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Beyond Invention: Patent as Knowledge Law

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BEYOND INVENTION: PATENT AS KNOWLEDGE LAW

by
Michael J. Madison*

*The decision of the Supreme Court of the United States in *Bilski v. Kappos*, concerning the legal standard for determining patentable subject matter under the American Patent Act, is used in this Essay as a starting point for a brief review of historical, philosophical, and cultural influences on subject matter questions in both patent and copyright law. The Essay suggests that patent and copyright law jurisprudence was constructed initially by the Court with explicit attention to the relationship between these forms of intellectual property law and the roles of knowledge in society. Over time, explicit attention to that relationship has largely disappeared from the Court's opinions. The Essay suggests that renewing consideration of the idea of a law of knowledge would bring some clarity not only to patentable subject matter questions in particular but also to much of intellectual property law in general.*

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I. INTRODUCTION

The contemporary struggle to define what modern courts, scholars, and lawyers call “patentable subject matter” builds on centuries’ worth of

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politics, culture, philosophy, technology, and legal practice. It is hardly surprising that any given decision on the topic by the Supreme Court of the United States—in the current instance, *Bilski v. Kappos*,¹ decided in 2010—should have a decidedly modest ambition and impact. *Bilski* itself likely will be little remembered; none of the opinions in the case advances the state of the law significantly. What *Bilski* does signify is that modern anxiety about the proper scope of patent law, and about intellectual property generally, has reached a critical point, one where the Supreme Court's intellectual property jurisprudence has so painted the Court into a doctrinal corner that escape is virtually impossible—except by radically rethinking the problem.

There was a time, decades ago, when intellectual property scholars confronted the then-novel technology of computer programming and wondered aloud whether some new legal paradigm was needed, beyond copyright and patent, to accommodate and balance the interests of producers, customers and consumers, re-users, and the public at large.² That time passed. No such paradigm emerged. The problem—dealing with multiple forms of intellectual property law and policy for what appear to be the same subject matter, or no relevant form of intellectual property law for that subject matter—has deepened. Today, a related but different moment has arrived. The occasion, marked by *Bilski*, is not a new technology but the very absence of technology; it is the idea that patterns of living might be constructed in law and practice not merely as “algorithm[s],” to borrow a term from an older Supreme Court opinion,³ but as man-made, virtual yet patentable machines. The modernist architect Le Corbusier wrote, “The house is a machine for living in” (*machine à habiter*).⁴ Decades later, living has itself become a kind of machine. That is both the premise and the implication of the plausible but terribly odd question framed by contemporary patentable subject matter cases: When is a patent available for behaving in a certain way? For causing others to behave in a certain way? For causing what can be fairly called “nature” to behave in a certain way? May a person obtain a patent on a way of organizing the activities of the staff of a restaurant kitchen? Strategizing risks in a market? Modifying the frequency, amplitude, or duration of an electric current, or signal?

If there are answers to these questions, they may be legal epicycles, finely tuned fixes to the workings of a Ptolemaic system whose basic

¹ 130 S. Ct. 3218 (2010).

² See, e.g., Allen Newell, Response, *The Models Are Broken, The Models Are Broken!*, 47 U. PITT. L. REV. 1023, 1034–35 (1986); Pamela Samuelson, Randall Davis, Mitchell D. Kapur & J.H. Reichman, *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308, 2310 (1994).

³ See *Gottschalk v. Benson*, 409 U.S. 63, 71–72 (1972) (ruling that a mathematical “algorithm” represented in a computer program did not constitute a patentable process).

⁴ LE CORBUSIER, TOWARD AN ARCHITECTURE 151 (John Goodman trans., 2007) (1923).

premises are in doubt. Those answers can be found in patent doctrine only using the limited internal tools of patent law itself. Propositions that are “abstract” and things that are not “articles of manufacture” may not be patented.⁵ *Bilski* defines a patentable “process” as a “process”⁶ or, according to one concurrence, as an “art,” which is defined in part as a “process.”⁷ In no sense should any of this be regarded as progress, Constitutional or otherwise.

There is a conceptual problem to be investigated before the doctrinal problem can be solved, and the conceptual problem lies in the near-total isolation of contemporary patent doctrine from copyright and trademark law, despite the shared roots of all three.⁸ Working toward a solution therefore requires returning to the foundations of patent law and to themes that blended what we now think of and apply as distinct bodies of law in a combined (though not perfectly integrated) jurisprudence. In that project, I focus here on ideas of *knowledge* that were fundamental to early thinking about what became intellectual property doctrine and that should remain so. I do not suggest that *Bilski* (or any other single case or policy development) counsels abolishing patent law and starting over from first principles.⁹ I do suggest that patent law could be strengthened by revisiting and building on its conceptual and pragmatic linkages with other intellectual property traditions, all of which focused, in the first place, on forms and practices of knowledge. Those other intellectual property traditions could be strengthened as well.

I organize the rest of this Essay as follows. Part II very briefly sets out key themes represented in the intellectual, cultural, and political histories which yielded what is generally regarded as the first modern patent law, the English Statute of Monopolies of 1624¹⁰ and which followed that statute, leading up to and shortly beyond what is generally regarded as the first modern copyright law, the Statute of Anne of 1710.¹¹ Part III traces those themes through major milestones in the development of subject matter jurisprudence for all of American

⁵ See *Bilski*, 130 S. Ct. at 3226–27.

⁶ *Id.* at 3225–26 (linking the word “process” in section 101 of the Patent Act to the definition of “process” in section 100(b) of the Patent Act).

⁷ *Id.* at 3247 (Stevens, J., concurring) (concluding that patents were historically confined to “arts,” for which the statutory term “process” is a synonym).

⁸ *Cf.* *Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417, 439 (1984) (noting the “historic kinship” between copyright and patent law but not exploring the sources or broader implications of that relationship).

⁹ I do not adopt either the method or the conclusion of Justice Stevens’s concurrence in *Bilski*, in which four Justices argued that the statutory term “process” can only mean what the non-legal term “art” and the Constitutional phrase “useful Arts” meant when the Constitution granted Congress the power to enact patent law. See *Bilski*, 130 S. Ct. at 3247, 3252 (Stevens, J., concurring).

¹⁰ See Statute of Monopolies, 1624, 21 Jac. 1, c. 3 (Eng.).

¹¹ See Statute of Anne, 1710, 8 Ann., c. 19 (Eng.).

intellectual property law, in an effort to reintroduce some conceptual integration to a field that has become increasingly fragmented. Those milestones are primarily Supreme Court opinions, though it is necessarily and obviously true that the Court has always engaged in an interpretive dialogue with Congress. Part IV brings that survey to a close with a re-reading of the *Bilski* case itself. Part V suggests a different way forward, arguing that the time is right to suspend the search for bright line distinctions among patent, copyright, and trademark law based on their respective subject matter and instead to consider overlaps and differentiation based on social interests in knowledge.

II. THE EMERGENCE OF KNOWLEDGE LAW

It is conventional today to think of patent law as dealing in knowledge,¹² but current usage is misleading. Patents are understood as dealing in technical knowledge, or information about how the material world works and how that information might be applied to solve material problems. That sort of knowledge is self-evidently only one form of knowledge, and in historical terms it might not even be considered a particularly important—one might say, virtuous—form of knowledge.¹³ What I have in mind with the term *knowledge*, here and below, are the many ways in which we know the world around us: ways of seeing and understanding, which are necessary to the constitution of state, community, and individual citizens within it. By this definition, the arts—including literature, music, sculpture, and film—are forms of knowledge, though in many respects art is quite unlike science as a form of knowledge. It might be better argued that performing arts, visual arts, musical arts, and literary arts—to use one rough taxonomy—are distinct forms of knowledge, as are physics, biology, and chemistry and their engineering counterparts—to use an equally rough cousin. But these

¹² See, e.g., Kevin Emerson Collins, *Semiotics 101: Taking the Printed Matter Doctrine Seriously*, 85 IND. L.J. 1379, 1384 (2010) (“The disclosure obligations [of the Patent Act] require a patent applicant to publicize information in a strong sense—to give the public a use privilege in the invention *qua* knowledge, free of the strings of property.”).

¹³ Aristotle prioritized knowing (the universal) over making (the specific object) as forms of knowledge, and making over practice, or the exercise of judgment. But all forms of knowledge—*theoria*, *poiesis*, and *praxis*—were intertwined as an understanding of knowledge as virtue. See ARISTOTLE, *THE NICOMACHEAN ETHICS* bk. VI (David Ross trans., Oxford Univ. Press 2009).

The ancient authority of poets and philosophers and the relatively low status of the craftsman may be contrasted with an anecdotal sociology of intellectual property law practice that puts patent lawyers at the top of an informal hierarchy, based on the technical training required for a person to obtain the right to practice before the United States Patent Office. Knowledge of science, in its modern sense, has been a reliable path to authority and prestige. According to stereotypes, copyright lawyers know art, music, and literature and occupy a middle ground; trademark lawyers know advertising and marketing.

different levels of abstraction are not mutually exclusive. It is plausible to see modern “science” as a form of knowledge at the same time as one sees “physics” as another form, any subfield of physics as a third, and so on.

That short, highly abstracted review expresses concerns that are typically quite far from contemporary intellectual property practice, yet that were front and center in the seventeenth and early eighteenth century debates that set the law on its course toward the intellectual property doctrines that we see and use today. In this Part, I briefly recover three key themes from those debates in an effort to close some of that distance: arts and artisanship as distinct technical and philosophical frameworks for the production of knowledge; state and society as distinct political frameworks for knowledge production; and elite and vernacular interests as distinct social and cultural frameworks for knowledge production. In each case, the distinction is dynamic rather than static, and the lines between what I characterize as technical and philosophical, political, and social and cultural frameworks are blurry. What we call *knowledge* itself is in large part a product of these themes, rather than a fixture within them. These are themes that operated centuries ago to generate patent law—and copyright law, as a complement to patent, and even some of trademark law—and themes that are represented, at times too faintly, in modern intellectual property law.

A. *Artistic and Artisanal Knowledge*

Contemporary scholarship on the origins of intellectual property law often works backward from the concept of the “useful Arts,” which appears in the United States Constitution as the context in which “[i]nventors” may be granted exclusive rights, that is, patents.¹⁴ “Useful arts,” traceable to the mechanical arts of the seventeenth century, are distinguished from “liberal arts,” the skills appropriate to citizenship in a free republic.¹⁵ Products and materials relating to the useful arts were and are thought suitable for patenting; they involve the development of new things from existing universal truths or knowledge.¹⁶ Products and materials relating to the liberal arts were and are thought suitable for copyright; they involve knowledge itself.¹⁷ This view borrows from pre-industrial practice and before, including Aristotle’s distinctions among theory, things, and practice, carried through Rome, the Renaissance, and into the Scientific Revolution.

That divide between “useful” and “liberal” arts was closing, however, even as the Constitution was being drafted. The divide began to dissipate

¹⁴ See U.S. CONST. art. I, § 8, cl. 8.

¹⁵ See John R. Thomas, *The Patenting of the Liberal Professions*, 40 B.C. L. REV. 1139, 1166–69, 1173–75 (1999).

¹⁶ See *id.* at 1143–44.

¹⁷ See *id.* at 1145.

in the seventeenth and eighteenth centuries during the birth of modern science, as natural philosophers—the predecessors of modern scientists—showed that nature itself, as well as scholarship, could be a source of knowledge—theoretical knowledge. In the end, for both legal and cultural purposes, scholars and scientists alike became “creators”—those who create the immaterial and material “new”¹⁸—and the idea of “new” knowledge emerged too. In social terms, this narrative recounts a progression from liberal arts as the domain of the scholarly elite, working in discursive (text-based) media, toward natural philosophy and then science, and a counterpart progression of mechanical arts as the domain of the people, working in phenomenal (physical and practical) forms, primarily objects, toward craft production. Practitioners of the former became artists, a term that intentionally obscures its application to “useful arts,” as creators of the new. The latter became artisans. Knowledge workers, to borrow a modern phrase, started to work in the lab as well as in the study and the monastery. Craft workers retreated to the workshop.

Recent scholarship in the history of science complicates this narrative, suggesting the existence of what Pamela Smith characterizes as an “artisanal epistemology” that originated in workshops long prior to the Scientific Revolution and that was incorporated into new scientific practices rather than extinguished by them.¹⁹ That complication is evoked by subtle ambiguities in patent law, which measures the inventiveness of a new machine or process from the perspective of a hypothetical construct sometimes referred to as the “skilled artisan”²⁰ and at other times as the “Person Having Ordinary Skill in the Art,” or PHOSITA.²¹ What can a mere artisan “know”? The idea of “artisanal epistemology,” Smith explains, is that knowledge about the world may be achieved through encounters with nature and particularly through bodily encounters with nature, not only via scholarly engagement with text.²² Bakers, painters, and locksmiths, artisans of their era, were medieval knowledge workers, too.

The point is not only that medieval artisans implicitly (and at times explicitly) developed a philosophy underlying their work to justify its virtue, but also that artisanal virtue was directly traced forward to ideas about knowledge. Smith describes and illuminates the path that ran between medieval artisans and their forms of knowledge, on the one

¹⁸ See DANIEL J. BOORSTIN, *THE CREATORS: A HISTORY OF HEROES OF THE IMAGINATION* 524–27 (1992).

¹⁹ See PAMELA H. SMITH, *THE BODY OF THE ARTISAN: ART AND EXPERIENCE IN THE SCIENTIFIC REVOLUTION* 59–85 (2004).

²⁰ *E.g.*, *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010).

²¹ See *id.* (treating the “skilled artisan” and the “person of ordinary skill in the art” as synonyms). The term PHOSITA comes from the Patent Act. 35 U.S.C. § 103(a) (2006).

²² SMITH, *supra* note 19, at 59.

hand, and natural philosophers and modern scientists, on the other. The latter inherited from the former their hands-on knowledge of nature and natural materials and the belief that knowledge of the world was rooted in matter.²³ Knowledge through practice, as artisanal epistemology, led to and justified knowledge through experiment in the hands of natural philosophers.²⁴ Smith argues that this sequence occurred not only at the level of rhetoric and argument, but in person, among painters, engravers, physicians, alchemists, and early scientists—note the crossing of the boundaries of social hierarchies—borrowing artisans’ active knowledge.²⁵

Given that background, it is hardly surprising—but should be remembered, as Adrian Johns demonstrates in a recent book—that English patent law, as the precursor to American patent law, emerged more or less concurrently with the emergence of what we now know as copyright law, and that both occurred against a background of emerging understandings of the relationships among text, machine, and the related ideas of identity and novelty.²⁶ The epistemological challenge posed by natural philosophy, given inherited Aristotelian traditions (represented by the liberal *arts* as the highest forms of knowledge) and the contrasting artisanal approach, was how to comprehend the related but possibly distinct relationships between law and text, as the context for copyright and literary property;²⁷ and law and machine and matter, as contexts for patent.²⁸ Johns shows how what Smith termed “artisanal epistemology” was deployed in the service of arguments by London’s booksellers, who were trying to distinguish patent law from literary property, and, in so doing, were trying to save a perpetual common law right from preemption by statutory copyright.²⁹ The arguments about artisanal knowledge—knowledge that leads directly to modern patent law sensibility—came to a head in the leading copyright case of *Donaldson v. Becket*.³⁰ One who copied a machine, it was argued, employed powers of the mind, because the nature of manufacturing dictated artisanal variation from one iteration of the machine to the next.³¹ One who

²³ See *id.* at 92–93.

²⁴ See *id.*

²⁵ See *id.* at 59–60.

²⁶ See ADRIAN JOHNS, *PIRACY: THE INTELLECTUAL PROPERTY WARS FROM GUTENBERG TO GATES* 140 (2009).

²⁷ These being two different things, in the seventeenth century. See *id.* at 38–39.

²⁸ See *id.* at 20–21.

²⁹ See *id.* at 28–29.

³⁰ (1774) 98 Eng. Rep. 257, 257–58 (K.B.).

³¹ One machine was always slightly different than another, but a book offered a different case. The material identity of a book was not the point; what mattered was “identity” of the author’s intangible “[s]tyle and sentiment.” *Tonson v. Collins*, (1761) 96 Eng. Rep. 180, 180, 189 (K.B.). Blackstone, arguing for the plaintiff in *Tonson v. Collins*, put the case as follows: “Style and sentiment are the essentials of a literary composition. These alone constitute its identity. The paper and print are merely accidents, which serve as vehicles to convey that style and sentiment to a distance. Every duplicate therefore of a work, whether ten or ten thousand, if it

copied a book engaged in an act of mechanical reproduction. The arguably “higher” nature of intellectual engagement in the former justified treating patent as a form of limited statutory right, or privilege, because of the importance to public welfare and social progress of permitting acts of independent creation. That would preserve literary property as a bulwark against mere piracy, as a right distinct from the limits imposed by the Statute of Anne.³² The House of Lords rejected the distinction—the booksellers’ commercial interest in the argument cannot be discounted—but voted to treat copyright as a statutory grant, equivalent to patent, rather than the reverse.³³

The judgment in *Donaldson* did not end the relevant history, either legally or epistemologically, but the preceding brief summary highlights several themes that still appear, sometimes in bits and pieces, in modern intellectual property jurisprudence. First, in epistemological terms the divide between text and object—so fundamental to modern intellectual property law—was, and remains, more complex than is often acknowledged. The fact that there *was* an epistemology of things centuries ago is itself worth noting for its relevance to modern law, in relation to the distinction between patent law and “nature,” the distinction between patent law and copyright law, and the distinction between the intangible inventions that comprise the subject matter of patents, the intangible creations that comprise the subject matter of copyright, and the tangible embodiments of both that are the subject matter of chattel property law. History teaches that each of these distinctions is, in a different way, a form of the pursuit of knowledge for the common and individual good. Second, it is neither fair in historical terms nor accurate in pragmatic terms to identify any one of these epistemological distinctions as leading necessarily to the superiority of one form of knowledge in relation to any other, that is, to identify some subject as relevant to “intellectual” property or knowledge law and some as not. Scientific and technical practice is recognized and rewarded in intellectual property law today, we believe, because of the distinct ways in which those forms of knowledge advance society’s interests. One might characterize patents today as encouragement for “applied truth”—the purest form of knowledge—without stretching the rhetoric of the law too far. Smith’s work suggests how much more complicated that perspective truly should be; Johns’s work suggests that the complexity is not limited

conveys the same style and sentiment, is the same identical work, which was produced by the author’s invention and labour. But a duplicate of a mechanic engine is, at best, but a resemblance of the other, and a resemblance can never be the same identical thing. It must be composed of different materials, and will be more or less perfect in the workmanship. Although therefore the inventor of a machine may not be injured at common law, by the sale of a work made like his, it will not follow, that an author is not injured by the surreptitious sale of a work that is absolutely and specifically his own.” *Id.* See also JOHNS, *supra* note 26, at 134.

³² 1710, 8 Ann., c. 19 (Eng.).

³³ *Donaldson*, 98 Eng. Rep. at 257–58.

to patent law and in fact is inextricably linked with the origins of copyright. Science, both in the modern sense of that term and in its eighteenth century sense—universal knowledge³⁴—is bound up as much with “artisanal” claims to truth (the work of the hand) as it is with “intellectual claims to truth” (the work of the head). The classical divide between what we now call arts and sciences was, at the onset of the Scientific Revolution that appears to have reinforced that divide, cross-cut by knowledge production across those categories and the social classes that represented them.

B. *Knowledge in State and Society*

The epistemological histories of intellectual property disciplines cannot be divorced from their political contexts, but the politics bear independent consideration. The English Statute of Monopolies of 1624 is generally regarded as the prototype for modern patent statutes. It barred the Crown from granting “lettres Patentes” (letters patents) except in extraordinary circumstances—the production or introduction to the state of “new manufactures.”³⁵ The standard account of this development recites the Crown’s history of granting letters patents, better regarded as privileges than exclusive or property rights, as tools of royal dispensation and reward and the abuse of that power, leading to anti-monopoly sentiment in Parliament and, eventually, to the Statute.³⁶

That account sometimes omits one or both of two key elements of the political economy of the early seventeenth century. First, the conflict over monopolies extended beyond manufactures, to printing (that is, to books, among other things), which was subject to extensive independent regulation within the commercial sphere.³⁷ Second, the impact and significance of the Statute, and the political and economic history that followed over the next 150 years, culminating in *Donaldson*, had as much to do with the distribution of power between what we would refer to as

³⁴ See EDWARD C. WALTERSCHEID, *THE NATURE OF THE INTELLECTUAL PROPERTY CLAUSE: A STUDY IN HISTORICAL PERSPECTIVE* 125–26 (2002).

³⁵ Statute of Monopolies, 1624, 21 Jac. 1, c. 3 (Eng.). The limitation of state-granted monopolies to the production or introduction to the country of “new manufactures” was subject to some important limitations, including patents or privileges of unlimited duration on the production of ordnance and gunpowder, and on printing, both of which could be continued—and were. *Id.*

³⁶ See, e.g., Oren Bracha, *The Commodification of Patents 1600–1836: How Patents Became Rights and Why We Should Care*, 38 LOY. L.A. L. REV. 177, 191–92 (2004) (evaluating the development of early English patent law in institutional terms); Craig Allen Nard & Andrew P. Morriss, *Constitutionalizing Patents: From Venice to Philadelphia*, 2 REV. L. & ECON. 223, 258 (2006) (describing the Statute of Monopolies as the resolution of an interest-group conflict between the Crown and Parliament regarding authority over monopolies).

³⁷ The famous Case of Monopolies invalidated a royal monopoly on a printed work: playing cards. *Darcy v. Allein (The Case of Monopolies)*, (1602) 77 Eng. Rep. 1260, 1260 (K.B.).

the state (in historical context, the government) and civil and commercial society (in context, the stationers who regulated the book trade) as it did with the concept of exclusive rights for inventors and inventions.

The production of printed texts in England in the seventeenth and eighteenth centuries was regulated primarily by the Stationers' Company, a private association (or, one should say, *the* private association) of London printers and booksellers.³⁸ A member acquiring a manuscript would record the "copy" in the register of the Company, assuring that member's exclusivity in the text as a matter of the Stationers' regulation, enforceable by the Stationers' agents and in the Stationers' court.³⁹ The Stationers Company was essentially a closed, private guild—if imperfect in its enforcement practices—which purposefully and explicitly aligned its interest in regulating fair commercial practices in the book trade with the interests of social order and welfare.⁴⁰ The claim was not an early version of a modern utilitarian idea (what would be good for the Stationers would be good for society); rather, the claim appears to have been that the Stationers assumed a kind of trusteeship with respect to the form and content of the knowledge that constituted the subject matter of the public sphere. In science, the Royal Society bid to assume a comparable position.⁴¹

Printing patents, royal privileges guaranteeing exclusivity with respect to a particular text, undertook in practice to regulate parts of the book trade in ways that were analogous to, if not precisely identical to, the authority assumed by the Stationers' Company.⁴² Where subject matter overlapped, printing privileges supervened the Company's interest, and the Company members also received privileges for certain books or for classes of books. The production and distribution of a text that was the subject of a printing privilege was regulated by the Crown, rather than by the Company, creating what in effect was—given the avowed purposes of the Stationers' regime—a dual system of *social* control. When Parliament moved to enact the Statute of Monopolies, therefore, the question was not only the existence of monopolies, particularly monopolies in books, but the source and purpose of monopolies in books. The question was also printing patents.⁴³ The effect of the Statute of Monopolies, as it applied to the book trade, was not to

³⁸ In that era, members would be described more as manufacturers of books than as publishers (firms that contracted with authors and with printers) in a modern sense, although over the course of the Stationers' history, booksellers eventually drew ahead of printers as matters of social hierarchy and economic influence.

³⁹ See JOHNS, *supra* note 26, at 17–18, 25–26.

⁴⁰ See *id.* at 25–30.

⁴¹ See *id.* at 69–70.

⁴² See *id.* at 28.

⁴³ See MARK ROSE, *AUTHORS AND OWNERS: THE INVENTION OF COPYRIGHT* 16–17, 23–24 (1993) (describing printing patents as "privileges" and suggesting that they should be regarded more as forms of patronage than as forms of property).

abolish monopolies altogether or even to abolish monopolies in books; printing patents were left untouched by the Statute.⁴⁴

Rather, by permitting monopolies in books to continue while other monopolies were strictly regulated, the Statute focused attention on the respective roles of the Crown and the commercial community regarding trade in books. Should the monopolies granted by the Stationers' Company be insulated from state-sanctioned competition? Over the succeeding century and a half, the struggle continued over the locus of social control of printed knowledge. Should that remain with the state, or should it shift to the commercial sphere? The state charter supporting the Stationers' authority lapsed in 1695,⁴⁵ and the turbulence that followed produced the first modern copyright statute, the Statute of Anne. That statute vested the copy in a manuscript, in the first instance, in the individual author of a book, rather than in the printer who acquired the manuscript and registered the copy.⁴⁶ But it took the judgment in *Donaldson* in 1774, rejecting the co-existence of literary property and copyright in the same material, to give the statute its social and economic bite. As some of this dust began to settle in the early eighteenth century, the case for literary property as a natural right had been rejected, and copyrights and patents had been put on equivalent legal footing as state-enforced property rights. The Stationers' role as guardian of commerce in knowledge, founded on the premise of literary property and non-interference by the state, had been undone. A new class of publishers started to grow up, succeeding to the booksellers' status based on their access to the knowledge creators: authors. The artisans on whose printing skill the Stationers had built their enterprise receded to craft status.

That shift is easy enough for a modern reader to comprehend in economic terms, but I focus on its political and institutional implications. The question was allocation of authority for determining whether a particular monopoly in knowledge would serve the public interest. Under what circumstances should competition be accepted or encouraged and under what circumstances should it be condemned as a piracy, inimical to public order? Would these determinations be functions of the state or civil society? What form would that authority take in either case? By what standards would claims of new knowledge, authoritative knowledge, authentic knowledge, or harmful knowledge be established by the state? By what standards would these things be established by private interests, as agents of commerce and society?

None of these questions is entirely absent from contemporary debates, but contemporary versions rarely are set in the historical context

⁴⁴ See *id.* at 46.

⁴⁵ See JOHNS, *supra* note 26, at 111.

⁴⁶ Statute of Anne, 1710, 8 Ann., c. 19 (Eng.).

outlined here.⁴⁷ Historians have discussed the meaning of the Statute of Monopolies in the context of contests for control between Parliament and the King, anticipating the Glorious Revolution and the Restoration.⁴⁸ The better uses of history here involve appreciating the tidal features of the struggle for control of knowledge between the state, on the one hand, and society, represented by the commercial interests of the Stationers' Company, on the other, that began around the time of the Statute of Monopolies at the beginning of the seventeenth century and that continued in England for nearly 200 years. The Statute of Monopolies drew a line between material knowledge and text-based knowledge based on "new manufactures."⁴⁹ The Statute of Anne, as later interpreted in *Donaldson*, drew a related but different line between society and the state, based on "author"-ship, or what was to take on the color of creativity or novelty. The epistemological account recited in the last Section, and the Scientific Revolution that took place during the seventeenth century, together suggest that the idea of knowledge as represented in "manufactures" and in books was, even then, potentially unstable. It is no surprise that the bases for allocating authority over these things should have been less than stable as well.

C. *Elite and Vernacular Knowledge*

Philosophy and politics intersect with important but independent social and cultural themes. As the Scientific Revolution approached, the useful or mechanical arts—including the craft of printing, the trade that was responsible for the production and distribution of books—were, as Pamela Smith suggests, rather broadly distributed in the hands (literally) of the people, who organized themselves into companies and guilds and passed their knowledge from hand to hand (hand to eye, hand to ear, and so forth) via craft objects and personal instruction.⁵⁰ This was vernacular knowledge. The practitioners of the liberal arts, scholars, were found among elite institutions: universities, the church, the state, and particularly courts. Their knowledge was encoded in texts, access to which was generally limited to other members of the elite. Theoretical knowledge (knowledge of the mind) was relatively concentrated; practical knowledge (knowledge of the hand) was relatively distributed.

⁴⁷ See, e.g., Christopher A. Cotropia & James Gibson, *The Upside of Intellectual Property's Downside*, 57 UCLA L. REV. 921, 921 (2010) (arguing that the output limiting effects of intellectual property law can be used to suppress the production of socially harmful information).

⁴⁸ See HAROLD G. FOX, *MONOPOLIES AND PATENTS: A STUDY OF THE HISTORY AND FUTURE OF THE PATENT MONOPOLY* 115–16 (1947); Adam Mossoff, *Rethinking the Development of Patents: An Intellectual History, 1550–1800*, 52 HASTINGS L.J. 1255, 1265–72 (2001).

⁴⁹ Statute of Monopolies, 1624, 21 Jac. 1, c. 3 (Eng.).

⁵⁰ SMITH, *supra* note 19, at 7–8.

The Scientific Revolution, the Statute of Monopolies, and the Statute of Anne and its aftermath had, in combination, a profound effect on the production and distribution of knowledge in terms of its mapping onto elite and vernacular segments of society. Natural philosophers, new scholars, succeeded to claims of artisanal or practical knowledge of nature, giving presumptively elite status to what had been vernacular practice. The practical implications of this shift were substantial. The previous Section explored how the long wake of the Statute of Monopolies, the Statute of Anne, and the judgment in *Donaldson* not only took the Crown out of the business of monopoly privileges but also took the Stationers' Company out of the business of regulating text. The future of knowledge regulation for both books and machines was to be the concept of property—patent and copyright, linked to capital and social class, rather than craft.⁵¹

The social value of science, or knowledge of nature, as represented in things, therefore moved from its vernacular roots to a more elite position, but this was an elite position measured by civil society organized by money and power rather than by craft or discipline. The social value of literature, or knowledge of the mind and spirit as represented in text, moved in the opposite direction. In modern terms, eighteenth century England set the stage for a massive democratization of knowledge during the nineteenth century. Practical knowledge, having become “scientific,” grew more concentrated; theoretical knowledge grew more distributed.

In neither case was this shift absolute, because at the heart of both moves was text itself, the embodiment of classical theoretical or conceptual knowledge and the necessarily elite form of representation and transmission of newly naturalized knowledge. For present purposes, therefore, more important than the absolute direction of either shift is the tension between elite and vernacular claims to the production of knowledge, to access to knowledge, and the relationship between the two. Crucially, when the scholarly elite adopted the epistemological stance of their artisanal forebears, the idea of nature as a route to knowledge was married to the text-oriented practices of traditional scholars. Knowledge would be produced by hand, but shared in print. Commerce in books was necessarily aligned with the practices of the cultural elite.

In other words, as both copyright and patent evolved during the eighteenth century, the relationships among text, machine, and vernacular and elite audiences remained central to both knowledge practices and to law. Perhaps the most fundamental advances in the modern conception of patent law stem from English law of the late eighteenth century: the idea that an invention and rights in that invention should be measured by what patent law today refers to as the PHOSITA and that the invention be measured by a published description

⁵¹ See JOHNS, *supra* note 26, at 140.

of what the inventor had produced over and beyond “principles,” or what we would today call “laws of nature” and “abstract ideas.”⁵² Both doctrines can be understood as efforts to help audiences make sense of the relationship between word and object, but they did so in a way that gave specific structure to ideas regarding the social structures surrounding access to and production of knowledge. English courts concluded that no invention was subject to claims of property (as against the general public good) until and unless it was rendered in some published (i.e., authored) form, and the criterion for satisfactory publication (i.e., specification) was that “a skilled craftsman in an appropriate field must be able to replicate the device from the document.”⁵³ Patent law and patent practice thereby acquired their modern cast as methods of “teaching.” The knowledge to be communicated was abstracted for transmission purposes and made part of the modern patent bargain: exclusive rights in exchange for disclosure.⁵⁴ The elite reader became the measure of public, or vernacular, interests in knowledge.⁵⁵ Later in the eighteenth century, James Madison similarly recognized a link between the distinct interests in knowledge represented by individual creators and the mass of readers and customers. Concerning the wisdom of Congressional power to enact protection for authors and inventors, he wrote: “The copy right of authors has been solemnly adjudged in Great Britain to be a right at common law. The right to useful inventions, seems with equal reason to belong to the inventors. The public good fully coincides in both cases, with the claims of individuals.”⁵⁶

⁵² In contemporary American patent law, these doctrines appear in the Patent Act in sections 103 (nonobviousness) and 112 (written description and specification). 35 U.S.C. §§ 103, 112 (2006).

⁵³ *Liardet v. Johnson*, (1778) 62 Eng. Rep. 1000 (K.B.), 1 CARPMAEL’S PATENT CASES 35, 37 (London, A Macintosh 1843) (emphasizing the significance of teaching via a specification); *JOHNS*, *supra* note 26, at 140–41 (citing *Morris v. Bransom*, (1776) Bull. N.P. 76, 1 CARPMAEL’S PATENT CASES 30, 34 (London, A. Macintosh 1843) (Mansfield, C.J.) (affirming the validity of a patent upon an improvement to an existing machine, signifying that progress, rather than the machine itself, was the touchstone of patent law). The relevant portion of the report of *Liardet* is:

The meaning of the specification is, that others may be taught to do the thing for which the patent is granted; and if the specification is false, the patent is void, for after the term the public ought to have the benefit of the discovery. Hence the law requires as the price the patentee should pay to the public for his monopoly, that he should, to the very best of his knowledge, give the fullest and most sufficient description of all the particulars on which the effect depends.

Id.

⁵⁴ See Mossoff, *supra* note 48, at 1288–92.

⁵⁵ The development of the idea of the “author” in late eighteenth century and nineteenth century literary property concepts plausibly signifies a comparable development in copyright law, the social production of an elite guide to a domain of knowledge designed for vernacular consumption. See Martha Woodmansee, *The Genius and the Copyright: Economic and Legal Conditions of the Emergence of the ‘Author,’* 17 EIGHTEENTH-CENTURY STUDIES 425, 426, 430–37, 445 (1984).

⁵⁶ THE FEDERALIST NO. 43, at 234 (James Madison) (J.R. Pole ed., 2005).

III. ISOLATING AND PURIFYING INTELLECTUAL PROPERTY'S SUBJECT MATTER

In this Part, I offer a brief and high-level overview of significant developments in the law of the subject matter of American intellectual property disciplines, measured primarily by key opinions of the Supreme Court of the United States. This overview suggests how the themes described in Part II were manifested in later legal developments—and, eventually, how the dynamism and stresses apparent in my descriptions above abated—after the law made its way across the Atlantic.

England in the eighteenth century witnessed only the beginnings of modern intellectual property law. Later English developments and American developments each have had their own distinct narratives and influences. The early history is relevant because it helps modern readers interpret later developments, particularly from the standpoint of the separate domains of patent law, copyright law, and even trademark law, and not because modern law should align with the form or structure of its antecedents. I do not claim that modern law has been or should be limited specifically by those historical patterns. My point is precisely the opposite: The patterns identified in Part II are historically contingent, limited by the social, economic, technological, philosophical, and political conditions of their times, but they gave birth to what we now call patent law, copyright law, and even, to a degree, trademark law. The later evolution of those doctrines occurred in the light and shadow of those same patterns, as courts, legislators, and litigants explored and developed the issues and questions that were first framed 300 years ago.

The themes identified in Part II—the distinction between artisanal and artistic claims to knowledge, the distinction between state and society as arbiter of claims to knowledge, and the distinction between elite and vernacular arguments about the value of knowledge—illuminate the rough outlines of the point that I made in the Introduction. In the two centuries since the establishment of federal patent and copyright law, the Supreme Court of the United States (and Congress, often responding to the Court) has moved gradually but clearly in the direction of identifying subject matter questions that have the effect of isolating each of these disciplines from any other. There is nothing inherently wrong about that evolution; in many respects it is to be expected in a common law system and a maturing market economy increasingly dominated by industry. But as the several conditions implicit in that summary now begin to dissipate—the line between materiality and literacy blurs, the line between state and society blurs, and the line between elite and vernacular blurs—an approach dominated by doctrinal segregation and channeling loses its traction in a pluralistic society and a diverse economy. The Court and the law might find traction anew by returning to ancient themes with fresh eyes and ears; it might find traction by identifying new themes in current conditions. The next Part explores that topic in a preliminary way.

The following is not an exhaustive account of the cases. They are used to illustrate by example, and in chronological order, how the subject matter domains of the three major intellectual property disciplines emerged, originally and explicitly in the shadow of older patterns, and later, independent of them. The chronological ordering is purposeful. By disrupting a retrospective effort to order and organize the cases by legal rule, I want to emphasize how the Court's jurisprudence moved from a position of greater recognition of the integrated character of what I (retrospectively) call knowledge to a position where that integration seems far less possible, and I want to emphasize the somewhat disordered progression of the history of intellectual property law as a whole.

A. *Nineteenth Century Cases*

*Pennock v. Dialogue*⁵⁷ dealt with an early version of what is now referred to as the on-sale bar to patenting, the idea that an invention cannot be the subject of a patent if it has previously been on sale to the public at large for more than a statutory period of time.⁵⁸ The Court distinguished the inventor's role as an (elite) inventor from his possible status as a (commercial) proprietor, which would invalidate the patent:

While one great object [of the patent statute] was, by holding out a reasonable reward to inventors, and giving them an exclusive right to their inventions for a limited period, to stimulate the efforts of genius; the main object was "to promote the progress of science and useful arts;" and this could be done best, by giving the public at large a right to make, construct, use, and vend the thing invented, at as early a period as possible; having a due regard to the rights of the inventor. If an inventor should be permitted to hold back from the knowledge of the public the secrets of his invention; if he should for a long period of years retain the monopoly, and make, and sell his invention publicly, and thus gather the whole profits of it, relying upon his superior skill and knowledge of the structure; and then, and then only, when the danger of competition should force him to secure the exclusive right, he should be allowed to take out a patent, and thus exclude the public from any farther use than what should be derived under it during his fourteen years; it would materially retard the progress of science and the useful arts, and give a premium to those who should be least prompt to communicate their discoveries.⁵⁹

Wheaton v. Peters was the first major opinion of the Court to deal with copyright, and as copyright scholars know well, the Court concluded that the federal copyright statute, with its limited term and scope of rights, extinguished the concept of literary property with respect to works that

⁵⁷ 27 U.S. (2 Pet.) 1 (1829).

⁵⁸ *Id.* at 23–24. *See also* *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 65 (1998).

⁵⁹ *Pennock*, 27 U.S. (2 Pet.) at 19.

fell within its scope.⁶⁰ This brought American law into line with its English cousin. As debates preceding the judgment in *Donaldson* had done, the Court justified its conclusion by drawing an explicit parallel between an author and inventor:

In what respect does the right of an author differ from that of an individual who has invented a most useful and valuable machine? In the production of this, his mind has been as intensely engaged, as long; and, perhaps, as usefully to the public, as any distinguished author in the composition of his book.

The result of their labours may be equally beneficial to society, and in their respective spheres they may be alike distinguished for mental vigour. Does the common law give a perpetual right to the author, and withhold it from the inventor? And yet it has never been pretended that the latter could hold, by the common law, any property in his invention, after he shall have sold it publicly.⁶¹

Hotchkiss v. Greenwood is remembered as a key source of the proposition that invention should be measured against the concept of the “ordinary mechanic,” whose output is not, in the main, worthy of legal recognition.⁶² The Court in *Hotchkiss* spoke, as it did in *Wheaton*, of a contrast between efforts of the hand (the mechanic) and of the mind (in this case, the inventor):

[U]nless more ingenuity and skill in applying the old method of fastening the shank and the knob were required in the application of it to the clay or porcelain knob than were possessed by an ordinary mechanic acquainted with the business, there was an absence of that degree of skill and ingenuity which constitute essential elements of every invention. In other words, the improvement is the work of the skilful mechanic, not that of the inventor.⁶³

*O'Reilly v. Morse*⁶⁴ is famous for its invalidation of the eighth claim of Samuel Morse's patent on telegraphy, on the ground that it too broadly claimed an exclusive right to “the use of the motive power of the electric or galvanic current, which [the inventor calls] electro-magnetism, however developed, for making or printing intelligible characters, letters, or signs, at any distances.”⁶⁵ Later courts and many scholars interpret the case as invalidating Morse's claim on the ground that Morse had not invented the natural principle of electro-magnetism, which could not be patented in any event.⁶⁶ An equally good and more useful reading of the

⁶⁰ 33 U.S. (8 Pet.) 591 (1834).

⁶¹ *Id.* at 657–58.

⁶² 52 U.S. (11 How.) 248, 267 (1851).

⁶³ *Id.*

⁶⁴ 56 U.S. (15 How.) 62 (1854).

⁶⁵ *Id.* at 86, 120.

⁶⁶ See, e.g., *The Telephone Cases*, 126 U.S. 1, 534 (1888); Alan L. Durham, *Natural Laws and Inevitable Infringement*, 93 MINN. L. REV. 933, 940 (2009); Robert A.

opinion is that Professor Morse had invented a new telegraphic device but had failed to adequately reduce that device to a textual form that corresponded to the breadth of his invention.

Winans v. Denmead was an early application of what became known as the doctrine of equivalents in patent law, testing the limits of the proposition that the text of an inventor's written specification defined the thing invented and limited the patent right.⁶⁷ Notably, the case was decided in the era before patent practice adopted the expectation of peripheral claiming, the idea that the language of the patent's claims defined the outer limit of the invention. Rather than establishing the principle of equivalents, therefore, the Court was emphasizing the importance of fair interpretation of the inventor's claim, using a rhetorical framework that looked to differentiate an inventive idea from a particular machine.⁶⁸ The Court wrote, distinguishing the nature of the plaintiff's inventiveness from the defendant's copying:

Merely to change the form of a machine is the work of a constructor, not of an inventor; such a change cannot be deemed an invention. Nor does the plaintiff's patent rest upon such a change. To change the form of an existing machine, and by means of such change to introduce and employ other mechanical principles or natural powers, or, as it is termed, a new mode of operation, and thus attain a new and useful result, is the subject of a patent. Such is the basis on which the plaintiff's patent rests.⁶⁹

....

Where form and substance are inseparable, it is enough to look at the form only. Where they are separable; where the whole substance of the invention may be copied in a different form, it is the duty of courts and juries to look through the form for the substance of the invention—for that which entitled the inventor to his patent, and which the patent was designed to secure; where that is found, there is an infringement; and it is not a defence, that it is embodied in a form not described, and in terms claimed by the patentee.⁷⁰

Elizabeth v. Pavement Co.,⁷¹ still cited today on the question of whether use of an invention before a patent application is filed invalidates a

Kreiss, *Patent Protection for Computer Programs and Mathematical Algorithms: The Constitutional Limitations on Patentable Subject Matter*, 29 N.M. L. REV. 31, 69 (1999).

⁶⁷ 56 U.S. (15 How.) 330, 343 (1854).

⁶⁸ See Joshua D. Sarnoff, *The Historic and Modern Doctrines of Equivalents and Claiming the Future, Part I (1790–1870)*, 87 J. PAT. & TRADEMARK OFF. SOC'Y 371, 393–98 (2005).

⁶⁹ *Winans*, 56 U.S. (15 How.) at 341.

⁷⁰ *Id.* at 343.

⁷¹ 97 U.S. 126 (1878).

patent because it was undertaken publicly or (instead) experimentally,⁷² relied on a crucial distinction between the inventor acting as, in effect, a scientist, and the inventor acting as a commercial proprietor:

In either case, such use is not a public use, within the meaning of the statute, so long as the inventor is engaged, in good faith, in testing its operation. He may see cause to alter it and improve it, or not. His experiments will reveal the fact whether any and what alterations may be necessary. If durability is one of the qualities to be attained, a long period, perhaps years, may be necessary to enable the inventor to discover whether his purpose is accomplished. And though, during all that period, he may not find that any changes are necessary, yet he may be justly said to be using his machine only by way of experiment; and no one would say that such a use, pursued with a *bona fide* intent of testing the qualities of the machine, would be a public use, within the meaning of the statute. So long as he does not voluntarily allow others to make it and use it, and so long as it is not on sale for general use, he keeps the invention under his own control, and does not lose his title to a patent.⁷³

In *The Trade-Mark Cases*, the Court was asked to identify a valid basis for a federal trademark statute, rather than the legitimate scope of copyright or patent law.⁷⁴ The Court spoke principally in negative terms: trademarks were not “founded in the creative powers of the mind,” akin to copyrighted writings, and could be (and ordinarily are) protected via long periods of use, rather than via demonstrations of originality or invention or other “work of the brain.”⁷⁵ “[I]n neither case does it depend upon novelty, invention, discovery, or any work of the brain. It requires no fancy or imagination, no genius, no laborious thought. It is simply founded on priority of appropriation.”⁷⁶ That distinction took trademark law beyond the scope of Congressional power to act under the Intellectual Property Clause of the Constitution, which extends only to authors and inventors, and to their respective writings and discoveries.⁷⁷

Baker v. Selden,⁷⁸ usually invoked today as a foundational case for copyright’s distinction between unprotected idea and protected expression,⁷⁹ has been shown convincingly to have depended originally on the Court’s sense of the divide between the subject matters of

⁷² See, e.g., *Trading Techs. Int’l, Inc. v. eSpeed, Inc.*, 595 F.3d 1340, 1362 (Fed. Cir. 2010); *Atlanta Attachment Co. v. Leggett & Platt, Inc.*, 516 F.3d 1361, 1365 (Fed. Cir. 2008).

⁷³ *Elizabeth*, 97 U.S. at 135.

⁷⁴ 100 U.S. 82 (1879).

⁷⁵ *Id.* at 94.

⁷⁶ *Id.*

⁷⁷ See U.S. CONST. art. I, § 8, cl. 8.

⁷⁸ 101 U.S. 99 (1880).

⁷⁹ See, e.g., *Frye v. YMCA Camp Kitaki*, 617 F.3d 1005, 1008 (8th Cir. 2010); *Kay Berry, Inc. v. Taylor Gifts, Inc.*, 421 F.3d 199, 208 (3d Cir. 2005).

copyright and patent.⁸⁰ One might translate that divide thematically into the divide between text and machine, between text and process, or between text and principle; all are represented to a degree in the opinion.⁸¹ Selden's system of forms for double-entry bookkeeping could not be protected by copyright, according to the Court, because Selden was in effect asking for protection for the art to be practiced by the system, and that protection could be given only by the Patent Office, if at all:

To give to the author of the book an exclusive property in the art described therein, when no examination of its novelty has ever been officially made, would be a surprise and a fraud upon the public. That is the province of letters-patent, not of copyright. The claim to an invention or discovery of an art or manufacture must be subjected to the examination of the Patent Office before an exclusive right therein can be obtained; and it can only be secured by a patent from the government.⁸²

*Tilghman v. Proctor*⁸³ took up the nature of invention, holding that the emergence of a process in a prior context, by accident and without consciousness or awareness of its significance as an invention, did not bar patenting that same process by a later inventor working intentionally, that is, *as an inventor*:

We do not regard the accidental formation of fat acid in Perkins's steam cylinder from the tallow introduced to lubricate the piston (if the scum which rose on the water issuing from the ejection pipe was fat acid) as of any consequence in this inquiry. What the process was by which it was generated or formed was never fully understood. Those engaged in the art of making candles, or in any other art in which fat acids are desirable, certainly never derived the least hint from this accidental phenomenon in regard to any practicable process for manufacturing such acids.

The accidental effects produced in Daniell's water barometer and in Walther's process for purifying fats and oils preparatory to soap-making, are of the same character. They revealed no process for the manufacture of fat acids. If the acids were accidentally and unwittingly produced, whilst the operators were in pursuit of other and different results, without exciting attention and without its even being known what was done or how it had been done, it would be absurd to say that this was an anticipation of Tilghman's discovery.⁸⁴

⁸⁰ See Pamela Samuelson, *The Story of Baker v. Selden: Sharpening the Distinction Between Authorship and Invention*, in *INTELLECTUAL PROPERTY STORIES* 159, 175–78 (Jane C. Ginsburg & Rochelle Cooper Dreyfuss eds., 2006).

⁸¹ See *Baker*, 101 U.S. at 102.

⁸² *Id.*

⁸³ 102 U.S. 707 (1881).

⁸⁴ *Id.* at 711–12.

Tilghman is generally regarded as the foundational case for the doctrine of anticipation by inherency, which has been rationalized according to the principle that an accidental or “inherent” invention may not put the device (or process) at the disposal of the public, and therefore ought not to be treated as a relevant part of the patent bargain.⁸⁵ It is not, in a legal sense or a disciplinary sense, a relevant form of *knowledge*.

*Singer Manufacturing Co. v. June Manufacturing Co.*⁸⁶ was the first case at the Court to address the intersection of patent law and what has become known as the law of trade dress, a species of unfair competition and trademark law. The Court concluded that the expiration of patents on Singer’s sewing machines gave competitors the right, as a matter of law, to produce machines in the distinctive shape used by Singer, notwithstanding Singer’s argument that by doing so the defendant had engaged in acts of unfair competition.⁸⁷ The Court thus began to give shape to the public domain at the end of the life of a patent, as in *O’Reilly* it had begun to give shape to the public domain at a patent’s beginning.

B. *Early Twentieth Century Cases*

As the twentieth century dawned, the Court’s intellectual property jurisprudence reflected each of the themes described in Part II, in one respect or another: the relationship between nature and invention, between text and machine, between art and science, between inventors and the commercial and consuming public, and between the state and society. In no case had a definitive line been drawn, but in broad outline and in the shadow of the Industrial Revolution the Court was developing and displaying a sense that a law of knowledge, guided by context and legal discipline, was emerging. As the Industrial Revolution drew to a close, the economic and social lessons of the nineteenth century—including the benefits and costs of social, political, and economic hierarchy and the virtues of access to capital and information—were consolidated, absorbed, and then extended during the twentieth century. As a turn-of-the-century case, *Singer Manufacturing Co.* is exemplary in this regard: the Court justified the outcome of the case in the name of the respective “property” claims of the parties, property being partly a metaphor for a legal right.⁸⁸ The plaintiff’s patent having expired, the right to produce the relevant machines became “public” property,⁸⁹ and any alleged injury to the plaintiff’s remaining property interest—what modern trademark law likely would refer to as “goodwill”—was

⁸⁵ See Dan L. Burk & Mark A. Lemley, *Inherency*, 47 WM. & MARY L. REV. 371, 383–84 (2005).

⁸⁶ 163 U.S. 169 (1896).

⁸⁷ *Id.* at 185.

⁸⁸ *Id.*

⁸⁹ *Id.* at 185, 203.

immaterial.⁹⁰ The relevant knowledge interests were becoming increasingly abstracted and differentiated for purposes of legal and economic markets. On the expiration of the patent, the public was entitled not to the knowledge of the inventor, but to “the right to make the machine in the form in which it was constructed during the patent.”⁹¹ However, the subtle shift in rhetoric is indicative of a deeper conceptual progression.

*Bleistein v. Donaldson Lithographing Co.*⁹² evidenced and extended that conceptual approach in the context of copyright law. The Court concluded that the subject matter of copyright consisted of “the copy” (today we would say “an original” work), which Justice Holmes wrote:

is the personal reaction of an individual upon nature. Personality always contains something unique. It expresses its singularity even in handwriting, and a very modest grade of art has in it something irreducible, which is one man’s alone. That something he may copyright unless there is a restriction in the words of the act.⁹³

The Court was doing for copyright what it had previously done for patents in *O’Reilly*—define the subject matter of the law with reference to the natural world—but now in more abstract terms. With respect to adjacent issues, the representation of legally protected material, and the definition of that material by a disciplinary community or by the state, the Court abdicated:

Certainly works are not the less connected with the fine arts because their pictorial quality attracts the crowd and therefore gives them a real use—if use means to increase trade and to help to make money. A picture is none the less a picture and none the less a subject of copyright that it is used for an advertisement.

....

It would be a dangerous undertaking for persons trained only to the law to constitute themselves final judges of the worth of pictorial illustrations, outside of the narrowest and most obvious limits. At the one extreme some works of genius would be sure to miss appreciation. Their very novelty would make them repulsive until the public had learned the new language in which their author spoke. It may be more than doubted, for instance, whether the etchings of Goya or the paintings of Manet would have been sure of protection when seen for the first time. At the other end, copyright would be denied to pictures which appealed to a public less educated than the judge. Yet if they command the interest of any public, they have a commercial value—it would be bold to say

⁹⁰ *Id.* at 185.

⁹¹ *Id.*

⁹² 188 U.S. 239 (1903).

⁹³ *Id.* at 250.

that they have not an aesthetic and educational value—and the taste of any public is not to be treated with contempt.⁹⁴

*Continental Paper Bag Co. v. Eastern Paper Bag Co.*⁹⁵ pushed an equally abstract framework in the patent context. The case involved the argument that a patentee who did not practice the patent was not entitled to invoke the equitable powers of the court to preserve the exclusivity of his patent right.⁹⁶ The Court rejected this argument. Patents, it noted, were species of property and their exclusivity was a matter of right.⁹⁷ But the Court noted the special status of inventors and the distinct services that justified their special treatment:

In other words, the language of complete monopoly has been employed, and though at first only a remedy at law was given for a violation of the right, a remedy in equity was given as early as 1819. There has been no qualification, however, of the right, except as hereinafter stated. An exception which, we may now say, shows the extent of the right—a right so explicitly given and so complete that it would seem to need no further explanation than the word of the statute. It has, however, received explanation in a number of cases which bring out clearly the services rendered by an inventor to the arts and sciences and to the public. Those cases declare that he receives nothing from the law that he did not have before, and that the only effect of the patent is to restrain others from manufacturing and using that which he has invented. And it was further said in that case that the inventor could have kept his discovery to himself, but to induce a disclosure of it Congress has, by its legislation, made in pursuance of the Constitution, guaranteed to him an exclusive right to it for a limited time, and the purpose of the patent is to protect him in this monopoly—not to give him a use which he did not have before, “but only to separate to him an exclusive use.”⁹⁸

White-Smith Music Publishing Co. v. Apollo Co., another copyright case, determined that reproduction of a copyrighted musical composition by means of a player piano roll did not constitute making an infringing “copy” of the protected work.⁹⁹ Congress promptly changed the law—a copy of a work has infringed ever since, even if the copy could be understood by humans only via an intervening mechanical or electronic process.¹⁰⁰ Mostly lost to later history is the fact that the Court was mindful of the relationship between public and expert audiences:

⁹⁴ *Id.* at 251–52.

⁹⁵ 210 U.S. 405 (1908).

⁹⁶ *Id.* at 406–07.

⁹⁷ *Id.* at 429.

⁹⁸ *Id.* at 423–24 (quoting *United States v. American Bell Telephone Co.*, 167 U.S. 224, 249 (1897)) (citation omitted).

⁹⁹ 209 U.S. 1, 18 (1908).

¹⁰⁰ See 17 U.S.C. § 101 (2006) (definition of “copies”).

The fact is clearly established in the testimony in this case that even those skilled in the making of these rolls are unable to read them as musical compositions, as those in staff notation are read by the performer. It is true that there is some testimony to the effect that great skill and patience might enable the operator to read this record as he could a piece of music written in staff notation. But the weight of the testimony is emphatically the other way, and they are not intended to be read as an ordinary piece of sheet music, which to those skilled in the art conveys, by reading, in playing or singing, definite impressions of the melody.¹⁰¹

This likely should be read as a statement that no expert musicianship should be required to assess copyright infringement; the “ordinary” public should be the relevant standard. The reference to those “skilled in the art” shows that the Court, as in *Bleistein*, intended to contrast the case with the sensibility of patent law.

Bobbs-Merrill Co. v. Straus dealt with the enforceability of a restrictive legend printed in each copy of a copyrighted book, purporting to limit the price at which further re-sales of those copies could occur.¹⁰² The Court held that the legend was not enforceable,¹⁰³ giving twentieth century force to what has become known as the first sale doctrine in copyright,¹⁰⁴ a cousin of the exhaustion doctrine in patent law. Much of the opinion is given over to reciting and distinguishing a line of Supreme Court cases in patent law that gave effect to restrictive legends printed or stamped on particular copies of patented items.¹⁰⁵ In contrast to *Wheaton v. Peters*, in which parallels between copyright and patent law persuaded the Court to treat the two statutes as essentially identical in their effect on existing claims of property right,¹⁰⁶ in *Bobbs-Merrill*, the Court emphasized their differences:

We may say in passing, disclaiming any intention to indicate our views as to what would be the rights of parties in circumstances similar to the present case under the patent laws, that there are differences between the patent and copyright statutes in the extent of the protection granted by them. This was recognized by Judge Lurton, who wrote a leading case on the subject in the Federal courts (*The Button Fastener Case*, 77 Fed. Rep. 288), for he said in the subsequent case of *Park & Sons v. Hartman*, 153 Fed. Rep. 24:

“There are such wide differences between the right of multiplying and vending copies of a production protected by the copyright statute and the rights secured to an inventor under the

¹⁰¹ *White-Smith Music Publ'g Co.*, 209 U.S. at 18.

¹⁰² 210 U.S. 339, 341–43 (1908).

¹⁰³ *Id.* at 351.

¹⁰⁴ See 17 U.S.C. § 109(a) (2006) (allowing resale of a lawfully made copy by its owner).

¹⁰⁵ *Bobbs-Merrill Co.*, 210 U.S. at 343–46.

¹⁰⁶ *Wheaton v. Peters*, 33 U.S. (8 Pet.) 591, 657–58 (1834).

patent statutes, that the cases which relate to the one subject are not altogether controlling as to the other.”¹⁰⁷

*Kellogg Co. v. National Biscuit Co.*¹⁰⁸ affirmed and extended the principle developed in *Singer*: The expiration of a patent gave the public—including competitors—the right to practice the invention represented in the patent, even to the extent that the result of the competition was to produce a thing that copied the distinctive appearance of the patented product.¹⁰⁹ In *Kellogg*, this was “shredded wheat” breakfast cereal.¹¹⁰ The Court’s opinion is less than clear as to the precise basis for the result, but its tenor was clear. The Court confirmed that the plaintiff’s property in the design and manufacture of the cereal had passed from a limited domain regulated by the state to the broader public marketplace and was subject only to ongoing duties, grounded in the law of unfair competition, to avoid deception:

Kellogg Company is undoubtedly sharing in the goodwill of the article known as “Shredded Wheat”; and thus is sharing in a market which was created by the skill and judgment of plaintiff’s predecessor and has been widely extended by vast expenditures in advertising persistently made. But that is not unfair. Sharing in the goodwill of an article unprotected by patent or trade-mark is the exercise of a right possessed by all—and in the free exercise of which the consuming public is deeply interested. There is no evidence of passing off or deception on the part of the Kellogg Company; and it has taken every reasonable precaution to prevent confusion or the practice of deception in the sale of its product.¹¹¹

C. *Mid-Twentieth Century Cases*

Cases decided in the middle part of the twentieth century continued the process of abstracting and dividing patent questions from copyright questions from trademark questions. The Court’s jurisprudence necessarily absorbed the instructions of Congress (which had in many instances absorbed the teachings of earlier Supreme Court cases), with new statutes in each field: a new Copyright Act in 1909,¹¹² the Lanham Act in 1946,¹¹³ and the Patent Act in 1952.¹¹⁴ As lawyers and judges refined the understanding of intellectual property rights as legal abstractions governing knowledge-based abstractions (inventions, works of authorship, and marks), the Court gradually grew more comfortable with

¹⁰⁷ *Bobbs-Merrill Co.*, 210 U.S. at 345–46 (quoting *Park & Sons Co. v. Hartman*, 153 F. 24, 28 (6th Cir. 1907)).

¹⁰⁸ 305 U.S. 111 (1938).

¹⁰⁹ *Id.* at 118.

¹¹⁰ *Id.*

¹¹¹ *Id.* at 122 (footnote omitted).

¹¹² Pub. L. No. 60-349, 35 Stat. 1075 (1909).

¹¹³ Pub. L. No. 79-489, 60 Stat. 427 (1946).

¹¹⁴ Pub. L. No. 82-593, 66 Stat. 792 (1952).

sharp subject matter definitions for patent, copyright, and trademark law that often allowed multiple forms of right to co-exist in a single intangible thing.

*Funk Brothers Seed Co. v. Kalo Inoculant Co.*¹¹⁵ invalidated patent claims to certain strains of the Rhizobium bacteria combined as an inoculant, on the ground that the inventor had claimed merely a product (or properties) of the natural world, “like the heat of the sun, electricity, or the qualities of metals, are part of the storehouse of knowledge of all men. They are manifestations of laws of nature, free to all men and reserved exclusively to none.”¹¹⁶

*Graver Tank & Manufacturing Co. v. Linde Air Products Co.*¹¹⁷ introduced the modern doctrine of equivalents to patent law, extending the scope of patent claims (now written as peripheral claims) beyond their literal scope, as interpreted.¹¹⁸ The “principle” of the invention became a free-floating thing, protected in law from “fraud” on the patent at the hands of knowledgeable but unscrupulous artisans, that is, fellow experts.¹¹⁹ The Court wrote:

An important factor is whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was.

A finding of equivalence is a determination of fact. Proof can be made in any form: through testimony of experts or others versed in the technology; by documents, including texts and treatises; and, of course, by the disclosures of the prior art. Like any other issue of fact, final determination requires a balancing of credibility, persuasiveness and weight of evidence. It is to be decided by the trial court and that court’s decision, under general principles of appellate review, should not be disturbed unless clearly erroneous. Particularly is this so in a field where so much depends upon familiarity with specific scientific problems and principles not usually contained in the general storehouse of knowledge and experience.¹²⁰

Under such circumstances, the accused infringer was likely to be a fellow member of the art but would be deemed to be acting deceptively, as a rival rather than as a fellow inventor.¹²¹

¹¹⁵ 333 U.S. 127 (1948).

¹¹⁶ *Id.* at 130 (emphasis added).

¹¹⁷ 339 U.S. 605 (1950).

¹¹⁸ *See id.* at 607–09.

¹¹⁹ *Id.* at 608–09.

¹²⁰ *Id.* at 609–10.

¹²¹ In that regard, the Court distinguished *Graver Tank* from *Westinghouse v. Boyden Power Brake Co.*, the case often regarded as the establishing the “reverse” doctrine of equivalents. 170 U.S. 537 (1898). Under some circumstances, a finding of noninfringement is appropriate in a case where the patent reads on the accused device, because the defendant has engaged in a clear process of invention. *Id.* at 568.

*Mazer v. Stein*¹²² concluded that a three-dimensional object could be protected by copyright notwithstanding the fact that it was part of a manufactured (that is, industrial) object, in a case that extended but modified the Court's effort in *Baker* to comprehend the relationship between the scope of copyright and the scope of patent.¹²³ As a suitable level of abstraction, the two intellectual property regimes could co-exist in a single product.¹²⁴

*Sears, Roebuck & Co. v. Stiffel Co.*¹²⁵ and *Compco Corp. v. Day-Brite Lighting, Inc.*,¹²⁶ a pair of cases decided on the same day, reinforced the reasoning applied in *Singer* and *Kellogg* and ruled that the inventor of an unpatented device (in this case, a pole lamp and a fluorescent light fixture) could not pursue state law unfair competition claims against competitors who copied the designs of those devices.¹²⁷ The invalidation or absence of patent rights left the design of the subject device in the public domain.¹²⁸ Because the federal government had determined the applicable level of intellectual property protection, no state could offer common law protection for the design under general commercial law principles, consistent with the Supremacy Clause of the Constitution.¹²⁹ *Sears/Compco* is a landmark in the law of the public domain for patentable subject matter, but it is of a piece with *Wheaton* in clarifying the respective roles of the state and the commercial sphere in the regulation of knowledge.

*Graham v. John Deere Co.*¹³⁰ provided the Court's most thorough explanation to date of the proposition that patentability is to be measured by the knowledge of the PHOSITA. The knowledge and skill (head and hand) of this hypothetical person should be used to measure the nonobviousness of an invention, under section 103 of the Patent Act.¹³¹ *Graham* modernized the original purpose of the faith that patent law placed in the skilled artisan. Expert knowledge was intended to constrain the power exercised by the state, as guardian of the broader public interest:

While we have focused attention on the appropriate standard to be applied by the courts, it must be remembered that the primary responsibility for sifting out unpatentable material lies in the Patent Office. To await litigation is—for all practical purposes—to debilitate the patent system. We have observed a notorious

¹²² 347 U.S. 201 (1954).

¹²³ *See id.* at 217–18.

¹²⁴ *Id.* at 217.

¹²⁵ 376 U.S. 225 (1964).

¹²⁶ 376 U.S. 234 (1964).

¹²⁷ *Sears, Roebuck & Co.*, 376 U.S. at 231–32; *Compco Corp.*, 376 U.S. at 237–38.

¹²⁸ *Compco Corp.*, 376 U.S. at 237–38.

¹²⁹ *Sears, Roebuck & Co.*, 376 U.S. at 231.

¹³⁰ 383 U.S. 1 (1966).

¹³¹ *See id.* at 17–18.

difference between the standards applied by the Patent Office and by the courts. While many reasons can be adduced to explain the discrepancy, one may well be the free rein often exercised by Examiners in their use of the concept of “invention.”¹³²

D. Late Twentieth Century Cases

My brief digests of older cases suggest ways in which the Court’s patent, copyright, and trademark jurisprudence might be linked to historic knowledge-oriented themes in intellectual property law, even if the Court itself was not always explicit in drawing those themes into its cases. By the late twentieth century, the Court’s jurisprudence in patent, copyright, and trademark law appears to have stabilized sufficiently that the Court tended to look inward, to the contemporary dynamics of each of these disciplines, rather than to broader themes concerning knowledge that connect them to law, practice, nature, and society.¹³³ Patentable subject matter increasingly depended on the statutes, policies, and needs of the patent system; likewise for copyright, and for trademark—even where these doctrines ran up against each other.

Gottschalk v. Benson invalidated a patent on a method of data processing on the ground that it constituted an abstract “algorithm,” or an idea that was insufficiently connected to a specific apparatus or application.¹³⁴

*Diamond v. Chakrabarty*¹³⁵ upheld a patent on a human-manufactured bacterium as a “manufacture” or “composition of matter” within the meaning of the Patent Act, distinguishing *Funk Bros.* on the ground that the bacterium was man-made.¹³⁶ In so holding, the Court recognized that “[h]is discovery is not nature’s handiwork, but his own.”¹³⁷

*Sony Corp. of America v. Universal City Studios, Inc.*¹³⁸ borrowed some patent-style reasoning to resolve a copyright case, but in a way that made

¹³² *Id.* at 18.

¹³³ The enactment of a new Copyright Act in 1976 enabled the Court to reset its understanding of copyrightable subject matter in light of new statutory language defining the scope of the law. Copyright Act of 1976, Pub. L. No. 94-553, 90 Stat. 2541 (codified as amended in scattered sections of 17 U.S.C.). The creation of the Court of Appeals for the Federal Circuit in 1982, with exclusive jurisdiction over appeals in patent cases, had a related impact, encouraging that court to look only to patent doctrine and policy in developing an integrated and consistent body of patent caselaw.

¹³⁴ 409 U.S. 63, 71–72 (1972); *but cf.* *Diamond v. Diehr*, 450 U.S. 175, 191–93 (1981) (upholding a patent on an industrial process for molding rubber, rather than characterizing the claim as directed to a mathematical formula); *Parker v. Flook*, 437 U.S. 584, 594–95 (1978) (invalidating a patent on a mathematical formula for catalytic conversion alarm limits).

¹³⁵ 447 U.S. 303 (1980).

¹³⁶ *See id.* at 309–10.

¹³⁷ *Id.* at 310.

¹³⁸ 464 U.S. 417 (1984).

clear that the Court regarded the two doctrines as distinct in contemporary terms rather than of a single historical piece, despite their acknowledged “kinship.”¹³⁹ The Court adopted a variation of the “staple article of commerce” doctrine from patent law and grafted it onto the contributory infringement doctrine in copyright law in order to exonerate the manufacturer of the Betamax videotape recorder from a claim that it had inappropriately facilitated consumer reproduction of television programming.¹⁴⁰

*Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*¹⁴¹ extended the reasoning of *Sears/Compco* with respect to state power to create intellectual property rights alongside the federal patent and copyright schemes.¹⁴² The Court ruled that states could not legislate forms of exclusive rights that offered patent-like protection to the designs of things or to their utility.¹⁴³

*Feist Publications, Inc. v. Rural Telephone Service Co.*¹⁴⁴ dealt again with the subject matter of copyright law. Borrowing generously from the *Bleistein* opinion, the Court set the bar for copyrightability about as low as it could be set while still having some presence.¹⁴⁵ To be copyrightable, a work of authorship must be “original,” meaning that it must possess a modicum of creativity and must have been created by the author, rather than copied from some other source.¹⁴⁶ By statute as well as by policy, no government agency or review is required to make this determination *ex ante*. The principle of *Feist* has obvious implications for the distribution of the knowledge of modern scientists and inventors, given the practical and legal requirements that their innovations be fully and fairly described, typically in text, as part of the patent bargain. But the Court did not refer to patent law.

*Markman v. Westview Instruments, Inc.*¹⁴⁷ concluded that interpretation of patent claims should be the province of the court rather than the jury, given the need for consistent interpretation of a given patent across possible successive lawsuits and given the Court’s conclusion that construction of patent claims is akin to the interpretation of written instruments, rather than the identification of the thing that the inventor produced.¹⁴⁸

¹³⁹ *Id.* at 439.

¹⁴⁰ *See id.* at 442, 456.

¹⁴¹ 489 U.S. 141 (1989).

¹⁴² *See id.* at 167. *See also* *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 474 (1974) (holding that state trade secret law, which regulates knowledge by protecting parties who refuse to share it, is compatible with federal patent law, which rewards those same parties when they forego trade secret protection and disclose that knowledge).

¹⁴³ *Id.* at 168.

¹⁴⁴ 499 U.S. 340 (1991).

¹⁴⁵ *Id.* at 358–59.

¹⁴⁶ *Id.* at 345.

¹⁴⁷ 517 U.S. 370 (1996).

¹⁴⁸ *Id.* at 388–91.

Wal-Mart Stores, Inc. v. Samara Brothers, Inc. revisited the scope of trademark protection for the designs of things, in this case dresses made of seersucker fabric and bearing appliques.¹⁴⁹ The Court focused on the different rules relevant to “product configuration” cases and “product packaging” cases. It noted that stricter standards for trademark protection should apply to the former, partly in order to avoid conflict with patent law, particularly design patent law, and partly because of the lesser likelihood that a product configuration would, in the course of things, be treated by consumers as an identifier of source.¹⁵⁰

E. Twenty-First Century Cases

The most recent Supreme Court cases continue the pattern of refinement of the abstraction that constitutes the subject matter of each field according to the bounds largely identified by statute, precedent, and related public policy. Any sense that these abstractions relate to underlying philosophical, social, and political interests in knowledge—a sense that may help the Court apprehend the implications and overlaps among intellectual property disciplines—has mostly, though not completely, disappeared.

TraFFix Devices, Inc. v. Marketing Displays, Inc. addressed the impact of patenting on the availability of trade dress protection for design features previously disclosed in a utility patent.¹⁵¹ The Court concluded that the bar to trade dress protection was not absolute, but it held: “Where the expired patent claimed the features in question, one who seeks to establish trade dress protection must carry the heavy burden of showing that the feature is not functional, for instance by showing that it is merely an ornamental, incidental, or arbitrary aspect of the device.”¹⁵² The Court did not, and perhaps could not, resolve the rhetorical and conceptual inconsistency between the idea of the claims and limitations of a patent, which define its scope, and the specification of the source-signifying features alleged to exist in a particular form of product configuration claimed as trade dress.

Eldred v. Ashcroft found that congressional power to set and extend the “limited” term of statutory copyrights was limited, if at all, by the concept that congressional authority extends to what the Court called the “traditional contours of copyright protection.”¹⁵³ The Court’s analysis was “inform[ed]” by the historical practice of Congress with respect to patent policy,¹⁵⁴ but the Court also noted clearly that the structure of patent law,

¹⁴⁹ 529 U.S. 205, 207 (2000).

¹⁵⁰ *Id.* at 212–14.

¹⁵¹ 532 U.S. 23, 29 (2001).

¹⁵² *Id.* at 30.

¹⁵³ 537 U.S. 186, 221 (2003).

¹⁵⁴ *Id.* at 201–04.

and the quid pro quo bargain that metaphorically cabins each issued patent, does not similarly define copyright.¹⁵⁵

Dastar Corp. v. Twentieth Century Fox Film Corp. involved the interpretation of a specific subsection of the Lanham Act in the context of a film that had once been the subject of copyright protection, but is now in the public domain.¹⁵⁶ Had the new distributor of the film falsely represented the “origin” of the film when it labeled the film and package with its own name rather than the name of the copyright owner?¹⁵⁷ The Court held that liability for a false designation of origin could not attach, because “origin” in its statutory context referred to the physical object rather than to the expressive context.¹⁵⁸ The Court reasoned that such a rule would not only protect consumer expectations regarding goods but would also preserve copyright and trademark as separate legal and commercial domains; it would, the Court said, prevent the emergence of a form of “mutant copyright” that would limit the public’s right to copy material in the public domain.¹⁵⁹

A handful of more recent cases suggest some interest at the Court in moving away from a highly specialized, internal perspective on each intellectual property domain and toward a sense that intellectual property fields are subject to some of the same pressures and opportunities as social activity generally. That trend is still inchoate; it is too new to comprise a tendency to look at intellectual property law in more integrative terms. In *Metro-Goldwyn-Mayer Studios Inc. v. Grokster*,¹⁶⁰ the Court held that secondary liability in copyright could be imposed according to general standards applicable to tort cases, including the idea of intentional inducement of a tort, rather than according to the copyright-specific framework announced in *Sony*.¹⁶¹ In *eBay Inc. v. MercExchange, L.L.C.*, the Court ruled that the availability of final equitable relief under the Patent Act should be governed by the same general standards as equitable relief in other civil litigation.¹⁶² In *KSR v. Teleflex*,¹⁶³ the Court refined its understanding of the PHOSITA, as specified in *Graham*, such that in an appropriate case the knowledge of the skilled artisan might be informed by the judgment of the field as well as by specific teachings of identified pieces of prior art.¹⁶⁴ “A person of ordinary skill is also a person of ordinary creativity, not an automaton.”¹⁶⁵

¹⁵⁵ *Id.* at 217 n.22.

¹⁵⁶ 539 U.S. 23, 25–26 (2003).

¹⁵⁷ *Id.* at 31.

¹⁵⁸ *Id.* at 38.

¹⁵⁹ *Id.* at 34.

¹⁶⁰ 545 U.S. 913 (2005).

¹⁶¹ *Id.* at 936–37.

¹⁶² 547 U.S. 388, 391 (2006).

¹⁶³ 550 U.S. 398 (2007).

¹⁶⁴ *Id.* at 415–18.

¹⁶⁵ *Id.* at 421.

Quanta Computer, Inc. v. LG Electronics, Inc. endorsed a broad reading of the patent exhaustion principle, limiting an inventor's exclusive rights in patent as applied to a particular item embodying the invention after that item has been sold.¹⁶⁶ The Court held that exhaustion is applicable to method claims as well as to product claims, so long as the relevant transaction constituted an authorized sale of a relevant product.¹⁶⁷ "The authorized sale of an article that substantially embodies a patent exhausts the patent holder's rights and prevents the patent holder from invoking patent law to control postsale use of the article."¹⁶⁸ The Court appeared to be attempting to align patent law generally with a common-sense distinction between patent rights (products of the head) and tangible goods (products of the hand). But the opinion is heavily invested in the Court's own precedents having to do with restrictive notices and licenses applied to patented products, and in the details of the patent-related transactions among the parties in the case.¹⁶⁹ There is no fair way to read *Quanta* as engaging explicitly in an analysis of the law of knowledge.

IV. AUTHORSHIP AND INVENTION IN *BILSKI*

In the interest of space, I have not catalogued all intellectual property cases from the Supreme Court. The trends that I describe as moving toward further and further specialization of each domain of intellectual property law are imperfect and incomplete. The divorce of artisanal applications of knowledge from artistic ones, of elite interpretations of knowledge from vernacular ones, of state-based forms and sanctions for knowledge from society-based forms and sanctions, and of knowledge-related considerations in any intellectual property jurisprudence at this level is ongoing, even if the Court's most recent opinions suggest some evidence of a reversal. On the whole, patent law has come to be seen in the Court's precedents as elite, artisanal, and state-sanctioned—to the extent that it continues to be informed at all by its relationship with knowledge as I described it earlier. In what remains of the relationship between knowledge and copyright, that body of law has come to be seen as vernacular, artistic, and social. Trademark law has come to be seen as vernacular, artisanal, and simultaneously state-sanctioned and social. But trademark law is now almost exclusively a matter of commerce, divorced from knowledge.

Where does *Bilski v. Kappos* fit in this account? The question in that case was whether a "business method" constituted a potentially patentable "process" within the meaning of that term in section 101 of the Patent Act.¹⁷⁰ The Court held that the method in question did not. It

¹⁶⁶ 128 S. Ct. 2109, 2122 (2008).

¹⁶⁷ *Id.* at 2117.

¹⁶⁸ *Id.* at 2122.

¹⁶⁹ *See id.* at 2115–17.

¹⁷⁰ *Bilski v. Kappos*, 130 S. Ct. 3218, 3225, 3228 (2010).

was abstract and therefore failed the traditional standard that abstract ideas cannot be patented.¹⁷¹ The Federal Circuit had concluded that a patentable process had to meet the “machine or transformation” test: A process could be patented “if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.”¹⁷² The Supreme Court rejected that standard as the sole test of patentability under section 101. The Court wrote:

This Court’s precedents establish that the machine-or-transformation test is a useful and important clue, an investigative tool, for determining whether some claimed inventions are processes under § 101. The machine-or-transformation test is not the sole test for deciding whether an invention is a patent-eligible “process.”¹⁷³

The outcome is decidedly inconclusive. Patent practitioners likely will take little of real value from the case, and the question of patentable subject matter will remain unresolved.

If patent law has come to be seen as elite, artisanal, and state-sanctioned, then *Bilski* neither follows that pattern nor rejects it. The fairest judgment may be that *Bilski*, like much of the Court’s twentieth century intellectual property jurisprudence, takes essentially no position on the relationship between patent law and questions of knowledge in society. The opinion hedges its bets on whether its analytic perspective is elite or vernacular. Is the Court’s subject matter perspective informed primarily by the technical and technologically determined rules and practices of patenting, measured by skilled artisanship, or is it based on popular understanding? Justice Kennedy’s opinion for the Court decrees that the statutory term “process” should be interpreted according to its “ordinary, contemporary, common meaning.”¹⁷⁴ Yet it offers suggestions that specialized (expert) meanings might apply, based on the Court’s discussions of traditional exclusions from patentable subject matter.¹⁷⁵ Vernacular meanings seem to govern the knowledge governed by patent law, the Court seems to say, except when expert meanings apply. Does the Court rely on a mostly artisanal approach to the knowledge taught by business methods? The conclusion that *Bilski*’s method failed the section 101 threshold can be justified on the ground that the method involved more head than hand, in metaphorical terms, but the Court’s refusal to reject business method claims as a class suggests that it is willing to accept patenting of some more “artistic,” that is, conceptual but human-made processes. The Court even equivocated with respect to patent law’s state-sanctioned basis:

¹⁷¹ *Id.* at 3229–30.

¹⁷² *In re Bilski*, 545 F.3d 943, 954 (Fed. Cir. 2008) (en banc).

¹⁷³ *Bilski*, 130 S. Ct. at 3227.

¹⁷⁴ *Id.* at 3226 (quoting *Diamond v. Diehr*, 450 U.S. 175, 182 (1981)).

¹⁷⁵ *See id.*

[The Information Age] puts the possibility of innovation in the hands of more people and raises new difficulties for the patent law. With ever more people trying to innovate and thus seeking patent protections for their inventions, the patent law faces a great challenge in striking the balance between protecting inventors and not granting monopolies over procedures that others would discover by independent, creative application of general principles. Nothing in this opinion should be read to take a position on where that balance ought to be struck.¹⁷⁶

The Court seems to be hinting that the patent system needs to take more explicit account of the full range of innovative processes and practices and other forms of knowledge that exist in society today. But the Court also does not wish to take a position as to which “useful arts” should be granted state sanction via the Patent Office. It is difficult to make too much of this passage. The concurrence by Justice Stevens is not helpful, either. The concurrence traces the contemporary term “process” through the Patent Act to the Constitutional phrase “useful arts,” then finds what we call “business methods” in current jargon missing from the scope of that historical term and related patent practice.¹⁷⁷ That approach has a vaguely artisanal air, which Justice Stevens then disclaims; in his description of relevant public policy, the idea of patents as instruments of knowledge is almost entirely absent.¹⁷⁸ The fact that the concurrence attracted the votes of four Justices lays to rest the possibility that the Court has any consistent view of broader knowledge themes.¹⁷⁹

V. CONCLUSION: A LAW OF KNOWLEDGE, IN WORD AND DEED

I suggested in the Introduction that the Supreme Court has painted itself into a doctrinal corner with respect to subject matter questions in intellectual property law. I meant that long ago the conceptual antecedents of patent, copyright, and trademark law shared an interest in big questions having to do with the role of knowledge in society. Hundreds of years of doctrinal refinement have largely squeezed those questions out of the law, and the remaining landscape of policy and precedent does not offer a set of tools that is rich enough to enable the Court—or lawyers, legislators, or policymakers working with the same questions—to offer a persuasive analysis of contemporary subject matter

¹⁷⁶ *Id.* at 3228.

¹⁷⁷ *Id.* at 3245–48 (Stevens, J., concurring).

¹⁷⁸ *See id.* at 3252–57 (Stevens, J., concurring); *but see id.* at 3254–55 (noting in passing that patents on business methods do not encourage the disclosure of anything that the “public”—a term that is not further specified—does not already “know[.]”). In light of the discussion of history and knowledge in Part II, one might read the concurrence as suggesting that business methods are not forms of useful knowledge because they are forms of useful knowledge. Either the meaning of the concurrence is so obscure that it defies interpretation, or it has set out a standard that would invalidate a vast range of modern patents on subject matter grounds.

¹⁷⁹ *Id.* at 3231.

problems. If all we had to worry about were books and machines, this would not be worrisome. But of course we have to worry about much more.

I also suggested in the Introduction that radically rethinking the problem might be called for. I meant that the original questions and themes that lawyers and courts encountered in the seventeenth and eighteenth centuries, having to do with changing forms of knowledge and how those forms intersect with changing social, political, and philosophical interests, may still be relevant today, but how we go about answering those questions and addressing those themes may be quite different. I also meant that a similarly thematic approach may be needed today, even if the themes that emerge from examination of knowledge problems in general—rather than as subdivided *ex ante* into patent, copyright, and trademark problems—might be quite different. Today's contingent patterns may turn out to be quite different than the contingent patterns of old England.

In a recent paper, I suggested that a similarly ambitious effort might be appropriate with respect to knowledge interests in copyright law.¹⁸⁰ Taking social interests in knowledge as the normative baseline for all aspects of intellectual property law, I offered a broad range of questions applicable to any knowledge law regime, covering such broad subjects as the language of knowledge law, the objects of knowledge law, roles and rules for control and sharing in knowledge law, institutional and material contexts for knowledge law, and distinction and integration of independent knowledge law traditions, including patent and copyright.¹⁸¹ All of those questions remain largely unexplored in the context of twenty-first century social, economic, political, and economic conditions. *Bilski*, for example, uses a literal and conceptual vocabulary derived from late twentieth century caselaw. A more sensible modern reading of all of intellectual property law as knowledge law would bring a broad array of benefits to the legal system and all those who are affected by it and deal with it: avoiding doctrinal inconsistency and ambiguity; offering clarity to commercial actors; reducing waste associated with the oversupply of intellectual property rights; and, most of all, generating meaningful social progress of the sort that both the Constitution and our English ancestors anticipated from granting exclusive rights to products of the mind.

It is plausible, perhaps even inevitable, that the legal system should want to know what the “thing” is that it is dealing with, whether in a property-bound world, a world of commercial regulation of knowledge, both, or some other. It is inevitable that the legal system describes and builds these things as much as it finds them, and perhaps more so. But there is nothing essential or necessary about dividing the world into

¹⁸⁰ Michael J. Madison, *Beyond Creativity: Copyright as Knowledge Law*, 12 VAND. J. ENT. & TECH. L. 817 (2010).

¹⁸¹ See *id.* at 833–35.

“patentable things” rather than “copyrightable things” or “trademarked things” any more than there is anything essential or necessary about dividing a patentable “invention” from a particular embodiment or a copyrightable work of authorship from its fixation in a tangible medium of expression.¹⁸² These lines are conveniences that suit particular times and places, and they should be discarded or at least limited, if time and circumstance warrant. The neologism “intellectual property” captures an important commonality—not the arguably property-like character of each of these things, but the now-accepted notion that they share an inescapably imaginative character. Inventions, works, and marks are related products of the “labor of the head,” and with that phrase I mean to capture not only the efforts and ingenuity of inventors and creators, but also the reactions and re-combinations that inhabit the minds of audiences and downstream generations. Even the most abstract physical laws are products of particular times, places, communities, and impacts. That fact does not deprive them of their status as physical laws. It merely reinforces the proposition that all knowledge is social.

To decide what the law has to do with knowledge is to accept the relevance of some social contexts and to reject others. What is “the invention,” either during prosecution of a patent application or during a patent infringement lawsuit? Every patent lawyer knows that claims can and will be drafted, where possible, to capture potential infringers; every trial lawyer will argue for a construction of the claims of the patent that embraces what the defendant has done. The real question in either case is not whether the words used in the patent and the things described by the patent are congruent, even if that is what the doctrine requires; the real question is whether an accused infringer has unfairly appropriated a form of knowledge that is fairly associated with the patentee and with the patentee’s customers.

What would the world of intellectual property look like, then, if it were more accepting of multiple, intersecting contexts for patent, copyright, and trademark (and perhaps other doctrines) as elements of a single knowledge law framework, with less emphasis on subject matter qualifiers? The question is mostly rhetorical; I am aware of the enormous practical impediments to pursuing this question at any level below the most conceptual. But even the conceptual conversation may have value. I conclude with the following tentative considerations.

Knowledge law would be less consumed with the specific form of the thing that the law needs to address than patent, copyright, and trademark law are today. Claim construction in patent law, the doctrine of fixation in copyright law, and the distinction between product design

¹⁸² Cf. Mark P. McKenna, *An Alternate Approach to Channeling?*, 51 WM. & MARY L. REV. 873 (2009) (advocating a shift away from focus on subject matter of each intellectual property doctrine in favor of a boundary managing approach grounded in intellectual property regimes as complementary or substitute appropriability mechanisms).

and product packaging (and the functionality doctrine) in trademark law are all features of current law that could be re-examined and perhaps rendered more flexible. All of these doctrines share an interest in the relationship between fixed or tangible form and creative, inventive, or distinctive content.

Liability standards would be reformed to provide greater conceptual coherence within each sub-domain of knowledge law and greater alignment (though not identity) of standards between sub-domains. Patent law currently permits claims for literal infringement and infringement under the doctrine of equivalents, with different conceptual frameworks for structural claims, method or process claims, and means-plus-function claims, among other things.¹⁸³ Claim construction is a question for the court; infringement is a question for the jury.¹⁸⁴ Copyright law and trademark law each have their respective tar pits of liability rules, organized around the concept of “substantial similarity” in copyright and “likelihood of confusion” in trademark.¹⁸⁵ All of these doctrines share an interest in the role that identity plays when considering the just uses of knowledge.

Remedies for misuse of knowledge—damages and injunctions for infringement—would be reconsidered. In many respects, in light of the Supreme Court’s opinion in *eBay*, revising standards for injunctive relief in patent cases, some of this reconsideration is underway.¹⁸⁶ Much more could be done to rethink the availability of statutory damages in copyright but not other intellectual property disciplines, and the availability of criminal penalties in copyright and trademark cases but not in patent cases. Knowledge law is not a one-size-fits-all concept, but remedial similarities and differences among sub-domains could be made part of a single overall framework.

Finally, a body of knowledge law would revive and be informed by interest in developing and describing the purposes of the law in more detail, beyond vague admonitions that it should be “utilitarian” in character. Even my references above to the idea of knowledge as a social construct and product are too broad. What I have in mind, however, is the restoration in law of an ethics of knowledge. The separation of knowledge arguments from intellectual property arguments that I describe here, and the resulting elaborate doctrinal introspection, correspond largely to the rise of intellectual property interests as tradable abstractions. Modern theory treats creations and inventions as public goods, subject to flawed private markets. That theory treats copyright and patent law as solutions to those flaws, offering incentives to authors and inventors that they otherwise would lack. The English pre-history of

¹⁸³ See *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 607 (1950).

¹⁸⁴ See *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 391 (1996).

¹⁸⁵ See *Therma-Scan, Inc. v. Thermoscan, Inc.*, 295 F.3d 623, 629–30 (6th Cir. 2002); *Smith v. Jackson*, 84 F.3d 1213, 1218 (9th Cir. 1996).

¹⁸⁶ *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006).

modern copyright and patent suggests that markets were a consequence of notions of rights in knowledge, rather than their cause. Knowledge as a source of virtue was the common starting point. Aristotelian philosophy suffers from many flaws, but recovering and exploring a kind of Aristotelian belief in the association of virtue and knowledge, and applying some of that belief to modern intellectual property law, may offer some Copernican clarity to a body of law that now suffers from Ptolemaic complexity.