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The Jurisprudence of Nature: The Importance of Defining What is "Natural"

Jill M. Fraley

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THE JURISPRUDENCE OF NATURE: THE
IMPORTANCE OF DEFINING WHAT IS
“NATURAL”

Jill M. Fraley⁺

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Art helps Nature, by reducing such wild, austere, and dangerous Ground, into a pliable, fine, fertile and, sound Earth.

—William Ellis¹

Without the benefit of statutory or regulatory definitions of “nature,” courts and federal agencies have long improvised, roughly applying an “I’ll know it when I see it” approach.² Such an approach implicitly invokes cultural norms, which in Western tradition means defining nature by setting it against man and man’s interventions.³ As a result, litigation across a variety of fields defines what is “natural” by the extent of intervention and manipulation something experiences.⁴ The Supreme Court recently grappled with this problem. In *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*,⁵ the Court addressed the question of whether isolating DNA is an “inventive act” that entitles the first person to isolate DNA with the right to a patent.⁶ The Court applied the “law of nature exception” to patentability, which exempts laws of nature, abstract ideas,

1. WILLIAM ELLIS, AGRICULTURE IMPROV’D: OR, THE PRACTICE OF HUSBANDRY DISPLAY’D 43 (London, T. Osborne 1745).

2. See *Jacobellis v. Ohio*, 378 U.S. 184, 197 (1964) (Stewart, J., concurring). Justice Stewart noted that that even though he could not define “pornography,” he “know[s] it when [he] see[s] it . . .” *Id.*

3. See Franklin Ginn & David Demeritt, *Nature: A Contested Concept*, in KEY CONCEPTS IN GEOGRAPHY 300, 302–03 (Gill Valentine et al. eds., 2009) (noting that nature is defined as the absence of “any trace of humans and their artifice”).

4. See *infra* Part I.A (summarizing the cases and regulations addressing use of the term “natural”).

5. 133 S. Ct. 2107 (2013).

6. See *id.* at 2114–15.

and natural phenomena.⁷ The case highlights the difficulty of determining just how much human action makes something “unnatural.”⁸

The stakes are high, because understanding what it means for a product to be “all natural” is extremely valuable in the marketplace and of great significance to everyday consumers.⁹ For example, natural products are hot commodities in the marketplace,¹⁰ which makes defining what is natural a priority. Simultaneously, the current rules regarding natural products, or the lack thereof, send many corporate competitors to court over what constitutes a “natural” product.¹¹ The National Products Association made “defining natural” a priority

7. *Id.* at 2117.

8. *See id.* at 2119–20 (limiting the holding to isolated DNA and failing to extend it to cases in which a company is seeking a method patent, the application of knowledge is at issue, or DNA is altered). Notably, the Court’s attempt to define “natural” in *Myriad Genetics* is viewed by some as the most significant decision in the field of intellectual property in 2013. *See, e.g.*, Warren Woessner, *Top Ten Intellectual Property Stories from 2013*, NAT’L L. REV. (Dec. 16, 2013), <http://www.natlawreview.com/article/top-ten-intellectual-property-stories-2013>.

9. Courts hold that consumers are entitled to rely on those “all natural” big-print representations on the front of packaging. *See, e.g.*, *Williams v. Gerber Prods. Co.*, 552 F.3d 934, 939 (9th Cir. 2008) (explaining that “reasonable consumers should [not] be expected to look beyond misleading representations on the front of the box to discover the truth”).

10. *See* ERIN SILVA ET AL., UW-MADISON CTR. FOR INTEGRATED AGRIC. SYS., ORGANIC AGRICULTURE IN WISCONSIN: 2012 STATUS REPORT 12 (2012), available at <http://www.ci.as.wisc.edu/wp-content/uploads/2012/02/org12finalnewlowres021612.pdf>. Since at least 2000, substantial organic and natural food markets have emerged within the United States with an average growth rate of almost seventeen percent per year between 2000 and 2010. *Id.* American organic food sales make up almost half of sales worldwide, and the global organic food market more than tripled between 2000 and 2009. *Id.* *See also* Press Release, Organic Trade Ass’n, Consumer-Driven U.S. Organic Market Surpasses \$31 Billion in 2011 (Apr. 23, 2012), available at http://www.organicnewsroom.com/2012/04/us_consumerdriven_organic_mark.html; Dana Hunsinger Benbow, *Natural, Organic Items Grab Bigger Share in Supermarkets*, USA TODAY (July 8, 2012, 2:04 PM), <http://usatoday30.usatoday.com/money/industries/food/story/2012-07-07/natural-organic-groceries/56085280/1>.

11. For example, Naked Juice settled a class action regarding product labeling. *See Pappas v. Naked Juice Co. of Gendora, Inc.*, No. LA CV11-08276 JAK, 2012 WL 1925598, at *1–2 (C.D. Cal. May 14, 2012), *appeal docketed*, No. 14-55289 (9th Cir. Feb. 24, 2014). The German chocolate company, Ritter, is also defending an accusation that it used synthetic ingredients. *See* Dan Charles, *Top German Chocolate Maker Fights for its ‘Natural’ Reputation*, NPR (Dec. 24, 2013, 8:31 AM), <http://www.npr.org/blogs/thesalt/2013/12/23/256587064/top-german-chocolate-maker-fights-for-its-natural-reputation>. Buitoni pastas just avoided a class action suit over its all natural labels. *See Pelayo v. Nestlé USA, Inc.*, No. CV 13-5213-JFW(AJWx), 2013 WL 5764644 (C.D. Cal. Oct. 25, 2013) (dismissing a complaint against Nestlé that alleged the all natural labels on Buitoni pastas were deceptive).

for 2014,¹² while major publications such as *Forbes*,¹³ *Newsweek*,¹⁴ and the *Wall Street Journal*¹⁵ cover stories about confusion and frustration for both consumers and industries.¹⁶ Even courts tire of litigation that could be avoided with some assistance from the Food and Drug Administration (FDA). Some judges stay claims and refer the matters to the FDA for an administrative ruling.¹⁷ Unfortunately, the road forward is not quite as clear as these cases might suggest because the FDA is not the only cook in the kitchen. Defining “nature” impacts disparate areas of law including patents, gemstone classification, cosmetics, and international trade. This broad range of application implicates numerous federal agencies, each of which struggles to create its own definition of nature, leading to structural isolation from each agency’s counterparts.

In defining “nature,” many agencies fail to reference the substantial literature discussing what is “natural” from historical and social science perspectives, even though the literature insightfully isolates the philosophical quandaries that generate very real-world problems.¹⁸ According to many scholars, our cultural history generates definitions that rely on a man/nature dichotomy, and that dichotomy creates important social consequences.¹⁹ From a legal perspective, critical social consequences of the dichotomy include downplaying the potential

12. John Shaw, *Defining ‘Natural’ is a Priority for NPA in 2014*, NUTRA INGREDIENTS-USA (Dec. 18, 2013), <http://www.nutraingredients-usa.com/Regulation/Defining-natural-is-a-priority-for-NPA-in-2014>.

13. See James McWilliams, *With the ‘All Natural’ Label under Fire, Consumers are Left in the Dark*, FORBES (Nov. 14, 2013, 10:40 AM), <http://www.forbes.com/sites/jamesmcwilliams/2013/11/14/with-the-all-natural-label-under-fire-consumers-are-left-in-the-dark/> (noting that many companies stopped using the term “natural” because of its vagueness, which leads to the possibility of lawsuits).

14. See Matthew Mientka, *The Unnatural Death of ‘Natural’ Labeling*, NEWSWEEK, Nov. 25, 2013, <http://www.newsweek.com/unnatural-death-natural-labeling-207164> (explaining that the word natural has no legal definition, which allows food producers to use it deceptively).

15. See Mike Esterl, *The Natural Evolution of Food Labels*, WALL ST. J., Nov. 6, 2013, at B1 (explaining that food companies are removing the word natural from food labels because they fear litigation).

16. Senator Richard Blumenthal of Connecticut introduced a Senate bill that, if passed, will strengthen labeling requirements for foods. See Food Labeling Modernization Act of 2013, S. 1653, 113th Cong. § 4(a) (2013).

17. See *Barnes v. Campbell Soup Co.*, No. C 12-05185-JSW, 2013 U.S. Dist. LEXIS 118225, at *29–30 (N.D. Cal. July 25, 2013) (granting a stay of the action and referring the matter to the FDA for an administrative determination regarding whether the soup at issue could be labeled natural); *Van Atta v. Gen. Mills, Inc.*, No. 12-cv-02815-MSK-MJW, 2013 U.S. Dist. LEXIS 118137, at *10 (D. Colo. July 18, 2013) (granting a stay of the action until the FDA issued a recommendation requested in an earlier case), *accepted in part, rejected in part, and stay granted* 2013 U.S. Dist. LEXIS 119119 (D. Colo. Aug. 5, 2013); *Cox v. Gruma Corp.*, No. 12-CV-6502 YGR, 2013 U.S. Dist. LEXIS 97207, at *6 (N.D. Cal. July 11, 2013) (referring the issue to the FDA to determine whether products with bioengineered seed can be labeled natural).

18. See Ginn & Demeritt, *supra* note 3, at 301, 304–05 (discussing different theories of nature and movements that addressed the definition of “nature”).

19. *Id.* at 303 (noting that the difference in cultural approaches creates ambiguity over how the idea of nature should be interpreted).

for man to deeply change elements of nature, such as the climate. Simultaneously, because the man/nature dichotomy is false, agencies are left to define nature by looking to a nuanced scale of human actions such as isolating, discovering, purifying, locating, synthesizing, and fermenting. The proliferation of limited definitions of what is natural within narrow legal spheres means each agency individually struggles with measuring the kind, quality, and quantity of human modifications and interventions to define “nature.”²⁰ A comparative history of the jurisprudence of defining “nature,” augmented with reflections from historical and sociological literature, is critical to developing a thoughtful and reasonably consistent narrative within the law. Such a narrative will create predictable outcomes.

This Article analyzes historical approaches to defining “nature” and suggests that a new definition of “nature,” based on property rights, should be adopted. Disentangling historical approaches reveals the enduring challenges of using a scale ranging from what originates in nature to the artificial in determining what is truly natural. While using such a scale may be unavoidable within the industries of foods, cosmetics, and drugs, improvements can be made to promote predictability and consistency. In other industries, the language of property rights may be a more appropriate substitute for defining “nature,” similarly increasing both predictability and consistency. In any event, such interventions pave the way for avoiding the socio-cultural consequences of defining “nature” as the exclusion of man.

Part I of the Article discusses historical efforts to define, or avoid defining, “nature” across federal agencies. It briefly considers the intersections of these definitions in addition to the impact of disparate approaches. Part II analyzes the challenges agencies face in defining “nature.” The analysis begins with investigating how the natural/human binary²¹ contrasts with the human action spectrum and considers how evidence of long-standing human intervention in ecosystems demonstrates the difficulty of applying the spectrum in the real world. Part III turns to history, philosophy, and the social sciences to investigate critiques of the binary man/nature definition and its cultural consequences. Part IV applies these critiques to the problem of creating a legal definition of “nature” while taking into account the social consequences of the binary man/nature definition, such as the pressure to justify human interventions in ecosystems in all circumstances. The Article concludes in Part V by suggesting that definitions of “nature” should rely on the language of property rights rather than the man/nature binary.

20. See, e.g., *id.* (discussing the Food Standards Agency (FSA)’s struggle to define “natural”).

21. In addition to patent law, binaries, or “bilateral dialogues,” also exist in the field of geography, in which geographers increasingly recognize binaries as significant to the development of the field and to popular understandings of key geographical concepts. See Paul Cloke & Ron Johnston, *Deconstructing Human Geography’s Binaries*, in SPACES OF GEOGRAPHICAL THOUGHT: DECONSTRUCTING HUMAN GEOGRAPHY’S BINARIES 1, 11 (Paul Cloke & Ron Johnston eds., 2005).

I. LEGISLATING NATURE ACROSS DIVERSE AREAS OF LAW

The natural designation impacts monetary profits, whether in patent law, where the exception can defeat patentability, or in the manufacture and sale of products, where the designation commands an increasing portion of markets.²² In any event, federal agencies increasingly tangle with the question of what is natural and are beginning to elaborate upon, even if only informally, definitions of this key concept.

A. *Non-Patentability of Natural Phenomena: Distinguishing Between What Occurs Naturally and the Human Application of Natural Phenomena*

Section 101 of the Patent Act states: “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”²³ In light of Congressional intention that the Act “include anything under the sun that is made by man,”²⁴ the Supreme Court has interpreted the Act broadly,²⁵ but has excluded “laws of nature, natural phenomena, and abstract ideas” from patent coverage.²⁶ This exclusion exists because these concepts form the basis of all scientific and technological processes.²⁷ The Court is careful to caution, however, that “too broad an interpretation of this exclusionary principle could eviscerate patent law[] [because] all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.”²⁸

While the Court has not attempted to specifically articulate a definition, the United States Patent and Trademark Office (USPTO) defines a natural thing as “the handiwork of nature” and something that “occurs without the hand of

22. Bryan Resnick, *Why is Myriad Genetics Still Filing Patent Suits for Breast-Cancer Tests?*, NAT'L J., Aug. 8, 2013, <http://www.nationaljournal.com/healthcare/why-is-myriad-genetics-still-filing-patent-suits-for-breast-cancer-tests-20130808>.

23. 35 U.S.C. § 101 (2012).

24. S. REP. NO. 82-1979, at 5 (1952), *reprinted in* 1952 U.S.C.C.A.N. 2394, 2399.

25. *See* *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980) (“In choosing such expansive terms as ‘manufacture’ and ‘composition of matter,’ modified by the comprehensive ‘any,’ Congress plainly contemplated that the patent laws would be given wide scope.”).

26. *Diamond v. Diehr*, 450 U.S. 175, 185 (1981). This Article focuses on the natural phenomena and law of nature exception, which is distinct from the “abstract ideas” exception. *See* *DDR Holdings, LLC v. Hotels.com, L.P.*, 954 F. Supp. 2d 509, 525–26 (E.D. Tex. 2013) (finding that defendant was only asserting “application of the ‘abstract ideas’ exception” with regard to certain claims, and advancing other claims on the basis of different exceptions). Similarly, this Article pursues the law of nature exception only to the extent that it comingles or overlaps with the natural phenomena exception. Other cases more squarely within the law of nature, line, such as those involving mathematical formulas, are omitted. *See, e.g.,* *Oleksy v. Gen. Elec. Co.*, No. 06-C-01245, 2013 WL 3233259, at *4 (N.D. Ill. June 26, 2013) (analyzing, in part, whether a mathematical formula included an inventive step that was patentable).

27. *See* *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972).

28. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012).

man.”²⁹ This definition suggests that something must occur in nature or must exist without significant human alteration or manufacture to be natural. This touchstone definition for what is “natural” references the spectrum of potential human actions with respect to a process or product, which ranges from natural to artificial. As a result, this definition reflects a dichotomy between those products and ideas that have nominal modifications and those that are substantially the result of human efforts. A threshold exists along this spectrum that must be surpassed for patent eligibility.³⁰ Further complicating the matter, the Court recognizes that application of a “law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”³¹

The Court interpreted the nature exception in a series of cases over a span of fifty years: *Funk Bros. Seed Co. v. Kalo Inoculant Co.*,³² *Diamond v. Chakrabarty*,³³ and *Mayo Collaborative Services v. Prometheus Laboratories*.³⁴ In *Funk Bros.*, the Court considered whether a mixture of different, naturally occurring, bacteria that could inoculate plant seeds fell within the law of nature exception.³⁵ In this context, the Court said the patentee merely made a “discovery” by locating an “unknown phenomenon of nature,” which needed to be used for a new purpose or applied to something further in order to become patentable.³⁶ Thus, although Funk Brothers used their discovery to create a new mixture of bacteria, the Court refused the patent, finding that the new mixture was merely a discovery because its natural behaviors remain unchanged.³⁷ The Court suggested that a patent may have been properly issued if Funk Brothers

29. U.S. PATENT & TRADEMARK OFFICE, U.S. DEP’T OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE § 2016.01(III) (8th ed. 2001); see also *Ex parte Grayson*, 51 U.S.P.Q. (BNA) 413, 414 (B.P.A.I. 1941) (rejecting the patent claim for a fresh shrimp product as a natural substance, noting the claimant’s design “is still in its natural state which has been changed in no manner”).

30. See Krysta Kauble, *Patenting Everything Under the Sun: Invoking the First Amendment to Limit the Use of Gene Patents*, 58 UCLA L. REV. 1123, 1125–26 (2011) (highlighting differences of opinion with regard to when something experiences so much human intervention that it is no longer patentable, particularly with regard to gene sequences).

31. *Diehr*, 450 U.S. at 187. Further, “[w]hile a scientific truth, or the mathematical expression of it, is not a patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be.” *Mackay Radio & Tel. Co. v. Radio Corp. of Am.*, 306 U.S. 86, 94 (1939).

32. 333 U.S. 127 (1948).

33. 447 U.S. 303 (1980).

34. 132 S. Ct. 1289 (2012).

35. See *Funk Bros.*, 333 U.S. at 130.

36. *Id.* at 130 (noting that such a discovery is not entitled to a patent, because the discovery could have been made by anyone, and the bacteria already existed in nature).

37. *Id.* at 131 (stating the bacteria’s “use in combination does not improve in any way their natural functioning. They serve the ends nature originally provided”). The Court acknowledged that although mixing the bacteria required skill, it did not change the characteristics of the bacteria. *Id.* at 132.

applied the discovery to create a state of inhibition or non-inhibition in the bacteria,³⁸ improve the bacteria's natural functioning,³⁹ or create new bacteria.⁴⁰

Over thirty years later, in *Chakrabarty*, the Court considered whether a patent for a live, human-made, genetically engineered bacterium that could break down crude oil was prohibited under the laws of nature exception.⁴¹ The Court distinguished this patent application from the patent in *Funk Bros.* on the grounds that the bacterium at issue was not naturally occurring.⁴² The Court stated that, with regard to patent eligibility, the distinction is not between living and inanimate objects, but between naturally occurring phenomenon and products created through human ingenuity and invention.⁴³

More recently, the *Mayo* Court considered whether a process that helps doctors determine whether a drug dosage level is too low or too high for patients with autoimmune disease fell within the law of nature exception.⁴⁴ The Court determined that the patent claims involved laws of nature because the relationship between the dosage level and its effect on the human body was an entirely natural process.⁴⁵ The Court reiterated the need for human application of naturally occurring phenomena in order for a patent to issue,⁴⁶ but only vaguely defined an "application," stating that the process would require "additional features that provide practical assurance that the process is more than a drafting effort designed to monopolize the law of nature itself."⁴⁷

Unfortunately, the line between natural phenomenon and its application remains unclear. The Supreme Court's recent decision in *Myriad Genetics*

38. *See id.* at 130 (noting *Funk Bros.* "does not create a state of inhibition or of non-inhibition in the bacteria. Their qualities are the work of nature. Those qualities are of course not patentable").

39. *See id.* at 131.

40. *See id.* (finding there was "no change in the six species of bacteria, and no enlargement of the range of their utility").

41. *See* *Diamond v. Chakrabarty*, 447 U.S. 303, 305 (1980).

42. *See id.* at 309–10 (stating that, rather, the bacterium was "a product of human ingenuity").

43. *Id.* at 313. The *Funk Bros.* decision makes sense to any cook: yeast, flour, and warm water nearly magically yield an entirely different substance when heated, but little of the magic is attributable to the cook when his actions are compared with the law of nature with regard to the creation of bread. *See* H.E. JACOB, *SIX THOUSAND YEARS OF BREAD: ITS HOLY AND UNHOLY HISTORY* 17 (Richard & Clara Winston trans., Lyons & Burford 1997) (1944). Is *Chakrabarty* different in a way that we can clearly articulate, simply because the "mixing" occurred within the organism and on a microscopic scale?

44. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1294 (2012).

45. *Id.* at 1296–97 (explaining that the process Prometheus sought to patent involved the "relationships between concentrations of certain metabolites in the blood and the likelihood that a dosage of a thiopurine drug will prove ineffective or cause harm[,] and that the metabolization of the drug by the human body was a natural process).

46. *See id.* at 1294 (emphasizing the need for an "inventive concept" to ensure nature itself is not being patented).

47. *Id.* at 1297.

emphasizes the problem.⁴⁸ The Court began by articulating the law of nature exception to patent eligibility, explaining the rationale behind the exception and noting the need to have a patent policy that provides incentives to spur invention, but simultaneously does not inhibit the exchange of information.⁴⁹ The Court then considered whether Myriad's patents were for a new and useful substance or were not patent eligible because they fell under the natural laws exception.⁵⁰ While the Court eventually acknowledged the need to evaluate the claim under the law of nature exception, it avoided offering any explanation of how to locate the threshold of sufficient human creation/application that distinguishes invention from natural phenomena.⁵¹ The Court explained that Myriad's isolation of a useful gene was important, but there was no "act of invention" that would be patentable because there was no creation.⁵² Such characterization, however, fails to adequately characterize actions such as isolating a gene and identifying the consequences of particular mutations of the gene, which might resemble both discovery and something more.

In *Myriad Genetics*, the Court struggled to choose a verb that would precisely characterize Myriad's actions with regard to the BRCA1 and BRCA2 genes. Despite noting that Myriad "separat[ed] [a] gene from its surrounding genetic material"⁵³ and "isolate[ed]" the relevant DNA,⁵⁴ the Court eventually found that Myriad only discovered the location of the genetic sequence of BRCA1 and BRCA2 and did not change the genes' characteristics.⁵⁵ In actuality, by "uncovering" the genes, Myriad did more than simply find their location; Myriad connected the genes with a predisposition for breast and ovarian cancer, which

48. See Russell E. Cass & Linda R. Friedlieb, *Myriad Illuminates High Court's Approach To Section 101*, SIDLEY AUSTIN LLP (July 8, 2013, 12:21 PM), <http://www.sidley.com/files/Publication/4a0455a1-3c94-4805-bf1b-b38c1587d83d/Presentation/PublicationAttachment/7c5ca151-4633-421d-a72c-bf7b756f2fc5/Cass%20Friedlieb%20Law360.pdf> (noting that after *Myriad Genetics*, it remains unclear how much human application is required for something to become patent eligible, though it is clear that the human intervention must be more than added effort, a routine, or something that is useful to a limited group, such as physicians).

49. *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2116 (2013) (quoting *Mayo*, 132 S. Ct. at 1293, 1305).

50. *Id.*

51. See *id.* at 2120 (limiting the Court's holding to the finding that genes are not patentable and refusing to address what is needed to show application of knowledge sufficient to obtain a patent). See also Cass & Friedlieb, *supra* note 48 (explaining the Court has left open the question of what additional features are needed to confer patent eligibility to a natural product).

52. *Myriad Genetics*, 133 S. Ct. at 2117.

53. *Id.* at 2117.

54. *Id.* at 2118. Notably, other courts find isolation to be a creative act worthy of patent. Michael Powell, *Supreme Court Rules That a Naturally Occurring DNA Segment is Not Patent Eligible, but cDNA May Be Patent Eligible*, LEXOLOGY (July 2, 2013), <http://www.lexology.com/library/detail.aspx?g=c9022fa6-7323-4063-a751-80e73b66e7f3> (noting that the European Court of Justice, the highest Court in Europe, confirmed the legality of patenting isolated genes).

55. *Myriad Genetics*, 133 S. Ct. at 2116.

now allows the company to accurately predict cancer diagnoses and prognoses.⁵⁶ The testing process required significant monitoring of populations and the collection of a massive database.⁵⁷ While individuals and their health outcomes existed before and without *Myriad Genetics*, the creation of the database involved hundreds, if not thousands, of creative decisions required to obtain precisely the data needed and to ensure its statistical validity.⁵⁸

The *Myriad Genetics* Court compared Myriad's gene isolation to the Funk Brothers' combination of naturally occurring bacteria to inoculate plants, and found that both fell within the law of nature exception.⁵⁹ The Court appears to consider Myriad's actions as a roughly parallel opposite of those in *Funk Bros.*: separation rather than combination. Notably, the Court did not consider how different the applicants' actions in *Funk Bros.* and *Myriad Genetics* might be in terms of the complexity and creativity. Effort does not appear as a part of the analysis when determining whether there is an "application" beyond discovery of the natural phenomenon.

The Court also compared Myriad's actions to scientists' actions in *Chakrabarty*, where the patent applicant modified a bacterium by adding plasmids, giving it the ability to break down crude oil.⁶⁰ In *Chakrabarty*, the Court held that a patent could issue because the bacterium was entirely new and had distinctive characteristics that did not exist in nature, unlike the discovery in *Myriad Genetics* in which nothing new was created.⁶¹

Prior to *Myriad Genetics*, the Court seemed to suggest that the line distinguishing between natural phenomenon and application might be whether the discovery advanced a "new and useful end,"⁶² but *Myriad Genetics* suggests the analysis is less clear. The *Myriad Genetics* Court acknowledged that the discovery was of a "useful gene," but said that was not enough for a patent, noting "[g]roundbreaking, innovative, or even brilliant discovery does not by itself satisfy the § 101 inquiry."⁶³

Without a definition of what it means to go beyond the discovery of natural phenomena, it is likely that future legal battles will focus on the critical verbs used in the patent application. Similarly, *Myriad Genetics*' method of navigating the natural phenomena exception creates a conflict between that decision and the traditional exception recognized in *Parke-Davis & Co. v. H.K.*

56. See *id.* at 2117 n.4. See also Gina Kolata, *DNA Project Aims to Make Public a Company's Data on Cancer Genes*, N.Y. TIMES, Apr. 13, 2013, at A14 (describing Myriad's database of DNA changes that can predict a person's cancer risk).

57. Kolata, *supra* note 56, at A14.

58. See *id.* (explaining that Myriad performed "millions of tests" to compile the database).

59. *Myriad Genetics, Inc.*, 133 S. Ct. at 2117.

60. *Id.* at 2116–17.

61. *Id.* at 2117.

62. *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948).

63. *Myriad Genetics, Inc.*, 133 S. Ct. at 2117.

Mulford Co.,⁶⁴ a case in which a patent was granted for isolating and purifying a substance that was found in nature.⁶⁵ Although some argue that such purified substances are naturally occurring and therefore not patentable,⁶⁶ many courts have held that purified forms of substances are not natural and can be patented.⁶⁷ For example, when reviewing a patent for ultramarine, the Fourth Circuit found that “[t]he fact[] [] that a new and useful product is the result of processes of extraction, concentration and purification of natural materials does not defeat its patentability.”⁶⁸ The court suggested that the creation of a new and useful product is vital to patentability, noting that the purified fermentates at issue would be useless on their own without extra steps making them medically useful.⁶⁹ Similarly, the D.C. District Court emphasized utility over creativity when it acknowledged that l-arterenol is naturally found with other compounds throughout the body, but held that its existence in a purified form was patentable because it is only usable in its purified form.⁷⁰

The memorable “aspirin case,” *Kuehmsted v. Farbenfabriken of Elberfeld Co.*,⁷¹ which questioned the validity of a patent issued for aspirin, also dealt with whether the product was “new.”⁷² Though novel to Europeans and their descendants, aspirin was used for centuries by Native American tribes as a remedy for fevers and is found in willow bark in a less purified form.⁷³ The patent was challenged in 1910 when a competitor developed a competing

64. 196 F. 496 (2d Cir. 1912).

65. *See id.* at 497. Traditionally, courts find purification of naturally occurring products patentable. *See Merck & Co. v. Olin Mathieson Chem. Corp.*, 253 F.2d 156, 164 (4th Cir. 1958) (allowing a patent where new products were created through the fermentation process); *In re Bergy*, 596 F.2d 952, 996 & n.4 (C.C.P.A. 1979) (finding a pure culture of *Streptomyces vellosus* used to create antibiotic patentable); *In re Bergstrom*, 427 F.2d 1394, 1401–02 (C.C.P.A. 1970) (reasoning that the purification of prostaglandin compounds was new enough to merit a patent); *Merck & Co. v. Chase Chem. Co.*, 273 F. Supp. 68, 69, 89–90 (D.N.J. 1967) (upholding the issuance of a patent for Vitamin B-12 because the product was sufficiently new); *Sterling Drug, Inc. v. Watson*, 135 F. Supp. 173, 176 (D.D.C. 1955) (upholding a patent for purified l-arterenol although it existed in nature in some form).

66. *See In re Bergstrom*, 427 F.2d at 1401–01.

67. *See sources cited supra* note 65. The low level of human intervention needed to purify a substance would suggest that the courts focus more on the “useful” aspect than the “new” aspect of patentable products, a theory that provides support for the *Myriad Genetics* decision. *See Merck & Co.*, 253 F.2d at 164 (discussing the relative ease of purifying a substance compared to creating a new substance).

68. *Merck & Co.*, 253 F.2d at 163.

69. *Id.* at 164.

70. *Sterling Drug Inc. v. Watson*, 135 F. Supp. 173, 176 (D.D.C. 1955).

71. 179 F. 701 (7th Cir. 1910).

72. *Id.* at 702–03.

73. *See Eric T. Rogers, Can You Patent Genes? Yes and No*, 93 J. PAT. & TRADEMARK OFF. SOC’Y 19, 34 n.107 (2011); *Willow Branches and Other Twigs and Roots*, NATIVETECH, <http://www.nativetech.org/willow/willow.htm> (last visited May 26, 2014).

generic version.⁷⁴ The Seventh Circuit found that aspirin was a “new thing.”⁷⁵ The primary justification was that the patent holder produced a new and useful compound that had widespread medical value.⁷⁶ Cases like *Kuehmsted* show that, historically, courts have been willing to grant patents for naturally occurring substances in a purified form where the substance is used for something new and useful, and have emphasized the utility of the product rather than the level of human intervention required for its purification. *Myriad Genetics*, however, suggests that human intervention may now be essential to patentability.

B. *The FDA and the Regulation of Natural Foods and Cosmetics*

Within federal agencies, the growing demand for natural foods has spurred the necessity to define what is “natural.” Consumers rely heavily on such terms when making product choices; products labeled “100% natural” are believed to be the best available, followed closely by those labeled “all natural ingredients.”⁷⁷

When the Food Safety and Inspection Service published Policy Memorandum 055 in 1982, it ushered in the modern guidance system.⁷⁸ For the purpose of food labeling, this system defined anything that contained “artificial or synthetic” ingredients as unnatural.⁷⁹ In 1991, the FDA established an informal policy that defined natural foods as those in which “nothing artificial or synthetic (including colors regardless of source) is included in, or has been added to, the product that would not normally be expected to be there.”⁸⁰ The FDA did not elaborate on the definitions of “artificial” or “synthetic,” even though these terms form a key part of the definition of “natural” in the informal policy.⁸¹ The FDA’s informal policy is deemed merely an advisory opinion that does not carry the force of law.⁸² The FDA also does not have an informal definition of natural

74. *Kuehmsted*, 179 F. at 702–03.

75. *Id.*

76. *Id.* at 705.

77. Josh Ashley, *A Bittersweet Deal for Consumers: The Unnatural Application of Preemption to High Fructose Corn Syrup Labeling Claims*, 6 J. FOOD L. & POL’Y 235, 236 (2010) (showing that 31.3% of consumers prefer “100% natural” products, compared to 25.4% preferring products containing “all natural ingredients” and 14.2% preferring “100% organic” products).

78. See A. Bryan Endres, *United States Food Law Update: Labeling Controversies, Biotechnology Litigation, and the Safety of Imported Food*, 3 J. FOOD L. & POL’Y 253, 262–63 (2007).

79. *Id.* at 263.

80. Food Labeling: Nutrient Content Claims, General Principles, Petitions, Definition of Terms, 56 Fed. Reg. 60,421, 60,466 (Nov. 27, 1991).

81. *Id.* The FDA sought input from consumers on how to accurately define “natural,” if at all. *Id.* at 60,467.

82. See *Holk v. Snapple Beverage Corp.*, 575 F.3d 329, 342 (3d Cir. 2009) (noting that “neither the FDA policy statement regarding the use of the term ‘natural,’” nor a letter from the

that applies to cosmetics.⁸³ Though the FDA considered mandating a formal definition for natural in 1991,⁸⁴ no definition has been issued to date.⁸⁵ The FDA justifies the lack of a formal definition by citing the difficulty of defining the term, given that most food has been processed in some way.⁸⁶ The FDA's informal definition continues to be a part of the legal lexicon of "natural"—a word that carries market value—and is, therefore, the focus of litigation, particularly between competitors. Recent cases pertain to products containing high fructose corn syrup, genetically modified organisms, artificial preservatives, and those processed with chemicals or containing other unnatural ingredients.⁸⁷ Another recent case questioned whether the use of common vitamin names was misleading when the vitamins included synthetic ingredients and the product was labeled "all natural."⁸⁸

In other cases involving non-food products, the courts have refused to make a determination about whether an "all natural" label was false.⁸⁹ Some courts are forced to create their own definition of "natural" because of the FDA's failure to promulgate a definition,⁹⁰ when courts have asked the FDA to weigh in on the

FDA classifying the contested product as natural, were operable because they lacked the "force of law").

83. See *Astiana v. Hain Celestial Grp.*, 905 F. Supp. 2d 1013, 1016 (N.D. Cal. 2012) (noting the lack of either a formal or informal definition of "natural" in the cosmetics context). See also Paul M. Hyman & Samina N. Rodriguez, *Regulation of Labeling and Advertising Claims, in COSMETIC REGULATION IN A COMPETITIVE ENVIRONMENT* 43, 46–47 (Norman F. Estrin & James M. Akerson eds., 2000) ("There is no definition in . . . FDA regulations of the term natural as used to describe a cosmetic product or ingredient.").

84. See *Food Labeling: Nutrient Content Claims, General Principles, Petitions, Definition of Terms*, 56 Fed. Reg. at 60,466.

85. See *Food Labeling: Nutrient Content Claims, General Principles, Petitions, Definition of Terms; Definitions of Nutrient Content Claims for the Fat, Fatty Acid, and Cholesterol Content of Food*, 58 Fed. Reg. 2302, 2407 (Jan. 6, 1993) ("Because of resource limitations and other agency priorities, [the] FDA is not undertaking rulemaking to establish a definition for 'natural' at this time.").

86. *What is the Meaning of 'Natural' on the Label of Food*, U.S. FOOD & DRUG ADMIN. <http://www.fda.gov/AboutFDA/Transparency/Basics/ucm214868.htm> (last updated Apr. 4, 2012) [hereinafter *What is the Meaning of Natural?*] (noting that the FDA does not object when "natural" is used to classify products that are free of "added color, artificial flavors, or synthetic substances").

87. See Dawn Goulet, *Confusion in Courts Over "All Natural" Claims*, A.B.A. SEC. LITIG.: CLASS ACTIONS & DERIVATIVE SUITS (Apr. 30, 2012), <http://apps.americanbar.org/litigation/committees/classactions/articles/spring2012-0412-all-natural-labels-mean-marketing.html> (discussing emerging lawsuits concerning the definition of "natural").

88. See *Hairston v. South Beach Beverage Co.*, No. CV 12-1429-JFW (DTBx), 2012 U.S. Dist. LEXIS 74279, at *3 (C.D. Cal. May 18, 2012).

89. See, e.g., *Astiana v. Hain Celestial Grp.*, 905 F. Supp. 2d 1013, 1016 (N.D. Cal. 2012) (refusing to determine whether a natural label on cosmetics was false or misleading without FDA guidance).

90. See, e.g., *Janney v. Mills*, 944 F. Supp. 2d 806, 813 (N.D. Cal. 2013) (stating that waiting for the FDA to develop its own definition would be "futile").

meaning of “natural,” the agency has declined to do so.⁹¹ Notably, in 2008, the FDA announced it would leave “natural” undefined, despite continued confusion over the definition.⁹²

As a result, class actions continue to center on the proper use of the word natural in food and cosmetics advertising.⁹³ Yet, such actions have failed to gain much traction in the courts. Stymied by the lack of a definition, cases thus far are stayed pending FDA input,⁹⁴ languish waiting for a ruling on motions and/or procedural matters,⁹⁵ or are resolved through either a voluntary dismissal by the plaintiffs⁹⁶ or a settlement agreement.⁹⁷ There is an additional challenge for certain avenues of products liability litigation because products labeled “all natural” may not be deemed defective if a synthetic element is included; the inclusion is intentional.⁹⁸ Similarly, labels defining a product as “all natural”

91. See Order Lifting Stay at 1, 3, *Coyle v. Hornell Brewing Co.*, 2010 WL 2539386 (D.N.J. June 15, 2010) (No. 08-2797 (JBS)), 2010 WL 2539386, at *1 [hereinafter Order Lifting Stay] (incorporating into a court order a letter from the FDA refusing Judge Jerome Simandle’s request to define the word “natural”). Although government agencies have not formally defined “natural,” they define phrases that include the term “natural.” For example, the FDA has a definition for “natural flavor.” See 21 C.F.R. § 101.22(a)(3) (2011).

92. See April Lynn Farris, *The “Natural” Aversion: The FDA’s Reluctance to Define a Leading Food-Industry Marketing Claim, and the Pressing Need for a Workable Rule*, 65 FOOD & DRUG L.J. 403, 407 (2010). Some manufacturers seem less inclined to seek formal definitions. Quaker Oats recently argued that “wholesome” was a term of “puffery,” and thus, presumably, without meaning about the healthfulness of its products. *Chacanaca v. Quaker Oats Co.*, 752 F. Supp. 2d 1111, 1125–26 (N.D. Cal. 2010).

93. See, e.g., *Holk v. Snapple Beverage Corp.*, 575 F.3d 329, 342 (3d Cir. 2009) (holding that a claim predicated on defendant’s use of the word “natural” was not preempted because “there is no FDA policy with which state law could conflict”); *Briseno v. Con Agra Foods, Inc.*, No. CV 11-05379 MMM (AGRx), 2011 U.S. Dist. LEXIS 154750, at *4–5 (C.D. Cal. Nov. 23, 2011) (claiming that Con Agra’s use of “100% natural” on its labels was misleading because of its use of genetically modified seeds); *Astiana v. Ben & Jerry’s Homemade, Inc.*, Nos. C 10-4387 PJH, C 10-4937 PJH, 2011 WL 2111796, at *1 (N.D. Cal. May 26, 2011) (challenging Ben & Jerry’s and Breyer’s use of the term “natural” for ice cream containing alkalized cocoa); *Coyle*, 2010 WL 2539386, at *1 (challenging Hornell’s use of a “100% NATURAL” label when the drink contained high fructose corn syrup); *Lockwood v. Con Agra Foods, Inc.*, 597 F. Supp. 2d 1028, 1029 (N.D. Cal. 2009) (challenging the use of “all natural” on labels for pasta sauce that contains high fructose corn syrup). See also *Ashley*, *supra* note 77, at 266 (predicting that public interest in “natural” claims will continue until a better definition of what is “natural” is formulated).

94. See, e.g., *Coyle*, 2010 WL 2539386, at *5 (staying the case pending an FDA response to Judge Jerome Simandle’s request for advice on the meaning of “natural”).

95. See, e.g., *Astiana*, 2011 WL 2111796, at *2 (outlining the lengthy procedural history of one class action).

96. See *Goulet*, *supra* note 87 (noting that in one case, after the FDA declined to define “natural,” the plaintiffs dismissed the case).

97. See *id.* (describing one settlement that required defendants to establish \$7.5 million in restitution funds, and cease labeling their products “all natural”).

98. See *Larsen v. Trader Joe’s Co.*, No. C 11-5188 SI, 2012 U.S. Dist. LEXIS 162402, at *8–9 (N.D. Cal. June 14, 2012) (finding that the products at issue were not “defective” because the incorporated synthetic ingredients were “knowingly and purposefully added or used”). Other cases use “natural” to describe what one would expect certain foods to contain. These ingredients may

may not create a warranty under certain products liability statutes.⁹⁹ Yet, despite these issues, there is a vibrant string of pending and newly decided cases challenging natural labels on products containing GMOs, preservatives, and high fructose corn syrup.¹⁰⁰ The continued filing of these types of cases emphasizes both the market importance of the term “natural” and the need for clarity in regulations.

C. The Department of Agriculture’s Regulation of Natural Goods

In comparison to the FDA, the United States Department of Agriculture (USDA) addressed the lack of a definition for “natural” more directly, adopting a definition of the word in its Food Standards and Labeling Policy Book.¹⁰¹ In 2005, the USDA, through informal policy, defined “natural” as not containing artificial ingredients or flavors and minimally processed.¹⁰² The policy lists specifically acceptable processes, like roasting, drying, and fermenting.¹⁰³ Products that undergo chemical bleaching or fundamental changes to the raw product, are not considered natural.¹⁰⁴ In addition, the USDA requires that all products purporting to be natural include a brief statement explaining the term “natural.”¹⁰⁵ The policy does not rise to the level of formal rulemaking, but it does provide a more concrete understanding of the term. The definition is limited in application, however, because it applies only to meat and poultry products.¹⁰⁶

include molds and assorted other bacteria. *See, e.g., Mexicali Rose v. Superior Court*, 822 P.2d 1292, 1301–02 (Cal. 1992) (explaining that if a “substance is natural to the preparation of the food served, it can be said that it was reasonably expected by its very nature and the food cannot be determined to be unfit for human consumption or defective”).

99. *See Brazil v. Dole Food Co.*, 935 F. Supp. 2d 947, 966 (N.D. Cal. 2013) (dismissing a Magnuson Moss Warranty Act (MMWA) claim after finding that labels on food are merely product descriptions and do not promise defect-free products); *Littlehale v. Hain Celestial Group, Inc.*, No. C 11-6342 PJH, 2012 U.S. Dist. LEXIS 162530, at *2 (N.D. Cal. July 2, 2012) (stating that “pure natural” and “all natural” are product descriptions, not warranties as defined by the MMWA).

100. *See Nicole E. Negowetti, A National ‘Natural’ Standard for Food Labeling*, 65 ME. L. REV. 581, 596–99 (2013) (listing many products that are the subject of litigation, and noting that Pepperidge Farms, Inc.’s Cheddar Goldfish crackers are among the contested foods).

101. U.S. DEP’T AGRIC., FOOD STANDARDS AND LABELING POLICY BOOK 116 (2005), [hereinafter FOOD STANDARDS AND LABELING POLICY BOOK] available at http://www.fsis.usda.gov/OPPDE/larc/Policies/Labeling_Policy_Book_082005.pdf.

102. *Id.* at 116–17 (explaining that a natural label may be used if the product lacks artificial color or flavoring, chemical preservatives, or other synthetic ingredients; in order to remain natural, a raw product must be only minimally altered).

103. *Id.*

104. *Id.*

105. Product Labeling: Definition of the Term “Natural,” 71 Fed. Reg. 70,503, 70,504 (Dec. 5, 2006).

106. *Id.* at 70,503–04.

The USDA's informal definition of what is natural parallels the agency's definition of "organic" in National Organic Program (NOP) regulations.¹⁰⁷ Via the NOP, the USDA has provided a list of "nonsynthetic" ingredients that are allowed in organic products as well as a list of "nonsynthetic" ingredients that are impermissible.¹⁰⁸ The NOP's regulations consider "nonsynthetic" and "natural" synonymous, and define a "nonsynthetic" substance as one that "is derived from mineral, plant, or animal matter and does not undergo a synthetic process"¹⁰⁹ In contrast, a "synthetic" substance is defined as one "that is formulated or manufactured by a chemical process or by a process that chemically changes a substance extracted from naturally occurring plant, animal, or mineral sources"¹¹⁰

D. *The Federal Trade Commission's Attempts to Define "Natural"*

In 1974, the Federal Trade Commission (FTC) proposed a rule defining "natural" foods as those with no artificial or synthetic ingredients, and only minimal processing.¹¹¹ However, in 1983, the FTC terminated its rulemaking, concluding that it could not define "natural" because the word has different meanings in different contexts, and that agency resources should be used for more pressing matters.¹¹² The FTC still declines to define "natural" in a comprehensive way.¹¹³

Regardless, the FTC has distinguished natural products in specific circumstances. For example, the FTC distinguishes a "natural fiber" from a "manufactured fiber," defining a "natural fiber" as one "that exists as such in the natural state," and a "manufactured fiber" as one "derived by a process of manufacture from any substance which, at any point in the manufacturing

107. Compare FOOD STANDARDS AND LABELING POLICY BOOK, *supra* note 101, at 116–17 (defining "natural" as a product lacking synthetic ingredients or preservatives), with 7 C.F.R. § 205.300(a) (2013) (stating that the word "organic" may only be used on labels and in the labeling of raw or processed agricultural products).

108. 7 C.F.R. § 205.601–205.602.

109. *Id.* § 205.2.

110. *Id.*

111. See Food Advertising, 39 Fed. Reg. 39,842, 39,849 (Nov. 11, 1974) (explaining that the impetus for the rule was the government's concern that consumers would not understand the meaning of words like "natural" or "organic" in product advertising, and that "establishment of uniform definitions for the use of the terms 'natural' (or 'naturally grown') or 'organic' (or 'organically grown')" could remedy the issue).

112. Termination of Proposed Trade Regulation: Rule of Food Advertising, 48 Fed. Reg. 23,270, 23,270 (May 24, 1983). Similarly, in 1985, the Bureau of Alcohol, Tobacco and Firearms withdrew its proposed rule, citing difficulty in defining "natural." Use of "Natural" in the Labeling and Advertising of Alcoholic Beverages, 50 Fed. Reg. 960, 960 (Jan. 8, 1985).

113. Karen A. Butcher et al., *FTC Releases Final "Green Guides" for Environmental Marketing Claims*, MORGAN LEWIS (Oct. 3, 2012), http://www.morganlewis.com/pubs/ACPP_LF_FinalGreenGuidesForEnviroMarketingClaims_3oct12 (noting that "the FTC has continued to avoid defining or qualifying the use of some more contentious terms, including 'natural,' 'organic,' [and] 'sustainable'").

process, is not a fiber.”¹¹⁴ Similarly, the FTC distinguishes “artificial gemstones” from “natural gemstones” in its Consumer Information publications.¹¹⁵ It explains that “natural gemstones” are found in nature and are more expensive, whereas “laboratory-created gemstones,” despite having the same physical characteristics of gemstones, are manufactured, more common, and less expensive.¹¹⁶ Additionally, the use of the term “natural” to describe a gemstone or similar jewelry product is considered an “unfair or deceptive” practice.¹¹⁷

E. The Tax Code and Other Consumer Product Definitions

Other agencies and entities have similarly followed the FDA’s synthetic/natural approach when dealing with consumer products. The Federal Tax Code defines “natural” in certain cases in order to determine applicable excise taxes for food products. For example, under 26 U.S.C. § 5381 (2012), a “natural wine” is any “product of the juice, ripe grapes or other sound, ripe fruit”¹¹⁸ This statute also outlines approved processes for winemaking, but anything beyond minimal and commercially acceptable cellaring and manufacturing procedures does not create “natural wine.”¹¹⁹

In 2004, the U.S. Court of International Trade, in addressing a tariff classification, recognized that the Harmonized Tariff Schedule of the United States does not define “natural.”¹²⁰ However, its predecessor, the Tariff Schedules of the United States, defined “natural substances” as “those substances found . . . in their molecular structure as found in nature.”¹²¹ Notably, this definition focuses on whether changes have been made to the product through human action.

F. Environmental Statutes and Definitions of “Natura”

Questions about what is natural arise both directly and indirectly in environmental legislation. While statutes define natural resources, these are less likely to be the subject of dispute, and therefore provide fewer insights into the meaning of “nature.” This section discusses the National Park Overflights Act,

114. 15 U.S.C. § 70(c)–(d) (2012). Other FTC definitions likewise require little alteration in order for a substance to be classified as natural. *See, e.g.*, 16 C.F.R. § 250.2(c) (1999) (noting that “[w]ood names or names suggesting wood should not be used to refer to materials which, while produced from wood particles or fibers, do not possess a natural wood growth structure”).

115. *See Gemstones, Diamonds, & Pearls*, FED. TRADE COMMISSION, <http://www.consumer.ftc.gov/articles/0295-gemstones-diamonds-pearls> (last updated July 2012).

116. *Id.*

117. 16 C.F.R. § 23.24 (2012).

118. 26 U.S.C. § 5381 (2012).

119. *Id.* at § 5382.

120. *Vanetta U.S.A. Inc. v. United States*, 306 F. Supp. 2d 1313, 1316 (Ct. Int’l Trade 2004).

121. U.S. INT’L TRADE COMM’N, TARIFF SCHEDULES OF THE UNITED STATES ANNOTATED, 1987 4–73 (1986).

Endangered Species Act, and Wilderness Act because they offer strong examples of how environmental legislation has codified the relationship between man and nature.

1. *The National Park Overflights Act*

In August of 1987, Congress passed the National Park Overflights Act,¹²² which recognized that aircraft flying over the Grand Canyon National Park were negatively impacting the “natural quiet and experience of the park”¹²³ In response, Congress gave the Federal Aviation Administration (FAA) the power to regulate the airspace.¹²⁴

Following the passage of the Act, the D.C. Circuit concluded that the FAA had to adopt the National Park Service (NPS)’s definition of “substantial restoration of the natural quiet,” which requires that “[fifty percent] or more of the park achieve ‘natural quiet’ (i.e., no aircraft audible) for 75–100 percent of the day.”¹²⁵ The Court also recognized that the agency could adopt the three-decibels-above-ambient measure of audibility used by the NPS.¹²⁶ Ultimately, the D.C. Circuit found that the FAA’s Final Rule meant that “an aircraft breaks the natural silence only when it is three decibels louder than the ambient sound—whether that sound is the roar of the river or the song of the birds.”¹²⁷ After the D.C. Circuit ruling, the FAA changed its interpretation concerning the measure of audibility such that it maintained the three-decibels-above-ambient standard for populated areas of the park, but substituted an eight-decibels-below-ambient standard in backcountry areas of the park.¹²⁸

The FAA’s adoption of this standard was challenged in *United States Air Tour Ass’n v. FAA*.¹²⁹ The Air Tour Association argued that the new standard altered

122. See Pub. L. No. 100-91, § 3(a), 101 Stat. 674, 676 (1987) (codified at 16 U.S.C. § 1a-1 (2012)).

123. *Id.* The Act intends to preserve the “natural quiet” of national parks by creating “flight free zones.” *Id.* The Grand Canyon National Park received special overflight rules, which were finalized December 31, 1996; those new rules created flight free zones encompassing approximately eighty percent of the Grand Canyon National Park. Jennifer C. Chen, *Special Flight Rules in the Vicinity of Grand Canyon National Park: A Deafening debate Over Restoring Natural Quiet*, 3 ENVTL. LAW. 877, 877, 883 (1997).

124. § 1(e), 101 Stat. at 675.

125. *Grand Canyon Air Tour Coal. v. FAA*, 154 F.3d 455, 461–62 (D.C. Cir. 1998).

126. *Id.* at 461, 465.

127. *Id.* at 465.

128. See *U.S. Air Tour Ass’n v. FAA*, 298 F.3d 997, 1006 (D.C. Cir. 2002). Legislation raged over the NPS and FAA’s interpretation of “natural quiet” and focused on whether the standard should be one of noticeability (how loud or distracting the sound is to humans) or audibility (whether humans can hear the sound). See *Grand Canyon Air Tour Coal.*, 154 F.3d at 461. See also Daniel W. Anderson, *In Pursuit of “Natural Quiet”: The Latest on Noise for Airports and Airlines*, AIR & SPACE LAW., Winter 2004, at 10 (describing the limitations of the FAA’s Integrated Noise Model, which focuses on the noticeability of aircraft sound (noisiness) rather than audibility).

129. See *U.S. Air Tour Ass’n*, 298 F.3d at 1001.

what constituted “natural quiet” because the FAA’s previous interpretation was based on “noticeability,” whereas the new interpretation was based on “detectability.”¹³⁰ The D.C. Circuit disagreed, concluding that the FAA’s explanation of the new standard was reasonable.¹³¹

2. *The Endangered Species Act*

The Endangered Species Act incorporates human intervention in an unusual way. Under the Act, animals that have been geographically moved by humans are ineligible for full protection.¹³² This is true even if the same species of animal is protected in its original location.¹³³ These “natural” populations receive the full safeguards of the Act, while the relocated “experimental” populations may not.¹³⁴ A single instance of human interaction or relocation, therefore, can permanently disqualify an otherwise protected wildlife group.

3. *The Wilderness Act*

Conservation and preservation laws have advanced on the basis of the idea that in order to protect vast areas of natural resources, animal habitats, or unique landscapes, these areas must be inaccessible to humans, lest human presence inevitably change and destroy them.¹³⁵ This is the premise of the Wilderness Act of 1964, which preserves nature in areas “where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain.”¹³⁶

The NPS was founded upon the idea that nature consists of undisturbed areas uninhabited by humanity.¹³⁷ The Wilderness Act distinguishes wilderness from areas in which humans and man-made structures dominate.¹³⁸ Additionally, the Act defines wilderness as “undeveloped” and “retaining its primeval character

130. *See id.*

131. *See id.*

132. *See* 16 U.S.C. § 1539(j)(2)(C) (2012).

133. *See id.* at § 1539(j)(1)–(2).

134. *See id.* at § 1539(j). Christine A. Klein, *Preserving Monumental Landscapes Under the Antiquities Act*, 87 CORNELL L. REV. 1333, 1378–79 (2002) (suggesting that such “absurd results might occur when reality confronts the legal fiction that reintroduced populations are distinct from naturally occurring populations”).

135. BILL MCKIBBEN, *THE END OF NATURE* 8 (1989) (arguing that if current conditions proceed unchecked, changes to nature caused by humans “will clash with our perceptions, until, finally, our sense of nature as eternal and separate is washed away, and we will see all too clearly what we have done”).

136. 16 U.S.C. § 1131(a), (c); *see* Klein, *supra* note 134, at 1374 (“The Wilderness Act of 1964 is perhaps the best legislative manifestation of the impulse to divide the world into the mutually exclusive spheres of nature and culture.”)

137. Federico Cheever, *British National Parks for North Americans: What We Can Learn From a More Crowded Nation Proud of its Countryside*, 26 STAN. EVTL. L.J. 247, 304 (2007).

138. 16 U.S.C. § 1131(c).

and influence[] without permanent improvements or human habitation”¹³⁹ The definition also includes areas that have developed naturally, “with the imprint of man’s work substantially unnoticeable”¹⁴⁰ The Act mandates that such wilderness areas be protected to maintain their “natural conditions.”¹⁴¹ This definition of “wilderness” implements the human/nature binary.¹⁴² As David Delaney observed, the idea of what constitutes “wilderness” is a perfect example “of the social construction of nature.”¹⁴³

Additionally, the Act requires the Secretary of Agriculture to conduct studies and surveys of possible wilderness sites.¹⁴⁴ To identify such sites, the Act directs the Secretary to look for every roadless area of 5,000 contiguous acres or more and determine whether that area should be preserved.¹⁴⁵ Roads, therefore, became the proxy for human intervention and development.¹⁴⁶

The history of our national park system underlines the cultural history of viewing pristine wilderness as uninhabited by humans.¹⁴⁷ Mark Spence claims

139. *Id.*

140. *Id.*

141. *Id.*

142. See generally WILLIAM CRONON, UNCOMMON GROUND: RETHINKING THE HUMAN PLACE IN NATURE (1995) (criticizing the environmentalism movement for failing to recognize that humans are inextricably tied to nature, and suggesting that environmentalists must attempt to understand that relationship in order to preserve nature); RODERICK FRAZIER NASH, WILDERNESS AND THE AMERICAN MIND (4th ed. 2001) (addressing how changes in Americans’ behavior may impact the future of wilderness). The focus of this part of the Article is limited to the legal definition of “wilderness” and its reliance on a human/nature binary.

143. David Delaney, *Making Nature/Marking Humans: Law as a Site of (Cultural) Production*, 91 ANNALS ASS’N AM. GEOGRAPHERS 487, 492 (2001). Delaney describes “wilderness” as a “highly politicized concept,” attributing “[t]he overt politicization of ‘wilderness’” to “the irreducible ambiguity, if not indeterminacy, of the term.” *Id.* The term “nature” may face a similar fate if it continues to go undefined. Failing to face the ambiguity of the term could lead to increased politicization and manipulation by legislators without consumer and citizen input. There would be an unfortunate irony in defining “nature” without citizen participation. Creating a national identity is tied to defining the national landscape and the cultural meaning of nature. See KENNETH ROBERT OLWIG, LANDSCAPE, NATURE AND THE BODY: POLITIC: FROM BRITAIN’S RENAISSANCE TO AMERICA’S NEW WORLD xxiii (2002) (describing the “interlinked meanings of landscape and nature, and the ways they have variously been used to define the body politic”).

144. See 16 U.S.C. § 1132(b). See also ROSS W. GORTE, CONG. RESEARCH SERV., WILDERNESS LAWS: STATUTORY PROVISIONS AND PROHIBITED AND PERMITTED USES 6 (2011) (describing the Wilderness Act and similar statutes that “direct[] the agencies to review the wilderness potential of certain lands”).

145. 16 U.S.C. § 1132(c).

146. See Klein, *supra* note 134, at 1374 (describing the absurd results of such arbitrary formalism, including local officials racing to construct “roads to nowhere” in order to disqualify vast state lands from being eligible for protection under the Wilderness Act).

147. See Ginn & Demeritt, *supra* note 3, at 303 (“[T]he ‘preservation’ of so-called wilderness areas was really a production of wilderness, in so far as it often involved the forcible expulsion of indigenous peoples.”). See also Lee Schweninger, *Writing Nature: Silko and Native Americans as Nature Writers*, 18 MELUS 47, 48 (1993) (quoting one Native American as claiming that “[o]nly to the white man was nature a wilderness”).

that the national parks were created by removing Native American tribes who lived on the land.¹⁴⁸ According to Spence, the idea of wilderness shifted over time, with Americans initially equating wilderness with its Native American inhabitants, but eventually determining that reservations were the appropriate home for Native Americans.¹⁴⁹ Ultimately, Spence argues, Americans wanted “the uninhabited wilderness preserved in national parks as remnants of a priori Nature (with a very capital N).”¹⁵⁰

The Act’s definition of “wilderness” and its use of roadless areas as a proxy strongly delineates what is human from what is natural. This human/nature binary is arguably so much the heart of our wilderness preservation system that it “bears only passing relation to biodiversity and habitat protection.”¹⁵¹

Finally, though there is growing academic support to reconceptualize the idea of wilderness,¹⁵² the man/nature dichotomy is deeply enshrined in the American concept of wilderness, and it is considered one of the nation’s most strongly held beliefs.¹⁵³

4. *The Clean Water Act*

The Clean Water Act of 1972 defines pollution as any “man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water.”¹⁵⁴ The Act’s legislative history defines “nature” as “that condition in existence before the activities of man invoked perturbations that prevented the system from returning to its original state of equilibrium.”¹⁵⁵ This definition separates elements based on whether they were created by man or nature, and presumes that the former harms the latter when the two interact. As a result, the Act failed to address any non-human sources of contamination (such as contamination resulting from other animals, microbes, etc.). The Clean Water Acts presents another clear demarcation between humanity and nature, as the Act’s purpose could justify the inclusion of both naturally occurring and man-made pollutants.

148. MARK DAVID SPENCE, *DISPOSSESSING THE WILDERNESS: INDIAN REMOVAL AND THE MAKING OF THE NATIONAL PARKS* 3–4 (1999).

149. *Id.* at 4. Spence explains that “[a]ntebellum Americans did not conceive of wilderness and Indians as separate.” *Id.* at 10.

150. *Id.* at 5.

151. Jamison E. Colburn, *Habitat and Humanity: Public Lands Law in the Age of Ecology*, 39 ARIZ. ST. L.J. 145, 175 (2007).

152. See Michael P. Nelson & J. Baird Callicott, *Introduction*, in *THE WILDERNESS DEBATE RAGES ON* 1, 13 (Michael P. Nelson & J. Baird Callicott eds., 2008).

153. WILLIAM CRONON, *THE TROUBLE WITH NATURE* 24 (1995). See also Peter A. Appel, *Wilderness and the Courts*, 29 STAN. ENVTL. L.J. 62, 66 (2010) (describing Americans’ attachment to the idea of wilderness and its protection); NASH, *supra* note 142, at xi (claiming that “[w]ilderness was the basic ingredient of American culture”).

154. 33 U.S.C. § 1362(19) (2012).

155. H.R. REP. NO. 92-911, at 76 (1972).

G. *Do Contradictions Matter When Patents and Wines Rarely Meet?*

Given that some regulations of different agencies rarely interact, it is reasonable to question whether there is a significant problem in having disparate, if not contradictory, definitions. The continuing efforts to reconcile definitions, at least in consumer products shows that there must be some drawback to multiple definitions. Thus, the Better Business Bureau (BBB), in cooperation with advertising associations, established the Advertising Self-Regulating Council, to minimize government involvement in advertisements, settle competitor disputes fairly, and increase public trust in the veracity of advertisements.¹⁵⁶ Additionally, in 1990, the Nutrition Labeling Education Act (NLEA) amended the Food, Drug and Cosmetic Act to preempt existing state laws regulating nutritional labeling in an attempt to unify the various standards.¹⁵⁷ First, given that labeling something as natural is a marketable product description heavily relied upon by consumers, there are legitimate reasons to seek a uniform decision that meets consumer expectations. Both NLEA and BBB efforts seem to indicate recognition this need.

Second, businesses may benefit from a coordination of definitions, even if only some of those definitions are immediately relevant to consumer decision-making. Many businesses deal with more than one agency's definitions on a regular basis. Indeed, the same product, perhaps a wine both sold in the U.S. and marketed abroad, would potentially be subject to USDA, ATF, FTC, and Internal Revenue Code definitions. Navigating conflicting regulations almost certainly raises the cost of doing business and creates legal uncertainties with respect to compliance.¹⁵⁸ Coordination among agencies would reduce both challenges for businesses.

There may be reasons for and against including the USPTO definition within the coordination project. The patent process is, arguably, sufficiently distinct so as to minimize issues of coordinating compliance among multiple agencies. At the same time, as the *Myriad Genetics* case indicates, when it comes to the natural exception to patentability, the USPTO and the courts remain substantially confused about how to articulate a definition of "natural" that will yield predictable outcomes for patentees.¹⁵⁹ Thus, there could be benefits to the USPTO engaging in formal rulemaking on the definition.

Finally, whether or not contradictions remain among agency definitions, continuing litigation over the meaning of "natural" and the use of the term as a product selling point indicates a substantial need for formal definitions that will

156. See *National Advertising Review Services*, COUNCIL BETTER BUS. BUREAUS, <http://www.bbb.org/council/the-national-partner-program/national-advertising-review-services/> (lasted visited May 30, 2014) (explaining the BBB's promotion of self-regulation and industry-wide standards).

157. 21 U.S.C. § 343-1(a) (2012).

158. See Shaw, *supra* note 12.

159. See *supra* notes 62–65 and accompanying text (describing the uncertainty the *Myriad Genetics* decision caused).

be predictable in application. Such definitions would reduce business costs within the natural products sectors.

II. CHALLENGES OF DEFINING NATURE BY MAN'S MODIFICATION OR INTERVENTION

A. *Man's Spectrum of Intent and Predicting Case Outcomes*

There is an inherent difficulty in seeking a binary answer (natural or not) when the question is answered by investigating a spectrum of human intervention or intent. As discussed above, in fleshing out the natural phenomena exception to patentability, courts have focused on the level of human application. In *Funk Bros.*, a new mixture of bacteria was insufficient to obtain a patent as it was too close to a discovery.¹⁶⁰ The Court has said that it is insufficient for a new product or process to “have been the product of skill,” rather, it must be a “product of invention,”¹⁶¹ and an application must be “more than a drafting effort designed to monopolize the law of nature itself.”¹⁶² Although unclear after *Myriad Genetics*, purification of a naturally occurring substance appears to be sufficient for patentability.¹⁶³ Yet courts have failed to clearly articulate what level of creation/application is necessary.

Similarly, the FDA and USDA ideas of nature require immediate recourse to a scale of human intervention, asking how much is too much for a product to remain natural. When the FDA informally defined natural products as those in which “nothing artificial or synthetic” is added, the spectrum of human action immediately came into play, particularly because the FDA did not elaborate on the definitions of “artificial” or “synthetic.”¹⁶⁴ The FDA’s prior treatment of flavorings suggests the natural label is acceptable if something is derived from a plant or animal source only, even when the substance has been “isolated, concentrated, or extracted by a process such as distillation or the use of solvents”¹⁶⁵ Manufacturers have been left to wonder how much human intervention is too much. Disputes have centered on actions such as alkalization, bioengineering, and the use of high fructose corn syrup.¹⁶⁶ The USDA’s definition created a similar scale by introducing the idea of “minimally processed” foods, which raised a question of how much human intervention is

160. See *supra* note 37 and accompanying text.

161. *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130–32 (1948).

162. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1297 (2012).

163. See, e.g., *Sterling Drug Inc. v. Watson*, 135 F. Supp. 173, 176 (D.D.C. 1955) (explaining that the natural version of the substance at issue had no therapeutic value, while the purified form did, and that, therefore, the purified form was patentable).

164. Food Labeling: Nutrient Content Claims, General Principles, Petitions, Definition of Terms, 56 Fed. Reg. 60,421, 60,466 (Nov. 27, 1991).

165. Hyman & Rodriguez, *supra* note 83, at 46–47.

166. See *supra* note 93 and accompanying text.

considered “minimal.”¹⁶⁷ The policy lists specifically acceptable processes, but it is more difficult to determine which processes are not acceptable, such as alkalization.¹⁶⁸

In general, the lack of formal and coherent definitions of the term “natural” has increased litigation risks and costs with little apparent benefit from resisting the process of formal rulemaking.

B. Finding Ground Zero: What is Intervention/Modification/Application Free?

One of the oddities—or, perhaps, culturally uncomfortable features—of the idea of nature as something pristine without any human intervention is that such pristine things may be rare, or even non-existent. Even if there were a scale of increasing manipulation to replace the current definition of natural, those things at the lowest level of intervention still would be suspect because it is difficult for something to be fully free of human impacts.

We live in a deeply changed landscape.¹⁶⁹ It is challenging to postulate a potential starting point for intensive human changes of the landscape. In rural England, for example, there were enormous agrarian advancements throughout history, but historians debate whether these changes occurred during the eighteenth and nineteenth centuries, or as early as the sixteenth century.¹⁷⁰ Whatever the specifics of timing, England’s arable real property was largely reclaimed from lands as diverse as marshes, heaths, and coastal mudflats.¹⁷¹ Scholars believe both rural England and northern Europe underwent significant landscape changes due to “deforestation, drainage, and general settlement.”¹⁷² England’s rulers granted lands to people on the condition that they reclaim the land for agricultural use through drainage and irrigation.¹⁷³ Thus, the ideal

167. See *supra* note 102 and accompanying text.

168. See *supra* notes 102–04 and accompanying text.

169. See generally IAN G. SIMMONS, CHANGING THE FACE OF THE EARTH: CULTURE, ENVIRONMENT, HISTORY 2 (2d ed. 1996) (describing “the changes humans have wrought in their surroundings”).

170. See TOM WILLIAMSON, THE TRANSFORMATION OF RURAL ENGLAND: FARMING AND THE LANDSCAPE 1700–1870, 1, 3 (2002).

171. C.S. & C.S. ORWIN, THE OPEN FIELDS 15–17 (2d ed. 1954).

172. Fredrik Albritton Jonsson, *Rival Ecologies of Global Commerce*, 115 AM. HIST. REV. 1342, 1348 (2010).

173. See Viola Florence Barnes, *Land Tenure in English Colonial Charters of the Seventeenth Century*, in ESSAYS IN COLONIAL HISTORY PRESENTED TO CHARLES MCLEAN ANDREWS 4, 11 (1931).

plantation lord-husbandman¹⁷⁴ was capable of effectively clearing swamp area for farming.¹⁷⁵

The English exported this system to Ireland during colonization, encouraging landscape-changing techniques to build the base of arable lands.¹⁷⁶ American colonies were evaluated for settlement in terms of how useful the land was for agriculture after swamp draining.¹⁷⁷ Such lands were prized because, once drained, the swamps or bogs would become “the best lands in the province.”¹⁷⁸ Beyond reclamation, husbandry practices generally transformed lands through the introduction of non-native plant and animal species.¹⁷⁹ For example, colonists found that the European cattle they brought to the colonies quickly depleted native grasses, and landscapes were, in turn, transformed.¹⁸⁰

During the twentieth century, this pattern of intensive intervention continued, creating new landscapes ideal for economic development. Humans built in high-risk areas and forced the landscape to fit their demands. Major cities and agricultural areas developed in arid climates, draining fresh water resources and challenging ecosystems. For example, cities including Los Angeles, San Diego, and Phoenix have diverted water from the Colorado River for irrigation purposes, causing it to fall 130 feet since 2000.¹⁸¹ Similarly, the Aral Sea was drained of ninety percent of its fresh water through agricultural irrigation, which created a desert and devastated the local ecosystem.¹⁸²

174. Notably, it was not only enterprising plantation owners and lords who impacted the landscape through concentrated reclamations of lands. Monastic groups also concentrated their labors by entering “into waste places” where they “cut down the forests, drained the swamps, built dwellings, and cultivated the soil.” ARTHUR LYNN CROSS, *A HISTORY OF ENGLAND AND GREATER BRITAIN* 37 (1919).

175. ALEXANDER HEWAT, *AN HISTORICAL ACCOUNT OF THE RISE AND PROGRESS OF THE COLONIES OF SOUTH CAROLINA AND GEORGIA* 159 (The Reprint Co. 1971) (1779).

176. See K. H. Connell, *The Colonization of Waste Land in Ireland, 1780–1845*, 3 *ECON. HIST. REV.* 44, 45, 51 (1950).

177. 2 W. WINTERBOTHAM, *AN HISTORICAL, GEOGRAPHICAL, COMMERCIAL, AND PHILOSOPHICAL VIEW OF THE AMERICAN UNITED STATES, AND OF THE EUROPEAN SETTLEMENTS IN AMERICA AND THE WEST-INDIES* 482 (J. Ridgway et al. eds., 1799).

178. 6 WILLIAM LAURENCE SAUNDERS, *THE COLONIAL RECORDS OF NORTH CAROLINA* 608 (AMS Press, Inc. 1968) (1888). Other settlers were less impressed with the potential of colonial North Carolina because it was filled with swamps, which were “very wet and low lands, and so full of canes and underwood, that there is no passing through them, many of which are several miles in length.” JOHN BRICKELL, *THE NATURAL HISTORY OF NORTH CAROLINA* 13 (James Carson ed., 1737). Settlers also connected eastern seaboard swampy coasts with an increase in mortality, suggesting that westward progress was preferable. See GEORGE LLOYD JOHNSON, JR., *THE FRONTIER IN THE COLONIAL SOUTH, SOUTH CAROLINA BACKCOUNTRY 1736–1800* 25 (1997).

179. See Jonsson, *supra* note 172, at 1343–44.

180. *Id.* at 1343.

181. See Sarah Zielinski, *The Colorado River Runs Dry*, *SMITHSONIAN* (Oct. 2010), <http://www.smithsonianmag.com/science-nature/the-colorado-river-runs-dry-61427169/?no-ist> (explaining that seventy percent of the water in the river is diverted elsewhere for crop irrigation).

182. See Pat Walters, *Aral Sea Recovery?*, *NAT’L GEOGRAPHIC* (Apr. 2, 2010), <http://news.nationalgeographic.com/news/2010/04/100402-aral-sea-story/>. See also *Aral Sea ‘One*

Other communities forced rivers underground and built cities above them.¹⁸³ Additionally, approximately three billion people throughout the world live in cities built on the coast where they are susceptible to the dangers of rising sea levels as a result of global warming.¹⁸⁴ A recent study suggests 1,400 U.S. cities are threatened by rising sea levels, and 316 cities are likely to be partially submerged by the end of the century.¹⁸⁵

Landscape changes are also inextricably connected to climate change, which has been recognized for over 250 years.¹⁸⁶ For example, irrigation and swamp drainage are thought to contribute to local climate change.¹⁸⁷ Similarly, deforestation modifies the water cycle and potentially increases precipitation levels.¹⁸⁸ An example of climate change is the Dust Bowl of the Great Plains,

of the Planet's Worst Environmental Disasters, TELEGRAPH (Apr. 5, 2010, 12:00 AM), <http://www.telegraph.co.uk/earth/earthnews/7554679/Aral-Sea-one-of-the-planets-worst-environmental-disasters.html> (noting that “[t]he sea shrank largely due to a Soviet project to boost cotton[] production in the arid region”).

183. See Brian Clark Howard, *11 Rivers Forced Underground*, NAT'L GEOGRAPHIC, <http://environment.nationalgeographic.com/environment/photos/underground-rivers/> (last visited May 31, 2014). See also Rachel Kaufman, *Daylighting Takes Off as Cities Expose Long-Buried Rivers*, NAT'L GEOGRAPHIC DAILY NEWS (July 30, 2013), <http://news.nationalgeographic.com/news/2013/07/130730-daylighting-exposing-underground-rivers-water-urban-renewal/> (discussing how urban renewal now includes daylighting underground rivers to reduce flooding). Daylighting also helps to ensure a supply of clean water in urban areas. See AM. RIVERS, DAYLIGHTING STREAMS: BREATHING LIFE INTO URBAN STREAMS AND COMMUNITIES 1 (2013) (claiming that “[p]reserving and protecting small streams is the best approach to ensure environmental and community benefits such as clean water and flood reduction Stream daylighting is a relatively new approach that brings these buried waterways back to life by physically uncovering and restoring them”).

184. See Gaia Vince, *The Rising and Sinking Threats to Our Cities*, BBC (June 13, 2013), <http://www.bbc.com/future/story/20130613-the-rising-threat-to-our-cities>.

185. See Wendy Koch, *Study Warns Rising Seas Could Swamp 1,400 Cities*, USA TODAY, July 29, 2013, at 3A (describing a new study showing the vulnerabilities of U.S. cities and how sea levels will rise if current rates of greenhouse gas emissions persist). See also Brian Clark Howard, *Pictures: Jakarta Faces Flooding, Rising Seas, and Failing Defenses*, NAT'L GEOGRAPHIC (July 23, 2013), <http://news.nationalgeographic.com/news/2013/07/pictures/130723-jakarta-indonesia-flooding-sea-level-rise-sinking-disasters/> (stating that forty percent of Jakarta is below sea level, which makes the city increasingly vulnerable to rising sea levels and extreme weather events; the city is currently sinking approximately twelve inches per year); Ben Strauss, *Sea Level Rise 'Locking In' Quickly, Cities Threatened*, CLIMATE CENTRAL (July 29, 2013), <http://www.climatecentral.org/news/sea-level-rise-locking-in-quickly-cities-threatened-16296> (showing a map of the most threatened areas throughout the U.S. based on different levels of emissions).

186. See Jonsson, *supra* note 172, at 1347 (noting that a French physiocratic naturalist suggested a link between deforestation and climate change in the late 1760s).

187. See Roger A. Pielke, Sr. et al., *The Influence of Anthropogenic Landscape Changes on Weather in South Florida*, 127 MONTHLY WEATHER REV. 1663, 1663, 1669 (1999) (explaining how landscape changes in the Florida Everglades are linked to that area's decrease in rainfall).

188. See Elfatih A. B. Eltahir & Rafael L. Bras, *Precipitation Recycling*, 34 REVS. GEOPHYSICS 367, 367, 377 (1996), available at http://web.mit.edu/eltahir/www/Publications_files/1996%20Eltahir%20Bras%20PrecipRecycling.pdf.

which was caused by overfarming and overgrazing and resulted in a substantial drought that lasted for years.¹⁸⁹ In contrast to areas that suffer because of human intervention, areas with more intact ecosystems, including reefs and wetlands, provide substantial protection to developed lands from coastal threats.¹⁹⁰

With such a substantial history of human impact on the environment, it becomes increasingly difficult to identify something that is entirely natural when the term is defined as the absence of human intervention. Is there a baseline left against which we truly can contrast our litany of potential humanness through the artificial or synthetic? History and social science scholars tend to answer that question in the negative. As Steve Hinchliffe summarizes the problem: “what might appear to western eyes as natural objects, as *natura naturata*, turn out to be tangled up with humans”¹⁹¹

III. PHILOSOPHY OF NATURE

Traditionally, the anthropomorphic viewpoint placed man and nature on opposite ends of a spectrum; they were viewed as definitional opposites and clearly exclusive of each other.¹⁹² As Karl Marx succinctly summarized, “Man opposes himself to Nature.”¹⁹³ Kate Soper explains that Western culture views nature as dichotomous “between what is naturally given and what is contrived (the artificial) and that between what is dictated by nature and what is humanly instigated (the cultural or conventional).”¹⁹⁴ Both of these definitions “presume

189. See *Great Depression and World War II, 1929–1945*, LIBR. CONGRESS, <http://www.loc.gov/teachers/classroommaterials/presentationsandactivities/presentations/timeline/depwwii/dustbowl/> (last visited May 31, 2014) (describing how overgrazing dried out soil that would blow away in the wind).

190. See Brian Handwerk, *New Map Shows Where Nature Protects U.S. Coast*, NAT’L GEOGRAPHIC (July 14, 2013), <http://news.nationalgeographic.com/news/2013/07/130714-coastline-beach-coastal-disaster-flood-sea-level-rise-ocean-storm/>.

191. STEVE HINCHLIFFE, *GEOGRAPHIES OF NATURE: SOCIETIES, ENVIRONMENTS, ECOLOGIES* 14 (2007). In fact, Hinchliffe claims that “natural processes are now so polluted and mixed in with contemporary society that they have ceased being very natural at all.” *Id.* Others suggest that although culture allows nature to be “polluted, or watered down, by social and/or political matters[,]” beyond culture, “nature itself remains unmoved by all of this huff and puff[.]” *Id.* at 35. Notably, the latter approach mimics the human/nature binary, with nature outside and distinct from man’s fiddling.

192. See Colburn, *supra* note 151, at 149 (noting that both “‘nature’ and ‘state of nature’ have been put opposite human culture . . . for the whole history of the liberal state”).

193. See Margaret Fitzsimmons, *The Matter of Nature*, 21 ANTIPODE 106, 114 (1989).

194. KATE SOPER, *WHAT IS NATURE?: CULTURE, POLITICS, AND THE NON-HUMAN* 37 (1995). This is not, of course, to say that Western culture has created a single cultural concept of nature. Undoubtedly, there are numerous regional variations, and arguably, similar binaries exist even within those variations. Our tendency “[i]n our everyday language” is to “treat nature and society as separate entities[,]” and therefore “if something is social, then almost by definition it can’t be natural.” HINCHLIFFE, *supra* note 191, at 10 (2007). The strongest weight of voices supports this trend, and as this Article demonstrates, the belief is visible within the American legal regime.

that there are certain ways in which humanity can—and indeed must—be counterposed to the rest of nature.”¹⁹⁵

Previously, there were many justifications for the traditional viewpoint. Mankind possessed the agency, culture, intellectual pursuits, and self-awareness that elevated it above other animals. This differentiation also played an important role in racial relations, gender inequality, and other social stratifications; anything seen as different or uncivilized was considered nonhuman.¹⁹⁶ Additionally, humans contain souls and a conscious intellect, something no plant, animal, or other living organism could claim.¹⁹⁷ Human physical and intellectual domination paved the way for a narrow conceptualization of nature as outside and opposed to that which is human.

Early ecological theory scientifically justified the idea that any human intervention would negatively impact nature. Frederic Clements provided the popular end-state theory, arguing that all the competition and successions of species would lead to a final “climax” landscape that would be the most natural equilibrium.¹⁹⁸ This “highest and best use” approach excluded human

195. SOPER, *supra* note 194, at 37.

196. See David Delaney, *Semantic Ecology and Lexical Violence: Nature as the Limits of the Law*, 5 L. TEXT CULTURE 77, 85–86 (noting that “[n]ature is, above all, a trope for differentiation”). A growing body of literature examines the impact of the idea of traditional gender roles on the human/nature binary. If traditional ecology and historical religious views considered man separate from nature because of man’s intelligence, spirituality, and consciousness, then immediate implications flow from feminizing “Mother Nature.” See also DOREEN MASSEY, SPACE, PLACE, AND GENDER 10 (1994) (arguing that there is a gender prejudice in our culture of nature with “[w]oman stand[ing] as metaphor for Nature (in another characteristic dualism), for what has been lost (left behind)”; Ginn & Demeritt, *supra* note 3, at 305 (suggesting that “oppressive gender rules are legitimated because they are seen as natural”). The feminization of nature aligns with another traditional and problematic dualism—that of the mind/body split in which women are viewed as being more aligned with the body. See SUSAN BORDO, UNBEARABLE WEIGHT: FEMINISM, WESTERN CULTURE, AND THE BODY 5 (2003) (“[W]hatever the specific historical content of the duality, the body is the negative term, and if woman is the body, then women are that negativity, whatever it may be: distraction from knowledge, seduction away from God, capitulation to sexual desire, violence or aggression, failure of will, even death.”). Older scholarly works examined the interplay between nature and ethnicity, critiquing the radicalized notion that some people could be “closer to nature,” with those people necessarily being “subjects called woman, indigenous, and so on” HINCHLIFFE, *supra* note 191, at 17. See also Johnson v. M’Intosh, 21 U.S. (8 Wheat.) 543, 590 (1823), (stating that “the tribes of Indians inhabiting this country were fierce savages, whose occupation was war, and whose subsistence was drawn chiefly from the forest. To leave them in possession of their country, was to leave the country a wilderness”); Glen Elder et al., *Le Pratique Sauvage: Race, Place, and the Human-Animal Divide*, in ANIMAL GEOGRAPHIES: PLACE, POLITICS, AND IDENTITY IN THE NATURE-CULTURE BORDERLANDS 80 (Jennifer Wolch & Jody Emel eds., 1998) (arguing that early American stories about animals represented the way certain native populations were radicalized and dehumanized).

197. See Fitzsimmons, *supra* note 193, at 107 (arguing that “[t]he perverse view that Nature is external and primordial is unconsciously confirmed by our placement as intellectuals in a spatially organized society in which ‘intellectual work’ and ‘intellectual life’ are urban”).

198. FREDERIC E. CLEMENTS, PLANT SUCCESSION: AN ANALYSIS OF THE DEVELOPMENT OF VEGETATION 854–55 (1916).

involvement; human interference would disturb nature's course and permanently prevent equilibrium.¹⁹⁹

Over the years, ecology adopted other theories, and the importance of the climax theory lessened. The separation of humanity from the natural, however, remained. Not until recently did ecologists postulate any human-inclusive ecological theories. In the last two centuries there have emerged a variety of theories of ecology and differing views on the definitions of "nature" and "human," as well as the role of law.²⁰⁰ Conceptualizations of nature within ecology change with the passage of time and as the result of our cultural heritage and scientific advancements.²⁰¹ For example, "preservationists" once viewed game animals as a crop that needed to be eradicated from their land.²⁰² Thus, cultural ideas, particularly views of marketable goods, had a strong influence on society's ideas of conservation and preservation.²⁰³

To understand the influence of ecology on the process of legally defining "nature," it is significant to note the timing of these fluxes. Until recently, nature was viewed as conflicting directly with human progress.²⁰⁴ Humans tend to place themselves outside of nature and fail to acknowledge their vital biological role in the ecosystem.²⁰⁵

If nature is pristine and man is inherently outside of nature, then the preservation of nature begins with the concept that man's interaction should be prevented because it negates the "natural" aspect of nature.²⁰⁶ Consequently,

199. See Fred P. Bosselman & A. Dan Tarlock, *The Influence of Ecological Science on American Law: An Introduction*, 69 CHI.-KENT L. REV. 847, 847 (1994).

200. See Jonathan Baert Weiner, *Beyond the Balance of Nature*, 7 DUKE ENVTL. L. & POL'Y F. 1, 9 (1996) (discussing the idea of nature as existing in flux rather than in equilibrium); Peter Manus, *One Hundred Years of Green: A Legal Perspective on Three Twentieth Century Nature Philosophers*, 59 U. PITT. L. REV. 557, 567–71 (1998) (discussing differences between the idea of nature at the turn of the century and the concept of nature within the twentieth century).

201. See Elder, *supra* note 196, at 80 (comparing North American and British conceptualizations of national parks and wilderness).

202. Colburn, *supra* note 151, at 162. Ideas of forest conservation were sporadic within the United States until well into the twentieth century. See *The Conservation Movement*, WISCONSIN HISTORICAL SOCIETY, <https://www.wisconsinhistory.org/turningpoints/tp-033/> (last visited May 31, 2014).

203. Indeed, cultural and spiritual ideas continue to impact modern views of preservation and conservation. See John Copeland Nagle, *The Spiritual Values of Wilderness*, 35 ENVTL. L. 955, 958 (2005) (examining in detail religious literature supporting wilderness preservation). Nagle argues that "[m]uch of the American thinking about wilderness derives from the biblical scriptures . . ." *Id.* at 969.

204. Colburn, *supra* note 151, at 149.

205. See LIZ WELLS, *LAND MATTERS: LANDSCAPE PHOTOGRAPHY, CULTURE AND IDENTITY* 2 (2011). Wells claims the problem is that "[n]ature is both 'internal,' fundamental to what constitutes us as human, and 'out there' in that we experience the external world through the senses, including sight." *Id.* at 5.

206. See Bosselman & Tarlock, *supra* note 199, at 870 (arguing that after interaction between humans and the natural environment, it is "impossible to return to an ideal state of nature"). See also Jonathan Baert Wiener, *Law and the New Ecology: Evolution, Categories, and Consequences*,

legislation historically favors preservationist ideologies, with the primary goal of preventing human interaction with previously untouched areas.²⁰⁷

IV. HOW THE JURISPRUDENCE OF NATURE DEFINES MAN AND IMPLICATIONS FOR CLIMATE CHANGE

A. *Can Consumers Define What Is “Natural”?*

All consumers have some expectation when they see the declaration “all natural” on a product’s label. Their expectations should be considered in the context of the spectrum of potential human interventions. No product arrives at a store with zero human intervention.²⁰⁸ Therefore, it is illogical to define “nature” as something without human intervention, because it “is an impossible standard in so far as all food is [at least] the product of intentional human selection.”²⁰⁹ When faced with a spectrum of levels of artificiality or manufacture, consumers are unlikely to be sure where to draw the line. Indeed, a binary outcome does not lend itself particularly well to a process spectrum. Arguably, most consumers, when given some of the options, see a spectrum and are unsure where to draw the line.

22 ECOLOGY L.Q. 325, 338 (1995) (noting that modern environmental law seeks to maintain balance between humans and nature, but sometimes human intervention is considered necessary to address nature’s own changes (such as naturally originating fires or droughts)). Modern environmental law is evidence of how “representations and images [of nature] that are crafted and put into circulation have material consequences” Delaney, *supra* note 143, at 488.

207. See Klein, *supra* note 134, at 1372 (discussing the preservationist ideals underlying the creation of the NPS and Wilderness Act of 1963); cf. Colburn, *supra* note 151, at 149 (claiming that modern conservation and preservation theories merged as ecology progressed and the population increased). Critics question whether preservation law has real, tangible benefits or if other alternatives will better protect nature. See, e.g., Appel, *supra* note 153, at 93 (explaining the view that if only “pristine” areas are preserved, other important landscapes will suffer); Alejandro E. Camacho, *Transforming the Means and Ends of Natural Resources Management*, 89 N.C. L. REV. 1405, 1426 (2011) (arguing that preservationist laws are ineffective because they fail to take into account the full impact of human/nature interactions in the ecosystem); Klein, *supra* note 134, at 1376 (suggesting that the standards used to determine if an area should be preserved as wilderness are arbitrary and could lead to valuable lands being unprotected).

208. See *What is the Meaning of Natural?*, *supra* note 86.

209. Ginn & Demeritt, *supra* note 3, at 303.

<i>A Potential Spectrum of Human Intervention in the Manufacture of a Food Substance</i>			
<i>Minimal</i>	<i>Some</i>	<i>Higher</i>	<i>Maximum</i>
Harvesting by machine	Purifying	Concentrating using solvents	Containing genetically modified or bioengineered ingredients
Transporting, freezing, or heating	Alkalizing	Using synthetic versions of natural substances such as vitamins	Irradiating
Washing with water	Waxing	Using additional extraction methods	Containing chemicals
Peeling, chopping, extracting and separating of parts by machine but without chemicals	Washing with a mild soap	Using solvents in washing	Using pesticides or insecticides
Mixing of other ingredients meeting this standard	Using preservatives found in nature	Using chemical preservatives	

B. Defining Nature in a Climate-Changed World

The world challenges us daily to redefine our understandings of the boundaries between natural and human-caused events.²¹⁰ Even climate events, traditionally considered sudden acts of nature, have been linked to human action. For example, in Guatemala, a sinkhole thirty-stories deep was caused by a leaking pipe system installed by humans.²¹¹ Additionally, a variety of human causes, including fracking wastewater disposal, may trigger earthquakes.²¹² In 2008, a 7.9 magnitude earthquake in China was linked to the fluctuating weight

210. Bill McKibben believes that society has reached the threshold of a new view of man's relationship to what is natural, claiming that we are "at the end of nature." MCKIBBEN, *supra* note 135, at 8.

211. See Ker Than, *Guatemala Sinkhole Created by Humans, Not Nature*, NAT'L GEOGRAPHIC DAILY NEWS (June 3, 2010), <http://news.nationalgeographic.com/news/2010/06/100603-science-guatemala-sinkhole-2010-humans-caused/>.

212. See Ker Than, *Fracking Wastewater Disposal Linked to Remotely Triggered Quakes*, NAT'L GEOGRAPHIC DAILY NEWS (July 11, 2013), <http://news.nationalgeographic.com/news/energy/2013/07/130711-fracking-wastewater-injection-earthquakes/>.

of water held by China's Zipingpu Dam.²¹³ Similarly, urbanization significantly contributes to flooding, because rain overwhelms urban drainage systems and there are no longer enough porous surfaces in hardened land to absorb the excess water.²¹⁴

Kate Soper defines nature as "those material structures and processes that are independent of human activity (in the sense that they are not a humanly created product)"²¹⁵ Under this definition, an earthquake created by natural gas drilling would likely be considered unnatural, but the result is less clear with regard to a hurricane that resulted from natural causes and gained strength because of a man-made increase in precipitation, or which had a greater impact because of the development-fueled loss of wetlands.²¹⁶

The traditional human/nature binary, which is haphazardly and partially codified into our laws and informal regulations, does not provide an adequate basis for dealing with these complicated questions. Nor does the binary position us to accept and respond to the demands of climate change. Indeed, such cultural hang-ups may well explain the continuing presence of those who deny climate change.

V. FINDING A NEW VOCABULARY FOR NATURE IN PROPERTY RIGHTS

Consumers are not as well equipped to define "natural" as they assume.²¹⁷ This idea suggests that, while their instincts should be taken into account in rulemaking definitions, such rulemaking is not effectively replaced by a simple

213. See Oded Balilty, *Photos: How Humans Can Trigger Earthquakes*, NAT'L GEOGRAPHIC (Feb. 10, 2009), <http://news.nationalgeographic.com/news/2009/02/photogalleries/humans-cause-earthquakes/>. Human-caused global warming causes ice sheets to melt, which can "release pent-up energy and trigger massive earthquakes." Mason Inman, *Melting Ice Sheets Can Cause Earthquakes, Study Finds*, NAT'L GEOGRAPHIC (Mar. 14, 2008), <http://news.nationalgeographic.com/news/2008/03/080314-warming-quakes.html>.

214. See Katie Mika, *Costs Of Chronic Urban Flooding Drain Money Out Of Local Economies and Governments*, THE RIVER BLOG (July 8, 2013), <http://www.americanrivers.org/blog/costs-of-chronic-urban-flooding-drain-money-out-of-local-economies-and-governments-2/> (noting that "[u]p to 25% of economic damages caused by flooding occur because runoff overwhelms urban drainage systems").

215. SOPER, *supra* note 194, at 132.

216. Interestingly, the Disaster Relief Act as codified defines a "major disaster" as a "natural catastrophe" such as a hurricane, tornado, or earthquake. 42 U.S.C. § 5122(2) (2012). See also Jill M. Fraley, *What We Can Predict and Affect*, N.Y. TIMES (Nov. 18, 2013), <http://www.nytimes.com/roomfordebate/2013/11/18/natural-disasters-or-acts-of-god/humans-can-predict-and-affect-what-once-were-acts-of-god> (suggesting that the "acts of God" doctrine is on the decline because many natural events are now foreseeable).

217. Editorial, *Is It Really Gluten Free?*, N.Y. TIMES, Aug. 15, 2013, at A22 (stating "most consumers" believe there is no real meaning to the words "lite" and "low carb"). This makes some sense with regard to the term "lite," but is debatable with regard to "low carb." Although the average consumer might not know if the descriptor referred to carbohydrates below a specific number of grams or compared to the typical product, it would seem that such a specific statement would possess some content. If the *New York Times* is correct about this (unsupported) statement, perhaps consumers are less sure of what "natural" means than we expect them to be.

common sense understanding of the word. Instead, there are substantial benefits to a clear definition for consumers, who would be better informed in their purchasing decisions, and for businesses, where a coordinated definition would prevent unwieldy compliance problems across agencies. Most importantly, rulemaking would offer citizens a voice in the debate before politics and corporate litigation relieves them of the opportunity. If the meaning of nature is “multiple, shifting, and unstable,”²¹⁸ then perhaps it is possible to stabilize a definition through formal processes that accommodate citizen voices.

A. Defining “Nature” and Property Rights in Patents

Property rights may provide one lens for focusing efforts to define “natural.” In the context of patents, there is an explicit link between the “natural” definition and property, because the natural phenomena exception to patentability defeats a potential property right.²¹⁹ One of the justifications for the exception explicitly relies on the public versus private property distinction. Although the Court has been careful to clarify that a patent is a unique form of private property because of its public purpose, and therefore not necessarily comparable to other forms of property,²²⁰ this caveat merely emphasizes how significant the public/private property distinction is with regard to patents. Increasingly, the distinction is at the heart of the natural exception to patentability. As the Supreme Court explained in *Funk Bros.*, patents will not be granted for discoveries of natural phenomena because natural phenomena “are part of the storehouse of knowledge of all men.”²²¹ A person could not own them, even temporarily, because these things are “free to all men and reserved exclusively to none.”²²²

Adopting a property rights approach to defining “naturalness” in the patent context would be consistent with *Myriad Genetics*, but more importantly, it might offer a building point. One of the issues with *Myriad Genetics*, and other decisions in its line, is the lack of a precise test or specific tools for determining the threshold of when human intervention tips something toward the artificial and away from the natural. The result is a frustrating lack of predictable case outcomes.

218. Michael Watts, *Nature: Culture, in SPACES OF GEOGRAPHICAL THOUGHT: DECONSTRUCTING HUMAN GEOGRAPHY'S BINARIES* 142, 144 (Paul Cloke & Ron Johnston eds., 2005).

219. See *supra* note 22 and accompanying text. A patent is, by its very nature, a private monopoly, although one of limited duration. See *Singer Mfg. Co. v. June Mfg. Co.*, 163 U.S. 169, 185 (1896) (noting that a patent only lasts for a limited time, and “on the termination of the patent[,] there passes to the public the right to make the [product] in the form in which it was constructed during the patent”).

220. *Special Equip. Co. v. Coe*, 324 U.S. 370, 382 (1945) (Douglas, J., dissenting) (explaining the intrinsic public policy of promoting the sciences and arts, making patents a unique property right).

221. *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948).

222. *Id.*

In *Myriad Genetics*, the Court recites the law of nature exception and then explains general patent protection reasoning, specifically, the importance of fostering creativity and providing incentives for invention.²²³ In other words, the Court focuses on the public purpose of creating private rights. If the focus shifted to more explicitly include a property framework, then the emphasis would be on the public rights to natural phenomena and defining the breadth of those rights. The question could be re-framed as whether the proposed patent would infringe upon the public's property rights in nature.

B. Defining "Nature" and Property Rights in Consumer Products

Natural products are a serious business enterprise that is growing remarkably despite the economic downturn.²²⁴ Competitors are litigating the right to use designations such as "all natural" and "purely natural," specifically because these product claims are valuable.²²⁵ At the same time, the product claims are valuable because consumers believe that they understand why these products are different from, and better than, others.²²⁶ Without formal definitions, dilution is likely, as are advertisements that will disappoint or infuriate consumers. Dilution of the term "natural" is not ideal for either corporations or consumers; if the term becomes untrustworthy, then the value inherent in the term plummets. From this perspective, any definition must value the consumer's instinctual understanding of term.

Additionally, the definition should take into account the costs that businesses may incur or avoid by using product manipulation or artificiality. Property rights are, of course, the traditional method of protecting investment.²²⁷ Businesses litigate over the natural label, not simply because it has value as a marketing mechanism, but because they incur costs in an attempt to be faithful to the designation and are frustrated when competitors claim the natural designation without incurring those costs.²²⁸ In other words, businesses believe that they are purchasing the right to designate their products as natural by incurring specific and substantial costs that could be avoided through the introduction of more elaborate methods of manufacture. In property terminology, there is a reliance interest.

223. *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2116 (2013).

224. *See supra* note 10 and accompanying text.

225. *See supra* note 10 and accompanying text.

226. *See* Katie M. Abrams, *Naturally Confused: Consumers' Perceptions of All-Natural and Organic Pork Products*, 27 *AGRIC. & HUM. VALUES* 365, 366 (2010).

227. BERNARD H. SIEGAN, *PROPERTY RIGHTS: FROM MAGNA CARTA TO THE FOURTEENTH AMENDMENT 2* (2001).

228. *See* Negowetti, *supra* note 100, at 593 (noting that "[w]ithout a consistent definition for food manufacturers to rely upon, some companies face unfair competition from other companies that adopt looser standards for products they call 'natural'").

VI. CONCLUSION

Defining “nature” is a complex enterprise and one that should not take place informally within isolated federal domains and without reference to a broader consistency. The natural designation carries with it a significant market value, but one that is vulnerable to the loss of consumer confidence. Traditionally, the struggle of defining “nature” has been a struggle of isolating and describing the level of mankind’s manipulations and interventions. This approach to defining “nature” allows law to reinforce an unfortunate Western cultural tendency to isolate man from nature. The struggle to define “nature” has not yielded predictability and security in the marketplace. The Supreme Court’s recent *Myriad Genetics* decision highlights the challenge of measuring levels of human intervention and manipulation. The scales of potential intervention approach frustrated a system that demanded a binary answer. To maintain consumer confidence in the “natural” designation and to protect the market value of the designation, a more consistent and thoughtful approach to defining the term is required. The language of property rights provides insights and guideposts that may more efficiently and reliably allow us to navigate the process of formally defining “nature.”

