

# Competing Visions of Patentable Subject Matter

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## ABSTRACT

*Although many people disagree about whether various types of subject matter (e.g., human genes, diagnostic tests, or business methods) are or should be patentable, they ostensibly agree on the overarching framework within which the issue is analyzed. Almost everyone in legal debates—in courts and in the scholarly literature—talks about patentable subject matter (“PSM”) in the consequentialist terms of promoting innovation and maximizing utilitarian benefits while minimizing utilitarian costs. A solution to PSM debates is thus understood to involve merely the collection of better data and more empirical evidence to answer the utilitarian-economic question.*

*This Article challenges this widely shared premise. The ostensible consensus that PSM law is about answering an agreed-upon utilitarian-economic question is an illusory one. In reality, debates about PSM law are not just about differences in empirical intuitions over economic costs and benefits; they are more importantly about differences in moral values, as well as about the relative weight of moral concerns vis-à-vis utilitarian concerns in patent law. Better data and more evidence will not resolve what is in reality a debate over first- and second-order normative commitments. Without candidly acknowledging and addressing the value differences that underlie PSM debates, the law in this area will remain an intractable mess.*

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## INTRODUCTION

On the surface, there is a wide consensus among scholars and judges that the purpose of patentable subject matter (“PSM”) law is a utilitarian one: to allow patents over subject matter if and when this creates more incentive benefits than monopoly costs, and not otherwise.<sup>1</sup>

What is generally taken to follow from this premise is that the content of PSM law is best understood in economic/utilitarian terms. That is, although the words of black-letter PSM doctrine do not speak in economic terms—the primary rule of PSM law being that “laws of nature, natural phenomena, and abstract ideas”<sup>2</sup> are not patentable—scholars argue that they ultimately reduce to an economic test; whether a patent claim covers an impermissible “law of nature” has nothing to do with how *natural* it is, but instead depends on a policy assessment of its economic costs and benefits. Professors Mark Lemley, Michael Risch, Ted Sichelman, and Polk Wagner, in advocating this understanding of PSM doctrine, sum it up nicely by stating: “We don’t exclude inventions from patentability because the invention is too abstract [or too natural]. We refuse to patent certain claims when those claims reach too broadly and thereby threaten downstream innovation.”<sup>3</sup>

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<sup>1</sup> *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1301–02 (2012) (stating that 35 U.S.C. § 101 reflects a concern that overly broad patents “will inhibit future innovation”); WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW* 305–06 (2003) (giving an economic justification for § 101 exclusions based on monopoly cost concerns); Mark A. Lemley et al., *Life After Bilski*, 63 STAN. L. REV. 1315, 1328–29 (2011) (arguing that the abstract idea and natural law exclusions reflect a “concern about overbreadth”); David S. Olson, *Taking the Utilitarian Basis for Patent Law Seriously: The Case for Restricting Patentable Subject Matter*, 82 TEMP. L. REV. 181, 182–84 (2009) (“[A] properly crafted patent law should provide enough property rights to incentivize the socially desirable (efficient) level of innovation, and no more.”).

<sup>2</sup> *Diamond v. Diehr*, 450 U.S. 175, 185 (1981).

<sup>3</sup> Lemley et al., *supra* note 1, at 1346.

Within this view, PSM law is both normatively and descriptively solely a matter of utilitarian costs and benefits. What proponents of this understanding argue is that moral considerations ought not—and, more relevantly for this Article, *do not*—play a role in PSM law.<sup>4</sup> This is most clearly articulated by John Duffy when he states that “the patentable subject matter doctrines are based not on a moral or ethical decision about the desirability of patents as an end in themselves, but on empirical estimation of the usefulness of patents in achieving other ends (progress).”<sup>5</sup> The further implication of this view is that the incoherence of PSM law is primarily a matter of empirical disagreement: if we had better empirical information about the costs and benefits of various types of patents (e.g., diagnostic tests, human genes, or computer software), then disagreements about PSM law would disappear.<sup>6</sup>

The goal of this Article is to challenge this economic understanding of PSM law. PSM law is not exclusively—perhaps not even primarily—about utilitarian concerns such as maximizing technological progress or economic welfare. Rather, PSM law is often about noneconomic moral values. The surface consensus among scholars and judges that moral values play little or no role in PSM law paints an inaccurate portrait.

This inaccuracy is problematic not only for reasons of academic obsession with truth. As this Article will explain, the cramped notion of what constitutes a “respectable” PSM argument leads to widespread miscommunication among different sides. The results are well known: not only is PSM doctrine messy and uncertain, repeated attempts to fix it never seem to get anywhere. What is not well understood is *why* they never work. My claim is that they never work because judges and scholars approach the problem as if PSM disagree-

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4 Ted Sichelman, Funk *Forward*, in *INTELLECTUAL PROPERTY AT THE EDGE: THE CONTESTED CONTOURS OF IP* 361, 372 (Rochelle Cooper Dreyfuss & Jane C. Ginsburg eds., 2014) (“Another line of argument in the patentable subject matter debate relies upon moral concerns to cabin patentability. . . . In the US, these views are relatively rare . . . .”); John M. Golden, *Biotechnology, Technology Policy, and Patentability: Natural Products and Invention in the American System*, 50 EMORY L.J. 101, 104 (2001) (“United States patent law is, under the Constitution, dedicated to ‘promoting the Progress of Science and useful Arts’—without reference to morality.” (internal alterations and footnote omitted)).

5 John F. Duffy, *Rules and Standards on the Forefront of Patentability*, 51 WM. & MARY L. REV. 609, 618 (2009).

6 See *id.*; Anna B. Laakmann, *An Explicit Policy Lever for Patent Scope*, 19 MICH. TELECOMM. & TECH. L. REV. 43, 47, 72 (2012) (arguing that the theoretical problem is a “[s]talemate of [e]mpirical [i]ntuitions” and PSM doctrine can resolve this problem through “[e]vidence-[b]ased [p]atent [l]aw”).

ments were merely about doctrinal unclarity<sup>7</sup> or empirical economic differences,<sup>8</sup> when the real issues are in fact much deeper. Without an understanding of the true causes of PSM disagreements, no progress can be made.

Lest I be misunderstood, my project here is descriptive, not prescriptive. I am not arguing that PSM law *ought* to be moralistic or that patents *ought* to be granted or denied on moral grounds. I am simply saying that moral concerns are in fact built deeply into the fabric of existing PSM debates, and this fact should be recognized.

Stated in this manner, a reader might find my claim to be so plainly true as to be obvious. But although I do think my claim is plain in some sense, it is also frequently denied, not only actively but more frequently through the striking omission of discussion of moral considerations in PSM debates.<sup>9</sup> For example, consider *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*,<sup>10</sup> the recent Supreme Court case involving the issue of whether human genes were patentable.<sup>11</sup> To most ordinary people, the strongest reason why human genes ought not be patentable is probably that they are *human* genes. In-

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<sup>7</sup> See, e.g., John M. Golden, *Patentable Subject Matter and Institutional Choice*, 89 TEX. L. REV. 1041, 1075 (2011) (arguing that courts face institutional difficulty with PSM cases due to “stare decisis-mediated attachment to a substantially incoherent body of precedent”); Peter S. Menell, *Forty Years of Wondering in the Wilderness and No Closer to the Promised Land: Bilski’s Superficial Textualism and the Missed Opportunity to Return Patent Law to Its Technology Mooring*, 63 STAN. L. REV. 1289, 1305 (2011) (criticizing “[u]ngrounded and [i]ncoherent [p]atentable [s]ubject [m]atter [j]urisprudence”); Jason Rantanen & Lee Petherbridge, *Disuniformity*, 66 FLA. L. REV. 2007, 2027–28 (2014) (giving patentable subject matter as a paradigmatic example where incoherence of doctrine causes disuniformity).

<sup>8</sup> Duffy, *supra* note 5, at 618; Laakmann, *supra* note 6, at 47.

<sup>9</sup> Compare Golden, *supra* note 7, at 1111 (defending PSM limits using an institutional economics analysis), and Olson, *supra* note 1, at 182–84 (arguing that utilitarian economic principles lead to narrow PSM), with F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697, 747 (2001) (making a commercialization-cost argument that it is “good that patents are now being used to protect subject matter such as living organisms, gene fragments, computer software, and financial services, which many previously considered to be ineligible for patent protection”), and Michael Risch, *Everything Is Patentable*, 75 TENN. L. REV. 591, 648 (2008) (arguing against PSM restrictions because “the movement toward more subject matter limitations will impose unwarranted private and social costs without producing any corresponding benefits”). Cf. Margo A. Bagley, *Patent First, Ask Questions Later: Morality and Biotechnology in Patent Law*, 45 WM. & MARY L. REV. 469, 482 (2003) (acknowledging that some patents can be “morally controversial” but concluding that “if Congress does not set limits on patenting morally controversial subject matter, no one will”). But see Katherine J. Strandburg, *Much Ado About Preemption*, 50 HOUS. L. REV. 563, 621 (2012) (arguing that PSM doctrine should “promote innovation while respecting other values that are important to us” (emphasis added)).

<sup>10</sup> *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107 (2013).

<sup>11</sup> See *id.* at 2112.

deed, counsel for petitioner stated the issue in the petition for certiorari as, “Are human genes patentable?”<sup>12</sup>; a framing that is surely deliberate. Yet one will struggle in vain to find any overt reference to moral concerns about patenting human genes in either party’s briefs. As for the Court’s opinion, it makes no mention of moral concerns about patenting human genes either. The only overt normative rationale that the Court offers for denying human gene patents, beyond formalistic appeals to precedent (which only begs the question of the rationale underlying those precedents), is the very utilitarian-economics-sounding assertion that gene patents might “tie up” the use of genes for research and thereby “inhibit future innovation.”<sup>13</sup>

As the remainder of this Article will explain, *Myriad* is only the most striking example of a situation where moral concerns are clearly playing a substantive role despite the dominance of economic rhetoric on the surface. The same is true of a wide variety of patentability debates surrounding areas such as laws of nature, mental processes, and computer software.

The Article proceeds as follows. Part I outlines the economic understanding of PSM that dominates scholarly and judicial discussions. Part II then presents my thesis that other values—which the Article will loosely call “moral” values—in fact play a substantial role in PSM law, one that is not reflected in the economic understanding. Part III then explains why this matters. A cramped discussion where PSM is presented in narrowly economic terms will often miss the crux of the issue. The result is a confused doctrine, doomed proposals, and an unproductive scholarly and judicial debate that keeps going in circles. Understanding the PSM debate as a fundamentally normative debate about society’s deepest values, and not just a debate about dry doctrine or objective empirics, sets the foundation for a more productive discussion.

## I. THE ECONOMIC PARADIGM OF PSM

In this Part, I provide an outline of the conventional account of PSM, where discussion centers on what I call the “excessive monopoly cost theory,” i.e., the theory that PSM is primarily or exclusively about preventing the issuance of patents that generate excessive monopoly costs. In Section A, I first explain why this theory is important. As I

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<sup>12</sup> Petition for Writ of Certiorari at i, *Myriad*, 133 S. Ct. 2107 (No. 12-398).

<sup>13</sup> *Myriad*, 133 S. Ct. at 2116 (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1301 (2012)).

explain in Section B, however, this theory is inadequate as the exclusive descriptive account of PSM.

### A. *The Excessive Monopoly Cost Theory and Its Payoff*

In order to see the payoff of the excessive monopoly cost theory, one must first understand why a theory is needed at all. Not every law requires a theory. Lawyers, judges, and scholars do not spend much time thinking about why, for example, the Seventh Amendment has a twenty-dollar floor.<sup>14</sup> They do not waste their time doing so because, whatever the reason, the dollar amount is clear and the duty of a judge is simply to follow it. The reason that a theory is needed in PSM law is because, unlike the twenty dollars clause, the rules of PSM law are not self-defining on their face. In other words, the purpose of the excessive monopoly cost theory in PSM is to serve a *definitional* function.

To elaborate on this point, the central rule of modern PSM law is that “laws of nature, natural phenomena, and abstract ideas” are not patentable.<sup>15</sup> As Justice Frankfurter once observed, terms such as “laws of nature” and “abstract idea” are “vague and malleable.”<sup>16</sup> As a purely semantic matter, virtually every patent claim can be said to cover a “law of nature” or “abstract idea,” because no patent claim is limited to a fixed set of concrete physical embodiments—all patent claims are directed to an infinite set of objects that is defined by some principle,<sup>17</sup> and it is always possible to characterize that defining prin-

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14 See Note, *The Twenty Dollars Clause*, 118 HARV. L. REV. 1665, 1665–66 (2005) (“With all writers so intently focused on the words ‘suits at common law’ and ‘shall be preserved,’ no writer has analyzed the Amendment’s relative clause: ‘where the value in controversy shall exceed twenty dollars.’” (internal footnote omitted)); see also U.S. CONST. amend. VII. I should note that some academics do talk about the twenty dollars clause, but always in the context of making a larger point. See, e.g., Michael Stokes Paulsen, *Is Bill Clinton Unconstitutional? The Case for President Strom Thurmond*, 13 CONST. COMMENT. 217, 218–19 (1996); Malla Pollack, *Dampening the Illegitimacy of the United States’ Government: Reframing the Constitution from Contract to Promise*, 42 IDAHO L. REV. 123, 199–202 (2005).

15 *Diamond v. Diehr*, 450 U.S. 175, 185 (1981).

16 *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 134–35 (1948) (Frankfurter, J., concurring); see also Michael Risch, *Forward to the Past*, 2010 CATO SUP. CT. REV. 333, 336 (“[I]t seems that no one can figure out what constitutes abstract ideas, natural phenomena, or products of nature.”).

17 Jeffrey A. Lefstin, *The Formal Structure of Patent Law and the Limits of Enablement*, 23 BERKELEY TECH. L.J. 1141, 1168 (2008); see *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 60 (1998) (“The primary meaning of the word ‘invention’ in the Patent Act unquestionably refers to the inventor’s conception rather than to a physical embodiment of that idea.”); *Cont’l Paper Bag Co. v. E. Paper Bag Co.*, 210 U.S. 405, 418–19 (1908) (“The principle of the invention is a unit, and invariably the modes of its embodiment in a concrete invention may be numerous and in appearance very different from each other.” (quoting 2 ROBINSON ON PATENTS § 485)).

ciple as a “law of nature” or “abstract idea.”<sup>18</sup> Thus deconstructed, patent law needs some theory or principle, beyond the semantic content of the doctrine, to distinguish a permissible claim from an impermissible one.<sup>19</sup>

The contribution of the excessive monopoly cost theory here is that it offers a principle. Specifically, it defines whether something constitutes a “law of nature, natural phenomenon, or abstract idea” in terms of its utilitarian cost-benefit balance: if the monopoly costs of a patent exceed the incentive benefits,<sup>20</sup> then the patent is *deemed* to be directed to a “law of nature” or “abstract idea,” and is therefore invalid.<sup>21</sup>

It is important to appreciate just how big a conceptual move this is: as defined by the excessive monopoly cost theory, whether something is a “law of nature” has nothing to do with its naturalness.<sup>22</sup> Instead, a “law of nature” becomes transformed into an *economic* concept. A decisionmaker applying the theory first determines the economic policy consequences of allowing versus denying a patent, and then works backwards to attach the doctrinal label necessary to reach the preferred result.<sup>23</sup> In legal theory jargon, the excessive mo-

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<sup>18</sup> See *Mayo*, 132 S. Ct. at 1293 (“The Court has recognized, however, that too broad an interpretation of this exclusionary principle could eviscerate patent law. For all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.”).

<sup>19</sup> See Risch, *supra* note 16, at 337 (observing “a long line of cases trying to draw the line between patent-eligible processes and unpatentable abstractions”).

<sup>20</sup> Some proponents of the excessive monopoly cost theory might add the qualification that a patent should not be denied *any* time the costs exceed the benefits, but only when the costs exceed the benefits by some large margin. I find such a qualification odd because it is not clear why, if one is going to do a cost-benefit analysis anyway, one would accept some cost-benefit unjustified patents. In any event, the key point here is that the excessive monopoly cost theory defines what constitutes a “law of nature” through the metric of a utilitarian cost-benefit analysis, regardless of where precisely the line is drawn within that metric.

<sup>21</sup> See Dan L. Burk, *Edifying Thoughts of a Patent Watcher: The Nature of DNA*, 60 UCLA L. REV. DISCOURSE 92, 102 (2013) (“Drawing the line is purely a matter of public policy informed by economic reality and technical practice.”); Laakmann, *supra* note 6, at 47, 72 (arguing that the theoretical problem is a “[s]talemate of [e]mpirical [i]ntuitions” and PSM doctrine can resolve this problem through “[e]vidence-[b]ased [p]atent [l]aw”); Lemley et al., *supra* note 1, at 1329 (“[T]he abstract ideas doctrine is not about finding a conceptual category of inventions that is entitled to no protection at all, . . . it is about encouraging cumulative innovation . . .”).

<sup>22</sup> Cf. Lemley et al., *supra* note 1, at 1346 (“We don’t exclude inventions from patentability because the invention is too abstract. We refuse to patent certain claims when those claims reach too broadly and thereby threaten downstream innovation.”).

<sup>23</sup> This is more clearly articulated in copyright law, where the distinction between copyrightable “expression” and an uncopyrightable “idea” is commonly understood in this manner. See *Herbert Rosenthal Jewelry Corp. v. Kalpakian*, 446 F.2d 738, 742 (9th Cir. 1971) (“The guiding consideration in drawing the line is the preservation of the balance between competition and

nopoly cost theory *reconstructs* the terms “law of nature” and “abstract idea” into a cost-benefit balancing test, with no relationship to the terms’ intuitive semantic meaning.

## B. Problems with the Excessive Monopoly Cost Theory

### 1. Courts Don’t Really Follow It

The first problem with the excessive monopoly cost theory is that, when one looks beyond the rhetoric, courts do not follow the theory. This is because, as Kathy Strandburg has observed, courts in PSM cases do not use the excessive monopoly cost theory to *define* or shape PSM doctrine, such as by using economic balancing to determine what constitutes a law of nature.<sup>24</sup> Instead, they attempt to define *per se* categories of exclusion based on semantics and not economics.<sup>25</sup>

Consider, for example, *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*<sup>26</sup> If one looks only to the rhetoric, the opinion cannot be more enthusiastic in promoting the excessive monopoly cost theory.<sup>27</sup> But when the patentee (Prometheus) took the theory by its own logic and argued that, if the law of nature and abstract idea doctrines are really about preventing excessive monopoly costs, then its patents did not create excessive monopoly costs and therefore did not encompass laws of nature or abstract ideas,<sup>28</sup> the Supreme Court responded thus:

Prometheus argues that, because the particular laws of nature that its patent claims embody are narrow and specific,

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protection reflected in the patent and copyright laws.”); Jane C. Ginsburg, *No “Sweat”? Copyright and Other Protection of Works of Information After Feist v. Rural Telephone*, 92 COLUM. L. REV. 338, 346 (1992) (“In copyright law, an ‘idea’ is not an epistemological concept, but a legal conclusion . . . . Thus, copyright doctrine attaches the label ‘idea’ to aspects of works which, if protected, would (or, we fear, might) preclude, or render too expensive, subsequent authors’ endeavors.”).

<sup>24</sup> Strandburg, *supra* note 9, at 613 (“To summarize, the Supreme Court’s cases mostly have been concerned with how to apply a *per se* exemption for natural phenomena and abstract ideas and not with the overbreadth concerns suggested by the preemption rubric.”).

<sup>25</sup> *Id.*

<sup>26</sup> *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289 (2012).

<sup>27</sup> See, e.g., *id.* at 1301–02 (citing Lemley et al., *supra* note 1); *id.* at 1293 (“[M]onopolization of those tools through the grant of a patent might tend to impede innovation more than it would tend to promote it.”); *id.* at 1301 (“The Court has repeatedly emphasized . . . a concern that patent law not inhibit further discovery by improperly tying up the future use of laws of nature.”); *id.* at 1303 (“[T]he underlying functional concern here is a *relative* one: how much future innovation is foreclosed relative to the contribution of the inventor.”).

<sup>28</sup> Brief for the Respondent at 42, *Mayo*, 132 S. Ct. 1289 (No. 10-1150) (arguing that its claims “are narrowly drawn and do not preempt abstract principles or ideas in a relevant sense”).

the patents should be upheld. Thus, it encourages us to draw distinctions among laws of nature based on whether or not they will interfere significantly with innovation in other fields now or in the future. . . .

[O]ur cases have not distinguished among different laws of nature according to whether or not the principles they embody are sufficiently narrow. . . . Courts and judges are not institutionally well suited to making the kinds of judgments needed to distinguish among different laws of nature. And so the cases have endorsed a bright-line prohibition against patenting laws of nature, mathematical formulas and the like . . . .<sup>29</sup>

Although this passage is brief, properly understood it represents a fundamental rejection of everything that the excessive monopoly cost theory is about. What this passage implicitly holds is that there is a preexisting noneconomic category of things—known as “laws of nature”—and the legal question is solely whether the patent at issue encompasses this preexisting noneconomic category of things. In other words, the Court finds that biological correlations are “laws of nature” without any evidence or examination of their economic benefits and costs. Once *Mayo* makes this move, the excessive monopoly cost theory becomes *irrelevant*—any correlation between the category of “laws of nature” and excessive monopoly costs has no effect on PSM law. If patents on “laws of nature” are positively correlated with excessive monopoly costs, we should all be very happy that the universe is configured in such a convenient way (and if patents on “laws of nature” are not positively correlated with excessive monopoly costs, we should all be disappointed that the universe is not so conveniently configured), but in all events the operation of PSM law would still be exactly the same: patents on “laws of nature” would still be forbidden, and whether a particular patent covers a “law of nature” would still have nothing to do with its economic benefits or costs. At such a point, economic costs and benefits do not help define what constitutes a “law of nature,” and therefore the Court is not following the excessive monopoly cost theory.

Many readers of prior drafts have responded to this critique by arguing that the Court in *Mayo* was relying on a different type of economic theory of PSM. In the alternative version, PSM law is not about scrutinizing *individual* patents for their costs and benefits, but about scrutinizing entire *classes* of patents. That is, if patents on na-

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<sup>29</sup> *Mayo*, 132 S. Ct. at 1303.

ture as a class create excessive monopoly costs, and it is administratively expensive to scrutinize each individual nature patent, then PSM law should exclude all nature patents from patentability without conducting an individualized analysis, thereby saving on administrative costs. I myself have previously explained how PSM law can operate in this manner.<sup>30</sup>

The problem with this alternative theory of PSM—what I call an “administrative cost theory” of PSM—is that it has no relevance to the *Mayo* case. In order to see this, it is important to understand that *Mayo* was not about *whether* there should be a law of nature doctrine at all, but only about *what constitutes* a patent on a law of nature.<sup>31</sup> In other words, *Mayo* was a definitional dispute, and it calls for a theory that performs a definitional function.

The administrative cost theory—unlike the excessive monopoly cost theory outlined in Part I.A—is not a definitional theory, and thus cannot further the analysis in *Mayo*. That is, the administrative cost theory can provide a justification for the existence of a rule prohibiting patents on “laws of nature” (namely, if the overall costs of such patents exceed the overall benefits, and if administrative costs make more individualized inquiries not worthwhile), but it cannot tell us what constitutes a patent on a “law of nature.” The administrative cost theory conducts its class-based cost-benefit balancing only *after* the class is exogenously defined. And a theory that cannot tell us what constitutes a law of nature has no contribution to make to the *Mayo* case: It does not drive the analysis toward any substantive conclusion about whether the patent-in-suit is valid. It does not help to resolve the case.

If the Court in *Mayo* was really offering the class-based administrative cost theory (and not the excessive monopoly cost theory that defines “law of nature” through individualized cost-benefit balancing), then what it was offering was a completely irrelevant theory with no bearing on the issue at hand. The *Mayo* opinion’s extended discussion of this irrelevant theory only functions to confuse readers and obscure the Court’s actual decisionmaking. That is, the ultimate holding of *Mayo* is that the biological correlation between 6-thioguanine

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<sup>30</sup> Tun-Jen Chiang, *The Rules and Standards of Patentable Subject Matter*, 2010 WIS. L. REV. 1353, 1407–13.

<sup>31</sup> No doubt, some people supported Prometheus’s side of the case because their fundamental position is that there should be no nature doctrine at all. See generally, e.g., Risch, *supra* note 9 (expressly arguing for abolition). But the issue in *Mayo* did not reach that far.

levels and drug effectiveness is a “law of nature.”<sup>32</sup> But the Court never explains why this is the case—it never gives any theory for what constitutes a “law of nature” or explains why biological correlations fall within the category. It simply asserts the conclusion.<sup>33</sup> And the Court’s long discussion of monopoly cost concerns does little but divert attention away from the substantive resolution of the case and the emptiness of its reasoning on that score.

To be sure, even in the manner that *Mayo* deploys it, economic theory still has relevance to PSM law at a more general level: if it turns out to be the case that there is in fact no positive correlation between patents on laws of nature and excessive monopoly costs, then that would be a strong reason to abolish the laws of nature doctrine; conversely, if there is a positive correlation, then that would be a reason to retain the laws of nature doctrine. But, as above, this is not a convincing response for two reasons. The first is that the existence *vel non* of the laws of nature doctrine was not on the table in *Mayo*, so the Court’s invocation of the theory was still pointless in the circumstances of the case. The second is that, because the *Mayo* Court provides no actual methodology to determine what constitutes a “law of nature,” its hypothesized correlation between patents on laws of nature and excessive monopoly costs is not measurable and thus not falsifiable. In this sense the *Mayo* version of the excessive monopoly cost theory (or, perhaps more accurately, the *Mayo* version of the administrative cost theory) is a post-hoc just-so story.

The sum of the situation is that, quite contrary to first appearances, *Mayo* is not an endorsement of the excessive monopoly cost theory or any other economic theory of PSM, at least not as a theory that does any analytical work in actual decisionmaking. Instead, when the Court theorizes about excessive monopoly cost, it is telling a post-hoc just-so story, while making its *real* decision—that biological correlations are “laws of nature”—based on some unarticulated and unexplained theory about what constitutes a “law of nature.” *That* theory—the one actually doing the analytical work—is the one that I am interested in.

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<sup>32</sup> *Mayo*, 132 S. Ct. at 1296–97 (“Prometheus’ patents set forth laws of nature—namely, 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.”).

<sup>33</sup> *Id.* Of course, the conclusion that biological correlations are laws of nature is perfectly intuitive and reasonable if one is applying the semantic meaning of “nature.” But that just goes to prove the point that it is semantics and not economics that is doing the work in determining the outcome in the case.

## 2. *At the Extreme, the Theory Is Self-Contradicting*

One possible response to the prior subsection is that even overt judicial rejection need not be a problem for a positive theory of PSM law. From a realist perspective, we can view the fundamental claim of the excessive monopoly cost theory as being that the laws of nature and abstract idea doctrines *are* legal conclusions that follow an economic cost-benefit balancing principle, not that judges necessarily *describe* or *think* of them that way.<sup>34</sup> There is no necessary logical inconsistency between an economic theory positing that the laws of nature and abstract idea doctrines are really about a (conscious or unconscious) cost-benefit balancing by judges, and at the same time judges continually denying that any such cost-benefit balancing is taking place.<sup>35</sup>

My reply to this point is twofold. First, if judges conceptualize “laws of nature” as an independent preexisting category of things and not as a cost-benefit balancing test, even if they later bend the category definition by surreptitiously importing economic considerations, then we need some theory of that category in order to understand judicial thinking on this matter. Economic theory alone cannot provide a definition of what constitutes a “law of nature” or “abstract idea” without reducing those concepts to a cost-benefit balancing test.<sup>36</sup> Thus, even if only as an exercise in judicial psychology, there would be value in examining non-economic theories of PSM.

My second contention is more fundamental. Taking the excessive monopoly cost theory—by which I mean the version outlined in Part I.A and not the *Mayo* just-so story—to its logical conclusion reduces the laws of nature and abstract idea doctrines into ad hoc individualized economic inquiries.<sup>37</sup> An individualized economic inquiry is redundant with more fine-grained patent law tests of novelty,

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<sup>34</sup> See WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF TORT LAW* 23 (1987) (“People can apply the principles of economics intuitively—and thus ‘do’ economics without knowing they are doing it.”).

<sup>35</sup> See *Mayo*, 132 S. Ct. at 1303 (stating that “judges are not institutionally well suited to making” individualized cost-benefit balancing judgments).

<sup>36</sup> See Burk, *supra* note 21, at 102 (“Drawing the line is purely a matter of public policy informed by economic reality and technical practice.”); Duffy, *supra* note 5, at 644 (“[T]he prohibition against patenting principles of nature still survives, but it survives only because it has incorporated a complex set of factors into its analysis . . . .”); cf. Lemley et al., *supra* note 1, at 1329 (“The abstract ideas exception should disallow those claims to ideas unmoored to real-world applications, taking into account the extent to which the claim forecloses after-arising embodiments of the idea, the nature and extent of the prior art, and the level of disclosure by the inventor.”).

<sup>37</sup> See *supra* note 36.

nonobviousness, and enablement.<sup>38</sup> This redundancy is problematic, because there is no logical reason that a fact-specific cost-benefit analysis should be conducted under the aegis of PSM doctrine.<sup>39</sup> PSM is a “threshold” inquiry, and threshold inquiries are inherently unsuited to fact-specific analysis.<sup>40</sup> If patent law is going to conduct a fact-specific cost-benefit analysis, it should be done at a later part of a case, when detailed facts are available, rather than at the threshold under § 101.<sup>41</sup> Thus, the logical endpoint of the excessive monopoly cost theory is not an insight that the laws of nature and abstract idea doctrines are or should be about preventing excessive monopoly costs; the logical endpoint is a prescription that these doctrines should be abolished.<sup>42</sup> At this point the excessive monopoly cost theory—to the extent it acts as a positive theory for the laws of nature and abstract ideas doctrines—contradicts itself.

One might respond to this by arguing, as Robert Merges and Dennis Crouch do, that the solution is to reorder the priority of litigation, so that PSM issues—including but not limited to the law of nature and abstract idea doctrines—are considered later rather than first.<sup>43</sup> And the Supreme Court could indeed simply deem by fiat that PSM should no longer be a threshold inquiry. But at that point there would be no distinctive analytical role for PSM doctrine at all; “patentable subject matter” would simply become an empty shell that replicates the same analytical issues that patent law considers during novelty, utility, nonobviousness, enablement, written description, and remedies. This merely reinforces rather than refutes the central argument against § 101.<sup>44</sup> The *essence* of PSM is that it is a threshold cate-

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<sup>38</sup> See *Ultramercial, Inc. v. Hulu, LLC*, 722 F.3d 1335, 1354 (Fed. Cir. 2013) (pointing to § 112 as a better tool to weed out overbroad claims), *vacated sub nom.* *Wildtangent, Inc. v. Ultramercial, LLC*, 134 S. Ct. 2870 (2014) (mem.); *Res. Corp. Techs., Inc. v. Microsoft Corp.*, 627 F.3d 859, 869 (Fed. Cir. 2010) (same).

<sup>39</sup> See Kevin E. Collins, *Even More Complex After All These Years: What the Complexity of the “How?” Question of Tailoring Claim Scope Has To Say About the “Who?” Question*, 1 IP THEORY 35, 39 (2010) (“[Where] redundant doctrines all enforce identical substantive restrictions on claim scope, this redundancy simply detracts from the coherency of patent doctrine.”).

<sup>40</sup> *Bilski v. Kappos*, 130 S. Ct. 3218, 3225 (2010).

<sup>41</sup> See *id.* (making this argument); *Ultramercial*, 722 F.3d at 1341 (same); Duffy, *supra* note 5, at 622–23 (arguing that PSM exclusion is rarely justified given individualized scrutiny under nonobviousness doctrine); Kristen Osenga, *Ants, Elephant Guns, and Statutory Subject Matter*, 39 ARIZ. ST. L.J. 1087, 1115–18 (2007) (favoring individualized scrutiny); Risch, *supra* note 9, at 657–58 (arguing for abolishing PSM in favor of individualized inquiries).

<sup>42</sup> See Risch, *supra* note 9, at 657–58 (arguing for abolishing all PSM exclusions).

<sup>43</sup> See generally Dennis Crouch & Robert P. Merges, *Operating Efficiently Post-Bilski by Ordering Patent Doctrine Decision-Making*, 25 BERKELEY TECH. L.J. 1673 (2010).

<sup>44</sup> See Golden, *supra* note 7, at 1041 (“Given the existence of fine-grained requirements

gorical inquiry.<sup>45</sup> If one were to change this feature, then it would be cleaner and more logical to formally abolish PSM altogether than to leave it with an undead shell to haunt the patent system.

Another potential response is that a reconstructed laws of nature and abstract ideas doctrine can more perfectly hew to the underlying economic policy goals of the patent system than the imperfect doctrines of novelty, nonobviousness, enablement, etc., that we have today.<sup>46</sup> But this is also not an answer to the analytical redundancy objection. Recasting PSM doctrine so that it becomes a more rigorous version of §§ 102, 103, and 112 might have political value (in allowing courts to avoid the express overruling of what are ostensibly precedents under §§ 102, 103, and 112), but it has no *analytical* value because the result will still be a patent system that asks the same analytical question twice (once under the recast PSM doctrine and once under the original doctrine). The redundancy simply makes patent law more complicated without moving the ball forward at an analytical level.<sup>47</sup>

The sum of the situation is that, if the laws of nature and abstract idea doctrines are to make sense at an analytical level—rather than just act as politically convenient redundant doctrines that replicate (in perhaps a more rigorous way) the substantive analysis of the nonobviousness and enablement inquiries<sup>48</sup>—then we need some definition of

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for patentability such as nonobviousness, the utility of a separate requirement of patentable subject matter has sometimes been questioned.”); accord *Ultramercial*, 722 F.3d at 1341 (asserting that § 101 should not replicate the analysis of other statutory sections); Risch, *supra* note 9, at 658 (same); see also Osenga, *supra* note 41, at 1123 (“[P]roxy-type inquiries are not and should not be part of the subject-matter eligibility requirement.”).

<sup>45</sup> See Golden, *supra* note 7, at 1060 (“Approaches to determining subject-matter eligibility are fundamentally categorical.”).

<sup>46</sup> Laakmann, *supra* note 6, at 84–85 (arguing that PSM doctrine should be used “as a ‘backstop’ that prevents the patenting of inventions that satisfy other statutory patentability criteria but nonetheless should, in the interests of innovation policy, remain in the public domain”); Lemley et al., *supra* note 1, at 1330 & n.79 (arguing that a reconstructed § 101 inquiry can be more “capacious” than the existing inquiry under § 112).

<sup>47</sup> And even the political benefit is questionable at best. If courts have the institutional capability and political will to refashion § 101 to achieve a more economically efficient patent system, it is not clear why they could not refashion §§ 102, 103 and 112. See Harold Demsetz, *Information and Efficiency: Another Viewpoint*, 12 J.L. & ECON. 1, 1 (1969) (criticizing an approach that “implicitly presents the relevant choice as between an ideal norm and an existing ‘imperfect’ institutional arrangement”).

<sup>48</sup> I am assuming here that obviousness and enablement are primarily about economic cost-benefit balancing. See generally Michael Abramowicz & John F. Duffy, *The Inducement Standard of Patentability*, 120 YALE L.J. 1590 (2011) (casting obviousness in economic terms); Tun-Jen Chiang, *A Cost-Benefit Approach to Patent Obviousness*, 82 ST. JOHN’S L. REV. 39 (2008) (same); Tun-Jen Chiang, *The Levels of Abstraction Problem in Patent Law*, 105 NW. U. L.

“law of nature” and an “abstract idea” that does not just reduce them to a case-by-case economic balancing of costs and benefits.<sup>49</sup> The semantic meaning of the phrases “law of nature” and “abstract idea” does not provide enough content to delineate such a category definition with any precision. Economic theory alone cannot define any such category, either. One must thus necessarily look beyond these sources to have a coherent understanding of the laws of nature and abstract idea doctrines.

One clarification is in order: the objection I am making in this Section is limited to the law of nature and abstract idea doctrines and the excessive monopoly cost theory that conceptualizes these doctrines as a cost-benefit balancing test. Not all economic theories of PSM call for reducing PSM doctrine to an individualized cost-benefit balancing test, and therefore not all economic theories of PSM suffer from the logical problem of ultimately calling for the abolition of the doctrine it is supposed to explain. As I have explained elsewhere, economic theory supports categorical exclusion of subject-matter when (1) there is an identifiable category of inventions, (2) patenting the category is likely to be socially detrimental on net, and (3) administrative costs make a more individualized inquiry inefficient.<sup>50</sup> But this kind of administrative cost theory is not what I am talking about in this Article.<sup>51</sup> The administrative cost theory can provide a *prescriptive* framework for PSM, but it has problems acting as a *descriptive* framework to explain the law of nature and abstract idea doctrines that dominate the PSM landscape today, because nobody can seriously contend that the laws of nature and abstract ideas categories are cheap to administer.<sup>52</sup> As Rebecca Eisenberg puts it, “although one

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REV. 1097 (2011) (casting enablement in economic terms). Someone committed to a moralistic view of PSM may have a moralistic view of those doctrines as well.

<sup>49</sup> Golden, *supra* note 7, at 1060.

<sup>50</sup> Chiang, *supra* note 30, at 1407–13; *see also* Olson, *supra* note 1, at 184.

<sup>51</sup> *Cf.* Mayo Collaborative Servs. v. Prometheus Labs., Inc., 132 S. Ct. 1289, 1303 (2012) (seeming to invoke an administrative cost argument, but not giving guidance on what constitutes a “law of nature” or explaining how that category saves administrative costs).

<sup>52</sup> The administrative cost theory would also have difficulty explaining why laws of nature are the central focus of PSM law and debates. A court that took the administrative cost theory really seriously would logically craft PSM doctrine in a manner to prioritize excluding the *most* economically harmful categories of patents that can be identified. Although there is ongoing empirical debate about whether patents on nature and biotechnology are economically harmful at all, *see* Laakmann, *supra* note 6, at 47, few would argue that such patents are the *most* harmful and deserve the highest priority from a pure economic perspective. *See* JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK 187 (2008) (arguing that patents on software and business methods stand out as being particularly problematic).

could imagine patentable subject matter serving a useful role as a threshold inquiry, economizing on administrative costs by excluding some kinds of subject matter from the front door . . . , patentable subject matter doctrine does not and cannot serve that role in its current form.”<sup>53</sup>

## II. NORMATIVE VALUES IN PSM DEBATES

In this Part, I lay out various moral values that I submit play a significant role in various strands of PSM doctrine. I should make clear that I am not arguing that economic considerations play no role at all; my point is that moral influences *also* play a significant role, and that the current PSM law and PSM debates cannot be intelligently understood without examining these moral influences.

### A. Dignity and the Human Body

Let me begin with what I regard to be the most obvious example of my thesis. There is a continuing controversy over whether, and to what extent, human genes and other human-body-related inventions are patentable.<sup>54</sup> This debate is fundamentally about moral concerns, in particular the moral belief that *human* bodies should not be subject to property rights. For example, when legislation banning patents “directed to or encompassing a human organism” was recently being debated,<sup>55</sup> supporters in Congress argued: “This amendment and USPTO policy reflect a commonsense understanding that no member of the human species is an ‘invention,’ or property to be licensed for financial gain. Patents on human organisms commodify life and allow profiteers to financially gain from the biology and life of another human person.”<sup>56</sup>

Yet, when this debate reaches the courts, as it did in the *Myriad* case on the patentability of human genes, the morals talk largely fades away. The closest judicial mention of moral concerns regarding gene

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<sup>53</sup> Rebecca S. Eisenberg, *Wisdom of the Ages or Dead-Hand Control? Patentable Subject Matter for Diagnostic Methods After In Re Bilski*, 3 CASE W. RES. J.L. TECH. & INTERNET 1, 47 (2012).

<sup>54</sup> See generally, e.g., DAVID B. RESNIK, *OWNING THE GENOME: A MORAL ANALYSIS OF DNA PATENTING* (2004); Mark J. Hanson, *Patenting Genes and Life: Improper Commodification?*, in *WHO OWNS LIFE?* 161 (David Magnus et al. eds., 2002); Hubert Curien, *The Human Genome Project and Patents*, 254 SCIENCE 1710, 1710 (1991); Christopher M. Holman, *The Impact of Human Gene Patents on Innovation and Access: A Survey of Human Gene Patent Litigation*, 76 UMKC L. REV. 295, 297 (2007).

<sup>55</sup> Leahy-Smith America Invents Act, Pub. L. No. 112-29, § 33, 125 Stat. 284, 340 (2011).

<sup>56</sup> 157 CONG. REC. E1177 (June 23, 2011) (Statement of Rep. Smith). Note that this statement is by a different Rep. Smith than the namesake of the Leahy-Smith America Invents Act.

patents in the *Myriad* litigation is an opaque passage in Judge Moore's concurring opinion in the Federal Circuit, where she emphatically proclaims that *she* is not acting on the basis of any "tempting" moral considerations:

It is tempting to use our judicial power in this fashion [to strike down gene patents], especially when the patents in question raise substantial moral and ethical issues related to awarding a property right to isolated portions of human DNA—the very thing that makes us humans, and not chimpanzees. The invitation is tempting, but I decline the opportunity to act where Congress has chosen not to.<sup>57</sup>

In the Supreme Court opinion, moral concerns about patents on human genes received no mention at all. Instead, the Court's opinion focused on issues of dry doctrine and a brief invocation of the economic policy concern that patents on human genes might "tie up" their use and thereby "inhibit future innovation."<sup>58</sup>

The narrow economic framing afflicts not only the judicial opinions, but also how parties cast their arguments. Consider this passage from the introduction to the challengers' brief in *Myriad*:

Because it is not possible to study or use the genes unless they are isolated, the claims have significant implications. The claims preempt any use of the genes for any purpose. This has serious and urgent consequences for patients today, who often cannot obtain information about their own genes and thus cannot make educated medical decisions about breast and ovarian cancer surveillance and treatment. Myriad has a monopoly on clinical testing of *its* genes in the U.S., dictating the type and terms of BRCA genetic testing. Myriad has given women false negative results, while also barring other laboratories from testing genes to verify the accuracy of Myriad's results. Although Myriad has not exercised its authority to stop all research, Myriad's claims have had a proven chilling effect on research, as laboratories are dissuaded from pursuing scientific work that requires using the patented genes.<sup>59</sup>

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<sup>57</sup> Ass'n for Molecular Pathology v. USPTO, 689 F.3d 1303, 1346 (Fed. Cir. 2012) (Moore, J., concurring in part), *aff'd in part, rev'd in part sub nom.* Ass'n for Molecular Pathology v. Myriad Genetics, Inc., 133 S. Ct. 2107 (2013).

<sup>58</sup> Ass'n for Molecular Pathology v. Myriad Genetics, Inc., 133 S. Ct. 2107, 2116 (2013) (quoting Mayo Collaborative Servs. v. Prometheus Labs., Inc., 132 S. Ct. 1289, 1301 (2012) (internal quotation marks omitted)).

<sup>59</sup> Brief for Petitioners at 2–3, *Myriad*, 133 S. Ct. 2107 (No. 12-398).

Two things are important to note here. The first is that, on the surface, this is a consequentialist argument. The concerns expressed are about “serious and urgent consequences” for patients. There is no overt mention of any moral concerns about patenting genes. And the quoted passage is fully representative of the rest of the challengers’ brief in this regard.

The second point to note, however, is that the challengers put italics on “*its* genes.” This is quite revealing. If the appeal is really to concerns about consequences, then there is no good reason to emphasize Myriad’s abstract assertion of ownership. If one were attempting to persuade a group of pure consequentialists of the undesirability of Myriad’s patents, the logical place of emphasis would be the concrete consequential harms, such as the inability of patients to obtain information, the inaccuracy of results given by Myriad, or the chilling effect on downstream research. The fact that Myriad happens to assert abstract ownership of genes, by itself, would be neither here nor there.

The only reason to give special emphasis to Myriad’s assertion of ownership to genes is that it violates a commonly held belief—a *moral* belief—that nobody should be able to own someone else’s genes.<sup>60</sup> This is what the challengers are doing when they emphasize “*its*.” This is why they framed the question presented on the first page of the petition for certiorari as “Are human genes patentable?”<sup>61</sup> And this is why they include in their brief statements such as “Myriad can even prevent scientists from looking at their own genes.”<sup>62</sup> The force of the appeal lies not with the effect on people who happen to be scientists doing research, but with the fact that they are deprived of rights over *their own* genes.

One cannot understand *Myriad*—why the case was brought, why it attracted media attention, and why it went all the way up to the Supreme Court—if one conceives of the case as simply a dry dispute over economic calculations. One can only understand the passionate controversy surrounding *Myriad* by understanding that the case is about deep-seated moral values.<sup>63</sup> And the very fact that the challeng-

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<sup>60</sup> Cf. Pilar Ossorio, *Legal and Ethical Issues in Biotechnology Patenting*, in A COMPANION TO GENETHICS 408, 413 (Justine Burley & John Harris eds., 2002) (“[M]any who oppose the patenting of human genes on the affront-to-human-dignity grounds do so because they believe that patenting human DNA constitutes a form of ownership by one person of part of another person.”).

<sup>61</sup> Petition for Writ of Certiorari at i, *Myriad*, 133 S. Ct. 2107 (No. 12-398).

<sup>62</sup> Brief for Petitioners at 3, *Myriad*, 133 S. Ct. 2107 (No. 12-398).

<sup>63</sup> For a particularly revealing statement, see Daniel J. Kevles, *Can They Patent Your Genes?*, N.Y. REV. OF BOOKS, Mar. 7, 2013, at 24 (“Christopher Hansen, one of the ACLU’s co-

ers' lawyers placed the italics where they are shows that they in fact understood the moral argument very well, and also that they thought the moral argument would have resonance with the Justices.

At the same time, the cramped notion of what constitutes "respectable" PSM legal advocacy means that the moral argument is only subtly hinted at, with a single italicized word doing all the work. For the rest of the time, we are bombarded with contentions about "serious and urgent consequences for patients" and for downstream scientific research that are, if not entirely beside the point, at least of only secondary importance to what is really at stake.<sup>64</sup> This widely shared pretense—that the gene patent debate is about consequentialist harms rather than moral principles—leads the debate off-track.

### B. *The Inviolability of Nature*

The human-related patent debate is the easiest example to prove my claim, but a far more consequential arena is the debate over the nature doctrine, by which I mean the doctrinal rule that prohibits patents on "laws of nature, natural phenomena, and abstract ideas." Far above other doctrines, this rule dominates modern PSM discussions.<sup>65</sup>

For many economically minded scholars, however, the nature doctrine makes no sense.<sup>66</sup> From an economic perspective, it is not obvious why nature should not be patentable, if issuing a patent would generate more economic benefits than costs (and if the patent does not generate more benefits than costs, it can be rejected under some other doctrine such as obviousness).<sup>67</sup> While one could (as *Mayo*

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counsels, has said that the plaintiff's lawyers approached the suit as though it were a civil rights case . . .").

<sup>64</sup> This is not to say anyone is consciously lying when presenting these consequentialist arguments. The arguments may be true, and the advocates may really believe them, but the motivation is based on deeper moral commitments. See generally JONATHAN HAIDT, *THE RIGHTEOUS MIND: WHY GOOD PEOPLE ARE DIVIDED BY POLITICS AND RELIGION* (2012); Dan M. Kahan, *Foreword: Neutral Principles, Motivated Cognition, and Some Problems for Constitutional Law*, 125 HARV. L. REV. 1, 19–27 (2011).

<sup>65</sup> See ROBERT PATRICK MERGES & JOHN FITZGERALD DUFFY, *PATENT LAW AND POLICY: CASES AND MATERIALS* 107 (6th ed. 2013) (describing the rule as "the primary doctrinal tool by which courts limit patentable subject matter").

<sup>66</sup> See, e.g., Burk, *supra* note 21, at 101 ("[O]ne wonders whether the most sensible course is to simply abandon the product of nature exercise altogether.").

<sup>67</sup> See, e.g., Lemley et al., *supra* note 1, at 1327 ("[B]ecause gatekeeping rules attempt to draw conceptual lines around classes of technology with unclear boundaries—instead of using the policy-based factors that should drive patentable subject matter determinations—the result is a set of tests that overexclude and underexclude in a costly and haphazard way."); Osenga, *supra* note 41, at 1087 (arguing that PSM is inappropriately being used as a proxy for "policy or practical issues that should be handled through other means"); Risch, *supra* note 9, at 658 ("[T]he

does) hypothesize that patents on nature as a class generate excessive monopoly costs,<sup>68</sup> such a hypothesis is unsatisfactory because, in the absence of a reasonably precise definition of what constitutes a patent on “nature”—which economic theory does not provide—the hypothesis is unfalsifiable and ends up being a just-so story. Because economic theory can neither define what constitutes a patent on “nature” nor convincingly explain why nature ought not be patented, economically minded scholars end up advocating either that the doctrine should be abolished altogether,<sup>69</sup> or (given the political reality that formal abolition has no judicial support) that it should be reinterpreted as being about economic cost-benefit balancing.<sup>70</sup>

In contrast to the contortions required to fit the nature doctrine into an economic mold, a doctrine that excludes nature from patentability makes straightforward sense if one approaches the issue from a variety of moral perspectives and premises. For example, if one subscribes to the religious view that nature is the creation of a divine being, then the moral argument against allowing individuals to patent nature follows quite easily.<sup>71</sup> In a similar vein, if one views nature as the “common heritage of mankind”<sup>72</sup>—whether for religiously inspired reasons<sup>73</sup> or as a moral principle in-and-of itself<sup>74</sup>—then

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PTO and courts should focus on answering specific questions about how to best apply rigorous standards of novelty, nonobviousness, utility, and specification with a scalpel rather than simply eliminating broad swaths of innovation with a machete.”).

<sup>68</sup> See *supra* Part I.

<sup>69</sup> Risch, *supra* note 9.

<sup>70</sup> See, e.g., Burk, *supra* note 21, at 101–02 (briefly considering abolition but then arguing that a “proper formulation” of the nature doctrine would transform it into “purely a matter of public policy informed by economic reality and technical practice”); Lemley et al., *supra* note 1, at 1327 (“One of us has gone so far as to argue that the best solution is to abandon all exceptions, including the historical ones. Whether or not this approach is correct, it is unlikely to gain judicial support in light of *Bilski*.” (footnote omitted)).

<sup>71</sup> See RESNIK, *supra* note 54, at 76 (“For those who hold religious beliefs . . . , patenting nature could be viewed as a form of hubris . . . . God, not man, has the right of authorship and exclusive control over nature.”); see also *Psalms* 24:1–2 (King James) (“The earth is the Lord’s, and the fulness [sic] thereof; the world, and they that dwell therein. For he hath founded it upon the seas, and established it upon the floods.”).

<sup>72</sup> See generally Melissa L. Sturges, Note & Comment, *Who Should Hold Property Rights to the Human Genome? An Application of the Common Heritage of Humankind*, 13 AM. U. INT’L L. REV. 219, 245 (1997) (“The Common Heritage of Mankind principle is an international legal concept which conveys equal property interests to all people.”).

<sup>73</sup> See KEMAL BASLAR, THE CONCEPT OF THE COMMON HERITAGE OF MANKIND IN INTERNATIONAL LAW 14–20 (1998) (exploring the theological roots of the common heritage of mankind concept).

<sup>74</sup> See *id.* at 20–23 (describing more modern justifications for the principle based on human dignity rather than theological argument).

it also follows that patent rights over such resources are inappropriate.<sup>75</sup>

Another moral perspective that would justify a principle that nature ought not be patented is Lockean theory.<sup>76</sup> Lockeans base property rights on a moral claim that arises when an individual applies his labor to the preexisting state of nature.<sup>77</sup> Without artificiality there is no labor and thus no value.<sup>78</sup>

These are not the only moral arguments that can justify a principle of excluding nature from patentability; an exhaustive list is not my goal here. My point is instead that a moralistic perspective would interpret the nature doctrine as being about nature, and not as being about economics. From a moralistic perspective, the problem with a patent on nature—and therefore the principle that determines whether something is a patent on a “law of nature,” “natural phenomenon[on],” or “abstract idea”—is that it covers something *preexisting* and *lacking human artificiality*.

This moralistic account, focused on artificiality, fits much better with the language of the nature doctrine than the standard economic account.<sup>79</sup> A moralistic interpretation of the nature doctrine does not twist the words “law of nature” beyond the breaking point like the economic interpretation does. Although the precise formulation has varied over time, as a generalization the doctrinal distinction has al-

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<sup>75</sup> See *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948) (“The qualities of these bacteria, like the heat of the sun, electricity, or the qualities of metals, are part of the storehouse of knowledge of all men.”).

<sup>76</sup> See generally ROBERT P. MERGES, *JUSTIFYING INTELLECTUAL PROPERTY* 31 (2011) (“[I]t makes sense in any serious discussion of property to start with the writings of John Locke.”).

<sup>77</sup> 2 JOHN LOCKE, *TWO TREATISES OF GOVERNMENT* § 27 (“Whatsoever then he removes out of the State that Nature hath provided, and left it in, he hath mixed his Labour with it, and [joined] to it something that is his own, and thereby makes it his Property.”).

<sup>78</sup> I should make clear that by “labor” I do not mean physical toil. See generally Adam Mossoff, *Saving Locke from Marx: The Labor Theory of Value in Intellectual Property Theory*, SOC. PHIL. & POL’Y, July 2012, at 283. Lockean theory does not necessarily call for a restrictive PSM doctrine that limits the patent system to tangible things. It does, however, support a patent law that measures the amount of artificial human labor (including intellectual labor) as the relevant consideration for patent entitlements.

<sup>79</sup> Emily Michiko Morris, *What is “Technology”?*, 20 B.U. J. SCI. & TECH. L. 24, 24 (2014) (“The answer turns out to have nothing to do with the various pragmatic rationales that courts commonly cite. Rather, the patent system has defined patentable technology according to much simpler criteria—artifice and action.”); see *Diamond v. Chakrabarty*, 447 U.S. 303, 309–10 (1980) (“[R]espondent’s micro-organism plainly qualifies as patentable subject matter. His claim is not to a hitherto unknown natural phenomenon, but to a nonnaturally occurring manufacture or composition of matter—a product of *human ingenuity* having a distinctive name, character and use.” (emphasis added) (internal quotation marks and alteration omitted))).

ways been expressed as a distinction between the discovery of a natural “principle,” on the one hand, and a human “application” of it, on the other.<sup>80</sup> Thus, for example, the Supreme Court in *Le Roy v. Tatham*<sup>81</sup> stated:

A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right. Nor can an exclusive right exist to a new power, should one be discovered in addition to those already known. . . . In all such cases, the processes used to extract, modify, and concentrate natural agencies, constitute the invention. The elements of the power exist; the invention is not in discovering them, but in applying them to useful objects.<sup>82</sup>

Later cases have characterized things falling within the category of the unpatentable as, variously, a “motive power,”<sup>83</sup> “law[s] of nature,”<sup>84</sup> “phenomena of nature,”<sup>85</sup> or “abstract ideas,”<sup>86</sup> but the theme that binds these subdivisions is that all the categories are perceived to be *preexisting*.<sup>87</sup> Conversely, the formulations that courts use to describe the patentable—“invention,”<sup>88</sup> “application,”<sup>89</sup> a “machine or

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<sup>80</sup> See, e.g., *Diamond v. Diehr*, 450 U.S. 175, 187–88 (1981) (“It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”); *Funk Bros.*, 333 U.S. at 130 (“If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end.”); *O’Reilly v. Morse*, 56 U.S. (15 How.) 62, 116 (1853) (“[T]he discovery of a principle in natural philosophy or physical science, is not patentable.”); see also *Mackay Radio & Tel. Co. v. Radio Corp. of Am.*, 306 U.S. 86, 94 (1939) (“While a scientific truth, or the mathematical expression of it, is not patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be.”).

<sup>81</sup> *Le Roy v. Tatham* (*Le Roy I*), 55 U.S. (14 How.) 156 (1852).

<sup>82</sup> *Id.* at 175.

<sup>83</sup> *O’Reilly*, 56 U.S. (15 How.) at 114.

<sup>84</sup> *Parker v. Flook*, 437 U.S. 584, 593 (1978).

<sup>85</sup> *Funk Bros.*, 333 U.S. at 130.

<sup>86</sup> *Bilski v. Kappos*, 130 S. Ct. 3218, 3230 (2010).

<sup>87</sup> This is true even of the abstract ideas category, even though it does not semantically include the word “nature.” The abstract idea exception, like the laws of nature exception, traces its history to *Le Roy II*, where the Court stated:

It is quite true, that a patent cannot be taken out solely for an abstract philosophical principle—for instance, for any law of nature or any property of matter, apart from any mode of turning it to account. A mere discovery of such a principle is not an invention, in the patent-law sense of the term.

*Le Roy v. Tatham* (*Le Roy II*), 63 U.S. (22 How.) 132, 137 (1859) (internal quotation marks omitted). As the quote makes clear, the problem with a patent on an abstract philosophical principle was that it involved the “mere discovery” of something preexisting, not that it lacked specificity.

<sup>88</sup> *Le Roy I*, 55 U.S. (14 How.) 156, 159 (1852).

transformation,”<sup>90</sup> or something that “add[s] enough” to nature<sup>91</sup>—have the theme that they all involve some degree of *human intervention*.

This insight—that the nature doctrine is (or at least can be interpreted as being) based on an aversion to patenting preexisting things—is not really new, though it has been lost to modern patent law.<sup>92</sup> The Supreme Court in *Parker v. Flook*<sup>93</sup> articulated the underlying rationale for the nature doctrine in much the same terms as what I have just identified:

The rule that the discovery of a law of nature cannot be patented rests, not on the notion that natural phenomena are not processes, but rather on the more fundamental understanding that they are not the kind of “discoveries” that the statute was enacted to protect. . . . The underlying notion is that a scientific principle, such as that expressed in respondent’s algorithm, reveals *a relationship that has always existed*.<sup>94</sup>

More recent decisions have moved away from this kind of morals-backed talk and instead promoted the excessive monopoly cost theory.<sup>95</sup> However, as explained above, the excessive monopoly cost theory cannot provide a satisfactory account of the nature doctrine, at least not without reconstructing it to the point where “nature” has nothing to do with nature. A moral perspective provides a more straightforward and coherent interpretation of the language of the nature doctrine than an economic perspective. To the extent that courts continue to give weight to the semantic labels (so that “nature” something to do with nature)—and I submit they do—then one can-

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<sup>89</sup> *Diamond v. Diehr*, 450 U.S. 175, 187 (1981).

<sup>90</sup> *In re Bilski*, 545 F.3d 943, 961 (Fed. Cir. 2008) (en banc), *aff’d sub nom. Bilski v. Kappos*, 130 S. Ct. 3218 (2010).

<sup>91</sup> *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1297 (2012).

<sup>92</sup> See Joshua D. Sarnoff, *Patent-Eligible Inventions After Bilski: History and Theory*, 63 HASTINGS L.J. 53, 89 (2011) (“The religion-inspired prohibition on owning science, nature, and abstract ideas was well understood by the end of the eighteenth century . . .”).

<sup>93</sup> *Parker v. Flook*, 437 U.S. 584 (1978).

<sup>94</sup> *Id.* at 593 & n.15 (emphasis added).

<sup>95</sup> *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2356, 2358 (2014) (rejecting argument that “the abstract-ideas category is confined to ‘preexisting, fundamental truths’ that ‘exist in principle apart from any human action’” and emphasizing “the preemption concern that undergirds our § 101 jurisprudence” (emphasis added) (internal alterations and citations omitted)); *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 126 (2006) (Breyer, J., dissenting from dismissal) (“[T]he reason for the exclusion is that sometimes too much patent protection can impede rather than ‘promote the Progress of Science and useful Arts.’” (emphasis omitted) (quoting U.S. CONST. ART. I, § 8, cl. 8)).

not fully understand PSM law without understanding the role of moralistic arguments.

### C. *Freedom of Thought*

Although the nature doctrine is by far the most important doctrine of modern PSM law, it is not the only one. Another PSM doctrine is the prohibition on patenting mental processes.<sup>96</sup> This doctrine is often conflated with the nature doctrine because courts give both doctrines the same official justification.<sup>97</sup> That is, officially, the reason for the mental process doctrine is that mental processes are (along with laws of nature, natural phenomena, and abstract ideas) “the basic tools of scientific and technological work.”<sup>98</sup> What courts seem to mean by this is a hypothesis that patents on mental processes might lead to excessive monopoly costs in suppressing downstream innovation more than they incentivize upstream conception.

If that is the hypothesis, it is unpersuasive: although mental thinking *in the aggregate* is obviously essential to scientific and technological work, free access to a *particular* mental process is not obviously more essential to scientific or technological advancement than access to any other particular patentable invention, such as to a new type of test tube or to a new type of computer. If the policy justification is an economic one, the rule against patenting mental processes would be highly overinclusive. It makes no more economic sense to deny a patent to a new and useful process merely because it can be entirely performed in the head than to deny a patent to a new and useful product merely because it is alive.<sup>99</sup> One might be concerned about the difficulty of proving infringement of a mental process patent, but—since the burden of proof would be on the patentee<sup>100</sup>—that difficulty would not be a reason to deny the patent *ex ante*.

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<sup>96</sup> See, e.g., *In re Comiskey*, 554 F.3d 967, 979 (Fed. Cir. 2009).

<sup>97</sup> See *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972) (stating in one breath that “[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work”).

<sup>98</sup> *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1371 (Fed. Cir. 2011) (internal quotation marks omitted).

<sup>99</sup> *In re Bergy*, 596 F.2d 952, 975 (C.C.P.A. 1979) (“[W]hen [something] is new and unobvious . . . we see no reason to deprive it . . . of the protection and advantages of the patent system by arbitrarily excluding it . . . on the sole ground that it is alive.”), *aff’d sub nom.* *Diamond v. Chakrabarty*, 447 U.S. 303 (1980); *accord* *Risch*, *supra* note 9, at 658 (arguing against “eliminating broad swaths of innovation with a machete”).

<sup>100</sup> See *Medtronic, Inc. v. Mirowski Family Ventures, LLC*, 134 S. Ct. 843, 846 (2014) (“A patentee ordinarily bears the burden of proving infringement.”).

Rather, the motivating rationale for the mental process doctrine is much more easily understood from a moralistic angle. Patenting mental processes might be viewed as akin to “thoughtcrime” and infringing the freedom of the mind.<sup>101</sup> Viewed from this perspective, an across-the-board categorical prohibition on all mental process patents is justified because the point is to protect freedom of thought as a categorical matter. Under a moralistic justification, the categorical prohibition is not overinclusive in the way that it would be under an economic justification.

Understood in this way, the mental process doctrine and the nature doctrine both have moralistic underpinnings, but the *specific* moral intuitions that undergird them differ. Lockean labor theory would support a rule that nature should be unpatentable, but it does not obviously support making a mental process (which still requires intellectual labor to devise) unpatentable merely because it occurs in the human mind. Conversely, the freedom-of-thought argument would exclude patents on mental processes, but it does not have relevance to whether nature ought to be patentable. In all cases, however, these moral arguments are different in kind to the economic arguments that dominate the discussion. And the fact that a freedom-of-thought rationale fits the actual doctrine much better than an economic rationale suggests that the former is what is really going on.

#### D. *Burkean Tradition*

Finally, at the most general level, my analysis is not just about a better understanding of the doctrines of PSM *law* but also of positions taken in PSM *debates*. That is, beyond situations where judges are influenced by moral considerations in shaping PSM law, the broader debate over PSM is also heavily influenced by moral considerations, which are often obscured. And these moral considerations are at play even when the subject matter is more distant from an obvious case like the patentability of human genes.

To illustrate what I mean, consider the debates over the patentability of business methods and software. In most academic circles—and even more so in the courts—these debates are conducted in doc-

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<sup>101</sup> See Kevin Emerson Collins, *Bilski and the Ambiguity of “An Unpatentable Abstract Idea,”* 15 LEWIS & CLARK L. REV. 37, 62 (2011) (“Claims reciting newly invented mental processes raise concerns about property in basic tools and restrictions on First Amendment rights.”); Kevin Emerson Collins, *The Knowledge/Embodiment Dichotomy*, 47 U.C. DAVIS L. REV. 1279 (2014) (arguing that current patent rhetoric fails to grasp the concept of excluding knowledge qua knowledge from patent protection, and that the mental process doctrine is an imperfect attempt to protect this policy interest).

trinal and consequentialist terms.<sup>102</sup> People debate whether software and business methods count as “abstract ideas.”<sup>103</sup> People debate whether software and business method patents promote progress.<sup>104</sup> People also debate whether software and business method patents are constitutional.<sup>105</sup> But someone making an argument in purely traditionalist terms—where tradition ought to be respected for its own sake and regardless of constitutional, doctrinal, or consequentialist arguments—is prone to being dismissed as a behind-the-times Luddite who doesn’t need to be taken very seriously.<sup>106</sup> Thus, no one makes an argument in those terms.<sup>107</sup>

When one scratches beneath the surface, however, I submit that arguments based on tradition in fact play a much more substantial role in debates over the patentability of business methods and software than is commonly appreciated.<sup>108</sup> Consider, for example, Justice Ste-

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<sup>102</sup> But see Thomas F. Cotter, *A Burkean Perspective on Patent Eligibility*, 22 BERKELEY TECH. L.J. 855 (2007).

<sup>103</sup> See, e.g., *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347 (2014); *Bilski v. Kappos*, 130 S. Ct. 3218, 3229–31 (2010); Pamela Samuelson & Jason Schultz, “Clues” for Determining Whether Business and Service Innovations Are Unpatentable Abstract Ideas, 15 LEWIS & CLARK L. REV. 109 (2011).

<sup>104</sup> See, e.g., BESSEN & MEURER, *supra* note 52, at 26 (arguing that software patents should be narrowly limited or abolished due to their economic harms); Rochelle Cooper Dreyfuss, *Are Business Method Patents Bad for Business?*, 16 SANTA CLARA COMPUTER & HIGH TECH. L.J. 263, 274 (2000); Olson, *supra* note 1, at 227–36 (arguing that business method patents are undesirable if we take the utilitarian basis of the patent system seriously); Pamela Samuelson, *Benson Revisited: The Case Against Patent Protection for Algorithms and Other Computer Program-Related Inventions*, 39 EMORY L.J. 1025, 1133–34 (1990) (arguing against software patents based on “[p]redictions that patents may be harmful to the software industry”); cf. Menell, *supra* note 7, at 1305 (arguing that uncertainty over the patentability of software and business methods causes economic harm).

<sup>105</sup> See John R. Thomas, *The Patenting of the Liberal Professions*, 40 B.C. L. REV. 1139, 1139–42 (1999) (arguing that the new expansive conception of PSM is inconsistent with the constitutional limitation of patents to the “useful Arts”); see also Andrew A. Schwartz, *The Patent Office Meets the Poison Pill: Why Legal Methods Cannot Be Patented*, 20 HARV. J.L. & TECH. 333, 336 (2007) (arguing that legal methods do not constitute “inventions” for purposes of the Patent Act).

<sup>106</sup> See *Bilski*, 130 S. Ct. at 3227 (dismissing the machine-or-transformation test as a relic of the “Industrial Age” that is inappropriate for the “Information Age”).

<sup>107</sup> Even Thomas Cotter, who is perhaps the most forthright proponent of a Burkean perspective on patentable subject matter, is careful to portray it as ultimately based on consequentialist policy considerations and to disclaim a view of tradition as having innate value. See Cotter, *supra* note 102, at 857–58 (arguing that a Burkean approach “respects, though it does not worship, tradition” because “tradition and custom embody practices that incorporate the collective insights of many people and that have proven successful over time”).

<sup>108</sup> See, e.g., Menell, *supra* note 7, at 1307–08 (arguing that courts should give greater respect to “two centuries of jurisprudential evolution”); Olson, *supra* note 1, at 204–27 (praising the historical role that courts played as PSM gatekeepers while lamenting that courts have “abandoned” that role); Samuelson, *supra* note 104, at 1026 (“Historical limitations on the scope

vens's concurring opinion in *Bilski v. Kappos*,<sup>109</sup> which argued for a per se rule against business method patents.<sup>110</sup> On the surface, the opinion is ostensibly economic: he states that the "primary concern is that patents on business methods may prohibit a wide swath of legitimate competition and innovation."<sup>111</sup> However, if one reads the opinion more carefully, much of his argument is really Burkean in character: almost the entire opinion is devoted not to studying or considering the economic costs and benefits of business method patents but instead to a historical argument that "[f]or centuries, it was considered well established that a series of steps for conducting business was not, in itself, patentable."<sup>112</sup> Such Burkean arguments are not necessarily "moralistic" in the strictest sense of the word—one can be a Burkean because one values tradition for its own sake or because of a high level consequentialist concern about potential unforeseeable side effects from rapid change—but they always reflect an *a priori* value judgment that is very different in character from an economic argument based on observable costs to some "wide swath of competition and innovation."

I should make clear that, in saying that Justice Stevens's argument in *Bilski* is primarily Burkean, I am not saying that he is uninfluenced by economic concerns. I am saying that *both* economic and moralistic concerns have resonance, and advocates seeking to achieve a particular outcome (including Supreme Court Justices writing dissents to persuade future generations) will make appeals to those differing philosophies. The point here is that the current debate elevates economic arguments while downplaying moralistic ones; but this is not because moralistic arguments are wrong, or that they do no work in actual decisionmaking, but simply because they are *unfashionable* to say out loud in today's political climate. Justice Stevens's older dissenting opinion in *Diamond v. Diehr*,<sup>113</sup> where he advocated a per se ban on software patents, with obvious parallels to his argument in *Bilski* for a per se ban on business method patents, strikes a very differ-

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of patents, both in the United States and abroad, . . . raise serious doubts about the use of patents as a form of intellectual property protection for software innovations."); Schwartz, *supra* note 105, at 334 ("Has our patent system lost its way? Courts, commentators, and even practitioners are increasingly pining for the good old days . . ."); Thomas, *supra* note 105, at 1139 (lamenting that "[t]imes have changed in patent law").

<sup>109</sup> *Bilski v. Kappos*, 130 S. Ct. 3218 (2010).

<sup>110</sup> *Id.* at 3232 (Stevens, J., concurring).

<sup>111</sup> *Id.* at 3255.

<sup>112</sup> *Id.* at 3232.

<sup>113</sup> *Diamond v. Diehr*, 450 U.S. 175 (1981).

ent rhetorical tone.<sup>114</sup> In *Diehr*, he *disclaims* reliance on economic policy and says that such policy considerations are something that the “Court is not authorized to address.”<sup>115</sup> While it is not impossible that Justice Stevens became converted to the idea of PSM being about judicially-implemented economic policy over thirty years, a more plausible alternative hypothesis is that what changed over the last thirty years is the fashionability of various types of arguments in legal and political rhetoric.

### III. PAYOFFS

At this point, a reader may ask, “so what?” Even if moral arguments in fact often underlie PSM law and PSM debates, there is little direct payoff from engaging in a moral debate: moral values are notoriously hard to change,<sup>116</sup> and a stalemate of moral values is even harder to break than a stalemate of empirical intuitions.<sup>117</sup>

To this I have two responses. The first is that a more candid and transparent debate is a good for its own sake. The second is that, although it is admittedly difficult to change people’s moral values, that is an unfair point of comparison. The current PSM debate is not a value-neutral debate where the only issue is getting the “right” economic answer. The current debate is actually a value-laden debate where moral values play a large role in shaping PSM law, but where this fact is largely unknown and unacknowledged, and so no progress ever gets made while much doomed effort is expended on a wild goose chase for clearer doctrine and empirical resolution (which people believe—wrongly—will move the ball). Without more clarity on what PSM debates are really about, not only do people end up talking past each other, they do not even realize that they *are* talking past one another.

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<sup>114</sup> *Id.* at 193–220 (Stevens, J., dissenting).

<sup>115</sup> *Id.* at 216–17.

<sup>116</sup> Jeffrey R. Seul, *Settling Significant Cases*, 79 WASH. L. REV. 881, 912 (2004) (“[M]oral beliefs . . . are deeply ingrained, hard to change, and associated with powerful emotions.”).

<sup>117</sup> See Cynthia M. Ho, *Splicing Morality and Patent Law: Issues Arising from Mixing Mice and Men*, 2 WASH. U. J.L. & POL’Y 247, 283–84 (2000) (arguing against overt consideration of moral issues in patent law because “it is unlikely that all parties could ever be satisfied since issues of morality are inherently controversial”); Joshua D. Sarnoff, *The Current State of Patent Eligibility of Medical and Biotechnological Inventions in the United States*, in INTELLECTUAL PROPERTY AND EMERGING BIOTECHNOLOGIES: THE NEW BIOLOGY 84, 100 (Matthew Rimmer & Alison McLennan eds., 2012) (stating that moral disagreements “may be even less susceptible to theoretical and empirical resolution” than economic disagreements).

### A. Clarifying the Stakes in the Nature Doctrine Debate

Let me begin by illustrating how the crosstalk occurs. Consider the debate over the patentability of isolated naturally occurring substances. In *Parke-Davis v. H.K. Mulford Co.*,<sup>118</sup> Judge Learned Hand famously held that isolated adrenaline (a naturally occurring substance in the human body) is patentable. In *Myriad*, Justice Thomas held that isolated human genes are not patentable because they are products of nature.<sup>119</sup> The tension between these two decisions has been widely acknowledged.<sup>120</sup> Yet if one looks only at the surface, there would appear to be much common ground between the two sides. After all, both decisions purport to be applying the same body of doctrine (i.e., the doctrine that laws and products of nature are not patentable), and both decisions purport to understand that doctrine as serving the same economic policy goal of promoting innovation.

But if we scratch below the surface, it quickly becomes clear that the two sides are not conducting the same analysis. The key passage in Hand's *Parke-Davis* opinion is the following:

[E]ven if it were merely an extracted product without change, there is no rule that such products are not patentable. Takamine was the first to make it available for any use by removing it from the other gland-tissue in which it was found, and, while it is of course possible logically to call this a purification of the principle, *it became for every practical purpose a new thing commercially and therapeutically*. That was a good ground for a patent. That the change here resulted in ample practical differences is fully proved. . . . The line between different substances and degrees of the same substance is to be drawn rather from the common usages of men than from nice considerations of dialectic.<sup>121</sup>

What emerges from this paragraph is that, for Hand, whether something should be considered patentable should be determined according to its “commercial[ ] and therapeutic[ ]” qualities and not “nice considerations of dialectic.”<sup>122</sup> This fits hand-in-glove with the excessive monopoly cost theory described in Part I.A. That is, in de-

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<sup>118</sup> *Parke-Davis v. H.K. Mulford Co.*, 189 F. 95 (S.D.N.Y. 1911).

<sup>119</sup> *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2111 (2013).

<sup>120</sup> See, e.g., MERGES & DUFFY, *supra* note 65, at 158 (presenting *Myriad* as an “alternative view” to *Parke-Davis*); Jon M. Harkness, *Dicta on Adrenalin(e): Myriad Problems with Learned Hand's Product-of-Nature Pronouncements in Parke-Davis v. Mulford*, 93 J. PAT. & TRADE-MARK OFF. SOC'Y 363, 364–65 (2011).

<sup>121</sup> *Parke-Davis*, 185 F. at 103 (emphasis added) (citations omitted).

<sup>122</sup> *Id.*

termining whether adrenaline constitutes a “product of nature,” the key question is not whether it is natural, whether it is structurally identical to adrenaline in the human body, or whether it might be possible to semantically call the patented invention a purification of a naturally occurring substance. Rather, the key inquiry is an inquiry into the practical economic consequences. In the Hand worldview, a product of nature is whatever produces excessive monopoly costs, and adrenaline is not a product of nature (despite its intuitive “naturalness”) because it does not produce excessive monopoly costs and instead is highly beneficial “commercially and therapeutically.” In this worldview, the measure of economic benefits and costs directly drives the legal outcome.

Contrast this with Justice Thomas’s opinion in *Myriad*. In Part II.A, I have already explained that I think the *Myriad* opinion is less than fully candid. But even taking the opinion as it is, the key portion reveals a very different analysis from the kind that Hand advocated:

Myriad recognizes that our decision in *Chakrabarty* is central to this inquiry. . . . The *Chakrabarty* bacterium was new with markedly different characteristics from any found in nature . . . . In this case, by contrast, Myriad did not create anything. To be sure, it found an important and useful gene, but separating that gene from its surrounding genetic material is not an act of invention.

*Groundbreaking, innovative, or even brilliant discovery does not by itself satisfy the § 101 inquiry.* In *Funk Brothers Seed Co. v. Kalo Inoculant Co.*, this Court considered a composition patent that claimed a mixture of naturally occurring strains of bacteria that helped leguminous plants take nitrogen from the air and fix it in the soil. . . . The Court held that the composition was not patent eligible *because the patent holder did not alter the bacteria in any way*. His patent claim thus fell squarely within the law of nature exception. So do Myriad’s. Myriad found the location of the BRCA1 and BRCA2 genes, but that discovery, by itself, does not render the BRCA genes new compositions of matter that are patent eligible.<sup>123</sup>

In striking contrast to Hand’s emphasis on the commercial and therapeutic value of adrenaline, Justice Thomas’s opinion deems such practical economic considerations insufficient and perhaps outright ir-

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<sup>123</sup> *Myriad*, 133 S. Ct. at 2116–17 (emphasis added) (internal quotation marks, alterations, and citations omitted).

relevant: “Groundbreaking, innovative, or even brilliant discovery does not by itself satisfy the § 101 inquiry.”<sup>124</sup> Instead, what matters according to Justice Thomas is whether the patent holder “alter[s] the [natural substance] in any way.”<sup>125</sup> In other words, within this worldview, the measure of human transformation is what drives the outcome.

What emerges from these opinions are two very different visions for how the nature doctrine analysis should operate. In one paradigm, the nature doctrine analysis proceeds as a case-by-case standard. The question is whether the claimed invention is commercially or technologically significant. This question has self-evident relevance to economic policy goals of maximizing social welfare, and the answer to the question determines the legal outcome, in that a commercially and technologically significant (and thus economically beneficial) invention is deemed to not be a “law of nature” while an economically harmful invention is deemed to be one. Within this paradigm, economic analysis plays a leading role since it is outcome-determinative. This paradigm can be closely associated with cases such as *O’Reilly v. Morse*<sup>126</sup> and *Parke-Davis*, as well as scholarly arguments by Dan Burk,<sup>127</sup> John Duffy,<sup>128</sup> and Mark Lemley et al.<sup>129</sup>

In another paradigm, the nature analysis proceeds as a hard-edged rule. The question is whether the type of invention at issue has sufficient “alter[ation]” from nature.<sup>130</sup> This question has no obvious relevance to the economic policy goals of the patent system—ensuring that patented inventions are different from nature does not necessarily, or even intuitively, promote economic welfare—but it does have obvious relevance to a variety of moral concerns. The answer to this morals-backed question directly determines the legal outcome, in that

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<sup>124</sup> *Id.* at 2117.

<sup>125</sup> *Id.*

<sup>126</sup> *O’Reilly v. Morse*, 56 U.S. (15 How.) 62, 113 (1853) (holding that claim is not patentable subject matter because it is “too broad” and may impair “some future inventor, in the onward march of science”).

<sup>127</sup> See Burk, *supra* note 21, at 102 (“We look to the policy work that the doctrine is intended to do. . . . Drawing the line is purely a matter of public policy informed by economic reality and technical practice.”).

<sup>128</sup> See Duffy, *supra* note 5, at 614, 644 (arguing that hard-edged PSM rules “always fail” and “the prohibition against patenting principles of nature still survives, but it survives only because it has incorporated a complex set of factors into its analysis”).

<sup>129</sup> Lemley et al., *supra* note 1, at 1346 (“We don’t exclude inventions from patentability because the invention is too abstract. We refuse to patent certain claims when those claims reach too broadly and thereby threaten downstream innovation.”).

<sup>130</sup> See *supra* note 125 and accompanying text.

types of inventions that involve insufficient alteration are deemed to be laws or products of nature and unpatentable, while types of inventions that cross some threshold of sufficient alteration are deemed patent eligible. Within this paradigm, economic analysis plays only a post-hoc, atmospheric role in that, if patents on nature happen to be positively correlated with excessive monopoly costs, that would provide support for the continued existence of the nature doctrine (if such existence were questioned). But economic considerations do not drive case outcomes or shape the operation of the doctrine on a day-to-day level; the moral principle of artificiality does. This paradigm can be associated with cases such as *Myriad*, *Mayo*, and *Funk Bros. Seed Co. v. Kalo Inoculant Co.*,<sup>131</sup> as well as scholarly arguments by Josh Sarnoff<sup>132</sup> and Jay Thomas.<sup>133</sup>

The analysis here raises two important points. The first is that the disagreement between the two paradigms is much deeper than just a shallow dispute over distinct empirical intuitions or ambiguous doctrinal phrasing. The two sides are not agreeing on the question to be asked and then coming to different answers; *they are disagreeing about what the question is*. In one paradigm, the question is the measure of economic costs and benefits; in the other, the question is the degree of artificial human intervention. Properly understood, the nature doctrine debate is a classic debate between utilitarianism versus deontology. It cannot be resolved by just polishing up doctrinal formulations or by collecting more empirical data.

The second point, though, is that the current rhetoric unhelpfully obscures what is going on. At face value, everyone talks in terms of “laws of nature” and concerns about excessive monopoly costs. The problem is that both sides mean very different things by these incantations. Those on the Hand side of this debate bend the words “law of nature” beyond the breaking point: within their paradigm a “law of nature” has nothing to do with nature and is really code for a cost-benefit balancing principle. Those on the Thomas side of this debate have their own problem: when they invoke excessive monopoly cost concerns, it is only as a post-hoc story, not as something that drives the legal analysis and determines outcomes. The result is that each side assumes that the other is talking about the same thing and asking the same questions (because they are using the same words), and merely coming to different answers. But in fact the two sides are talk-

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<sup>131</sup> *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127 (1948).

<sup>132</sup> See Sarnoff, *supra* note 92, at 58–59.

<sup>133</sup> See Thomas, *supra* note 105, at 1142–43.

ing about completely different things and asking completely different questions.

By presenting the two paradigms and associating them with specific judges and decisions, I do not mean to say that these (or any) judges in real life sort themselves into rigid utilitarian versus moralistic camps, or that the actual decisionmaking in the cases cited were entirely utilitarian or entirely moralistic in character. My point in citing and quoting the opinions is to show the *logical endpoints* of the two paradigms. In real life, however, judges are pragmatists who are influenced by a mix of utilitarian and deontological arguments,<sup>134</sup> and legal decisions incorporate both kinds of considerations, whatever the nature of the articulated test. A doctrine that is articulated in economic cost-benefit balancing terms can be bent to incorporate moral considerations (e.g., by conjecturing that a morally problematic patent will cause high monopoly costs); while a doctrinal test that is articulated in moralistic categorical terms can be bent to incorporate economic considerations (e.g., by deeming an economically inefficient patent to be “natural”). The result is a muddled mix, where moral and economic considerations both play a role, and second-order normative disagreements about utilitarianism-versus-deontology are more about the *weight* to be assigned to each type of consideration than about whether the consideration is relevant at all. But without first cleanly distinguishing the two paradigms, one cannot make sense of the muddled mix.

### B. *Clarifying the Stakes in PSM Debates Generally*

The point in the prior Section can be generalized: PSM debates—including but not limited to debates about the proper interpretation and application of the nature doctrine—are fundamentally about normative commitments. The first and foremost problem in these debates is not that nobody knows what the right *answer* is.<sup>135</sup> The first and foremost problem with PSM is that nobody knows what the right

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<sup>134</sup> RICHARD A. POSNER, *HOW JUDGES THINK* 230 (2008). I should note that my conception of pragmatism here differs somewhat from Posner’s use of the term. In Posner’s vocabulary, pragmatists are mainly consequentialists. See, e.g., *id.* at 232 (attributing the pragmatic approach to law to Oliver Wendell Holmes, who “argued that judges in difficult cases made law with reference to the likely social and economic consequences of their decisions”). My point is that judges act out of both consequentialist and nonconsequentialist considerations—what Posner calls “constrained pragmatism[us].” *Id.* at 230, 253–54.

<sup>135</sup> *Contra* Duffy, *supra* note 5, at 619 (“The biggest impediment to developing stable patentable subject matter doctrine . . . is the continuing inability to answer the [economic] question identified by Justice Breyer with any rigorous and convincing data.”).

question is. Or, more precisely, that many people have different views about what the question ought to be.

As Part II has explained, normative disagreement animates many different PSM debates. The gene patent debate is not a narrow doctrinal debate about the best analogy to be found in Supreme Court precedent, or a narrow empirical debate about the economic consequences of gene patents—it also involves a heavy dose of moral disagreement about whether, and to what extent, patenting *human* genes is morally repulsive, and how that moral concern should weigh against other considerations such as the potential economic benefits of gene patents. Similarly, the mental process patent debate is not about finely parsing a stray line in *Gottschalk v. Benson*<sup>136</sup> that happens to include “mental processes” along with “laws of nature” and “abstract intellectual concepts” as unpatentable categories,<sup>137</sup> nor is it about the economic costs and benefits of mental process patents. The mental process doctrine is best explained as reflecting a concern for freedom of thought. And even in debates that are more stereotypically “economic,” such as debates about the patentability of business methods and software, some digging will reveal that noneconomic arguments are often doing much work beneath the surface.<sup>138</sup>

Yet on the surface, all of these debates tend to be conducted in rhetoric that either emphasizes legal doctrine or economic theory. And the legal doctrine is portrayed as if it is the product of economic theory.<sup>139</sup> In short, the impression that the literature and caselaw gives is that PSM debates are fundamentally economic in character.

In one sense, the fact that economic rhetoric is prevalent in PSM debates should not be surprising. Judges have political incentives to portray PSM law as a product of economic theory because economics promises objectively right answers that are divorced from subjective-value judgments.<sup>140</sup> A judge who candidly admitted to invalidating a

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<sup>136</sup> *Gottschalk v. Benson*, 409 U.S. 63 (1972).

<sup>137</sup> *Id.* at 67.

<sup>138</sup> See *supra* notes 108–12 and accompanying text.

<sup>139</sup> See *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2356, 2358 (2014) (rejecting argument that “the abstract-ideas category is confined to ‘preexisting, fundamental truths’ that ‘exist in principle apart from any human action’” and emphasizing “*the* preemption concern that undergirds our § 101 jurisprudence” (emphasis added) (alterations omitted)); *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 126 (2006) (Breyer, J., dissenting from dismissal) (“[T]he reason for the exclusion is that sometimes too much patent protection can impede rather than ‘promote the Progress of Science and useful Arts.’” (emphasis omitted)).

<sup>140</sup> Ugo Mattei, *The Rise and Fall of Law and Economics: An Essay for Judge Guido Calabresi*, 64 MD. L. REV. 220, 232 (2005) (arguing that the rise of law and economics can be attributed to its claim to objectivity).

patent because it offended *his* moral values would be called a “judicial activist” or worse. And even advocates and scholars who are not bound by judicial conventions of value-neutrality will find little direct payoff to overtly engaging moral arguments. Because moral beliefs are hard to change, a scholar who makes a moral argument either for or against the patentability of some category of things (e.g., genes, software, etc.) will likely find himself preaching only to the choir. The only way to make any progress in PSM debates, it might seem, is if PSM were an economic question capable of objective empirical resolution.

That it is entirely understandable to *want* PSM questions to be about empirical economics, however, does not make it *true*. And an incorrect understanding is not only bad in-and-of-itself (though it is that) but it also leads to broader problems in terms of opaque doctrine, unpredictable decisionmaking, and a lower quality of argument in PSM debates. When moral arguments cannot be openly made, the result is not that that moral sentiments go away. The result is only that doctrinal language, empirical results, and legal arguments all get bent, and much gets lost in the communicative process.<sup>141</sup>

I have already illustrated in Part III.A how moral concerns about patenting nature are obscured under the rhetoric of the excessive monopoly cost theory. Let me now provide an example where the hidden moral concern is about something else. Consider *Laboratory Corp. of America Holdings v. Metabolite Laboratories, Inc.* (“*LabCorp*”),<sup>142</sup> the case that in many senses started the current interest in patentable subject matter.<sup>143</sup> *LabCorp* involved a claim to a medical diagnostic test that correlated a high level of homocysteine in the blood with a vitamin deficiency.<sup>144</sup>

The patenting of diagnostic tests raises several potential moral concerns, one of which is the concern about propertizing preexisting natural principles. Before getting to the other hidden concerns, how-

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<sup>141</sup> Again, my point is not that these arguments and results are consciously or dishonestly bent. As the cultural cognition literature explains, people view even seemingly objective evidence through tinted lenses. See, e.g., Dan M. Kahan & Donald Braman, *More Statistics, Less Persuasion: A Cultural Theory of Gun-Risk Perceptions*, 151 U. PA. L. REV. 1291, 1299–1302 (2003).

<sup>142</sup> *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc. (LabCorp)*, 548 U.S. 124 (2006) (per curiam).

<sup>143</sup> See Eisenberg, *supra* note 53, at 2 (“For the quarter century preceding *Laboratory Corporation*, the . . . patent bar[ ] had—for the most part—taken it for granted that new advances in biotechnology were patentable subject matter . . .”).

<sup>144</sup> *LabCorp*, 548 U.S. at 125 (Breyer, J., dissenting from dismissal).

ever, let me begin by noting that Laboratory Corporation of America Holdings (“LabCorp”), the accused infringer in *LabCorp*, made no overt moral arguments at all. Rather, its brief made only two arguments relevant to patentable subject matter: (1) a legalistic argument that the claim at issue “violates the prohibition on patenting ‘laws of nature, natural phenomena, and abstract ideas,’”<sup>145</sup> and (2) an economic policy argument that the patent “hinders rather than promotes scientific and technological progress.”<sup>146</sup> Once again, in the prevailing rhetoric, PSM arguments are phrased in either doctrinal or economic terms (and the doctrine, in turn, is purportedly based on economic theory).

Does this mean that LabCorp was not making moralistic appeals? Consider how it phrased the question presented: “Whether a method patent . . . can validly claim a monopoly over a basic scientific relationship used in medical treatment such that any doctor necessarily infringes the patent merely by thinking about the relationship after looking at a test result.”<sup>147</sup> This question *can* be understood as an appeal to the economic concern of excessive monopoly costs—it does, after all, speak of a “monopoly” over a “basic scientific relationship,” but it is designed to appeal to other intuitions as well. Most particularly, LabCorp was trying to appeal to a moralistic intuition that doctors ought to have mental privacy and freedom of thought. Indeed, LabCorp’s brief used the words “think” or “thinking”—as in, “nobody should be able to gain the legal right to prevent doctors from simply *thinking* about a basic scientific principle in treating patients”<sup>148</sup>—no less than 30 times. Yet nowhere does LabCorp explain *why* a patent on thinking would be bad.

I should acknowledge that LabCorp’s strategy in phrasing its argument in this manner was understandable and probably even smart. At that point in time, there was no “mental process” doctrine.<sup>149</sup> The only “doctrinal hooks” that LabCorp had available were the common law nature doctrine and the constitutional mandate that patents are

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<sup>145</sup> Brief for Petitioner at 19, *LabCorp*, 548 U.S. 124 (No. 04-607).

<sup>146</sup> *Id.* at 43.

<sup>147</sup> *Id.* at i.

<sup>148</sup> *Id.* at 45–46.

<sup>149</sup> See *In re Comiskey*, 554 F.3d 967, 979 (Fed. Cir. 2009) (creating mental process doctrine). There was a slightly different “mental steps” doctrine that existed in prior law, but it was widely considered dead at the time of *LabCorp*. See Kevin Emerson Collins, Prometheus Laboratories, *Mental Steps, and Printed Matter*, 50 Hous. L. Rev. 391, 393–94 (2012) (“The mental steps doctrine was relatively short lived. The CCPA . . . had abandoned the doctrine by 1970 . . . . The CAFC never revived the doctrine, and it does not consider the doctrine to be good law today.”).

supposed to promote rather than hinder progress, and those were the doctrinal hooks that LabCorp's lawyers used. But the sacrifice here is that, by casting its argument in a misleading manner—by portraying what is really an argument about the freedom of thought as an argument either about the nonpatentability of nature or an economic concern about excessive monopoly costs—the brief is less logically coherent and fails to make its arguments in the most forceful manner possible. To the extent that LabCorp's lawyers thought that the most serious problem with the patent was that it covered *thinking* rather than a basic scientific relationship (which the location of the italics in the brief would imply), then it would have made their argument stronger to explain why this was the case. As the brief stood, the only issue that seemed to be before the Court was one of patenting basic science (with a consequentialist concern of blocking downstream innovation) and not of patenting mental processes. This presentation feeds a vicious cycle: because parties frame PSM issues in narrow doctrinal and economic terms, this encourages courts to discuss PSM issues in those terms, and because courts discuss PSM issues in narrow doctrinal and economic terms, this encourages litigants (and scholars interested in influencing courts) to frame PSM issues in those terms, and so on *ad infinitum*.

Outside of the judicial forum, there is occasional mention of the concern that diagnostic test patents raise concerns about freedom of thought.<sup>150</sup> Passing reference is sometimes made to moralistic viewpoints when talking about biotechnology patents.<sup>151</sup> And Burkean arguments are sometimes close to being expressly articulated when it comes to business method and software patents.<sup>152</sup> But all in all, these mentions are few and far between and they fall well short of canvassing the full range of moral intuitions that are likely to be driving commitments in PSM debates. The literature and debate is poorer for the loss.

### C. *Clarifying the Nature Doctrine*

Finally, for readers who are not satisfied with a payoff that is largely about conceptual clarity and transparency, my analysis also

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<sup>150</sup> See generally Kevin Emerson Collins, *Propertizing Thought*, 60 SMU L. REV. 317 (2007).

<sup>151</sup> See, e.g., Bagley, *supra* note 9; Robert P. Merges, *Intellectual Property in Higher Life Forms: The Patent System and Controversial Technologies*, 47 MD. L. REV. 1051, 1058–62 (1988); Ossorio, *supra* note 60.

<sup>152</sup> See Cotter, *supra* note 102; Menell, *supra* note 7, at 1307–08; Samuelson, *supra* note 104, at 1026; Thomas, *supra* note 105, at 1139.

provides more concrete payoffs at a doctrinal level. Specifically, my analysis provides a coherent perspective within which many features of existing PSM doctrine can be explained and justified. It provides a useful metric to determine whether something is a “law of nature.”

To elaborate, the central claim of a moralistic interpretation of patentable subject matter is that PSM—or at least the language of PSM doctrine—is about moral aversion, not about economic balancing. This claim has a corollary: if PSM is about moral aversion, then the *content* of PSM doctrine should be understood in light of the moral principles that underlie it. If we forbid patents on nature because of moral aversion, then the scope of what constitutes an impermissible patent on “nature” will be defined by what triggers the moral sentiment. Similarly, if we forbid patents on mental processes because of a concern about freedom of thought, then the scope of the prohibition should be interpreted in light of the underlying moral concern. Because the nature doctrine is generally considered the most significant rule of PSM law, I will focus on the artificiality principle in the rest of this Section, but the same analytical principles apply to other facets of PSM doctrine.

What follows from the above is that, viewed through the lens of the moralistic paradigm, whether a claim covers impermissible “nature” or a permissible “application” of nature will depend on the degree of artificiality involved.<sup>153</sup> And this insight provides a way to understand the various doctrinal tests that courts have developed; tests that make little sense under the excessive monopoly cost theory. Consider the Federal Circuit’s “machine or transformation” test,<sup>154</sup> which continues to be an “important clue”<sup>155</sup> even after the Supreme

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<sup>153</sup> A good illustration of the artificiality principle in action is the contrast between *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127 (1948), and *Diamond v. Chakrabarty*, 447 U.S. 303 (1980). In *Funk Brothers*, the Court holds that a combination of six naturally occurring bacteria in a single package is not patentable. 333 U.S. at 128–32. In *Chakrabarty* the Court holds that a combination of two naturally occurring plasmids in a single genetically engineered microorganism is patentable. 447 U.S. at 309–10. Commentators often point to this contrast as illustrating the intrinsic incoherence and manipulability of PSM doctrine. See, e.g., Allen K. Yu, *Why It Might Be Time To Eliminate Genomic Patents, Together with the Natural Extracts Doctrine Supporting Such Patents*, 47 IDEA 659, 695–97 (2007). But an artificiality principle explains the difference: using genetic engineering to create a new microorganism from natural plasmids involves more human intervention than simply putting bacteria together in a packet. See MERGES & DUFFY, *supra* note 65, at 163 (noting this difference).

<sup>154</sup> *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), *aff’d sub nom.* *Bilski v. Kappos*, 130 S. Ct. 3218 (2010).

<sup>155</sup> *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can.*, 687 F.3d 1266, 1278 (Fed. Cir. 2012) (internal quotation marks omitted).

Court rejected the test as the exclusive test for PSM in *Bilski v. Kappos*.<sup>156</sup>

If one starts with the premise that PSM is about economic policy, then, as many have argued, the machine-or-transformation test is illogical: whether a patent claim involves a machine or transformation has little bearing on its net cost-benefit balance, or at least it is not likely to work as a better proxy for that economic policy question than judging a claim's novelty, nonobviousness, and fit with the specification disclosure.<sup>157</sup> But if one starts with the premise that PSM is about protecting moral values, and the nature doctrine in particular is about artificiality, then the machine-or transformation test makes more sense: a patent claim that involves a machine or a human-induced<sup>158</sup> transformation will necessarily involve more artificiality, and is therefore more likely to be patentable within the framework that I have outlined.

The same is true of the Supreme Court's more recent test, which asks whether a claim "add[s] enough" to a law of nature to be patentable.<sup>159</sup> Within the economic interpretation of the laws of nature doctrine, this inquiry is difficult to decipher, because it pre-assumes a baseline of a category of things known as "laws of nature" from which the inquiry proceeds. This baseline makes no sense to a utilitarian economist: What *are* "laws of nature"? Why *assume* that they are categorically unpatentable to begin with?<sup>160</sup> Because economic theory cannot explicate or explain this pre-assumed baseline, what ends up happening is that utilitarian economics-inclined judges interpret the baseline as a cost-benefit balancing test, such that the patentability of

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<sup>156</sup> *Bilski*, 130 S. Ct. at 3225–27.

<sup>157</sup> See *In re Bilski*, 545 F.3d at 996 (Newman, J., dissenting) ("The court then concludes that because Bilski's Claim 1 fails the machine-or-transformation test it *ipso facto* preempts a 'fundamental principle' and is thereby barred from the patent system under Section 101: an illogical leap that displays the flaws in the court's analysis."); Sichelman, *supra* note 4, at 10 (criticizing the machine or transformation test as "significantly lacking coherence in the policy sense").

<sup>158</sup> Another payoff worth noting here is that the artificiality principle explains why the machine-or-transformation test is universally understood to require a *human-induced* transformation—nobody thinks that natural transformations such as photosynthesis or nuclear fusion in the sun qualify even though they would be included in a literal reading of the textual formulation. See Christopher M. Holman, *Applying Bilski to Biotechnology and the Life Sciences*, PATENTLY-O (Nov. 4, 2008), <http://www.patentlyo.com/patent/2008/11/applying-bilski.html>.

<sup>159</sup> *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1297 (2012).

<sup>160</sup> Of course, if we had evidence that the costs of patents on laws of nature exceed the benefits, there would be an economic justification for making laws of nature categorically unpatentable. But we do not have such evidence, and cannot collect it absent a more precise definition of what constitutes a "law of nature."

isolated adrenaline is determined by its commercial and therapeutic significance rather than any semantic notions about nature.<sup>161</sup> And once a “law of nature” is understood as really being a cost-benefit balancing test, it makes no sense to ask whether a claim “adds” more elements over-and-above that baseline.<sup>162</sup>

In contrast, the “adds enough” inquiry makes complete sense if viewed in light of the artificiality principle. What the inquiry asks is whether a particular claim adds enough *human intervention* to a pre-existing thing to relieve the moral concern about patenting preexisting natural things. The answer to the “what kinds of things must be added” question is therefore “human intervention,” and the answer to the baseline question is “the preexisting natural world.”

At this point, two counterarguments should be addressed. The first is that the Supreme Court’s recent opinion in *Alice Corp. Pty. Ltd. v. CLS Bank International*<sup>163</sup> seems to reject my argument. In *Alice*, the Court stated that the “abstract ideas” category is not “confined to ‘preexisting, fundamental truths’ that ‘exist in principle apart from any human action.’”<sup>164</sup> More specifically, the Court held that activities such as risk hedging and intermediated settlement are not patentable under the nature doctrine.<sup>165</sup> Since risk hedging and intermediated settlement require human action, it would appear to follow that the nature doctrine, at least as applied in *Alice*, is not about excluding preexisting things that exist independent of human action.<sup>166</sup>

I have two responses to this objection. Initially, *Alice* seems more to reflect concerns about patenting business methods and software than concerns about patenting natural principles,<sup>167</sup> so its invocation of the nature doctrine may not prove lasting.<sup>168</sup> Second, even under-

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<sup>161</sup> See *supra* text accompanying note 121.

<sup>162</sup> To be clear, it is not *conceptually* impossible to add something to the outcome of a cost-benefit balancing test. If the optimum cost-benefit balance is to require that adrenaline be isolated before it can be patented, for example, we can imagine a legal rule that requires adrenaline to be both isolated and then purified before it can be patented. But the point is that the cost-benefit balancing test is itself supposed to compute the optimal result, so there is no policy reason for adding anything to that result.

<sup>163</sup> *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347 (2014).

<sup>164</sup> *Id.* at 2356 (alterations omitted).

<sup>165</sup> *Id.* at 2356–57.

<sup>166</sup> See *id.* (“Although hedging is a longstanding commercial practice, it is a method of organizing human activity, not a truth about the natural world that has always existed.” (internal quotation marks and citation omitted)).

<sup>167</sup> See *id.* at 2360 (Sotomayor, J., concurring) (“I adhere to the view that any ‘claim that merely describes a method of doing business does not qualify as a ‘process’ under § 101.” (quoting *Bilski v. Kappos*, 130 S. Ct. 3218, 3232 (2010) (Stevens, J., concurring in judgment))).

<sup>168</sup> Another way to say this is that the Court may be using the “abstract idea” label to

stood as a case about natural principles, nothing in the holding of *Alice* actually contradicts my argument. It is true that, to *perform* risk hedging or intermediated settlement in the real world, human action is required. But the *concepts* of risk hedging and intermediated settlement are preexisting—sexual reproduction in plants and animals, for example, effectively “hedges” against the risk of genetic defects as compared to asexual reproduction.<sup>169</sup> Viewed in this light, the key question in *Alice* is not whether the claim-at-issue implicated a preexisting principle—it did—but whether the patent’s concrete *implementation* of the concept, as reflected in the claim, added enough human artifice.<sup>170</sup> The Court in *Alice* concluded it did not.<sup>171</sup> That conclusion is consistent with an understanding of the nature doctrine as an inquiry into whether there is sufficient artificiality over the preexisting natural world.

The second counterargument, which goes to the heart of my analysis, is that any distinction between the preexisting and the artificial is meaningless.<sup>172</sup> Dan Burk, for example, argues that “[e]ither everything is a product of nature—drawn from and existing in the world—or nothing is a product of nature—having been intellectually and socially constructed by human cognition.”<sup>173</sup> If the artificiality principle is in fact meaningless, then a meaningless principle cannot add coherence to the nature doctrine, and one would then be forced to reconstruct the nature doctrine around some other criterion (such as economic cost-benefit balancing).<sup>174</sup>

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reintroduce the business method and software patent exceptions that it previously rejected in *Bilski*. Using a single doctrinal label to cover multiple policy functions and normative concerns is often politically appealing to judges, but such arrangements are confusing and unstable because the underlying policy functions and normative concerns—i.e., the underlying substance—remain distinct. See generally Samuel L. Bray, *On Doctrines That Do Many Things* (UCLA Sch. of Law, Research Paper No. 14-21, 2014), available at <http://ssrn.com/abstract=2527648>.

<sup>169</sup> RICHARD A. POSNER, *SEX AND REASON* 88–89 (1992).

<sup>170</sup> Cf. *Alice*, 134 S. Ct. at 2355 (“First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts. If so, we then ask, what else is there in the claims before us?” (alterations, internal quotation marks, and citation omitted)).

<sup>171</sup> *Id.* at 2355–57.

<sup>172</sup> See Jacob Sherkow, *The Natural Complexity of Patent Eligibility*, 99 IOWA L. REV. 1137, 1149–50 (2014) (arguing that a doctrine based on the semantic meaning of “laws of nature” is inevitably “unworkable”); Yu, *supra* note 153, at 695–97 (arguing that whether something is perceived as artificial depends on the level of granularity at which it is presented).

<sup>173</sup> Burk, *supra* note 21, at 101.

<sup>174</sup> *Id.* at 102 (stating that “the label product of nature is a conclusion rather than a criterion”).

My response to this objection is that the concept of artificiality is not meaningless because there are easy cases on both sides.<sup>175</sup> A toaster is artificial, raw iron in the ground is natural. It is true that, as a practical matter, no patent claim is directed to a purely natural or purely artificial thing—no one claims raw iron in the ground.<sup>176</sup> But just because artificiality is a spectrum, with fuzzy edges, does not mean that it is meaningless. Iron ore that has been dug up from the ground is *more* artificial than iron ore in the ground; a steel toaster is more artificial than iron ore that has been dug up. What *degree* of artificiality suffices for patentable subject matter is a difficult legal line-drawing question,<sup>177</sup> but it is a different question from the antecedent question of whether artificiality is a meaningful concept at all. The easy cases demonstrate that artificiality is not a meaningless illusion. To the extent that Burk's claim is otherwise, that argument is incorrect.

That said, Burk's argument is not entirely without substance. Although an artificiality principle is not utterly meaningless, it *is* underdeterminate in the sense that it does not precisely draw a line between patent eligible subject-matter and patent ineligible subject-matter. All my analysis can say is that more artificiality is *better*, it cannot tell us how much artificiality is *sufficient*. What constitutes sufficient artificiality for any particular case will depend on the specific moral values of the individual decisionmaker. Because everyone has a slightly different set of moral values, my analysis is generally not able to prescribe particular outcomes at a bottom-line level.

My only response to this point is to say that prescribing outcomes—either for or against patentability—is not what my analysis is trying to accomplish. My goal is to provide a conceptual framework to explain what the nature doctrine is *about*, in a way that gives the doctrine greater coherence, enhances our understanding, and allows

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<sup>175</sup> On pointing to easy cases as a countermove to deconstruction, see Kenney Hegland, *Goodbye to Deconstruction*, 58 S. CAL. L. REV. 1203 (1985); Lawrence B. Solum, *On the Indeterminacy Crisis: Critiquing Critical Dogma*, 54 U. CHI. L. REV. 462, 471 (1987). On easy cases more generally, see Frederick Schauer, *Easy Cases*, 58 S. CAL. L. REV. 399 (1985).

<sup>176</sup> Burk's version of the deconstruction is similar but subtly different. Burk argues that all patent claims (presumably even one to raw iron in the ground) require human cognition because the boundary between iron and the surrounding material has no significance in nature—in nature, everything simply exists as “globes of material.” Burk, *supra* note 21, at 95. While this is true, it is not on point. The *recognition* of a distinction between iron and other surrounding material is an exercise in human cognition, but its *existence* is natural. A patent claim to iron would still be a claim to a preexisting category of things.

<sup>177</sup> Morris, *supra* note 79, at 66 (“The degree of artifice and action necessary for patentability therefore requires a judgment call that will vary from judge to judge and court to court.”).

us to explain why courts keep coming up with doctrinal tests (such as the machine-or-transformation test) that do not seem to fit well with the articulated economic justification.<sup>178</sup> The fact that the artificiality principle operates at an intermediate level and does not lead to bottom-line prescriptions is a limitation, but not a defect, of my analysis.<sup>179</sup>

Beyond allowing us to make more sense of what the nature doctrine is about, the artificiality principle can lead us to some insights about specific features of this doctrine. That is, there are many parts of the nature doctrine that are generally taken for granted, but which might appear counterintuitive if given some thought. The artificiality principle explains these features.<sup>180</sup>

First, the understanding that the doctrinal rule against patenting “laws of nature, natural phenomena, and abstract ideas” as really being about an artificiality principle explains why natural products are universally understood as being unpatentable,<sup>181</sup> even though they are not expressly included in the standard textual formulation (unless one takes a very broad view of what constitutes “phenomena”). Natural products are just as preexisting as laws of nature and natural phenomena, and therefore they fall within the rule as understood in this manner.

Second, understanding the nature doctrine as being about a moral principle that pre-existing things should not be patented explains why it is a *unitary* rule, governed by a unitary doctrinal test. That is, the “laws of nature doctrine,” “natural phenomena doctrine,” and “abstract ideas doctrine” are not distinct. Even though the exceptions are semantically distinguished, they are all expressions of a single concept and the semantic labels are often used interchangeably. For example, in *Funk Brothers*, the Supreme Court oscillates between

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<sup>178</sup> See Eisenberg, *supra* note 53, at 7 (explaining that “current patentable subject matter doctrine suffers from a lack of clarity not only as to what the applicable rules are, but also as to what those rules are supposed to accomplish”).

<sup>179</sup> For a discussion of the role of mid-level principles, see MERGES, *supra* note 76, at 139–43.

<sup>180</sup> I should make clear that my claim in the remainder of this Section is not a comparative one: I do not analyze whether one might or might not reach the same doctrinal prescriptions through the excessive monopoly cost theory. My criticism of the excessive monopoly cost theory has been detailed in Part I.0. My goal here is simply to describe the affirmative payoffs of the artificiality principle.

<sup>181</sup> See *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (“The laws of nature, physical phenomena, and abstract ideas have been held not patentable. Thus, a new mineral discovered in the earth or a new plant found in the wild is not patentable subject matter.” (citations omitted)).

calling the claimed subject matter (a combination of six bacteria) a “law of nature,”<sup>182</sup> a “phenomen[on] of nature,”<sup>183</sup> and a “natural principle.”<sup>184</sup> More recently, the Court in *Myriad* oscillates between framing the question as whether human genes are a “law of nature,”<sup>185</sup> “naturally occurring phenomena,”<sup>186</sup> or “products of nature.”<sup>187</sup> Although the Court sometimes invokes only one particular label in its decisions, I am aware of no case that specifically holds something to be a law of nature, a natural phenomenon, or an abstract idea, but *not* one of the other categories.

Third, the moralistic paradigm produces a novel way to understand the statutory text of § 101. If one takes the view that a widely shared moral intuition with influence in patent law debates is the intuition that preexisting things ought not be patented—and that this intuition is likely to affect legislators as well as judges in formulating PSM doctrine—then it emerges that the statutory text is quite easily understood to contain an artificiality principle.<sup>188</sup> The statutory text allows patents on “any . . . process, machine, manufacture, or composition of matter.”<sup>189</sup> The words “machine” and “manufacture” inherently suggest something artificial. A “composition” of matter requires the combination of more than one natural ingredient,<sup>190</sup> which can be reasonably understood as requiring human action. And a “process” in patent law was historically defined as “a mode of *treatment* of certain materials to produce a given result. It is an act, or a series of acts, *performed upon* the subject-matter to be transformed and reduced to a different state or thing.”<sup>191</sup> Once again, although human agency was not explicit in this definition, it can be fairly implied. And if one were

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<sup>182</sup> Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 130 (1948).

<sup>183</sup> *Id.*

<sup>184</sup> *Id.* at 131. Importantly, the rule that “abstract ideas” may not be patented traces its heritage to the older formulation that “principles” were not patentable. See *Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 175 (1852) (“A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented . . .”).

<sup>185</sup> Ass’n for Molecular Pathology v. Myriad Genetics, Inc., 133 S. Ct. 2107, 2117 (2013).

<sup>186</sup> *Id.* at 2116.

<sup>187</sup> *Id.* at 2114.

<sup>188</sup> Cf. Samuelson & Schultz, *supra* note 103, at 117–18 (arguing that the abstract ideas doctrine should be understood in light of “[t]he Patent Act’s [e]mphasis on [m]achines, [m]anufactures, and [c]ompositions of [m]atter,” but reaching a concreteness principle instead of an artificiality principle).

<sup>189</sup> 35 U.S.C. § 101 (2012).

<sup>190</sup> *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1349 (Fed. Cir. 2014) (“[A] composition of matter requires the combination of two or more substances . . .”).

<sup>191</sup> *Cochrane v. Deener*, 94 U.S. 780, 788 (1876) (emphasis added).

to look back to the older statutory phrasing—“art”<sup>192</sup> instead of “process”—the requirement of human activity becomes even more explicit.<sup>193</sup>

This insight is important because it allows us to reconcile the statutory text with the common law nature doctrine: if the principle of artificiality underlies both the statutory text and the common law nature doctrine (backed, in turn, by various moral intuitions that support limiting patent coverage to artificial creations), then the nature doctrine is not only consistent with the statutory language but an implementation of it.

This reconciliation is not only about the theoretical neatness of patent law but also has practical implications. First, it provides a rebuttal to the common argument that the statutory text supports broad patent eligibility and that the nature doctrine is a textually unjustified carve-out from the statutory text.<sup>194</sup> Contrary to the standard view,<sup>195</sup> the statutory text can in fact support robust limits on patent eligibility, at least insofar as requiring a high degree of human intervention.<sup>196</sup>

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<sup>192</sup> Patent Act of 1836, § 6, ch. 357, 5 Stat. 117, 119.

<sup>193</sup> Congress changed “art” to “process” in the Patent Act of 1952. Act of July 19, 1952, Pub. L. No. 82-593, §§ 100–101, 66 Stat. 792, 797. The articulated reason for this change was to clarify that “art” in the Patent Act did not refer to the same category as “the useful Arts” in the Constitution and to ratify the case law interpretation of “art” while avoiding the confusing verbiage. See Report from the Comm. of the Judiciary, H.R. REP. NO. 82-1923, at 6 (1952). No substantive change seems to have been intended.

<sup>194</sup> See, e.g., *Bilski v. Kappos*, 130 S. Ct. 3218, 3225 (2010) (stating that “these exceptions are not required by the statutory text” and relying on *stare decisis* to justify their existence); *Research Corp. Techs., Inc. v. Microsoft Corp.*, 627 F.3d 859, 867 (Fed. Cir. 2010) (referring to “the Patent Act’s broad patent-eligibility principles”); MERGES & DUFFY, *supra* note 65, at 103 (calling the nature doctrine “atextual” and describing a textualist interpretation of § 101 as “broad”); Duffy, *supra* note 5, at 621 (“It is an understatement to say that there is an obvious and significant tension between the statutory and common law approaches to the patentable subject matter issue.”); Risch, *supra* note 9, at 591 (arguing for elimination of “non-statutory subject matter restrictions”).

<sup>195</sup> Even outspoken advocates of robust PSM restrictions concede that the statutory text disfavors their position. See, e.g., Olson, *supra* note 1, at 204 (“[T]he language of the various patent statutes has been so broad that one might think that virtually anything is patentable . . .”).

<sup>196</sup> See *Am. Fruit Growers, Inc. v. Brogdex Co.*, 283 U.S. 1, 11–14 (1931) (holding that dipping an orange in borax is not sufficient to make it a “manufacture”); *Am. Wood Paper Co. v. Fibre Disintegrating Co.*, 90 U.S. (23 Wall.) 566, 593–94 (1874) (holding that extracting natural products is not sufficient to qualify as a “manufacture”). It is more difficult to view the statutory text as supporting other kinds of limits, such as limiting patent eligibility to technologies that would not have been created but for the patent system. See Alan J. Devlin & Neel U. Sukhatme, *Self-Realizing Inventions and the Utilitarian Foundation of Patent Law*, 51 WM. & MARY L. REV. 897 (2009) (arguing for this kind of PSM rule). But this in turn demonstrates my most fundamental point: if the question is not whether patent eligibility should be expansive or stingy but

Put in a less sunny manner, the point here is that even if we “stick to the statute” as many proponents of broad subject-matter eligibility urge,<sup>197</sup> the result will not be a victory for their position but instead the same old fight in different clothing. Instead of debating whether something is sufficiently artificial to distinguish it from a “law of nature,” we will be debating whether it is sufficiently artificial to count as a statutory “manufacture” or “composition of matter.” Real progress in the PSM debate requires confronting the underlying normative disagreements, not mere playing around with the doctrinal silos.

Second, reconciling the nature exception with the statutory text brings a large set of previously neglected cases into play. For example, the Supreme Court held in *American Fruit Growers, Inc. v. Brogdex Co.*<sup>198</sup> that an orange dipped in borax was not patentable because it was not a “manufacture” under the statute.<sup>199</sup> The case is generally considered insignificant<sup>200</sup> and is found in none of the leading patent casebooks, because it is ostensibly about the statutory text and not about the common law nature exception (which is where people regard the action as being). But the case can in fact be viewed as standing for a more robust principle—that the reason that an orange dipped in borax is not patentable is because the Court did not regard a preserved orange as *sufficiently artificial* compared to its natural form.<sup>201</sup> Viewed in this light, *American Fruit Growers* is important both as a matter of the history of the nature doctrine, and as one data point on the practical question of where the line between the natural and the artificial lies: if dipping a picked orange in borax is not sufficient to make it patentable, then it almost necessarily follows that many lesser acts—e.g., packaging bacteria together as in *Funk Broth-ers* or isolating human genes as in *Myriad*—are not, either.<sup>202</sup>

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rather the *kind* of metric by which patent eligibility is measured, then the PSM debate is a contest over the theoretical framework.

<sup>197</sup> See *supra* note 194 and accompanying text.

<sup>198</sup> *Am. Fruit Growers, Inc. v. Brogdex Co.*, 283 U.S. 1 (1931).

<sup>199</sup> *Id.* at 11–12.

<sup>200</sup> See DONALD S. CHISUM, CHISUM ON PATENTS: A TREATISE ON THE LAW OF PATENTABILITY, VALIDITY AND INFRINGEMENT § 1.02[3][a] (2014) (“[T]he *American Fruit Growers* treatment of the meaning of ‘manufacture’ is of little or no precedential value.”).

<sup>201</sup> *Am. Fruit Growers*, 283 U.S. at 11–12 (“Addition of borax to the rind of natural fruit does not produce from the raw material an article for use which possesses a new or distinctive form, quality, or property. . . . It remains a fresh orange, fit only for the same beneficial uses as theretofore.”).

<sup>202</sup> Though of course other decisions by other judges with different value judgments about the importance of human intervention may draw the line elsewhere, with the result that the collective body of doctrine is contradictory on this issue. For example, the Supreme Court’s later decision in *J.E.M. AG Supply, Inc. v. Pioneer Hi-Bred International, Inc.*, 534 U.S. 124 (2001),

Of course, all of the above has a huge qualification: the analysis follows only if one adopts the premise that the nature doctrine is about morality in general, and about artificiality in particular. As explained in Part III.A, a utilitarian economist will deny that premise. And the fact that the nature doctrine makes more sense when viewed from a moralistic perspective than a utilitarian one is not a reason to subscribe to deontology over utilitarianism. Thus, I am not saying that the nature doctrine *ought* to be understood in the manner that I outline in this Section; I am only saying it *can* be coherently understood, with no need to reinterpret the meaning of “nature,” *if* one subscribes to a moralistic point of view to begin with.<sup>203</sup>

Despite the qualification, the analysis remains important, not least because one argument in the literature is that the nature doctrine cannot be intelligibly understood, that its intrinsic incoherence causes uncertainty, and that the only way to save the doctrine and dispel the uncertainty is to reconstruct the nature doctrine into an ad hoc consequentialist policy test.<sup>204</sup> What the above analysis shows is that this is not accurate. Properly understood, the problem with the nature doctrine is not that it cannot be intelligibly understood in any circumstances; it is that it cannot be intelligibly understood *if* one first subscribes to the premise that PSM should be about utilitarian economics or consequentialist policy. Once again, this illustrates that the stakes in the debate are about one’s fundamental philosophical predicates.

## CONCLUSION

In their constitutional law textbook, Michael Gerhardt and his co-authors begin by observing that “the trouble with constitutional law is that nobody knows what counts as an argument.”<sup>205</sup> By this the

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holding that human intervention through cross-breeding is sufficient to create a new patentable plant, appears to require a lesser degree of human intervention than suggested by *American Fruit Growers*. See Chiang, *supra* note 30, at 1383 & n.159.

<sup>203</sup> I am also saying that courts in fact often subscribe to the moralistic viewpoint, despite the dominance of economic rhetoric in judicial opinions. The fact that courts continue to utilize the machine-or-transformation test and other doctrinal formulations that make more sense from a moralistic viewpoint than an economic viewpoint is evidence of the continuing relevance of moral concerns in PSM law.

<sup>204</sup> See Burk, *supra* note 21, at 101–02 (arguing that “[e]ither everything is a product of nature . . . or nothing is a product of nature,” and that drawing a doctrinal line is “purely a matter of public policy”); Sherkow, *supra* note 172, at 1195–96 (arguing that limits on patenting “nature” are “meaningless as both legal terms of art and as scientific concepts” and that courts should base a test on “patent eligibility’s policy goals”).

<sup>205</sup> MICHAEL J. GERHARDT, STEPHEN M. GRIFFIN, THOMAS D. ROWE, JR., & LAWRENCE B.

authors mean that constitutional law debates are fundamentally about second-order normative commitments. The debate between originalists and living-constitutionalists is not a narrow disagreement about the outcome of particular cases or the right answer to some shared question. Originalists and living-constitutionalists might sometimes agree on the outcome of a case,<sup>206</sup> but they always disagree about what questions to *ask* in deciding cases.<sup>207</sup> The uncertainty of constitutional law comes first and foremost from disagreement over the proper normative framework. As the quote above demonstrates, this feature of constitutional law debates is well known to people in that field.

The core claim in this Article is that PSM debates are also fundamentally about normative commitments. Unlike in constitutional law, this feature of PSM debates does not appear to be well known to patent scholars. Instead, what pervades the PSM literature is a facade of normative consensus, where everyone talks in the language of economics. The facade, though, is still a facade. Although everyone *talks* in the same words, they *mean* different things when one scratches below the surface.

None of this is to say that one side or another is right or wrong. Rather, the point is to explain “why brilliant individual works can combine to make a dreary debate”<sup>208</sup>—a debate that never gets anywhere. Lawyers, judges, and scholars, for understandable reasons, like to couch their arguments in the prevailing tone,<sup>209</sup> which in patent law today is an economic-utilitarian one. But the pretense of a shared framework is unhelpful in that it obscures what is really at stake and makes progress more difficult. For better or for worse, the PSM debate is about the “big” questions of patent law, just as constitutional debates are about the big questions of law more generally. Without more recognition of what PSM is really about, no progress is likely to be made anytime soon.

To be sure, given the difficulty of changing normative commitments, progress is likely to be difficult even with greater candor and understanding. The recognition that constitutional law is about fundamental normative commitments has not bridged the divide between originalists and living-constitutionalists. But more candor is at least

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SOLUM, CONSTITUTIONAL THEORY: ARGUMENTS AND PERSPECTIVES § 1.01 (4th ed. 2013) (internal quotation marks omitted).

<sup>206</sup> See, e.g., *NLRB v. Noel Canning*, 134 S. Ct. 2550 (2014).

<sup>207</sup> Compare *id.* (Breyer, J., majority opinion), with *id.* at 2593 (Scalia, J., concurring in judgment).

<sup>208</sup> David McGowan, *Copyright Non-Consequentialism*, 69 MO. L. REV. 1, 1–2 (2004).

<sup>209</sup> See *id.*

better than less candor in this regard.<sup>210</sup> Even if ultimate resolution is unlikely, a more transparent approach has intermediate benefits in enhancing understanding and avoiding confusion. If the normative value differences that drive PSM debates are truly intractable, it is still better to understand precisely where everyone is coming from than to engage in the pretense of sharing agreement on the analytical framework while really talking past each other.

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<sup>210</sup> Cf. Lisa Larrimore Ouellette, *Cultural Cognition of Patents*, 4 IP THEORY 28, 28 (2014) (arguing that insights from the cultural cognition research can help overcome value-based divisions in patent law).