more hopeful but still insufficient to protect the interests of the aggrieved owner. Subpart II(C) considers the law of lost and abandoned property as a means of explaining the manner in which an owner might inadvertently be deprived of DNA, and the manner in which a third party might come to acquire the DNA of a selectively bred horse without exposing himself to any civil liability.[5]

Part III discusses the possibility of achieving patent protection for the DNA of a selectively bred animal. Addressing the requirements of subject matter, utility, novelty, and nonobviousness set out in the Patent Act, I conclude that patent protection will probably not be available to breeders of selectively bred animals.[6]

Part IV considers two possible methods of recognizing a right in the DNA of selectively bred animals. Subpart IV(A) reviews various objections to the recognition of rights in the DNA of animals. Subpart IV(B) considers a statutory model based on the Plant Variety Protection Act (PVPA),[7] which recognizes a right akin to personal property in selectively bred plants registered with a national governmental authority. Subpart IV(C) considers a judicial model based on simple recognition of a right to property in the DNA of a selectively bred animal sufficient to sustain an action in conversion or trespass to chattel. The Note concludes with a recommendation for further inquiry into other areas in which cloning may present new challenges to traditional legal protection of basic property rights.

This Note is not meant to be a conclusive study, and as noted in the introduction to Part IV, many other approaches to the issue presented here can and will be imagined. The basic purpose of this Note is to identify an emerging area of conflict between traditional legal protection and the application of new technology. This conflict results in the violation of previously protected interests without violating previously sufficient laws. My hope is that the analysis, for all its faults, will prompt further consideration of the

5. The question of criminal liability for the unauthorized acquisition and use of selectively bred animal DNA is beyond the scope of this Note; however, to the degree that criminal liability depends on state recognition of a property right in such DNA, the basic recommendations of this Note speak to the establishment of such liability.

6. I am not the first to suggest the use of the Patent Act to protect the products of selective breeding. For instance, in a remarkably prescient 1998 student note, Paul Blunt identified the unequal treatment of genetically engineered and selectively bred animals and advocated the extension of patent protection to the latter. Paul Blunt, Note, *Selective Breeding and the Patenting of Living Organisms*, 48 SYRACUSE L. REV. 1365 (1998). This Note builds upon the Blunt note, endorsing many of its normative arguments regarding the appropriateness of patent protection for selectively bred animals and proposing a number of other arguments in favor of such protection, but concluding that—notwithstanding the theoretical arguments in its favor—patent protection will not, as a practical matter, be extended to selectively bred animals.

7. Plant Variety Protection Act of 1970, 7 U.S.C. §§ 2321–2582 (2000).

manner in which new technologies such as cloning stand to challenge our most fundamental legal assumptions.

I. Horses and the Science of Genetic Cloning

Consider the owner of a stable who spends thousands upon thousands of dollars a year to breed Thoroughbred horses. Generation by generation he selectively breeds horses, purchasing studs and mares with Thoroughbred genes and mating them in order to improve the genetic stock of his stable. After many years and hundreds of thousands—perhaps millions—of dollars in investment, he produces a champion Thoroughbred, a horse I'll call Mr. Ed. This horse possesses the precise combination of desirable characteristics that the owner hoped it would possess by virtue of its pedigree. Mr. Ed has a successful career—perhaps as a racehorse or an endurance racer, perhaps as a show horse or a jumper—and then retires.

Having recouped some of his investment in prizes, the owner—let's call him Wilbur—hopes to make back even more money by licensing the right to mate with Mr. Ed to other stable owners. These owners are willing to pay top dollar for the chance to add Mr. Ed's genetic line to their own stock, and Wilbur eagerly begins to arrange licensing agreements.

Suddenly, however, an advertisement appears in a trade magazine offering the opportunity to mate with a stud possessing exactly the same genetic characteristics as the champion—but for a fraction of the price. Wilbur discovers that a rival, in conjunction with a commercial laboratory, has acquired a sample of Mr. Ed's DNA and has produced a genetic clone of the champion. Wilbur's prospective clients abandon him for the clone, and he is forced to cut his own asking price and to compete with a genetic clone of his own horse, the product of his own investment and effort, in order to make back some fraction of his costs.

Naturally, Wilbur is furious. He wants to sue. But what rights does he have?

A. The Horse Industry

Horses are big business. In 2007, more than an estimated thirty-four thousand foals will be registered as Thoroughbreds in the United States[8]—descendants of three seventeenth-century stallions whose crossbreeding with English mares resulted in faster, stronger animals.[9] In each of the past seven years, Thoroughbred horses have competed for more than a billion dollars in race purses in the United States alone.[10] A 2004 study estimated that the

8. The Jockey Club, Online Fact Book: Annual North American Registered Foal Crop, http://www.jockeyclub.com/factbook.asp?section=2.

9. The Jockey Club, The Thoroughbred, http://www.jockeyclub.com/thoroughbredHistory.asp.

10. The Jockey Club, Online Fact Book: Gross Purses, http://www.jockeyclub.com/factbook.asp?section=7.

horse industry—including racing, showing, and recreation—contributed more than $100 billion to the American economy.[11] It is little surprise, then, that yearlings are sold at auction for an average of about $57,000 each.[12]

As these figures suggest, the business of horse breeding is central to the horse industry in general. This is particularly true with regard to Thoroughbred racing. All Thoroughbreds trace their ancestry to three horses—the Byerley Turk, the Darley Arabian, and the Godolphin Arabian—which were introduced to England in the seventeenth century.[13] The Jockey Club, which governs Thoroughbred racing in the United States, requires all those seeking to register a horse as a Thoroughbred to demonstrate the horse's ancestry through genetic testing.[14] If a Thoroughbred pedigree cannot be demonstrated, the horse will not be registered and will not be allowed to race.[15]

Breeding aims at more than ancestry, however. Registration is limited to Thoroughbreds because Thoroughbred stock is believed to produce the finest horses for the purpose, but the intention is always to improve the breed.[16] One industry observer has suggested that American horse breeding has increased the average height of Thoroughbreds by eight inches and that adjustments in breeding in response to a shift towards shorter races has increased average speeds by twelve seconds per mile.[17] Although a successful racing career can result in large cash prizes, an owner stands to earn a substantial sum by selling the right to breed with a champion horse.[18]

Indeed, the breeding industry itself may be thought of as the story behind the story. Each Thoroughbred racehorse or show horse is the product of selective breeding intended to produce an animal possessing the most desirable characteristics for the job. Traditionally, this might be achieved through the sale of a retired champion to stud—sending him to a stable where his only responsibility is to mate with mares in order to pass on his winning

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11. The Jockey Club, Online Fact Book: National Economic Impact Study, http://www.jockeyclub.com/factbook.asp?section=18.

12. The Jockey Club, Online Fact Book: Average/Median Price Per Yearling, http://www.jockeyclub.com/factbook.asp?section=14. The median price per yearling in 2006 was $14,000. *Id.* All Thoroughbreds celebrate their birthday on January 1; a yearling is a horse that has celebrated its first, but not its second, birthday. THE JOCKEY CLUB, THE AMERICAN STUD BOOK: PRINCIPAL RULES AND REQUIREMENTS 5 (2005), *available at* http://www.jockeyclub.com/pdfs/RULES_2005_PRINT.pdf.

13. BERT SUGAR WITH CORNELL RICHARDSON, HORSE SENSE 67 (2003) [hereinafter SUGAR, HORSE SENSE].

14. THE JOCKEY CLUB, *supra* note 12, at 9, 12.

15. *See id.* at 13. Note that horses born of a registered mare may be issued a "racing permit" but are not considered Thoroughbreds. *Id.*

16. SUGAR, HORSE SENSE, *supra* note 13, at 67.

17. *Id.* at 69.

18. *See* THOMAS KIERNAN, THE SECRETARIAT FACTOR 4–6 (1979) (describing the multimillion-dollar valuation of the racehorse Secretariat following his retirement in the early 1970s and the large entry fee demanded by the syndicate that controlled the horse's breeding schedule).

genes.[19] Alternatively, an owner might sell the right to mate with the horse on a one-off basis. The purpose is always the same: to pass on the genes that made the father a winner in order that the child might be a winner too. But advances in breeding technology have created a new possibility: rather than simply passing genes on, it may now be possible to reproduce the champion horse itself.

B. The Science of Cloning: Somatic Cell Nuclear Transfer

In 1997, a team of scientists in Scotland made headlines by announcing the birth of a cloned sheep—the famous Dolly.[20] The scientists used a procedure called somatic cell nuclear transfer. SCNT involves the substitution of DNA—the genetic code that governs the development of an organism—in order to create a genetic replica of the donor.[21] First, the nucleus of a host egg is removed.[22] Second, cells from the organism to be cloned are fused with the host egg, causing the egg to adopt the nucleus—and DNA—of the donor.[23] Third, the resulting egg is stimulated in order to encourage embryonic development.[24] Because the egg is now governed by the DNA of the donor, the embryo will develop as an exact genetic replica of the donor—as a clone.[25]

The Dolly scientists were not the first to clone an animal, nor even a mammal, using the SCNT technique.[26] What made Dolly special was the nature of her source genes. Previously, source genes had been derived from fetal cells, under the theory that cell fusion would be more successful if the source cells were undifferentiated—that is, if the process of biological development had not yet assigned the cells a specific function within the

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19. *See id.* at 64–67 (describing the stud careers of various American Thoroughbred horses).

20. *See* Kolata, *supra* note 1.

21. *Studies Find Differentiated Cells More Efficient than Stem Cells for Somatic Cell Nuclear Transfer*, LIFE SCI. WKLY., Oct. 24, 2006, at 453, 453 ("Somatic cell nuclear transfer (SCNT), the scientific term for cloning, involves creating an embryo by using a nucleus that's been removed from a somatic cell—any cell other than a reproductive cell—and transferring it into an unfertilized egg that has had its chromosomes removed. Because the resulting new embryo contains the entire genome of the donor somatic cell it is an identical copy.").

22. *See Cloning Technology: Scientific Developments and Current Guidelines*, 77 CONG. DIG. 35, 35–36 (1998) [hereinafter *Cloning Technology*] (describing the stages of the SCNT procedure); Anne McLaren, *Cloning: Pathways to a Pluripotent Future*, 288 SCIENCE 1775, 1776 (2000) (describing the development of the SCNT procedure).

23. *Cloning Technology*, *supra* note 22, at 36.

24. *Id.*

25. *Id.*; *see also* Gary B. Anderson & George E. Seidel, *Cloning for Profit*, 280 SCIENCE 1400, 1400–01 (1998) (describing various commercial applications of SCNT cloning); Chikara Kubota et al., *Six Cloned Calves Produced from Adult Fibroblast Cells After Long-Term Culture*, 97 PROC. NAT'L ACAD. SCI. U.S. 990, 990 (2000) (reporting the birth of six genetic clones of a seventeen-year-old bull); Randall S. Prather, *Pigs Is Pigs*, 289 SCIENCE 1886, 1886–87 (2000) (discussing the difficulties of using SCNT cloning with pigs).

26. Anderson & Seidel, *supra* note 25, at 1400.

body.[27] Dolly was the first mammal to be created from adult cells—in her case, cells that had differentiated and become the mammary cells of a six-year-old ewe.[28] In other words, Dolly demonstrated the possibility of cloning adult mammals.

By the year 2000, only three years after Dolly had been announced to the world, animal cloning had become "something of a cottage industry."[29] Subsequent research has resulted in improved methods for achieving healthy clones from adult cells.[30] The possibilities of animal cloning have become the topic of speculation and hope, particularly in the field of selectively bred animals.[31] As one commentator has observed: "[C]loning by nuclear transfer could replicate large numbers of genetically elite individuals that have highly advantageous combinations of genes . . . . Without cloning, these unique gene combinations would be dissipated by genetic recombination."[32] In other words, cloning allows for the perpetuation of perfection.

C. Cloning and the Horse Industry

With scientific advances making cloning an increasingly real—and affordable—possibility, horse owners and breeders were quick to explore its possibilities. In the spring of 2003, scientists in Idaho successfully cloned a mule they named Idaho Gem, the first successfully cloned member of the horse family.[33] Later that summer, scientists in Italy announced the successful cloning of an actual horse, a foal created from adult cells of the mare that carried it to term.[34]

Owners soon realized the commercial possibilities of cloning, as did private laboratories. In the summer of 2005, scientists in Italy, in conjunction with a private French laboratory, Cryozootech, successfully cloned champion-endurance-racehorse Pieraz using adult cells.[35] Pieraz (also called, tellingly, Cash) had been castrated and was unable to pass on his champion DNA; his clone (blandly named Pieraz Cryozootech Stallion) would be marketed not as a champion racer but as a stud, mating with mares—at a fee—in order to perpetuate Pieraz's genetic line.[36]

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27. *Cloning Technology*, *supra* note 22, at 35–36.

28. I. Wilmut et al., *Viable Offspring Derived from Fetal and Adult Mammalian Cells*, 385 NATURE 810, 810–11 (1997).

29. Prather, *supra* note 25, at 1886.

30. *See, e.g.*, Kubota et al., *supra* note 25, at 993–94 (discussing an improved method for achieving healthy clones from adult skin fibroblast cells).

31. *See* McLaren, *supra* note 22, at 1779–80.

32. *Id.* at 1779.

33. Pollack, *supra* note 2, at A22; *Scientists Clone Mule*, *supra* note 2, at 30.

34. Weiss, *supra* note 2, at A1.

35. Elaine Pascoe, *Cash Cloned*, PRAC. HORSEMAN, July 2005, at 72, 72.

36. *See id.*; Cryozootech, Cloned Horses: Pieraz-Cryozootech-Stallion, http://www.cryozootech.com/index.php?m=the_horses&d=pieraz_st_en&l=en.

Cryozootech, the French lab responsible for cloning Pieraz, has subsequently announced the successful cloning of another elite horse, Quidam de Revel.[37] The clone, named Paris-Texas, was created in conjunction with scientists at Texas A&M University.[38] Cryozootech is not alone in seeking commercial profit from the cloning of elite horses; in the spring of 2006, Austin-based ViaGen, Inc. and Encore Genetics announced a partnership to launch "the first commercial horse cloning operation in the country."[39] Most recently, in November 2006 ViaGen announced the successful cloning of champion-barrel-racing-horse Scamper.[40]

The cloning of selectively bred horses is no longer science fiction. As cloning technology allows for cheaper and healthier clones, SCNT will become an increasingly cost-effective alternative to traditional breeding methods. The Jockey Club's restriction on the participation of cloned horses in racing will not likely hinder the advance of the technique; as Texas A&M's Katrin Hinrichs has noted, many other venues are open to superior selectively bred horses.[41] Besides, as the possibility of a race between War Admiral, Secretariat, Sea Biscuit, and history's other great horses becomes scientifically plausible, who is to say that an audience—and money—won't follow?

II. Traditional Property Protection

Let's revisit Wilbur, the aggrieved stable owner who is looking to the law to protect his interest in the DNA of his selectively bred champion, Mr. Ed. Traditionally, the nonconsensual transfer of personal property has been privately regulated through certain common law rights of action, such as conversion.[42] The common law also provides guidelines for the disposition of abandoned, lost, or mislaid property.[43] Upon discovering the unauthorized acquisition and use of Mr. Ed's DNA, Wilbur might first look to traditional

37. Cryozootech, Cloned Horses: Paris-Texas, http://www.cryozootech.com/index.php?m=the_horses&d=Paris_Texas_en&l=en.

38. *Id.*

39. Press Release, ViaGen, Inc., Top Cutting Horse "Royal Blue Boon" First Mare to Ever Be Cloned (Mar. 30, 2006), http://www.viagen.com/wordpress/news/first-two-commercially-cloned-us-horses-thriving/; *see also* Andrew Pollack, *Goodbye Dolly: Up From Sheep to Cloned Horses*, N.Y. TIMES, Mar. 31, 2006, at C4 (reporting ViaGen's announcement of the "first commercially cloned horses").

40. Press Release, ViaGen, Inc., Top Barrel Racing Champion Horse "Scamper" Cloned (Nov. 15, 2006), http://www.viagen.com/wordpress/news/top-barrel-racing-champion-horse-scamper-cloned/.

41. Weiss, *supra* note 2, at A7.

42. *See* RESTATEMENT (SECOND) OF TORTS § 222A cmt. a (1965) (tracing the history of the common law tort of conversion to the English common law action of trover); J.B. Ames, *The History of Trover* (pts. 1–2), 11 HARV. L. REV. 277, 374 (1897–1898) (describing the private actions that antedated trover).

43. *See* 1 AM. JUR. 2D *Abandoned, Lost, and Unclaimed Property* §§ 1–18 (2005) (describing the common law principles of abandoned, lost, and mislaid property).

property protection in order to vindicate his rights. As will become clear, however, the private rights of action of conversion and trespass to chattel are insufficient to afford protection. Moreover, the common law doctrines of abandonment and loss make the nonconsensual acquisition of DNA possible—even likely. Absent specific recognition of a property right in the DNA of selectively bred animals—a recognition that no American court or legislature has yet made—traditional property law will afford Wilbur no relief.

A. Conversion

The basic common law protection against unauthorized transfer of personal property is the action of conversion.[44] Civil conversion typically involves the "intentional exercise of dominion or control over a chattel which so seriously interferes with the right of another to control it that the actor may justly be required to pay the other the full value of the chattel."[45] The basic elements of conversion are: (1) a right of ownership or possession on the part of the plaintiff; (2) intentional interference with that right by the defendant; and (3) consequent deprivation of the plaintiff's right of enjoyment of the property in question.[46] An action in conversion would afford Wilbur no relief for two reasons.

First, and most fundamentally, it is not at all clear that Wilbur has any ownership of Mr. Ed's DNA. On the one hand, it is indisputable that animals themselves—including horses—are subject to ownership and are considered personal property.[47] On the other hand, at least one court has found no property right in *human* DNA sufficient to sustain an action for conversion.[48] In *Moore v. Regents of the University of California*,[49] the California Supreme Court held that the lack of any historical recognition of a property right in

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44. *See supra* note 42.

45. RESTATEMENT (SECOND) OF TORTS § 222A; *see also* Zaslow v. Kroenert, 176 P.2d 1, 6 (Cal. 1946) ("Stated generally, 'Conversion is any act of dominion wrongfully exerted over another's personal property in denial of or inconsistent with his rights therein.'" (quoting Gruber v. Pac. States Sav. & Loan Co., 88 P.2d 137, 139 (Cal. 1939))); Mustola v. Toddy, 456 P.2d 1004, 1006 (Or. 1969) (defining conversion as "any distinct act of dominion wrongfully exerted over one's property in denial of his right, or inconsistent with it").

46. 18 AM. JUR. 2D *Conversion* § 2 (2004); *see also* Waisath v. Lack's Stores, Inc., 474 S.W.2d 444, 446 (Tex. 1971) (defining conversion as "the wrongful exercise of dominion and control over another's property in denial of or inconsistent with his rights").

47. *See, e.g.*, Sabin v. Smith, 147 P. 1180, 1182 (Cal. Dist. Ct. App. 1915) (contrasting the weaker property right in dogs with the stronger property right recognized in "more harmless and useful domestic animals"); Animal Prot., Educ. & Info. Found. v. Friends of the Zoo of Springfield, 891 S.W.2d 177, 179 (Mo. Ct. App. 1995) ("Animals are regarded as property."); State v. Mata, 668 N.W.2d 448, 470 (Neb. 2003) ("Animals are personal property under Nebraska law.").

48. *See* Moore v. Regents of the Univ. of Cal., 793 P.2d 479, 488 (Cal. 1990) (holding that a patient could not establish an action for conversion where human DNA from his excised cells was used in conducting research).

49. 793 P.2d 479 (Cal. 1990).

one's DNA, coupled with various statutory provisions limiting an individual's control over extracted DNA, established that the unauthorized use of human DNA subsequent to its extraction could not constitute conversion.[50]

The holding in *Moore* can be distinguished in at least two ways. While the notion of ownership in human beings is controversial,[51] ownership in animals is widely accepted.[52] Moreover, the statutory provisions said by the *Moore* court to cast doubt on the ability to own human DNA would not apply—at least not of their own force—to DNA extracted from an animal.[53] On the other hand, the first ground of the *Moore* court's ruling—the historical lack of recognition of a property right in extracted human DNA—would appear to apply to extracted animal DNA as well.[54] Still, even if *Moore* were to gain general acceptance (hardly a sure thing at this point), it would not necessarily control in the case of Wilbur and Mr. Ed.

Second, assuming for the moment that a property right in animal DNA exists, it is not clear that a competitor's acquisition and use of the DNA would amount to the dispossession or interference necessary to constitute conversion. The *Restatement (Second) of Torts* limits conversion to "those serious, major, and important interferences with the right to control the [property] which justify requiring the defendant to pay its full value."[55] It is hardly clear that the acquisition of DNA by a third party constitutes such interference.

On the one hand, a competitor's ability to use Mr. Ed's DNA, even to the extent of creating another version of the source horse through SCNT, does not diminish Wilbur's ability to do the same. In other words, possession of DNA is not exclusive, as use by one does not interfere with simultaneous and coextensive use by another.[56]

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50. *Id.* at 488. *But see* Midwest Oilseeds, Inc. v. Limagrain Genetics Corp., 231 F. Supp. 2d 942, 953–54 (S.D. Iowa 2002) (holding that under Iowa law, genetic information relating to crops can be property and can therefore support an action for common law conversion).

51. *See, e.g.*, Margo A. Bagley, *Patent First, Ask Questions Later: Morality and Biotechnology in Patent Law*, 45 WM. & MARY L. REV. 469, 475 (2003) ("The moral controversies surrounding [biotechnological advances] stem from several concerns including . . . the ownership of humans.").

52. *See supra* note 47 and accompanying text.

53. *See Moore*, 793 P.2d at 489 (discussing the applicable statutory provisions).

54. *But see Midwest Oilseeds, Inc.*, 231 F. Supp. 2d at 953–54 (recognizing a property right in extracted plant DNA). *See generally* Marjorie A. Shields, Annotation, *Liability for Conversion and Misappropriation of Genetic Material*, 121 A.L.R.5th 315 (2005) (discussing cases that have either found or not found property rights in genetic material sufficient to support a conversion action).

55. RESTATEMENT (SECOND) OF TORTS § 222A cmt. c (1965).

56. *See* Consol. Constr. Servs., Inc. v. Simpson, 813 A.2d 260, 268–69 (Md. 2002) (defining property as "the unrestricted and exclusive right to a thing; the right to dispose of a thing in every legal way, to possess it, to use it, and to exclude everyone else from interfering with it" (quoting BLACK'S LAW DICTIONARY 1216 (6th ed. 1998))); Olwell v. Nye & Nissen Co., 173 P.2d 652, 654 (Wash. 1947) ("The very essence of the nature of property is the right to its exclusive use.").

On the other hand, a party may interfere with the property right of another without ever having possession of the property itself.[57] Although a competitor's acquisition of Mr. Ed's DNA would not interfere with the *use* of the DNA by Wilbur, it might well interfere with its value. One Texas court, for instance, has stated that "one who receives without right the direct benefits of the personal property of another is liable in [conversion] for the value of the same," suggesting that a competitor whose possession and use of DNA deprives Wilbur of the full value of exclusive control over the DNA might be liable.[58] In the Texas case, however, the owner of the property had been deprived of actual possession; although only one of two defendants actually achieved possession of the property, both were held liable for conversion.[59] Because Wilbur retains possession, any nonconsensual acquisition of DNA would be unlikely to rise to the level of conversion.

Current conversion law is therefore unlikely to afford Wilbur any relief. Although ownership in animal DNA is less problematic than ownership in human DNA, it has never been recognized by a court in support of an action in conversion. Moreover, even if a property right were to be recognized, the ability of DNA to be possessed and used simultaneously by more than one party would make a showing of interference constituting tortious deprivation difficult. If he is to find protection at common law, Wilbur will have to look elsewhere.

B. Trespass to Chattel

Trespass to chattel, although similar to conversion, does not turn on possession; mere interference, of the sort that cannot sustain an action for conversion, may suffice.[60] Trespass to chattel involves intentional interference with the property in question in a manner resulting in harm.[61] The harm

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57. 18 AM. JUR. 2D *Conversion* § 23 (2004).

58. Hooser v. G. M. Carlton Bros., 288 S.W. 1095, 1097 (Tex. Civ. App.—Waco 1926, no writ); *see also* Branham v. Prewitt, 636 S.W.2d 507, 510 (Tex. App.—San Antonio 1982, writ ref'd n.r.e.) ("To constitute a conversion, it is not necessary that there be a manual taking of the property in question.").

59. *Hooser*, 288 S.W. at 1096–97.

60. *See* Mountain States Tel. & Tel. Co. v. Vowell Constr. Co., 341 S.W.2d 148, 150 (Tex. 1960) ("[T]he gist of trespass to personalty is an injury to, or interference with, possession, unlawfully, with or without the exercise of physical force.") (quoting 87 C.J.S. *Trespass* §§ 8, 9); RESTATEMENT (SECOND) OF TORTS § 217(b) (contending that trespass has come to mean intentional interference with chattel); 75 AM. JUR. 2D *Trespass* § 16 (2007) (arguing that intent to interfere physically with a chattel is sufficient to make one liable for trespass).

61. *See* Intel Corp. v. Hamidi, 71 P.3d 296, 302 (Cal. 2003) ("[T]respass to chattels lies where an intentional interference with the possession of personal property has proximately caused injury." (internal quotations omitted)); Fordham v. Eason, 521 S.E.2d 701, 704 (N.C. 1999) ("The basis of a trespass to chattel cause of action lies in injury to possession." (internal quotations omitted)); RESTATEMENT (SECOND) OF TORTS § 218 cmt. e (declaring that one is liable for interference in another's chattel only if the interference is intentional and harmful); 87 C.J.S. *Trespass* § 9 (2000) (explaining that trespass is the intentional interference with a chattel that causes injury, however

can be in the form of actual dispossession, but actual dispossession is not required; any measurable harm to the chattel—or to a legal interest of the owner—can sustain a trespass to chattel.[62]

To the extent that possession and use of Mr. Ed's DNA harms Wilbur's legal interest in that DNA, Wilbur would appear to have an action for trespass to chattel. Unfortunately, he will run into the same fundamental problem he faced in trying to establish an action for conversion.

First, because Wilbur retains possession and use of the DNA, the only measure of harm—the only intrusion into his right to control the DNA—is the decrease in value that results from third party acquisition and the consequent loss of *exclusive* control. For instance, the owners of endurance-racing-champion Pieraz will be able to charge a pretty penny for the opportunity to mate with Pieraz's clone only because he is the only clone of Pieraz, and so the only source of his genes. If a second, unauthorized clone of Pieraz appears, the value of mating with the first clone will fall.

It is unclear whether this sort of purely economic harm will suffice to sustain an action for trespass to chattel.[63] In *Intel Corp. v. Hamidi*,[64] the Supreme Court of California rejected such a claim where the defendant had sent a large number of emails to employees of the plaintiff via the plaintiff's email system.[65] The court first held that because the defendant's use of the system neither damaged nor injured the system's functioning, no action for trespass could lie.[66] The court also found that the economic damage the plaintiff alleged could not support an action because the alleged economic damage was incidental to the alleged trespass to the email system.[67] In other words, because the email system itself did not suffer economic harm, any economic harm that did occur could not sustain an action for trespass to chattel.[68]

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slight); DAN DOBBS, THE LAW OF TORTS 122 (2000) ("The tort of trespass to chattels . . . is committed by intentionally interfering with the plaintiff's possession in a way that causes recognizable harm.").

62. *See Hamidi*, 71 P.3d at 302–03 ("[O]ne who intentionally intermeddles with another's chattel is subject to liability only if his intermeddling is harmful to the possessor's materially valuable interest in the physical condition, quality, or value of the chattel, or if the possessor is deprived of the use of the chattel for a substantial time, or some other legally protected interest of the possessor is affected . . . ." (quoting RESTATEMENT (SECOND) OF TORTS § 218 cmt. e)).

63. *See id.* at 302, 308 (reversing a lower court's decision that interference with another's chattel was trespass even without actual damage to the chattel).

64. 71 P.3d 296 (Cal. 2003).

65. *Id.* at 296.

66. *Id.* at 303–04.

67. *Id.* at 307–08. For instance, the plaintiff alleged that the subject matter of the defendant's email messages, when read by the plaintiff's employees, caused a measurable decrease in productivity. *Id.*

68. *Id.*

In reaching this second ruling, the *Hamidi* court distinguished *CompuServe Inc. v. Cyber Promotions, Inc.*[69] The court in *CompuServe* had recognized an action for trespass to chattel where the defendant had sent a large number of emails to subscribers of the plaintiff's email service.[70] The court held that "[a]n unprivileged use or other intermeddling with a chattel which results in actual impairment of its physical condition, quality or value to the possessor makes the actor liable for the loss thus caused."[71] Since the harm was suffered as a direct consequence of the interference with the email system, and not as a collateral consequence as in *Hamidi*, it was sufficient to support an action for trespass to chattel.[72]

This area of law is hardly settled, and it remains unclear whether it would extend beyond the field of electronic communication. The *Hamidi* court questioned the expansion of the notion of economic harm in *CompuServe*, noting that the comment to the *Restatement* provision upon which the *CompuServe* court relied appeared to limit the scope of "legally protected interests" to personal injuries.[73] If the *Hamidi* court is correct as to the proper scope of protected interests, our friend Wilbur will be out of luck. If the *CompuServe* court is correct, he may have a shot. As in *CompuServe*, where the economic harm was directly related to the property, and unlike *Hamidi*, where the economic harm was collateral to the alleged trespass to the property, Wilbur can plead economic harm in the form of a loss of value in Mr. Ed's DNA, which directly results from the unauthorized acquisition of the DNA by a third party. Direct economic harm is undoubtedly present—the only question is whether it is sufficient to sustain the action.

Unfortunately for Wilbur, even a recognition of the sufficiency of purely economic harm still might not allow for the protection of horse DNA through an action in trespass to chattel. Interference with the economic value of the DNA will support an action only where the owner has a right to enjoy the value of the DNA in the first place.[74] In other words, since trespass to chattel protects only property interests, a property interest in Mr. Ed's DNA must exist. Whether such an interest exists is a question that the common law action of trespass to chattel is not designed to answer.

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69. 962 F. Supp. 1015 (S.D. Ohio 1997).

70. *Id.* at 1022–23.

71. *Id.* at 1022 (quoting RESTATEMENT (SECOND) OF TORTS § 218 cmt. h).

72. *Id.* at 1022–23.

73. *Hamidi*, 71 P.3d at 307 n.6 (citing RESTATEMENT (SECOND) OF TORTS § 218 cmt. j).

74. *E.g.*, Fordham v. Eason, 521 S.E.2d 701, 704 (N.C. 1999) ("A successful action for trespass to chattel requires the party bringing the action to demonstrate that she had either actual or constructive possession of the personalty or goods in question at the time of the trespass . . . ."); Skane v. Star Valley Ranch Ass'n, 826 P.2d 266, 269 (Wyo. 1992) ("[O]ne asserting a trespass to chattel must still demonstrate that he has a possessory interest.").

C. *Abandonment and Loss*

Even if traditional common law actions do not seem to afford protection, a simpler solution might be available. In order to acquire the DNA that Wilbur wishes to protect, a competitor would have to come into possession of some "bit" of the horse that contains the DNA—a sample, in other words. Wilbur might try to prevent the unauthorized acquisition of Mr. Ed's DNA simply by asserting commonly recognized rights to prevent unauthorized acquisition of the material from which the DNA might be extracted.[75] Unfortunately for Wilbur, this may be easier said than done.

In order to clone a horse one must have a sample of its DNA, a somatic cell that, once cultured, can be fused with an egg to create a genetically identical embryo.[76] If a competitor does not own the horse in question and must acquire the sample surreptitiously, his options are limited. Wilbur will most likely be able to prevent someone from walking up to the horse and sticking it with a syringe, or yanking out some hairs; certainly, such an intentional acquisition of physical material without the consent of the owner would constitute conversion of the material as discussed above.[77] But a competitor need not act tortiously in order to acquire the material. Enough material will be cast off by the owner, either intentionally or inadvertently, to allow the extraction of a full DNA sequence that would allow SCNT cloning.

First, Wilbur will abandon a good deal of DNA-rich material. At common law, property is abandoned when the owner intends to abandon the property and manifests that intention through an affirmative act.[78] In the course of raising and maintaining a horse, an owner will throw away copious amounts of material—hair, brushes, rags, or even bodily waste—that an intrepid competitor might collect. Since abandonment divests the prior owner of all rights in the object or property, the competitor would thereby acquire the DNA-rich material in an entirely lawful manner.[79]

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75. For instance, interference with Mr. Ed himself would no doubt constitute an interference with chattel in which Wilbur has a property interest, and so it would constitute trespass to chattel.

76. *Cloning Technology*, *supra* note 22, at 35–36.

77. *See supra* notes 42–57 and accompanying text. Note, however, that such material would likely be found to have a negligible value—unless, again, a property right is recognized in the DNA that the material contains.

78. *E.g.*, Bruner v. Geneva County Forestry Dep't, 865 So. 2d 1167, 1172 (Ala. 2003) ("[A]bandonment of property requires intent plus an act." (quoting Johnson v. Northpointe Apartments, 744 So. 2d 899, 905 (Ala. 1999))); Griffis v. Davidson County Metro. Gov't, 164 S.W.3d 267, 279 (Tenn. 2005) ("Common law abandonment thus has two basic elements: (1) the intent to abandon; and (2) some external act by which the intent to abandon is effectuated."); State v. Rynhart, 125 P.3d 938, 942 (Utah 2005) ("In the law of property, the question . . . is whether the owner has voluntarily, intentionally, and unconditionally relinquished his interest in the property so that another, having acquired possession, may successfully assert his superior interest.").

79. *See* Hawkins v. Mahoney, 990 P.2d 776, 779 (Mont. 1999) ("Personal property, upon being abandoned, ceases to be the property of any person."); State v. West, 235 S.E.2d 150, 157 (N.C. 1977) ("[T]he owner of articles of personal property may terminate his ownership by abandoning it and, in that event, title passes to the first person who thereafter takes possession.").

Of course, a careful owner might control abandonment of material, perhaps by burning or burying it all. Even the most careful owner will lose some material, however, and that loss might be just as bad as abandonment. Lost property is that which the owner has "involuntarily parted with through neglect, carelessness, or inadvertence."[80] In showing or racing his bred-for-characteristic horse, the owner will inevitably lose some material—the horse's hair or saliva, for example—and this material might be acquired by a competitor. Although the finder of lost property does have a duty to find the owner[81]—not a difficult task where the finder intentionally "finds" the lost hairs of a particular horse in order to clone it—a failure promptly to return the material would likely give rise only to an action for such a return.[82] The *de minimis* nature of the property acquired would make the success of such an action unlikely; in any case, by the time the property were to be returned, the DNA might have been extracted. From the perspective of the owner trying to prevent third party acquisition of DNA, lost property is as good as abandoned.

Traditional property rights, therefore, provide Wilbur little, if any, protection. Neither an action for conversion nor an action for trespass to chattel will serve to prevent the unauthorized transfer of horse DNA—absent a specific recognition of a right in the DNA itself. Nor can the owner trust the law of abandoned and lost property to ensure that he does not inadvertently give away the very thing meant to be protected. If protection is to be achieved, the owner will have to establish a property right not only in the horse, but in the horse's DNA itself.

III. Patent Protection

Since traditional common law actions to protect property seem not to extend to the DNA of selectively bred animals, Wilbur might logically turn next to intellectual property laws, and in particular patent law, to protect a right in horse DNA. He might take heart from the fact that in recent years the United States Supreme Court and the United States Patent Office have recognized the availability of patent protection for certain types of life forms,

80. 1 AM. JUR. 2D *Abandoned, Lost, and Unclaimed Property* § 12 (2005); *see Bruner*, 865 So. 2d at 1172 ("[G]oods or chattels are lost in the legal sense of the word only when the possession has been casually and involuntarily parted with, so that the mind has no impress of[,] and can have no recourse, to the event." (alteration in original) (quoting Auto. Ins. Co. v. Kirby, 144 So. 123, 124 (Ala. Ct. App. 1932))); Ritz v. Selma United Methodist Church, 467 N.W.2d 266, 269 (Iowa 1991) ("Property is lost when the owner unintentionally and involuntarily parts with its possession and does not know where it is.").

81. 1 AM. JUR. 2D *Abandoned, Lost, and Unclaimed Property* § 32.

82. *Id.* ("A person who finds lost property is not required to take charge of it, but if he or she chooses to undertake its custody he or she is responsible to the owner for its safekeeping and return, if demanded.").

including complex organisms such as mice.[83] Unlike the common law causes of action of conversion and trespass to chattel, federal patent law can affirmatively create and recognize a property right. In order to achieve such a recognition, however, Wilbur will have to overcome a series of statutory hurdles that may ultimately prove insurmountable.

The Constitution confers on Congress the 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."[84] Congress has exercised this power in 35 U.S.C. §§ 101–103, which sets out certain requirements that a creation must meet in order to receive legal recognition and protection. First, as a threshold requirement, a creation must be found to constitute appropriate subject matter for utility patent protection.[85] Second, the inventor must demonstrate that the creation is useful,[86] novel,[87] and nonobvious.[88] In addition, the inventor must provide a written description of the creation.[89] Each of these requirements will be addressed in turn in the context of a patent for the DNA of a bred-for-characteristic animal.

A. Subject Matter

The patent statute allows utility patents to be issued for "any new and useful process, machine, manufacture, or composition of matter."[90] This has been taken to mean that laws of nature and naturally occurring phenomena

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83. *See* Diamond v. Chakrabarty, 447 U.S. 303, 318 (1980) (recognizing the patentability of biologically altered microorganisms); U.S. Patent No. 4,736,866 (filed Apr. 12, 1988) (granting a patent on a biologically modified mouse). For a detailed discussion of the development of patent protection for living organisms, see Blunt, *supra* note 6, at 1367–70.

84. U.S. CONST. art. I, § 8, cl. 8.

85. Patent Act, 35 U.S.C. § 101 (2000). Note that § 101 recognizes patents on "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." *Id.* This Note assumes that the process of SCNT cloning is available to all parties. Theoretically, assuming that a process patent could be granted for SCNT cloning of selectively bred animals, protection of selectively bred animal DNA might be achieved through restrictive-use clauses in the license agreements between the party holding the patent and the party seeking to engage in the process. In such a case, however, an owner like Wilbur would only have a breach of contract claim. In fact, since the operative contract would be between the process-patent holder and the competitor, an owner like Wilbur might not even have such a remedy. In any case, only by recognizing a property right in the DNA of selectively bred animals—and not just in the process by which that DNA might be used to create clones—can an owner like Wilbur have a state-recognized cause of action independent of any possible contract terms.

86. *Id.*

87. *Id.* § 102.

88. *Id.* § 103.

89. *Id.* § 112.

90. *Id.* § 101.

are not patentable.[91] The legislative history of the Patent Act, however, indicates that Congress intended to extend patent protection to "anything under the sun that is made by man."[92] This suggests that the greatest obstacle to patent protection for life forms is the simple fact that they are not "made by man." It also suggests that if there were a way for man to make a life form, it might very well be patentable.

The Supreme Court recognized precisely this possibility in the 1980 case *Diamond v. Chakrabarty*.[93] Dr. Chakrabarty had successfully modified a single-celled organism by introducing biological material that allowed the organism to perform an act—the breaking down of certain components of crude oil—that it could not perform in its original state.[94] Although he was granted a patent on the process of creating the new organism, Dr. Chakrabarty's application for a patent on the new organism itself was denied on the ground that as "products of nature" and "living things," microorganisms were not patentable subject matter.[95]

The Supreme Court upheld the patent. Chief Justice Burger, writing for a majority of five, held that the statutory language of § 101—including the specific categories of appropriate subject matter—should be read broadly.[96] "In choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by the comprehensive 'any,'" he wrote, "Congress plainly contemplated that the patent laws would be given wide scope."[97] Burger also cited to the legislative history, adopting the language asserting that the Patent Act covered "anything under the sun that is made by man."[98] Concluding that Chakrabarty's discovery was "not nature's handiwork, but his own," the Court recognized genetically modified living organisms as appropriate subject matter for utility patents under § 101.[99]

The decision in *Chakrabarty* opened the door to patents in multicellular organisms, such as oysters, and even mammals, such as mice.[100] All such patents, however, have involved organisms or animals that have been

91. *E.g.*, Parker v. Flook, 437 U.S. 584, 593 (1978) ("[T]he discovery of a law of nature cannot be patented . . . ."); Schering Corp. v. Amgen Inc., 18 F. Supp. 2d 372, 391 (D. Del. 1998) ("[P]atents cannot cover physical phenomena occurring in nature . . . .").

92. Diamond v. Diehr, 450 U.S. 175, 182 (1981) (quoting S. REP. NO. 82-1979, at 5 (1952) and H.R. REP. NO. 82-1923, at 6 (1952)).

93. 447 U.S. 303 (1980).

94. *Id.* at 305.

95. *Id.* at 306.

96. *Id.* at 308.

97. *Id.*

98. *Id.* at 308–09 (quoting S. REP. NO. 82-1979, at 5 (1952) and H.R. REP. NO. 82-1923, at 6 (1952)).

99. *Id.* at 310.

100. *See, e.g.*, *Ex parte* Allen, 2 U.S.P.Q.2d (BNA) 1425, 1427 (B.P.A.I. 1987) (recognizing a patent in biologically modified oysters); U.S. Patent No. 4,736,866 (filed Apr. 12, 1988) (granting a patent on a biologically modified mouse).

biologically altered. In order to receive patent protection under *Chakrabarty*, Wilbur would have to establish that his selectively bred horse was as much an example of man's handiwork as a biologically modified mouse.

The claim is not outrageous.[101] If the standard of patentability truly is whether a creation is "made by man," the test might reasonably be rephrased as whether, absent human intervention, the creation would come to pass. Absent Dr. Chakrabarty's intervention, his lowly microorganism would never have developed the capacity to break down crude oil. The controversial question is whether in the absence of the intervention of an owner and breeder, a particular selectively bred horse would have been created.

At the very least, it is extraordinarily unlikely. The gradual disappearance of wild horses,[102] the controlled nature of Thoroughbred horse breeding,[103] and the very fact of human involvement in breeding mean that it would be remarkable for a horse to display the set of desirable characteristics for which breeders select, absent the involvement of a human breeder. Focusing on the particular set of characteristics selected and exhibited in any specific horse reduces the likelihood of a naturally occurring horse possessing the same precise set of genetic characteristics almost to zero.

This approach presumes selective breeding over a series of generations in order to create or greatly increase the odds of creating a horse manifesting certain characteristics. As discussed in Part I above, this is the aim of the modern Thoroughbred-breeding industry.[104] Any practitioner in the art of breeding might admittedly breed a horse with long legs. But for every added characteristic that goes into the combination of characteristics that are present in a particular horse, the likelihood of duplication falls. And because, at the margin, certain characteristics are unique to the offspring of particular animals—animals that themselves had been bred, and which would not mate absent human intervention—the particular combination of genetic characteristics present in any particular selectively bred horse will be entirely unique. Given the extensive human involvement in the selective breeding process, it is no stretch at all to suggest that, but for human intervention, any particular Thoroughbred horse would not exist. Each such horse is, in that sense, man's handiwork.

This is, of course, an unorthodox view. The prevailing attitude appears to be that because animals, at least those that are not biologically engineered, are born to their parents "naturally," they are, for the purposes of § 101,

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101. For another version of the argument that follows, see Blunt, *supra* note 6, at 1384–85.

102. *See* Roberto Iraola, *The Wild Free-Roaming Horses and Burros Act of 1971*, 35 ENVTL. L. 1049, 1050 (2005) ("At one time numbering in the millions, by the 1960s, the [wild] horse population [in America] had declined to seventeen thousand.").

103. SUGAR, HORSE SENSE, *supra* note 13, at 66–72.

104. *See supra* notes 13–19 and accompanying text.

things occurring in nature for which there can be no patent protection.[105] If the Court's assertion in *Chakrabarty* that the Patent Act reaches "anything under the sun that is made by man" is to be taken seriously, however, the procedure of selective breeding described here ought to be recognized as a legitimate manufacture or composition of matter entitled to patent protection under § 101.[106]

B. Utility

Even if the DNA of a selectively bred horse is considered patentable subject matter, an owner seeking recognition of a property right in that DNA under the Patent Act will have to meet the statutory requirements set out in §§ 101–103. The first such requirement is that the creation be "useful."[107] The U.S. Patent Office Utility Examination Guidelines provide that an application should not be rejected for want of utility if it is "readily apparent that the claimed invention has a well-established utility, . . . [that is,] if a person of ordinary skill in the art would immediately appreciate why the invention is useful based on the characteristics of the invention . . . [and] the utility is specific, substantial, and credible."[108] The courts have further explained that an invention is useful when it provides a means—though not necessarily the best means—of achieving its stated purpose.[109]

Our friend Wilbur would most likely have little trouble satisfying the utility prong. A useful selectively bred horse would be one possessing a combination of characteristics that other practitioners in the art—that is, other breeders—would recognize as useful.[110] If the owner breeds a racehorse, the combination of leg and torso length, and lung and heart size might suffice; if it's a show horse, perhaps a combination of eye and mane color, and a naturally glossy sheen. Utility will depend on the precise nature of the animal in question.[111] The key point is that there is nothing inherent in the

105. A search through the Westlaw Key Numbers tied to the Patent Act revealed no recorded attempts to patent an animal itself, rather than to patent some procedure involving an animal.

106. *See* Diamond v. Chakrabarty, 447 U.S. 303, 309–10 (1980) (distinguishing man's handiwork from nature's based in part on the use of human ingenuity).

107. 35 U.S.C. § 101 (2000).

108. Utility Examination Guidelines, 66 Fed. Reg. 1092, 1098 (Jan. 5, 2001).

109. *See* Stiftung v. Renishaw PLC, 945 F.2d 1173, 1180 (Fed. Cir. 1991) ("An invention need not be the best or the only way to accomplish a certain result, and it need only be useful to some extent and in certain applications . . . ."); Envirotech Corp. v. Al George, Inc., 730 F.2d 753, 762 (Fed. Cir. 1984) ("[T]he fact that an invention has only limited utility and is only operable in certain applications is not grounds for finding lack of utility.").

110. Utility Examination Guidelines, 66 Fed. Reg. at 1098.

111. *See In re* Blake, 358 F.2d 750, 753 (C.C.P.A. 1966) ("[W]hether or not testing of an invention is required to establish utility, and if so, the nature and extent of such testing, depends on the facts of the particular case. No a priori rules can be formulated to meet the exigencies of each case.").

utility requirement that would prevent the patenting of a selectively bred horse.

C. Novelty

The next statutory requirement is that an invention be new.[112] Novelty has been called the most important of the statutory requirements.[113] Novelty requires that the inventor be the first to accomplish the result in the manner by which it was accomplished.[114] More importantly, the invention must not have been anticipated; that is, if prior to invention a thing exists that would violate a patent subsequent to invention, that thing anticipates the invention and undermines its novelty.[115]

As before, the obstacle presented by this requirement diminishes as the specificity of the description of the animal DNA to be patented increases. An application seeking a patent on, for instance, a horse with blue eyes would undoubtedly fail: the invention is anticipated since there exist, prior to breeding, other horses with blue eyes that would violate the requested patent. But if every selectively bred horse is unique in its entirety, and if no selectively bred horse would exist but for the intervention of the breeder, then the novelty barrier disappears. Because every such horse is unique, every such horse is novel; because no previously existing horse would possess precisely the same elements as required by the "narrow" and "technical" doctrine of novelty,[116] no previously existing horse would ever anticipate a later selectively bred horse.

It is important to recognize the corollary: because no previously existing horse can anticipate a later selectively bred horse, it follows that no previously existing horse would violate a patent on a later horse. This strongly suggests that no horse bred later would violate the patent either. The only horse that would ever infringe on such a patent would be a genetically identical horse—that is, a clone. Allowing patents on bred-for-characteristic horses would therefore protect against precisely the risk sought

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112. 35 U.S.C. § 102.

113. *See In re* Schoenwald, 964 F.2d 1122, 1123 (Fed. Cir. 1992) ("Paramount among the patentability requirements is that that which is sought to be patented must be new.").

114. *See* Bilofsky v. Westinghouse Elec. Supply Co., 160 F.2d 154, 156 (2d Cir. 1947) ("What is disclosed must, to be patentable, be new in the sense that [the inventor] was the first to accomplish that result in substantially the way he did it.").

115. *See* Hoover Group, Inc. v. Custom Metalcraft, Inc., 66 F.3d 299, 302 (Fed. Cir. 1995) ("Invalidity based on lack of novelty (often called 'anticipation') requires that the same invention, including each element and limitation of the claims, was known or used by others before it was invented by the patentee."); A.J. Indus., Inc. v. Dayton Steel Foundry Co., 394 F.2d 357, 359 (6th Cir. 1968) ("[N]ovelty is lacking if all the elements of the patent, or their equivalents, are found in a single prior art structure where they do substantially the same work in the same way."); 60 AM. JUR. 2D *Patents* § 93 (2003) ("To meet the novelty requirement for the validity of a patent, invention within the United States must have occurred before anticipation by prior art or reference.").

116. 60 AM. JUR. 2D *Patents* § 93 (2003).

to be protected against, without interfering with other horses, owners, and their rights.

D. Nonobviousness

The final statutory requirement is that an invention be nonobvious.[117] While novelty has been called the most important of the statutory requirements, nonobviousness has been called the most "crucial."[118] Section 103 establishes that no patent shall issue if "the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art."[119] Although a fair case may be made that a particular selectively bred horse is nonobvious, the case law is inconclusive as applied to this new claim.

As a threshold issue, an invention seeking patent protection must display a certain degree of inventiveness.[120] The Supreme Court has understood the Constitution's power to "promote the Progress of Science and useful Arts"[121] to require a measure of innovation and advancement.[122] Inventiveness requires a change in kind, rather than simply a change in degree;[123] merely "doing substantially the same thing in the same way by substantially the same means with better results" does not rise to the necessary level of inventiveness.[124]

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117. 35 U.S.C. § 103.

118. Epstein v. Dennison Mfg. Co., 314 F. Supp. 116, 121 (S.D.N.Y. 1969) ("The test of nonobviousness is the most crucial and provides the more practical test of patent validity."); *see also Schoenwald*, 964 F.2d at 1123 ("Paramount among the patentability requirements is that that which is sought to be patented must be new.").

119. 35 U.S.C. § 103.

120. The Supreme Court has noted that:

> Under the [C]onstitution and the acts of [C]ongress, a person, to be entitled to a patent, must have invented or discovered some new and useful art, machine, manufacture, or composition of matter, or some new and useful improvement thereof, and [] "it is not enough that a thing shall be new, in the sense that in the shape or form in which it is produced it shall not have been before known, and that it shall be useful, but it must, under the [C]onstitution and the statute, amount to an invention or discovery."

Hill v. Wooster, 132 U.S. 693, 700–01 (1890); *see also* Promega Corp. v. Novagen Inc., 6 F. Supp. 2d 1004, 1033 (W.D. Wis. 1997) ("The inquiry required by § 103 goes to the underlying inventiveness of the proposed patent.").

121. U.S. CONST. art. I, § 8, cl. 8.

122. *See* Graham v. John Deere Co., 383 U.S. 1, 6 (1966) ("Innovation, advancement, and things which add to the sum of useful knowledge are inherent requisites in a patent system which by constitutional command must 'promote the Progress of . . . useful Arts.' This is the *standard* expressed in the Constitution and it may not be ignored." (alteration in original)).

123. *See* Rem-Cru Titanium, Inc. v. Watson, 147 F. Supp. 915, 919 (D.D.C. 1956) ("There is no question that a 'different product', that is, one differing in kind rather than in degree, is essential for patentability, but it is the difference in properties or characteristics that illustrates this difference in kind.").

124. Pullman Inc. v. ACF Indus. Inc., 393 F.2d 83, 89 (2d Cir. 1968); *see also* Smith v. Nichols, 88 U.S. 112, 119 (1874) ("[T]he substitution of equivalents, doing substantially the same

It is not clear that a selectively bred animal would demonstrate the required degree of inventiveness. There is case law holding that a difference in kind is illustrated by differences in properties or characteristics,[125] suggesting that a selectively bred horse manifesting a unique set of characteristics might qualify as a different kind of horse than any that had come before. In *Rem-Cru Titanium, Inc. v. Watson*,[126] the District Court of the District of Columbia recognized inventiveness in an alloy that manifested a particular combination of elements, even though alloys manifesting a broader combination of elements—including the narrower set—had already been invented.[127] The court held that because the earlier alloy had not "possessed in structure or performance the characteristics" of the new alloy, it could not be said to render the new alloy nonobvious.[128]

On the other hand, there is case law suggesting that a simple change in degree over the prior art does not rise to the necessary level of inventiveness.[129] As one court has put it, "differences in degrees of excellence are not patentable . . . ."[130] In *McCord Corp. v. Beacon Auto Radiator*,[131] the Massachusetts District Court held that a heat-exchange core used in radiators that was made in substantially the same manner and with substantially the same components as a previously existing core did not display the necessary degree of inventiveness even though it was more efficient than the previously existing core.[132]

Whether a selectively bred horse will display the requisite level of inventiveness will therefore depend on whether the process of selective breeding is seen as creating a new kind of animal through the collection and manifestation of genetic characteristics, or as simply creating a better version of an existing animal through the reorganization of preexisting components.

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thing in the same way by substantially the same means with better results, is not such an invention as will sustain a patent.").

125. *E.g.*, *Rem-Cru*, 147 F. Supp. at 919 ("[I]t is the difference in properties or characteristics that illustrates this difference in kind.").

126. 147 F. Supp. 915 (D.D.C. 1956).

127. *Id.* at 915–17.

128. *Id.* at 919.

129. *See Nichols*, 88 U.S. at 119 (holding that improvements made to the beauty and value of a patented fabric constituted change by degree and, therefore, did not rise to the level of inventiveness necessary for a new patent); Fowler v. Sponge Prods. Corp., 246 F.2d 223, 226 (1st Cir. 1957) ("[I]t is a well established principle 'that a mere carrying forward of the original thought, a change only in form, proportions, or degree, doing the same thing in the same way, by substantially the same means, with better results, is not such an invention as will sustain a patent.'"); Shelco, Inc. v. Dow Chem. Co., 322 F. Supp. 485, 518 (N.D. Ill. 1970) ("[A] mere carrying forward of a thought, a change only in form, proportions or degree, the substitution of equivalents which do the same thing in the same way, by substantially the same means, with better results, is not such an invention as will sustain a patent.").

130. McCord Corp. v. Beacon Auto Radiator Co., 96 F. Supp. 438, 445 (D. Mass. 1951).

131. 96 F. Supp. 438 (D. Mass. 1951).

132. *Id.* at 443–45.

As in *Rem-Cru Titanium*, where the prior existence of an alloy containing a broad set of characteristics did not undermine the patentability of an alloy containing a narrower set of characteristics,[133] the breeding of a horse manifesting a certain combination of genetic characteristics should not be rendered nonobvious by the prior existence of a horse possessing those as well as other characteristics.

On the other hand, if the standard is substantial similarity, such a horse will probably not be found to be nonobvious. As in *McCord*, where the prior existence of a substantially similar device made in substantially the same way was held to undermine a claim of nonobviousness,[134] the prior existence of selectively bred horses manifesting many of the same characteristics will probably be held to render any subsequent selectively bred horse obvious for Patent Act purposes.

Our friend Wilbur the stable owner therefore faces an uphill battle to achieve recognition of a property right in the DNA of a selectively bred horse through the Patent Act. First, living matter has only recently been recognized as patentable subject matter, and protection has never been extended beyond biologically altered animals.[135] Second, Wilbur would have to convince the Patent Office that his selectively bred horse was in fact new, requiring a recognition of the absolutely unique nature of any given selectively bred horse.[136] Finally, Wilbur would have to establish that, despite the long history of animal husbandry (and particularly horse breeding), the creation of a selectively bred animal was not simply an improvement over existing horses but was rather the creation of an entirely new *kind* of animal, distinguished by its unique set of genetic characteristics.[137] It seems unlikely that an owner will be able to overcome these obstacles.

That does not mean, of course, that the claim is not worth making. As mentioned, the purpose of the constitutional power that Congress exercised through the Patent Act is to encourage the useful arts and sciences by guaranteeing to creators a property right—even if a limited property right—in their creations.[138] Implicit in the scheme is a recognition that absent such protection creators would not create, and the useful arts and sciences would not progress—to the detriment of society. The selectively bred horse industry is a multimillion-dollar manifestation of a set of useful arts and sciences, including selective breeding itself.[139] Absent recognition of a property right in the DNA of their horses, breeders may become less willing to invest the

133. *Rem-Cru*, 147 F. Supp. at 915–17.
134. *McCord*, 96 F. Supp. at 443–45.
135. *See supra* subpart III(A).
136. *See supra* subpart III(C).
137. *See supra* subpart III(D).
138. *See supra* note 84 and accompanying text.
139. *See supra* notes 8–19 and accompanying text.

time, money, and effort necessary to sustain the industry. Insofar as the constitutional scheme of patents is intended to prevent precisely this outcome, the Patent Act should be read to recognize a property right in the DNA of selectively bred horses.

IV. Policy Alternatives

It seems unlikely that either traditional common law remedies or the patent statute will afford an owner like Wilbur any protection—at least absent an explicit recognition of a property right in the DNA of selectively bred animals. Such recognition, if it is to come at all, must come from a different source. The final Part of this Note will address objections to such recognition before suggesting two ways in which it might be achieved.

A. Objections to Property Rights in the DNA of Selectively Bred Animals

Whatever the advantages to recognizing a property right in the DNA of a selectively bred animal, there are certain undeniable objections. Three such objections will be addressed here: section IV(A)(1) will address the claim that property rights should not be recognized in living things; section IV(A)(2) will address the claim that the recognition of property rights in living things would lead to overprotection, allowing DNA ownership in any animal that happened to be in an individual's possession (up to and including the pet cat); and section IV(A)(3) will address the claim that recognizing property rights in selectively bred animals would result in violation of such property rights by nature herself as well as by innocent third parties.[140]

1. Life Should Not Be the Subject of Property.—A basic objection to the recognition of property in the DNA of selectively bred animals is that animals, as living beings, should not be subject to private ownership.[141] This objection expresses normative moral judgments regarding the propriety of subjecting life to ownership.

The response is twofold. First, and most pragmatically, while ownership of humans has been recognized as unconstitutional since 1865,[142]

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140. For a different list and discussion of objections to the more narrow proposition of extending *patent* rights to selectively bred animals, see Blunt, *supra* note 6, at 1373–86.

141. *See, e.g.*, Lee Hall, *Interwoven Threads: Some Thoughts on Professor MacKinnon's Essay* Of Mice and Men, 14 UCLA WOMEN'S L.J. 163, 209 (2005) (book review) ("We rationalize and perpetuate our dominion over other animals in part by making ourselves their benefactors; but is any ownership of animals ethically acceptable? Moral consistency puts the burden of persuasion on those who maintain the acceptability of slavery within the non-human context."); Betsy Hanson & Dorothy Nelkin, *Public Responses to Genetic Engineering*, 27 SOCIETY 76, 76 (1989) ("To other groups, patenting violates their sense of the 'natural,' by defining complex, living organisms as profit-making machines.").

142. U.S. CONST. amend. XIII.

the same has never been true as to animals; on the contrary, animals have long been recognized as personal property.[143]

Second, animals themselves may benefit from being property. Ownership of animals certainly allows for inhumane or immoral treatment, but there is no reason to believe that such treatment would not occur in the absence of property rights. Property rights create an incentive for conservation and protection that would not otherwise exist.[144]

Although ownership of animals may raise moral concerns, there are both practical and theoretical reasons for recognizing a property right. Not only has a right of ownership in animals long been recognized, but ownership may in fact be better for the long-term viability of animals than the alternative. Recognition of a property right in the DNA of a selectively bred animal should not depend on the fact that the animal is alive.

2. Property Rights in Animal DNA Would Result in Overprotection.— Recognition of a property right in animals does not, of course, mandate recognition of a property right in the animal's DNA. There are, however, good reasons for protecting a right in the DNA of at least some animals—to protect our friend Wilbur, for instance. Still, some may be concerned that allowing ownership in animal DNA will lead to overprotection of animals as property, resulting in absurdities such as litigation over the pet cat.

It's not clear that this would be a bad thing. If traditional ownership does not necessitate ownership in DNA, it certainly suggests it. Why should a family have anything less than total ownership of their cat—including the right to prevent others from cloning it?

In fact, there may be strong public policy reasons to limit the availability of animal-DNA property rights. Such a property right would be most valuable to those who had a hand in the creation of the animal subject to protection. Allowing a property right in any animal would allow owners to enjoy a windfall from nature. The owner of a gorgeous dog picked up from the pound or the owner of a cat who gives birth to a striking litter should not be able to benefit from the pure chance that put the unique and desirable animal DNA in his possession. On the other hand, the owner who breeds a series of dogs selectively to create a new breed has as much of an

143. *See, e.g.*, State v. Sumner, 2 Ind. 377 (1850) (holding that domesticated animals are property as much as any inanimate object); Fackler v. Genetzky, 595 N.W.2d 884, 891 (Neb. 1999) ("Nebraska law has generally regarded animals as personal property."); State v. McDuffie, 34 N.H. 523 (1857) (holding that while dogs are not the sort of property that can sustain a criminal action for larceny, they are property for the purpose of civil remedies); State v. Brown, 68 Tenn. 53 (1876) (holding that dogs are the sort of personal property that can sustain an action for larceny).

144. *See generally* Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. (PAPERS & PROC.) 347 (1967) (suggesting that property rights create incentives to conserve scarce resources).

interest in achieving a property right in the resulting dog as Wilbur has in protecting the DNA of his selectively bred horse.

This suggests that as a practical matter only those with a financial interest will seek property protection. The chance discovery of a unique and desirable animal will likely be rare as compared to the purposeful breeding of an animal possessing unique and desirable characteristics. If there is still concern about these rare cases, there might be ways to exclude them from property protection, as will be discussed in subpart IV(C) below.

3. Property Rights in Animals Will Make Nature Herself a Thief.—A closely related concern may be that recognition of ownership in animal DNA will give owners a right over naturally occurring animals. Property ownership raises the possibility that a wild animal might be found to contain the protected DNA and so either violate the property right or become subject to it.

The likelihood of such an occurrence is inversely proportional to the specificity of the DNA sequence subject to property ownership: the more precise (or complete) the DNA sequence protected, the less commonly that sequence will be found in nature. If property protection applies only to the entire genetic sequence of a particular animal, the likelihood of another animal possessing the same DNA sequence approaches zero.

Ironically, DNA sequences are subject to property ownership at present only if they are discrete and isolated[145]—that is, only if they are in a form that is likely to be found commonly in nature. This regime is maintained through the fiction that because a DNA sequence will never occur in isolation in nature, ownership does not interfere with any naturally occurring entity.[146] Recognition of the entire DNA sequence of a particular animal would eliminate the need for such a fiction because the uniqueness of any given animal is defined not by those portions of its genetic sequence that are common to nature, but by those portions (or, more likely, combination of portions) that are unique.

The risk of overprotection diminishes, therefore, as the specificity of the DNA protected increases. Far from increasing such a risk, then, the recognition of a property right in the entire DNA of a selectively bred animal would make overprotection less likely.

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145. Utility Examination Guidelines, 66 Fed. Reg. 1092, 1093 (Jan. 5, 2001) ("[A]n inventor's discovery of a gene can be the basis for a patent on the genetic composition isolated from its natural state and processed through purifying steps that separate the gene from other molecules naturally associated with it.").

146. *Id.* ("An isolated and purified DNA molecule that has the same sequence as a naturally occurring gene is eligible for a patent because (1) an excised gene is eligible for a patent as a composition of matter or as an article of manufacture because that DNA molecule does not occur in that isolated form in nature . . . .").

These three objections do not undermine the practical case for protection of animal DNA. In fact, they may suggest certain characteristics of a property-recognition regime that would serve to ease such concerns even while allowing a property right in the DNA of certain animals.

Before turning to a consideration of what such a regime might look like, however, it is worthwhile to consider one moral objection in *favor* of the extension of property rights to selectively bred animals. As discussed above, patent protection is currently available for animals, but only for those animals that have been biologically altered.[147] As long as no similar property right exists in nonaltered animals, owners and breeders will have an incentive to engage in biological engineering in order to meet the threshold requirement. To those concerned about tampering with nature, the removal of this incentive should be a priority.

B. A New Regime of Property Protection

The advent of safe and affordable SCNT cloning of selectively bred animals poses a threat to the economic viability of the horse-breeding industry. Unless owners can be sure of a property right in the DNA of their horses, the value of those horses will drop, which in turn will reduce the incentive to invest in selectively bred animals in the first place. Cloning technology stands to advance the science of horse breeding and open new possibilities to owners and breeders, but without a concomitant advance in the legal recognition of property in DNA, cloning technology could bring an entire industry to its knees.

Legal recognition of property in the DNA of selectively bred animals might be achieved in a variety of ways. I will consider two alternatives: a statutory scheme modeled on the Plant Variety Protection Act[148] and a judicial scheme based on simple judicial recognition of a property right in the DNA of selectively bred animals.

1. A Statutory Model.—Recognition of a property right in the DNA of selectively bred animals might be most comprehensively achieved through the creation of a national regime of DNA registration akin to that created by the Plant Variety Protection Act of 1970.[149] The PVPA extended "patent-like" protection to those who, through selective breeding, successfully created new breeds of sexually reproducing plants.[150] Plant breeds had not been afforded patent protection under the Patent Act, largely because of the problems of patenting living matter as discussed above, but also because of

147. *See supra* notes 91–99 and accompanying text.

148. Plant Variety Protection Act of 1970, 7 U.S.C. §§ 2321–2583 (2000).

149. *Id.*

150. 69 C.J.S. *Patents* § 413 (2001).

the difficulty of meeting the written-description (and other) requirements of the Patent Act.[151]

The PVPA responded to these shortcomings in two ways. First, it afforded protection to those who registered their breeds with the Plant Variety Protection Office.[152] Protection provides "the attributes of personal property,"[153] and a violation gives rise to a civil remedy.[154] In other words, the PVPA recognized a property right in the genetic makeup of selectively bred plants and provided a private cause of action in the event of unauthorized acquisition and use.[155] Second, the PVPA instructed applicants to deposit and periodically replenish a viable sample of seed of the plant variety to be protected in a public repository.[156] This was important given the nature of the protection afforded: the PVPA does not protect plants themselves but plant varieties—that is, plants defined not as objects but as manifestations of genetic characteristics.[157] Depositing specimens allows for simple comparison to determine violation: if an owner brings suit alleging a violation of plant-variety protection, the court need only subject the allegedly violating plant or seed to genetic comparison with the specimen held at the Plant Variety Protection Office.

The PVPA provides a model upon which a public scheme for recognizing property rights in selectively bred animals might be based. Just as Thoroughbred horse owners currently register foals with the private Jockey Club,[158] they might also be given the opportunity to register, voluntarily, with a federally created Animal Variety Protection Office. Registration might be limited to certain selectively bred animals, just as the PVPA is limited to a relatively narrow range of plants.[159] Together with a written application, owners might voluntarily provide a sample of the DNA of the animal to be registered, contributing to a national database of selectively bred animals. The controlling statute might create a private civil cause of action for unauthorized use of the protected animal variety, and a violation might be demonstrated through a simple comparison of the allegedly violating animal with the sample of DNA provided at the time of registration. Protection under such a scheme would extend only to unauthorized use of the entire DNA of a selectively bred animal, and no further.

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151. PHILIPPE G. DUCOR, PATENTING THE RECOMBINANT PRODUCTS OF BIOTECHNOLOGY AND OTHER MOLECULES 144–45 (1998).

152. 7 U.S.C. § 2531(a).

153. *Id.*

154. *Id.* § 2561.

155. *Id.* § 2541(a).

156. *Id.* § 2422.

157. *Id.* § 2402(a).

158. The Jockey Club, About the Registry, http://www.jockeyclub.com/registry.asp.

159. *See* 7 U.S.C. § 2402(a).

A statutory scheme based on the PVPA would have certain advantages. It would be national and so could afford common protection to owners in all states under a uniform procedure. It would also be familiar, mimicking protection already afforded to plant varieties and evoking the Patent Act. At the same time, such a scheme would have distinct disadvantages. A national statutory scheme would be a costly response to a limited (though important) problem, particularly if registration were only voluntary. Statutory creation of a civil action for violations might also be seen as an infringement on the traditional state authority to establish tort law.[160] Ultimately, however, the common and national character of the issue, and the importance of a legislative response, make a national statutory scheme an appealing possibility.

2. A Judicial Model.—If a national statutory scheme is considered too broad, and perhaps constitutionally problematic, property protection can nonetheless still be achieved. In fact, judicial recognition of a property right sufficient to sustain a private cause of action for conversion or trespass to chattel could recognize property rights much more simply, quickly, and cheaply than the national legislative process.

The procedure by which courts might come to recognize such a right is not hard to imagine. Our friend Wilbur, having discovered the unauthorized acquisition of Mr. Ed's DNA, might bring an action either in conversion or, more likely, in trespass to chattel to recover the lost value of the DNA. As discussed in Part II, such suits are currently likely to fail on the ground that a property right in animal DNA has never been recognized.[161] As argued throughout this Note, however, recognition of such a right is important to the continued viability of the breeding industry. By recognizing a property right in the DNA of selectively bred animals sufficient to sustain private civil actions, courts would provide owners with the tools necessary to protect their economic interests at common law.

Court recognition, like national statutory recognition, has both advantages and disadvantages. On the one hand, court recognition is a modest and limited response to the issue because it would only be available when sought by owners. It would be far less costly than a national registry scheme and would avoid the constitutional and structural obstacles that national legislation might present. On the other hand, court recognition might result in a patchwork scheme with varying levels of protection in different states. A judicial response might also run into a doctrinal obstacle: since no property right in DNA has historically been recognized, recognition would be

160. *Cf.* Daniels v. Williams, 474 U.S. 327, 332 (1986) ("Our Constitution deals with the large concerns of the governors and the governed, but it does not purport to supplant traditional tort law in laying down rules of conduct to regulate liability for injuries that attend living together in society.").

161. *See supra* subparts II(A)–(B).

legally novel—and so might be considered more appropriate for the legislative branch.[162] Still, judicial recognition of a right sufficient to support a currently existing cause of action does not seem entirely outrageous, and such a response might be the approach most narrowly and appropriately tailored to the issue.

Other variations of the public and private models discussed here might be imagined, and these two are certainly not the only possible approaches.[163] They do, however, suggest the nature of possible policy responses to an emerging legal issue. Those more interested in achieving a comprehensive scheme and less concerned with issues of state prerogative might prefer a national statutory response, perhaps modeled on the PVPA. Those more interested in ensuring the protection of state prerogative and less concerned with the possibility of a patchwork response might prefer a judicial response involving simple recognition of a property right in the DNA of selectively bred animals. Both types of observers might agree, however, that some sort of response is necessary to address an emerging issue in the law of commercial cloning of selectively bred animals.

V. Conclusion

The advent of safe and affordable cloning technology offers both promise and peril to the Thoroughbred horse industry. Somatic cell nuclear transfer cloning presents the opportunity to distribute more broadly the genes of the finest selectively bred animals, including those whose genes would otherwise be lost forever. The more reliable and affordable SCNT cloning becomes, however, the more easily it might be used to the detriment of the traditional property rights of selectively bred animal owners. The size of the Thoroughbred industry in America gives this otherwise fantastical problem a very real-world importance.

The manner in which the law responds to developments in this particular field may hold clues as to how it will, or can, respond to changes in other areas—areas where the importance extends beyond the economic ramifications. Although the application of SCNT cloning to human beings is extraordinarily controversial and generally condemned,[164] it is clear that

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162. *See, e.g.*, Bruegger v. Faribault County Sheriff's Dep't, 497 N.W.2d 260, 262 (Minn. 1993) ("Principles of judicial restraint preclude us from creating a new statutory cause of action that does not exist at common law where the legislature has not either by the statute's express terms or by implication provided for civil tort liability.").

163. Paul Blunt suggests various ways in which the Patent Act might be modified to place selectively bred animals on an equal footing with genetically engineered animals, including the extension of patent protection to selectively bred animals and the elimination of patent protection for genetically modified animals. Blunt, *supra* note 6, at 1386–89.

164. *See* THE PRESIDENT'S COUNCIL ON BIOETHICS, HUMAN CLONING AND HUMAN DIGNITY: AN ETHICAL INQUIRY 5 (2002) ("[T]he controversy surrounding human cloning, and the widespread sense of disquiet and concern with which the prospect has been received around the

cloning itself is not always immoral; on the contrary, as discussed above, cloning may create both incentives and opportunities to safeguard the genetic lines of endangered animals.[165] In any case, SCNT cloning may soon become a reality of many areas of life, regardless of any moral consensus.

The law has not kept up. Though genetic cloning has become a commercial reality for owners of selectively bred horses, traditional forms of property protection—as currently applied—seem incapable of safeguarding valuable DNA from unauthorized SCNT use.[166] Nor does the main avenue of intellectual property protection, the utility patent scheme envisioned in the Constitution and set out in the Patent Act, afford the protection sought.[167] If traditional property rights are to keep pace with the extension of property interests into not just animals themselves but their very DNA, the law will have to adapt to recognize and protect such rights. This might be done through a national statutory scheme, recognizing rights and creating remedies for those who register their animals. It might also be done through simple judicial recognition of a property right in the DNA of selectively bred animals. However it is done, it is important that it be done; until it is, the gap between the law and the science will only widen—to the detriment not only of the owners, but of the rule of law itself.

—David S. Mader

world, make it clear that cloning is not just another reproductive technology, to be easily assimilated into ordinary life.").

165. *See supra* note 144 and accompanying text.

166. *See supra* Part II.

167. *See supra* Part III.