

**WHAT'S IN, AND WHAT'S OUT: HOW IP'S BOUNDARY
RULES SHAPE INNOVATION**

Mark P. McKenna & Christopher Jon Sprigman***

TABLE OF CONTENTS

I. INTRODUCTION	491
II. THE DIVIDED NATURE OF OUR IP SYSTEM	497
<i>A. Utility Patent Doctrine and Technological Utility</i>	500
<i>B. Inconsistency in Practice</i>	508
III. UTILITY PATENT'S DOMAIN IN CHANNELING DOCTRINES	516
<i>A. Challenges in Design Patent</i>	516
<i>B. Trade Dress Functionality</i>	523
<i>C. Copyright's Exclusion of Ideas, Systems, and Useful Things</i>	530
1. The Idea-Expression Distinction	531
2. The Useful Articles Doctrine	535
IV. CONSEQUENCES	540
<i>A. Internally Incoherent Doctrine</i>	540
<i>B. Normative Choices About Competition and Innovation</i>	542

I. INTRODUCTION

Ours is a divided system of intellectual property. Rather than relying on a single set of rules to protect all forms of intangible creation, intellectual property (“IP”) law sorts creative things into a variety of different regimes — utility patent, design patent, copyright, and trademark — each with different rules regarding eligibility, infringement, and defenses. Because we have a divided system, every area of

* Associate Dean for Faculty Development, Professor of Law, and Notre Dame Presidential Fellow, Notre Dame Law School.

** Professor, New York University School of Law and Co-Director, Engelberg Center on Innovation Law and Policy. Thanks to the Filomen D’Agostino and Max E. Greenberg Research Fund for a grant that supported this work. Thanks also to Shyam Balganes, Barton Beebe, Chris Buccafusco, Kevin Collins, Rochelle Dreyfuss, Jeanne Fromer, Scott Hemphill, Deborah Gerhardt, Eric Goldman, Brad Greenberg, Zahr Said, Pam Samuelson, Jason Schultz, Kathy Strandburg, and Polk Wagner for helpful conversations and comments on earlier drafts. This paper was presented at the plenary session of the 2016 Intellectual Property Scholars Conference at Stanford Law School, the University of Pennsylvania Law School Center for Technology, Innovation and Competition Workshop, the conference on Competition Policy, Innovation, and Procurement at the Institute for Advanced Study in Toulouse, the DePaul College of Law, the University of Toronto Centre for Innovation Law and Policy Workshop, and the University of Washington School of Law.

intellectual property law must wrestle with a fundamental series of questions regarding what's in and what's out. Out of the entire universe of potentially protectable things, what will utility patent, design patent, copyright, and/or trademark law protect? More specifically, what are the boundaries between each of the legal regimes that together make up the law of intellectual property? Why is a poem copyrightable but not patentable? Why is a mousetrap patentable but not copyrightable?

This Article is about a particular aspect of this broad boundary issue, namely the boundaries of utility patent law. What sorts of things are sorted into the utility patent system rather than into the copyright, trademark, or design patent systems? That question matters for patent law, obviously, as some of the current debates about patentable subject matter attest.

But the delineation problem of patent law's boundaries spills over into a much bigger set of questions about the structure of the IP system because copyright, trademark, and design patent all contain doctrines that are designed, at least in significant part, to exclude "useful" or "functional" matter on the basis that those things belong to utility patent law. This is a foundational point; every other area of IP understands its own domain to some extent in negative relation to utility patent. Trademark law excludes functional product features even when those features indicate the source of products and services. It does so because functional features are the province of utility patent and therefore do not belong to trademark law even if they do indicate source.¹ Likewise, copyright (inconsistently) excludes systems, processes, and so-called "methods of operation," not because these things lack originality, but because they belong to utility patent.² Design patent (nominally) excludes functional designs not because they are not novel or nonobvious or ornamental, but because they perform a function and therefore belong to utility patent instead.³

To be clear, none of these doctrines are premised on the idea that all excluded subject matter must be protected by utility patent. Trademark law, for example, does not exclude functional features on the expectation that they inevitably will be protected by utility pa-

1. See *Qualitex Co. v. Jacobson Prods. Co.*, 514 U.S. 159, 165 (1995) ("Functionality doctrine therefore would require . . . that even if customers have come to identify the special illumination-enhancing shape of a new patented light bulb with a particular manufacturer, the manufacturer may not use that shape as a trademark, for doing so, after the patent had expired, would impede competition . . .").

2. See Pamela Samuelson, *Strategies for Managing the Boundaries Between Copyright and Patent Protection* 24 (Feb. 2, 2017) (unpublished manuscript) (on file with authors).

3. See, e.g., *High Point Design LLC v. Buyers Direct, Inc.*, 730 F.3d 1301, 1315–16 (Fed. Cir. 2013).

tents;⁴ nor does copyright exclude methods of operation in the expectation that those methods will be patentable in all cases.⁵ Instead, each area of IP excludes certain subject matter on the basis that it is of the type for which utility patent has the exclusive right to make policy judgments about protection. These exclusion doctrines apply even if (and perhaps especially if) particular claimed subject matter fails to meet patent's entry requirements (because, for instance, it is not novel) and is thus not protected.⁶

The way in which IP doctrines establish boundaries embeds a clear view that some forms of overlapping protection are a problem — that despite differences in the nature of the rights granted by copyright, trademark, and design patent, the ability to use those forms of protection for useful features, the purview of utility patent, would undermine the policy judgments of the utility patent system regarding what should be protected and what should instead be open to imitation.⁷ But this kind of structure works only if each of those other systems has a reasonably clear and stable sense of what belongs to utility patent law. That is to say, we can't coherently build a system that is designed to keep certain features out of non-patent forms of protection on the ground that they belong to utility patent unless we understand what kinds of features are in the domain of utility patent.

4. As Judge Easterbrook said, “[f]unctionality is determined by a feature’s usefulness, not its patentability or its infringement of a patent.” *Jay Franco & Sons, Inc. v. Franek*, 615 F.3d 855, 858 (7th Cir. 2010).

5. 17 U.S.C. § 102(b) (2016) (“In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.”).

6. See Mark P. McKenna & Katherine J. Strandburg, *Progress & Competition in Design*, 17 STAN. TECH. L. REV. 1, 19 (2013) (“Copyright, trademark, and design patent each in their own way refuse protection to ‘useful’ or ‘functional’ features because those features are the exclusive province of utility patent law. Put differently, each of those systems subordinates its own policy goals to the dynamic competition goals of utility patent law . . .”). Cf. Kevin Emerson Collins, *Patent Law’s Authorship Screen* 6–7 (Feb. 8, 2017) (manuscript on file with authors) (making the analogous point that patent law’s exclusion of innovation that is the proper subject of copyright law does not depend on the assumption that copyright will actually protect that material, only that “copyright law should determine the conditions under which non-functional innovation can and cannot be protected.”).

7. We do not attempt a full defense of that view here, but we note that concerns about use of other forms of IP to protect “functional” features are widely shared. See, e.g., *Baker v. Selden*, 101 U.S. 99, 102 (1879) (“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.”); Samuelson, *supra* note 2 (cataloging a variety of approaches courts have used to avoid copyright being used to protect functional features); Christopher Buccafusco & Mark A. Lemley, *Screening Functionality* 2 (Feb. 26, 2017) (unpublished manuscript) (on file with authors) (“Preventing non-utility patent IP regimes from protecting function makes good sense . . . Without the ability to screen out functionality, creators could use copyright, trade dress, or design patent law to obtain the equivalent of a utility patent without having to do the work required to get one.”); McKenna & Strandburg, *supra* note 6.

Courts and scholars conventionally describe utility patent law as focusing on technological innovation. While the concept of “technological” innovation has never been fully fleshed out, a number of utility patent law’s traditional doctrinal and structural features are broadly consistent with that understanding of innovation. But modern developments have muddled the water considerably,⁸ to the point that we think it’s fair to say that patent law’s focus on technological innovation is now inconsistent, at best. This Article argues that this inconsistency is at least a partial explanation for courts’ notorious difficulty applying the channeling doctrines in other areas of IP. Lack of a clear sense of utility patent law’s boundaries undermines the very idea of channeling.

Serious as the resulting doctrinal problems have been, the problem is much more than a doctrinal one. Trademark, copyright, and design patent all remit to patent “useful” or “functional” matter — refusing to extend their own forms of protection, even if that protection would otherwise be justified on trademark, copyright, or design patent terms, because that subject matter belongs to utility patent. For that reason, IP incentives are necessarily shaped by the ways we sort some subject matter into patent law and others not. Different mixes of IP regimes (and of IP regimes with other types of regulatory exclusivity or other legal rules) will promote competition along different dimensions. A patent-heavy system will promote competition along utilitarian or conventionally “functional” characteristics; systems that rely more on trademark law will promote competition along other more psychological or phenomenological dimensions.

To see this, consider a blue pill that treats depression. Part of the efficacy of the pill is the chemical compound of which it’s comprised. But imagine that the pill’s blue color also provides some component of its therapeutic effect. This is not a fanciful example; the color of pills can trigger powerful placebo responses that provide a substantial component of the clinical efficacy of some drugs.⁹ Is the pill color “useful”?

One could argue that placebo triggers seem to have the type of utility with which patent law is typically most comfortable since their effect is, at least at times, indistinguishable from that of the chemical compound. Even if patent law were to consider the pill color useful, the novelty and nonobviousness requirements would nonetheless bar many, if not most, placebo triggers.¹⁰ Perhaps that is why we don’t see

8. See Section II.B, *infra*.

9. See A. J. de Craen et al, *Effect of Colour of Drugs: Systematic Review of Perceived Effect of Drugs and of their Effectiveness*, 313 *BMJ* 1624, 1625 (1996).

10. Cf. Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 *J.L. & ECON.* 265, 280 (1977) (changing the color or shape of an invention may not make it novel).

much (if any) patenting in this area. If that's true, and assuming that the incentive justification of patent holds in this context, then patent law will direct innovation away from the placebo component of efficacy and toward the pharmacological component, at least relative to the state in which patent law protected the color.

There is a second possibility. If trademark law and patent law both maintain the view that pill color is not useful, then trademark will potentially allow protection of the color as trade dress.¹¹ Since trademark protection would create the exclusive rights to use the dress within a particular product category, trade dress protection would incentivize investment in the placebo color via trademark law if an exclusive right to use that color would tilt the competitive field in the direction of the trade dress owner.

On the most superficial level, it seems as if we're replacing one incentive with another, but that's not right. Utility patent law provides a very broad but relatively short-term (twenty years, generally) property right.¹² Utility patent rights are subject to strict entry conditions — principally, the need to show novelty and nonobviousness.¹³ In contrast, trademark provides a narrower right — in the case of colors, trademark law protects only marks that have gained consumer recognition as indications of source (so-called “secondary meaning”),¹⁴ and such protection is generally only available when the use of a similar mark is likely to confuse consumers regarding the source of the junior user's product.¹⁵ On the other hand, relative to patent, trademark erects much lower entry barriers. Most significantly, trademark protection requires neither novelty nor utility.¹⁶

Finally, there is a third possible outcome. Trademark does not protect “functional” elements, even when they are source-indicating.¹⁷ As a result, if patent considers the placebo trigger to be useful, then trademark law will likely refuse to protect it. The result could easily

11. Trade dress refers to the visual appearance of a product or its packaging. When it is distinctive (meaning that it indicates the commercial source of the goods with which it is used) and nonfunctional, it is protectable under the Lanham Act on substantially the same terms as trademarks. 15 U.S.C. § 1125 (2016).

12. 35 U.S.C. § 154(a)(2) (2016).

13. 35 U.S.C. §§ 102–03 (2016).

14. *Qualitex Co. v. Jacobson Prods. Co.*, 514 U.S. 159, 163–64 (1995).

15. Trademark law also permits a cause of action for trademark dilution — i.e., unauthorized use of a mark that, even in the absence of confusion, diminishes the distinctiveness of the famous mark. *See* 15 U.S.C. § 1125(c). But that form of protection is only available for famous marks, defined as those “widely recognized by the general consuming public of the United States as a designation of source of the goods or services of the mark's owner.” 15 U.S.C. § 1125(c)(2)(A).

16. Actually, trademark does require a very specific kind of utility — the ability to designate source — but it refuses to consider that attribute to be functional or useful.

17. *See Qualitex Co.*, 514 U.S. at 165.

be that placebo triggers are protected under neither body of law — barred from patent for lack of novelty or obviousness, and excluded from trademark because they are functional. In which case, what's left is a utility patent incentive to invest in pharmacological efficacy and whatever market incentives exist to find new placebo triggers even in the absence of legal exclusivity.¹⁸

Which of these three outcomes — (1) no protection for placebos, (2) patent protection of placebos as useful inventions, or (3) trademark protection of placebos as non-useful source indicators — is most desirable? The answer to that question depends upon a host of factors, including the cost of achieving an increment of efficacy via the psychological mechanism (the placebo) compared to the pharmacological one. The first outcome, no IP protection for the placebo color, might look terrible if pharmacological advances in a particular field are much costlier than beneficial placebo-driven “psychological” effects — at least if innovations in placebo (for example, the production of new placebo triggers) are responsive to IP protection and some incentive is needed. Choosing between these outcomes would also require information about the degree to which trademark protection of placebos would foreclose competition, particularly in comparison to the shorter-term (but potentially more complete) foreclosure that the patent system would create. And any competitive harm would need to be assessed relative to any delay in development of these triggers that might result if inventors were unable to protect their inventions and prevent others from copying and profiting from them.

Just to be clear: we're not making an argument for changing to any particular set of IP rules for pills, poems, mousetraps, or anything else. Exactly what the mix of IP rules should be depends on the sort of innovation incentives society wants to create, and that judgment involves context-specific knowledge that is far outside the scope of this Article. Our point is that, until we understand precisely what we mean when we say an article or a feature of an article is “useful” or “functional,” and until we have a calculus for understanding the particular value of any such features, we can't think coherently about which types of competition we want to promote or the costs of promoting that competition. Nor can we even think about how best to satisfy consumer demand, or how different IP regimes help shape that demand. We are blind to a variety of considerations that actually affect consumer welfare.

18. To be clear, those market incentives may well be adequate. Our point is only that the incentives are very different, and that difference should be considered in designing a legal response.

In this Article, we first describe the ways that different branches of IP conceive of their own domains — and particularly how branches of IP other than utility patent employ doctrines that attempt to send to utility patent the subject matter those branches understand to belong there. Our goal here is not primarily to launch a normative argument about the content of IP's subject matter rules. Our mission is instead to explore the theoretical adequacy of IP's own account of its internal structure, and whether that account is reflected in doctrine that is stable and capable of providing broadly predictable answers to categorization questions. More specifically, we mean to highlight how patent law's inconsistency on its subject matter rules creates problems for other branches of IP that are attempting to operationalize a utility patent supremacy principle and render unto utility patent what belongs to utility patent. We describe utility patent law's inconsistency in Part II.

Part III focuses on the accounts that trademark, copyright and design patent courts have offered of what sorts of subject matter those bodies of law should channel to utility patent. In sum, these branches of the IP system retain a view of utility patent's domain that is pegged to an earlier time, and today they all struggle mightily because utility patent's domain is far from clear. Finally, Part IV assesses the consequences for IP policy of the ongoing confusion over what sort of "useful" or "functional" inventions belong to utility patent. The weak foundation of many of IP's subject matter boundary doctrines makes it difficult, as we will show, to design an IP system that provokes particular sorts of desired innovation. For that reason, more coherence in IP's channeling doctrines would be a boon to rational IP policymaking.

II. THE DIVIDED NATURE OF OUR IP SYSTEM

As noted above, our IP system is a divided one. Patent, copyright, and trademark law all apply to particular (and largely different) subject matter. Indeed, the sense that subject matter belongs to particular regimes underlies IP lawyers' deep frustration at journalists' habitual mislabeling of IP concepts — as when news reports refer to a person "copyrighting their name."¹⁹

19. See, e.g., William McGeeveran (@BillMcGev), TWITTER (Mar. 19, 2017, 9:14 PM) <https://twitter.com/BillMcGev/status/843677211899187202> [<https://perma.cc/Q6HL-PS2E>]; Tara Aaron (@tara_aaron), TWITTER (Feb. 6, 2017, 6:57 AM) https://twitter.com/tara_aaron/status/828618622771802112 [<https://perma.cc/B37C-HR4W>]; *Why It's Not OK for Journalists to get Intellectual Property Law Wrong*, PLAGARISM TODAY (Feb. 19, 2013), <https://www.plagiarismtoday.com/2013/02/19/why-its-not-ok-for-journalists-to-get-intellectual-property-law-wrong/> (last visited Mar. 24, 2017).

IP law's divided structure is not inevitable, of course, and the idea that different subject matter belongs to certain systems of IP is under some pressure. Indeed, some have called for the elimination of all of the subject-matter requirements of section 101 of the Patent Act,²⁰ and that view could be generalized across IP.²¹ One could argue that no particular subject matter "belongs" to any branch of IP law, at least in the strong sense that it should be excluded categorically from other forms of protection. Instead, our tendency to sort different subject matter into different branches of IP law could simply be a consequence of the fact that, while the stated subject matter categories are amply inclusive, other doctrinal constraints tend to rule out certain kinds of subject matter with regularity. On that view, it's not that utility patent is categorically limited to technological innovation, it's simply that other forms of innovation are unlikely to satisfy requirements like novelty and nonobviousness.

We don't agree with that characterization, in part because it cannot explain why, if subject matter was never meant to be treated categorically, the eligibility rules for each regime differ so significantly. Copyright attaches automatically to any original work of authorship upon fixation,²² and the originality threshold is generally understood to be quite low.²³ Patent rights, on the other hand, can be acquired only by applying for a patent and successfully navigating a rigorous examination process in which the Patent Office considers, among other things, the novelty and nonobviousness of the claimed invention — the latter of which is understood to be a comparatively significant hurdle.²⁴ These differences can't be explained simply on the ground that copyrights last longer and require copying (both features that, of

20. David Kappos, former Director of the United States Patent and Trademark Office, proposed abolishing section 101, which defines the subject matter of patent altogether. See Ryan Davis, *Kappos Calls for Abolition of Section 101 of Patent Act*, LAW360 (Apr. 12, 2016), <http://www.law360.com/articles/783604/kappos-calls-for-abolition-of-section-101-of-patent-act> [<https://perma.cc/WB73-QECV>].

21. See Samuelson, *supra* note 2, at 13 ("Like the Weil treatise before it, the Nimmer treatise has, for the past fifty-some years, asserted that copyright and utility patent law can provide overlapping protections to intellectual creations.").

22. 17 U.S.C. § 101 (2016) ("Copyright protection subsists, in accordance with this title, in original works of authorship fixed in any tangible medium of expression . . .").

23. See *Feist Publ'ns., Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 345 (1991) ("Original, as the term is used in copyright, means only that the work was independently created by the author . . . and that it possesses at least some minimal degree of creativity. To be sure, the requisite level of creativity is extremely low; even a slight amount will suffice.") (citations omitted).

24. 35 U.S.C. §§ 102, 103 (2016). See also *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 415–16 (2007) ("For over a half century, the Court has held that a 'patent for a combination which only unites old elements with no change in their respective functions . . . obviously withdraws what already is known into the field of its monopoly and diminishes the resources available to skillful men.'") (citation omitted).

course, themselves need some explanation). It seems much more likely that copyright and patent developed different entry requirements because those rules were developed with particular subject matter in mind.

The notion that the forms of IP are not categorical faces another serious challenge to its validity: it does not match the way courts describe the purposes of the various channeling doctrines we see in design patent, copyright, and trademark law. As the following Sections describe in more detail, each of those other areas of IP quite explicitly defines its own subject matter negatively in relation to patent, at least in some instances. Yet because they have internalized the idea that utility patent is focused on technological utility, these doctrines have particular notions of what should be excluded.²⁵

Many of these channeling doctrines were created at a time when the subject matter of all areas of IP was narrower,²⁶ so it's possible that the notions of the domain of utility patent that undergird these doctrines reflects a once-clearer division between IP systems. But as we argue below, it is now much harder to attribute to utility patent law a coherent theory of its domain. As a result, the channeling doctrines in other areas of IP are to some extent artificial; the lines they draw do not clearly reflect the much broader subject matter of modern utility patent.

There are two major issues here. One is a misfit between the purported purposes of these channeling doctrines and the domain of utility patent. Insofar as the channeling doctrines intend to render unto utility patent what belongs to utility patent, misalignment with patent law regarding its domain means that the channeling necessarily will

25. See, for example, *Varsity Brands, Inc. v. Star Athletica, LLC*, 799 F.3d 468 (6th Cir. 2015), *aff'd*, No. 15-866 (U.S. Mar. 22, 2017), in which the majority rejected Star's contention that cheerleading uniforms identify the wearer as a cheerleader and defined the relevant function as "cover[ing] the body, wick[ing] away moisture, and withstand[ing] the rigors of athletic movements," while the dissent believed that identification of the wearer as a cheerleader was an important part of the function of the article. The Supreme Court granted certiorari, but did not resolve the conflict — indeed, other than implicitly determining that the cheerleader uniform itself was a useful article in the way that apparel is thought to be generally (i.e., useful as body cover), the Court did not consider whether the patterns of stripes, chevrons, and other design elements claimed by the Respondent Varsity Brands *themselves* functioned as useful articles. The district court had agreed with Star's view that these design elements functioned to identify the wearer as a cheerleader. See Case No. 10-2508, 2014 LEXIS 26279, *8–*9 (WD Tenn., Mar. 1, 2014). And an insightful amicus brief submitted to the Supreme Court argued that the design elements had an even more specific function — they shaped the appearance of the wearer's body in ways that made her appear more appealing as a cheerleader. See Brief of Profs. Christopher Buccafusco and Jeanne Fromer as Amici Curiae in Support of Petitioner, http://www.scotusblog.com/wp-content/uploads/2016/07/15-866_amicus_pet_professor_buccafusco_and_professor_fromer.pdf.

26. For a discussion of the ways subject matter expansion has put more pressure on scope doctrines, see Mark A. Lemley & Mark P. McKenna, *Scope*, 57 WM. & MARY L. REV. 2197, 2214–19 (2016).

be over- or under-inclusive. Second, if we accept that channeling doctrines are justified because patent law alone defines the terms on which protection should be available for features in utility patent law's domain, then to the extent misalignment is the result of other areas of IP maintaining an anachronistically narrow view of utility patent, the existing channeling doctrines may actually not be aggressive enough. Put simply, if modern utility patent law is in fact open to much more than technological innovation, then maybe design patent, trademark, and copyright ought to be excluding a whole lot more material.

A. Utility Patent Doctrine and Technological Utility

On its face, utility patent law seems open to quite a wide range of subject matter. The statute nowhere expressly limits patent to a particular kind of innovation, and the subject matter categories are quite broad, encompassing “any new and useful process, machine, manufacture, or composition of matter.”²⁷ Those categories would appear to allow nearly anything to be claimed as patentable subject matter — even a poem could be claimed as a manufacture with particular words. Indeed, the Committee Report accompanying the 1952 Act suggested as much, stating that Congress intended statutory subject matter to “include anything under the sun that is made by man.”²⁸ Of course, the subject matter categories are not the only constraints on patentability. For one thing, the Patent Act requires that the claimed invention have utility.²⁹ But that requirement does very little to limit patent law's domain, as modern utility doctrine requires only that a claimed invention work for its intended purpose and have some credible use.³⁰ While a claimed invention must have some use beyond being the object of future research, virtually any other identifiable use will do, and only one such use need be identified.³¹ Thus, outside of a few particular fields, courts do not investigate whether an invention meets the utility requirement with much seriousness.³²

27. 35 U.S.C. § 101 (2016).

28. S. REP. NO. 1979, at 4 (1952); H. R. REP. NO. 1923, 82d Cong., 2d Sess. 6 (1952).

29. 35 U.S.C. § 101 (2016) (requiring claimed matter to be “new and *useful*”) (emphasis added).

30. See *Brenner v. Manson*, 383 U.S. 519, 533 (1966).

31. As Professor Michael Risch described it, “[T]he requirement that an invention be useful has been nearly nonexistent — essentially ignored.” Michael Risch, *A Surprisingly Useful Requirement*, 19 GEO. MASON L. REV. 57, 58 (2011). Claimed inventions cannot violate the laws of nature, see *Newman v. Quigg*, 877 F.2d 1575, 1577 (Fed. Cir. 1989), nor can they be so unlikely to work that someone skilled in the art would find them incredible, see *Rasmusson v. SmithKline Beecham Corp.*, 413 F.3d 1318, 1323 (Fed. Cir. 2005).

32. Noting the disconnect between the extremely permissive utility standards for most inventions and the impact of those standards in isolated fields, particularly “unpredictable

Nevertheless, for most of patent law's history courts and scholars have shared a widespread understanding that patent law focuses on a particular kind of utility — one that is understood as *technological*.³³

Perhaps the most direct evidence of patent's tacit adoption of a technological understanding of innovation is the existence of a separate patent system for design. Design patent deals with innovative ornamental designs of articles of manufacture, and the law understands ornamentality as the obverse of utility.³⁴

Indeed, only because utility patent law frames the concept of utility in technological terms does it make sense to have a separate system focused on design.³⁵ If utility were understood more broadly, we would have a unified patent law that recognizes innovative ornamental designs as both new and useful. The unified law would recognize that appealing new designs have utility because they make products

fields like chemistry, biotechnology, and pharmaceuticals,” Professor Sean Seymore has proposed abolishing the utility requirement altogether and focusing instead on a useful disclosure. Sean Seymore, *Making Patents Useful*, 98 MINN. L. REV. 1046, 1049 (2014).

33. In a recent paper, Kevin Collins argues that utility patent law limits its own domain in part by negative reference to copyright law, screening out authorship by defining patent law's domain in terms of functionality — a concept he takes to be broader than *technological*. Collins, *supra* note 6. According to Professor Collins, patent law channels authorship to copyright through a series of doctrinal mechanisms that collectively focus patent law on *functional* innovations — those that “do” something that patent law recognizes as a function. *Id.* “One coherent, core sense of patentable ‘doing’ is physical, mechanical, or chemical,” according to Collins, but that core notion does not capture all of patentable functionality. *Id.* Indeed, Collins argues, modern patent law counts a variety of other kinds of “doing,” including “looking like” and operating in the sense of a game. *Id.*

We agree with Collins that modern patent law includes a wider range of subject matter than that which “does something” in the physical, mechanical, or chemical sense — if those concepts are themselves sufficiently coherent. But we think that only proves our point — that patent law no longer has, if it ever did, a coherent theory of what kinds of “doing” count. In our view, it is inadequate simply to say that patent law recognizes various types of doing but rules out other types because they belong to copyright. Though we are inclined to agree that the deference afforded by other areas of IP ought not be unidirectional (meaning it would be better if all areas of IP defined their own territory in negative relation to the other areas of IP), operating that type of system still requires an affirmative sense of the subject matter that belongs in each domain. The system cannot be entirely negative, or else it is circular — i.e., copyright channels out that which belongs to patent, which is defined by that which does not belong to copyright.

34. U.S. PATENT AND TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 1502.01 (9th ed. Rev. 7, Nov. 2015) (“In general terms, a ‘utility patent’ protects the way an article is used and works, while a ‘design patent’ protects the way an article looks.”); PHG Techs., LLC v. St. John Cos., 469 F.3d 1361, 1366 (Fed. Cir. 2006) (“‘If the patented design is primarily functional rather than ornamental, the patent is invalid.’ The design of a useful article is deemed to be functional when ‘the appearance of the claimed design is “dictated by” the use or purpose of the article.’”) (quoting L.A. Gear, Inc. v. Thom McAn Shoe Co., 988 F.2d 1117, 1123 (Fed. Cir. 1993)).

35. That is, to the extent design patent law makes sense at all. See McKenna & Strandburg, *supra* note 6, at 1 (arguing that a patent system for design makes sense only if one can evaluate progress in the integration of form and function).

better and more appealing, and because they shape consumer demand, which is itself a useful thing for any sort of innovation to do.

But because patent law is focused on technological innovation, ornamental features require a distinct form of protection. Thus, in defining the subject matter of design patents, courts have construed ornamental to mean non-functional,³⁶ ostensibly to prevent parties from using design patent law to gain protection for the kinds of useful features that properly belong in utility patent.³⁷

Though the term “technological” has plenty of its own ambiguity, this characterization works outward from patent law’s archetypal subject matter (mechanical and chemical inventions)³⁸ and is meant to convey that patent law is aimed at provoking the sort of innovation that can be explained in terms of scientific or engineering principles. This conception has a strong rationalist and physicalist orientation, and it distinguishes other forms of innovation, particularly those with phenomenological, aesthetic, or psychological utility. So utility patent law is not, for example, about innovations that appeal primarily to consumer sentiment — like those in marketing, advertising, packaging, or design.³⁹

Professor Dennis Karjala captures patent’s technological sense of innovation well, in contrasting patent’s domain with that of copyright:

With only a few exceptions, copyright has always eschewed protection of *functional* works, while functional works of technology are the very stuff of patent subject matter. Moreover, patent law has tried to steer clear of works that are merely useful in the sense of informing human beings or portraying an appearance but not functional in the sense of actually doing work in the physical world. As a result, tradi-

36. See, e.g., *High Point Design LLC v. Buyers Direct, Inc.*, 730 F.3d 1301, 1315 (Fed. Cir. 2013) (“[A] design patent can be declared invalid if the claimed design is ‘primarily functional’ rather than ‘primarily ornamental,’ i.e., if ‘the claimed design is “dictated by” the utilitarian purpose of the article.”) (quoting *L.A. Gear*, 988 F.2d at 1123).

37. See McKenna & Strandburg, *supra* note 6 and cases cited. Professor Sarah Burstein has recently argued that ornamentality need not (and indeed should not) be reduced to non-functionality. See Sarah Burstein, *Commentary: Faux Amis in Design Law*, 105 TRADEMARK REP. 1455, 1456 (2015). Burstein may be right, normatively, but as a descriptive matter ornamentality means non-functionality in current doctrine.

38. See BRAD SHERMAN & LIONEL BENTLY, *THE MAKING OF MODERN INTELLECTUAL PROPERTY LAW: THE BRITISH EXPERIENCE, 1760–1911*, at 142 (Cambridge Univ. Press 1999) (noting that much of IP law’s structure is built from a focus on certain archetypal subject matter, which causes difficulty when applied to newer forms).

39. Risch, *supra* note 31, at 72 (“[A] claim to the differently shaped hammer will be patentable only if the hammer’s novel shape provides some new or different useful benefit in driving nails . . . *A new hammer’s patentable usefulness must be based on its ability to drive nails and not on its ornamental shape or door-stopping capabilities.*”) (emphasis added).

tional patent and copyright subject matter divided rather cleanly between the nonfunctional, reserved to copyright, and the functional, reserved to patent.⁴⁰

As the end of Karjala's characterization indicates, IP law is wont to include in patent's domain only those things "doing work in the physical world,"⁴¹ even though it is quite clear that, in a broader sense, many other things are functional or useful in terms of having real world effects. Indeed, designers commonly describe the process of design as one of solving problems, by which they mean creating artifacts that are useful in a variety of different ways, not simply solving engineering problems.⁴² Marketers often speak of innovation in marketing techniques affecting how products or services are perceived by consumers or how they perform in markets.⁴³ But these kinds of innovation are often — though not always — pushed out of the domain of utility patent because they are not the technological innovation patent law aims to promote.

This focus on technological innovation is commonly tied to the constitutional text, which gives Congress the power to "promote the Progress of . . . the useful Arts, by securing for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries."⁴⁴ According to

40. Dennis S. Karjala, *The Relative Roles of Patent and Copyright in the Protection of Computer Programs*, 17 J. MARSHALL J. COMPUTER & INFO. L. 41, 41–42 (1998) (emphasis added). For a thorough discussion of the respective roles of utility patent and copyright in the software context, see Pamela Samuelson, *Functionality and Expression in Computer Programs*, 31 BERKELEY TECH. L. J. (forthcoming 2017).

41. Karjala, *supra* note 40, at 42.

42. See, e.g., KARL T. ULRICH, DESIGN: CREATION OF ARTIFACTS IN SOCIETY 2 (2011) ("Design is conceiving and giving form to artifacts that solve problems."). Ulrich's definition is a particularly broad one, in that he defines artifact to include "any product of intentional creation, including physical goods, services, software, graphics, buildings, landscapes, organizations, and processes." *Id.* He also uses problem solving quite broadly, meaning to include problems not only of physical use, but also of aesthetics, consumer demand, and many other things. *Id.* at 14, 20.

43. See, e.g., Vikash Naidoo, *Firm Survival Through a Crisis: The Influence of Market Orientation, Marketing Innovation and Business Strategy*, 39 INDUS. MKTG. MGMT. 1311 (2010); Beth Comstock, *Innovation Is Marketing's Job Too*, HARV. BUS. REV. (July 3, 2014), <https://hbr.org/2014/07/innovation-is-marketing-job-too> [<https://perma.cc/Q8KZ-PELK>]; Pat Hong, *5 Examples of Innovative Marketing Strategies*, LINKDEX LTD. (Aug. 24, 2015), <https://www.linkdex.com/en-us/inked/innovative-marketing-strategies-examples/> [<https://perma.cc/S9TC-LU7Y>] ("While innovation has been acknowledged as a fundamental quality for product and tech teams for some time now, innovative practices are also increasingly being applied to marketing.").

44. U.S. CONST. art. I, § 8, cl. 8. According to Professor Edward Walterscheid, "[i]n 1787 'useful arts' meant helpful or valuable trades. Therefore, to promote the progress of useful arts presupposed an intent to advance or forward the course or procession of such trades." Edward C. Walterscheid, *To Promote the Progress of Science and Useful Arts: The Background and Origin of the Intellectual Property Clause of the United States Constitution*, 2 J. INTELL. PROP. L. 1, 52–53 (1994).

the Federal Circuit, “the exclusive right [granted by the Patent Act], constitutionally derived, was for the national purpose of advancing the useful arts — the process today called technological innovation.”⁴⁵ Scholars also regularly equate the useful arts with technological innovation.⁴⁶

A number of structural features of the Patent Office reflect this technological focus, including the requirement of technical training to be admitted to the Patent Bar,⁴⁷ the organization of the Patent Office by technical art unit,⁴⁸ and the USPTO’s elaborate classification scheme, which organizes patent documents according to technical field.⁴⁹

The text of the Patent Act can be read consistently with this understanding. Machines, manufactures, and compositions of matter call to mind products, factories, and substances, all of which are physical artifacts we recognize as falling within the conceptual category of technology.⁵⁰ Since all of these subject matter categories are modified

45. *Paulik v. Rizkalla*, 760 F.2d 1270, 1276 (Fed. Cir. 1985) (“This result furthers the basic purpose of the patent system.”); *I/P Engine, Inc. v. AOL Inc.*, 576 F. App’x. 982, 996 (Fed. Cir. 2014) (“[T]he constitutional grant of authority ‘[t]o promote the Progress of Science and useful Arts . . .’ ‘is both a grant of power and a limitation . . . Section 101’s vital role . . . is to insure that patent protection promotes, rather than impedes, scientific progress and technological innovation.’”) (citations omitted).

46. See, e.g., John R. Thomas, *The Patenting of the Liberal Professions*, 40 B.C. L. REV. 1139, 1140 (1999) [hereinafter Thomas, *Liberal Professions*] (describing the Patent Act’s subject matter categories as “embodying the current understanding” of the useful arts “to mean the technological arts”); David J. Kappos, John R. Thomas & Randall Bluestone, *A Technological Contribution Requirement for Patentable Subject Matter: Supreme Court Precedent and Policy*, 6 NORTHWESTERN J. TECH. & INTELL. PROP. 152, 153 (2008) (connecting the “useful Arts” with technological innovation specifically and arguing that, in our constitutional context, “patentable advances must be tied to a particular machine or apparatus, or alternatively, must reside in the physical transformation of an article to a different state or thing.”).

47. *General Requirements Bulletin for Admission to the Examination for Registration to Practice in Patent Cases before the United States Patent and Trademark Office*, U.S. PATENT AND TRADEMARK OFFICE (July 2015), http://www.uspto.gov/sites/default/files/OED_GRB.pdf [https://perma.cc/XG3S-AMWY] (“An applicant applying for the examination must demonstrate to the Director of the Office of Enrollment and Discipline (OED) that he or she possesses the scientific and technical training necessary to provide valuable service to patent applicants.”).

48. *Classification Standards and Development*, U.S. PATENT AND TRADEMARK OFFICE (Feb. 7, 2017, 9:13 AM), <http://www.uspto.gov/patents-application-process/patent-search/classification-standards-and-development> [https://perma.cc/3HM3-SK7E] (“The Patent Technology Center Directors coordinate patent examination through Art Units. The term, Art Unit, refers to the group of professionals responsible for a cluster of related patent art.”).

49. *Examiner Handbook to the U.S. Classification System*, U.S. PATENT AND TRADEMARK OFFICE (July 21, 2016, 9:57 AM), <http://www.uspto.gov/patent/laws-and-regulations/examiner-handbook-us-patent-classification-system.html> [https://perma.cc/6JCB-EDGN].

50. The link between those subject matter constraints and the useful arts was even clearer in early statutory text. The subject matter of the Patent Act of 1790 was “any useful art,

by the requirement that they be useful, it is not surprising that courts, lawyers, commentators and the Patent Office might understand the utility requirement in light of the technological focus of these categories. The influence might also run the other way — courts may be tempted in some cases simply to assume the utility of claims directed, for example, to machines. The fact that a claim is directed to subject matter with a technological cast might be sufficient evidence of the invention's utility.

Several significant doctrinal rules also reflect a focus on technological innovation. For example, while a party's public use of an invention more than one year prior to the date of application ordinarily precludes patentability, courts have long recognized that the bar will not apply if the party can establish that the use was experimental.⁵¹ But this rule is importantly limited: legitimate experimentation is intended to "perfect[] or complet[e] an invention to the point of determining that it will work for its intended purpose."⁵² Market testing is explicitly ruled out; only experimentation relating to the technical aspects of the invention counts.⁵³

Similarly, the technological framing of patent law is ultimately behind the rule that mere printed matter is not patentable.⁵⁴ Printed matter would seem to fit comfortably in the category of manufacture, but the intuition underlying the exclusion is that mere printed matter doesn't *do* anything.⁵⁵ It's the same intuition that led a court to reject a utility patent on the design of the back pocket of jeans.⁵⁶ These

manufacture, engine, machine, or device, or any improvement thereon not before known or used." Patent Act of 1790, ch. 7, 1 Stat. 109 (1790).

51. See *City of Elizabeth v. Am. Nicholson Pavement Co.*, 97 U.S. 126, 134 (1877) ("The use of an invention by the inventor himself, or of any other person under his direction, by way of experiment, and in order to bring the invention to perfection, has never been regarded as [public use].").

52. *RCA Corp. v. Data Gen. Corp.*, 887 F.2d 1056, 1061 (Fed. Cir. 1989).

53. See, e.g., *In re Smith*, 714 F.2d 1127, 1135 (Fed. Cir. 1983) ("[The experimental use exception] does not include market testing where the inventor is attempting to gauge consumer demand for his claimed invention").

54. See Collins, *supra* note 6, at 19–21; Kevin Emerson Collins, *Semiotics 101: Taking the Printed Matter Doctrine Seriously*, 85 IND. L.J. 1379, 1379 (2010) [hereinafter Collins, *Printed Matter*].

55. Collins argues that the printed matter rule works as an "informative authorship screen," channeling information to copyright because it is non-functional. See Collins, *supra* note 6, at 8–11; Collins, *Printed Matter*, *supra* note 54, at 1405 n.148. As Collins acknowledges, these kinds of screens are not presented in patent law as channeling doctrines — meaning patent law does not "invoke a term like 'authorship' that affirmatively defines copyright's proper domain." See Collins, *supra* note 6. To the extent these screens channel to copyright, it is only by virtue of negatively defining patent law's domain in a way that excludes this subject matter. *Id.* In that way, patent law's authorship screens are unlike the channeling doctrines in other areas of IP, which do explicitly invoke patent law's domain to exclude subject matter that would otherwise qualify for protection.

56. See *Levi Strauss & Co. v. Golden Trade, S.r.L.*, Nos. 92 Civ. 1667, 90 Civ. 6291, 90 Civ. 6292, 1995 WL 710822, at *28 (S.D.N.Y. Dec. 1, 1995) ("The appearance of the ran-

kinds of exclusions reflect gut-level attempts to differentiate the subject matter of utility patent from that of copyright or design patent, and there may well be good reasons to do that. But the distinctions are rarely well theorized, since the back pocket of a pair of jeans is clearly a manufacture with utility both to the manufacturers and consumers of the jeans. Implicitly, then, these doctrines reflect a judgment that “aesthetic” utility, even if it shapes market demand, is not the right kind of utility.

The nonobviousness requirement also embeds a particular understanding of the type of innovation with which patent law is concerned. The test for obviousness focuses on the technical achievement of the invention, asking whether, in light of the differences between the claimed invention and the prior art, the invention would have been obvious to a person with ordinary skill in the relevant art.⁵⁷ In assessing obviousness, courts are to consider certain “secondary” factors, including commercial success, long-felt but unsolved needs, and the failure of others.⁵⁸ But the Federal Circuit has been quite clear that the secondary factors are only indicative of nonobviousness when there is a nexus with the technical achievement — that is, the claimed invention — reflected in the patent.⁵⁹

dom faded effect on the jeans attracts attention but does not affect the utility of the jeans themselves.”).

57. 35 U.S.C. § 103 (2016); *Graham v. John Deere*, 383 U.S. 1, 15 (1966) (“If this difference [between the subject matter sought to be patented and the prior art] is such that the subject matter as a whole would have been obvious at the time to a person skilled in the art, then the subject matter cannot be patented.”); *KSR Int’l. Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.”).

58. See *Graham*, 383 U.S. at 17.

59. See, e.g., *Tokai Corp. v. Easton Enters., Inc.*, 632 F.3d 1358, 1369 (Fed. Cir. 2011) (“Regarding commercial success, this factor ‘may have relevancy’ to the overall obviousness determination, but a nexus must exist between the commercial success and the claimed invention.”) (citing *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1311–12 (Fed. Cir. 2006) (“Evidence of commercial success . . . is only significant if there is a nexus between the claimed invention and the commercial success.”)). The Federal Circuit has also required courts in design patent cases to evaluate secondary considerations in evaluating the obviousness of a claimed design. See *High Point Design LLC v. Buyers Direct, Inc.*, 730 F.3d 1301, 1311 (Fed. Cir. 2013). But notably, the requisite nexus between, for example, commercial success and the merit of the invention relates to the merit of the design as such. See, e.g., *Petersen Mfg., Inc. v. Central Purchasing, Inc.*, 740 F.2d 1541, 1549 (Fed. Cir. 1986) (“With respect to the argument based on the fourth inquiry under *Graham*, in this case . . . there is no evidence that the acceptance of the tool is due to its ornamental appearance rather than to its filling the need for a quality tool of this type.”); *Tyco Industries, Inc. v. Tiny Love, Ltd.*, 914 F. Supp. 1068, 1081 (D.N.J. 1996) (“The problem with Tiny Love’s argument is that it has failed to establish the requisite nexus between any alleged commercial success and/or Tyco’s alleged copying and the ornamental aspects of the claimed de-

The same can be said — although at a deeper conceptual level — about the legal standards by which patent law judges obviousness. Patentability is assessed according to a cumulative notion of progress in which inventions are judged against what came before them. Not only must a claimed invention be new, it must also be different enough from the prior art to represent a significant leap.⁶⁰ Patent law stands in sharp contrast to copyright in its willingness to assess the size of technological advances. It does so both because it recognizes the importance of cumulative innovation and because that assessment is more feasible in the context of technological innovation.⁶¹ “We often can agree on how to assess technical improvement” — for example, computers can be engineered to run faster, contain more memory, or be cheaper or more durable.⁶² This point about non-obviousness is very important to our sense that patent law is distinctive. Copyright long ago repudiated any similar requirement of incremental progress, largely limiting the threshold condition to originality, which the Supreme Court has interpreted to mean only that “the work was independently created by the author (as opposed to copied from other works), and that it possesses at least some minimal degree of creativity.”⁶³ These are not difficult requirements to meet. According to the Court, “the requisite level of creativity is extremely low; even a slight amount will suffice. The vast majority of works make the grade quite easily, as they possess some creative spark, ‘no matter how crude, humble or obvious’ it might be.”⁶⁴ In sum, copyright’s originality criterion does not entail difference.⁶⁵

These pervasive differences between patent and copyright doctrine reflect fundamentally different intuitions about the ways in which inventive versus expressive creativity function and how they benefit society. As Professor Barton Beebe has persuasively argued, we have never had a good metric for evaluating progress in the fine

sign. Since this is a design patent case, Tiny Love would have to prove that the commercial success and copying was due to the GYMINI Gym’s appearance and not to any of its functional attributes.”).

60. See *KSR*, 550 U.S. at 424–25 (holding the claimed adjustable gas pedal with electronic sensor obvious in light of prior art of adjustable gas pedals and prior art electronic sensors because the combination “would have been obvious to a person of ordinary skill.”).

61. See McKenna & Strandburg, *supra* note 6, at 7.

62. *Id.*

63. *Feist Publ’ns., Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 345 (1991).

64. *Id.* (quoting MELVILLE B. NIMMER & DAVID NIMMER, *NIMMER ON COPYRIGHT* § 1.08[C][1] (1990)).

65. *Id.* at 345–46 (arguing that originality does not signify novelty. Two poets, for example, each ignorant of the other, might compose identical poems. Neither work is novel, yet both are original and, hence, copyrightable).

arts.⁶⁶ For that reason, courts have generally found it impossible to measure the extent to which a particular combination of previous expression has advanced over the prior works. As the Supreme Court stated more than one hundred years ago, in *Bleistein v. Donaldson Lithographing Co.*⁶⁷:

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 that they have not an aesthetic and educational value — and the taste of any public is not to be treated with contempt.⁶⁸

Copyright doctrine thus appears to have settled on a quantitative, rather than a qualitative, conception of progress — more is better, rather than better is better. Within patent law's technological domain, more has never been the criterion. Patent law aims for better.

B. Inconsistency in Practice

Despite the widespread understanding that utility patent law is focused on technological innovation and the reflection of that understanding in a wide range of features of the patent system, in practice patent law (at least modern patent law) is actually not so constrained. At its core, patent law has always presented the possibility of reaching beyond technological utility to cover things that are useful in a broader sense — for example, because they affect consumer dispositions or

66. Barton Beebe, *Bleistein*, American Copyright Law, and the Problem of Aesthetic Progress 13–14 (unpublished manuscript) (on file with authors).

67. 188 U.S. 239 (1903).

68. *Id.* at 251–52.

tastes.⁶⁹ The statutory subject-matter categories of manufactures and compositions of matter, for example, even if traditionally understood to refer to inventions of industrial application,⁷⁰ are amply inclusive of a wider range of materials that are only functional in a broader sense.

But the subject matter category covering “process[es]” is particularly capacious. On the one hand, the term prototypically refers to industrial processes, like methods for manufacturing a drug.⁷¹ But courts have always had some difficulty constraining the scope of that category, since in principle it could “embrace the broadest reaches of human experience.”⁷² In fact, as Professor Michael Risch has shown, business methods — including methods of teaching writing, a new musical notation, and a method of managing bees — were routinely patented in the early 1800s.⁷³

Modern expansionist views of the patent system stretched the subject matter categories even further. Some judicial interventions intended to make patents more readily available to new computer technologies have posed particular conceptual challenges in defining the scope of patentable subject matter, leading parties to claim patent protection for processes whose only connection to technology is that they are implemented by a computer.⁷⁴ This expansion has loosened patent law’s connection to technological innovation, making it much harder to characterize patent law’s domain. Indeed, even outside of the software field, many patents have been granted on subject matter that clearly cannot be described as technological in any conventional sense.⁷⁵

It could, of course, be the utility requirement, rather than the subject matter categories, that imposes the technological framing. But despite a small number of utility cases that reject claimed inventions on the ground they don’t do anything,⁷⁶ modern utility doctrine doesn’t meaningfully limit patent law’s domain.

69. See examples in text accompanying footnotes 77–89, *infra*.

70. See Section II.A, *supra*.

71. Indeed, the original patent statute did not use the term “process,” instead including “arts,” a term linked more tightly to manual or industrial processes. Patent Act of 1790, ch. 7, § 1, 1 Stat. 109, 110 (1790) (repealed 1793).

72. Thomas, *Liberal Professions*, *supra* note 46, at 1139.

73. Michael Risch, *America’s First Patents*, 64 FLA. L. REV. 1279, 1320–24 (2012) (noting that most of the patented business methods did not use a machine or transform matter, though certain types of these method patents involved measurement and had some end use related to manufacturing).

74. See Thomas, *Liberal Professions*, *supra* note 46 at 1153–55.

75. See, e.g., text accompanying footnotes 120–26, *infra* (discussing patents for jewelry).

76. Kevin Collins describes this requirement that the invention be functional, or “do something,” as an authorship screen, excluding from utility patent subject matter that belongs to copyright. See generally Kevin Emerson Collins, Patent Law’s Authorship Screen (Feb. 9, 2017) (unpublished draft) (on file with authors).

Take the example of *Juicy Whip, Inc. v. Orange Bang, Inc.*⁷⁷ In that case, the Federal Circuit upheld a patent on a post-mix beverage dispenser that was designed to look like a pre-mix beverage dispenser. “A ‘post-mix’ beverage dispenser stores beverage syrup concentrate and water in separate locations until the beverage is ready to be dispensed.”⁷⁸ A pre-mix beverage dispenser, on the other hand, pre-mixes the syrup concentrate and water and the beverage is stored in a display reservoir bowl until it is ready to be dispensed.⁷⁹ A pre-mix dispenser’s display bowl stimulates impulse buying, but it also creates the need to clean the bowl frequently because of bacterial build-up.⁸⁰ The patented dispenser had the appearance of a pre-mix dispenser but worked as a post-mix dispenser, avoiding the need for required maintenance.⁸¹ Plaintiff sued defendant claiming it was infringing on the patent. The district court granted defendant’s motion for summary judgment, holding that an invention lacks utility when its only benefit is to make a product more salable.⁸²

The Federal Circuit reversed, holding that “[t]he fact that one product can be altered to make it look like another is in itself a specific benefit sufficient to satisfy the statutory requirement of utility.”⁸³ In so finding, the Federal Circuit cited other patents for which the relevant utility was some psychological appeal, including those directed toward producing imitation grill marks on food, imitation wood flooring, and imitation hamburger.⁸⁴ Similarly, in *Application of Miller*,⁸⁵ the Federal Circuit’s predecessor found measuring cups marked with fractional cup gradations patentable subject matter because it helped alleviate the “mental strain” on cooks who were attempting to make fractional recipes.⁸⁶

It is possible to conceive of the utility of these inventions as technological, at least if you don’t look too hard. The invention in *Juicy Whip* certainly “did” something — it stored the beverage mixture and the water in separate locations and then mixed them together. It therefore achieved its purpose of making one thing look like another by

77. 185 F.3d 1364 (Fed. Cir. 1999).

78. *Id.* at 1365.

79. *Id.*

80. *Id.*

81. *Id.*

82. *Id.*

83. *Id.* at 1367.

84. *See id.*; *see also* U.S. Patent No. 5,762,968 (issued June 9, 1998) (imitation grill marks); U.S. Patent No. 5,899,038 (issued May 4, 1999) (laminated flooring imitating wood); U.S. Patent No. 5,571,545 (issued Nov. 5, 1996) (imitation hamburger). Professor Collins refers to these patents as having “look like” functionality. Collins, *supra* note 76, at 38–39.

85. 418 F.2d 1392 (C.C.P.A. 1969).

86. *Id.* at 1394, 1396.

virtue of its mechanical design. Imitation wood flooring is clearly a tangible article of manufacture. Processes that create imitation grill marks have tangible output. But characterizing the utility of those inventions as technological only highlights the emptiness of the concept of technological utility and its inability to meaningfully demarcate the domain of patent law. Marked measuring cups are certainly tangible and they are useful to cooks because they reduce mental strain. But jewelry designs and the designs on the back pockets of jeans are also tangible manufactures useful to their purchasers because they produce feelings of well-being, or perceptions of increased status, that shape consumers' preferences in the markets for these products. Why is reducing mental strain on cooks an acceptable form of utility while adding commercial appeal to jeans is not? Tangibility provides no answer here. Measuring cup gradations and the stitching on jeans are equally tangible, and their mental effects are equally intangible — they are simply different types of mental effects.⁸⁷

Some of these patents, like the patent on the round beach towel discussed in the Seventh Circuit's *Jay Franco & Sons v. Franek*⁸⁸ decision, also highlight the problem with conceiving of utility in terms of whether the invention “does” something. Often the utility of a manufacture is not in what it does but rather what consumers do with it. The round beach towel is useful not because it does anything, but because sunbathers are able to rotate their bodies around the towel along with the sun rather than having to move the towel.

Despite these many examples of patent law's openness to a wide range of subject matter, the sense that patent law is fundamentally about technological innovation runs deep, and for that reason courts have never been fully comfortable with expansive claiming of pro-

87. These two examples — marked measuring cups and stitching on the back pocket of jeans — are examples of why we think Professor Collins's acknowledgement of “look like” patents doesn't go far enough in capturing the under-theorization of functionality. Collins, *supra* note 76, at 38–39. A number of these patents do go to the “look” of an object, but they do not attempt to make one thing “look like” something else (as did the invention in *Juicy Whip*). The “function” of these inventions is entirely the production of mental effects of one sort or another. Indeed, as Collins identifies, the USPTO also regularly issues patents that merely claim “geometric configurations of space or mass without disclosing any conceivable new function that the geometries perform (except satisfying consumers' aesthetic preferences, of course).” Collins, *supra* note 76 at 53–54 (citing numerous issued patents). Collins suggests these patents were erroneously issued, but we think they are consistent with other “look” patents, particularly those for jewelry designs.

88. 615 F.3d 855, 858 (7th Cir. 2010) (referring to U.S. Patent No. 4,794,029 as evidence of the functionality of the circular beach towel and noting that the patent claimed a “towel-bag . . . wherein said towel is circular in shape, whereby a user while sunbathing may reposition his or body towards the changing angle of the sun while the towel remains stationary”).

cesses.⁸⁹ Until the latter part of the twentieth century, for example, most courts rejected patents on business methods “disconnected from the [tangible] means for carrying out” the methods.⁹⁰ Courts in later years struggled to adapt this rule to the computer era,⁹¹ fumbling initially to distinguish patentable processes from mere algorithms. Tellingly, it was the connection to the tangible machine that seemed to make all the difference.⁹² The Federal Circuit later characterized patentable methods as those that produced “a useful, concrete, and *tangible* result”⁹³ and found process claims invalid unless the process was tied to a particular machine or effected a physical transformation of a composition of matter or a manufacture.⁹⁴

Though the Supreme Court more recently held that the machine-or-transformation test is not the sole criterion for deciding whether an invention is patent eligible,⁹⁵ it has continued to be concerned about processes. In *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*,⁹⁶ the Court held that a claimed method for reducing non-payment risk in financial transactions was too abstract to be patented, and that the method was

89. See Thomas, *Liberal Professions*, *supra* note 46, at 1143–47 (describing English and American courts’ discomfort with broad interpretations of process and their efforts to limit protection for processes to those with physical results).

90. *Hotel Security Checking Co. v. Lorraine Co.*, 160 F. 467, 469 (2d Cir. 1908); *see also In re Patton*, 127 F.2d 324, 327 (C.C.P.A. 1942) (“[I]t is sufficient to say that a system of transacting business, apart from the means for carrying out such system, is not within [patentable subject matter] . . .”); *Rand, McNally & Co. v. Exchange Scrip-Book Co.*, 187 F. 984, 986 (7th Cir. 1911) (requiring a “physical tangible facility” for practicing the technique in order for a process to be patentable); *Ex parte Turner*, 1894 Dec. Comm’r Pat. 36, 38 (“[A] plan or theory of action which, if carried into practice, could produce no physical results proceeding directly from the operation of the theory or plan itself is not an art within the meaning of the patent laws.”). Infringement, even of method patents, also typically required the existence of a tangible device that performed the method. *See* Timothy R. Holbrook & Lucas S. Osborn, *Digital Patent Infringement in an Era of 3D Printing*, 48 U.C. DAVIS L. REV. 1319, 1322–23 (2015) (discussing the historical anchoring of infringement to the physical); Richard S. Gruner, *Intangible Inventions: Patentable Subject Matter for an Information Age*, 35 LOY. L.A. L. REV. 355, 355–57, 360 (2002).

91. Thomas, *Liberal Professions*, *supra* note 46, at 1148 (noting that “[t]he rise of computer technology sorely tested” patent law’s “demand for physical structure” as a patent eligibility standard).

92. *See* Katherine J. Strandburg, *What If There Were a Business Method Use Exemption to Patent Infringement?*, 2008 MICH. ST. L. REV. 245, 254 (2008) (“As business methods were computerized, patents drawn to what might earlier have been deemed unpatentable methods of doing business slipped in under the guise of apparatus claims.”).

93. *State St. Bank & Trust Co. v. Signature Fin. Grp., Inc.*, 149 F.3d 1368, 1373 (Fed. Cir. 1998) (emphasis added) (quoting *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994)).

94. *See In re Comiskey*, 554 F.3d 967, 980 (Fed. Cir. 2009).

95. *See Bilski v. Kappos*, 561 U.S. 593, 604 (2010) (“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.’”).

96. 134 S. Ct. 2347 (2014).

not saved from abstractness merely because it was implemented on a computer.⁹⁷

Despite *Alice*'s focus on abstraction, the Court failed to draw any perceptible line separating patentable processes from those that are too abstract; the lower courts will be forced to do that job.⁹⁸ One notable early attempt can be found in the Federal Circuit's recent *Ultramercial* decision.⁹⁹ In his concurrence in that case, Judge Mayer characterized the Supreme Court's *Alice* decision as imposing a technological innovation requirement in § 101.¹⁰⁰ Generally speaking, Judge Mayer wrote, "[i]n assessing patent eligibility, advances in non-technological disciplines — such as business, law, or the social sciences — simply do not count."¹⁰¹

The patent in *Ultramercial* was directed to a "method for distribution of products over the Internet" whereby a consumer was given access to "a media product" if the consumer viewed an ad.¹⁰² While the claim identified eleven steps, the court characterized it simply as "showing an advertisement before delivering free content" or "using

97. *Id.* at 2357.

98. Thus far, the majority of courts that have considered subject matter challenges to process patents post-*Alice* have found the patents invalid. However, the rate of invalidation has decreased each year, suggesting that the weakest patents were litigated first, and that a new equilibrium is emerging. See Robert R. Sachs, *Alice Brings a Mix of Gifts For 2016 Holidays*, THE FENWICK & WEST BILSKI BLOG (Dec. 23, 2016) <http://www.bilskiblog.com/blog/2016/12/alice-brings-a-mix-of-gifts-for-2016-holidays.html> [https://perma.cc/AM5C-V5ZE]. Notably, however, the Patent Trial and Appeal Board ("PTAB") which is a body within the USPTO that conducts proceedings on patent validity, including inter partes, post-grant, and covered business method patent reviews and derivation proceedings, hears appeals from adverse examiner decisions in patent applications and reexamination proceedings, and renders decisions in interferences, continues to invalidate patents in covered business method disputes at a very high rate. *Id.* (showing rates of 84.6% for the PTAB's institution of challenges to covered business method patents and 97.0% for invalidation at final decision). Selection effects seem very powerful here, however. See Mark Nowotarski, *Surviving Alice in the Finance Arts*, THE FENWICK & WEST BILSKI BLOG (Jan. 30, 2017) <http://www.bilskiblog.com/blog/2017/01/surviving-alice-in-the-finance-arts-1.html> [https://perma.cc/LJ8Z-ECNL] (documenting a significant decline in allowances on applications in the finance art units, and showing that allowed applications nearly always incorporate a physical device into their claims).

99. *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709 (Fed. Cir. 2014).

100. *Id.* at 721 ("*Alice* recognized that the patent system does not extend to all products of human ingenuity . . . [I]ts rewards do not flow to ideas — even good ones — outside of the technological arena.") (citing *Alice*, 134 S.Ct. at 2358–60).

101. *Id.* In his concurrence in *Bilski v. Kappos*, 561 U.S. 593 (2010), Justice Stevens argued business methods were categorically unpatentable, not because they are necessarily abstract, but because they are business methods. Notably, however, Justice Stevens believed this limitation was part of the definition of a "process," a category he took to exclude business methods, noting that utility for conducting business did not count. *Id.* at 614 ("[A]lthough a process is not patent ineligible simply because it is useful for conducting business, a claim that merely describes a method of doing business does not qualify as a 'process' under § 101.").

102. *Ultramercial*, 772 F.3d at 712.

advertising as an exchange or currency.”¹⁰³ The court held that the claimed method was not patentable under *Alice*, as it was directed to the abstract idea “that one can use an advertisement as an exchange or currency,”¹⁰⁴ and the claims did not transform that abstract idea into patent-eligible subject matter because they “simply instruct the practitioner to implement the abstract idea with routine, conventional activity.”¹⁰⁵

Judge Mayer agreed that the claims were directed to patent-ineligible subject matter, but he wrote separately, emphasizing that *Alice* articulated a “technological arts test” for patent eligibility, and that the asserted method and system claims were patent ineligible because they did not “improve the functioning of the computer itself” or “effect an improvement in any other technology or technical field.”¹⁰⁶

Though it was only a concurrence, Judge Mayer’s opinion articulated with unusual clarity a particular view of patent law’s domain. The Federal Circuit echoed that view in *DDR Holdings, LLC v. Hotels.com, L.P.*,¹⁰⁷ a case involving claims directed to systems and methods of generating a composite web page that combines certain visual elements of a host website with content of a third-party merchant.¹⁰⁸ The defendant in *DDR Holdings* argued that the claims recited abstract ideas ineligible for patent protection under the standards set by the Supreme Court in *Alice* and its prior opinion in *Bilski v. Kappos*.¹⁰⁹ The Federal Circuit disagreed. It first attempted to set out the guidelines for ascertaining patent eligibility established in the two Supreme Court cases. In doing so, it identified the domain of patent, as Judge Mayer’s *Ultramercial* concurrence had done before it, with technological innovation:

Distinguishing between claims that recite a patent-eligible invention and claims that add too little to a patent-ineligible abstract concept can be difficult, as the line separating the two is not always clear. At one time, a computer-implemented invention was considered patent-eligible so long as it produced a “useful, concrete and tangible result.” This understanding rested, in large part, on the view that such inventions crossed the eligibility threshold *by virtue*

103. *Id.* at 715.

104. *Id.*

105. *Id.*

106. *Id.* at 721 (quoting *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S.Ct. 2347, 2359 (2014)).

107. 773 F.3d 1245 (Fed. Cir. 2014).

108. *Id.* at 1245.

109. *Id.* at 1257–59.

*of being in the technological realm, the historical arena for patented inventions.*¹¹⁰

Having established the centrality of the technology criterion to patentability, the Federal Circuit found the claimed invention patent eligible. Unlike unpatentable abstract ideas that merely recite generic computer limitations, the claims at issue in *DDR* addressed a business challenge particular to the Internet.¹¹¹ According to the court:

[The *DDR*] claims st[ood] apart [from those courts had found ineligible] because they d[id] not merely recite the performance of some business practice known from the pre-Internet world along with the requirement to perform it on the Internet. Instead, the claimed solution [was] necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks.¹¹²

This was not simply, as the dissent argued, application of the abstract “store within a store” concept because that practice “did not have to account for the ephemeral nature of an Internet ‘location’ or the near-instantaneous transport between these locations made possible by standard Internet communication protocols, which introduces a problem that does not arise in the ‘brick and mortar’ context.”¹¹³ The invention was intimately related to the technology of the Internet.

In sum, patent law drifted away from a focus on technological function (at least in part) during the period when business method patents were freely granted.¹¹⁴ But following the Supreme Court’s opinions in *Bilski* and *Alice*, at least some decisions of the Federal Circuit seem to be enforcing subject matter limitations in such a way that reconnects to a more explicitly technological understanding of patent eligibility. If this trend takes root, then the patent system’s previously largely implicit grounding in a certain sort of technological innovation will become more overt. By implication, so too will the exclusion from patent’s jurisdiction of, as Judge Mayer put it in *UL-*

110. *Id.* at 1255 (emphasis added) (citations omitted).

111. *Id.* at 1257 (“In particular, the ‘399 patent’s claims address the problem of retaining website visitors that, if adhering to the routine, conventional functioning of Internet hyperlink protocol, would be instantly transported away from a host’s website after ‘clicking’ on an advertisement and activating a hyperlink.”).

112. *Id.*

113. *Id.* at 1258.

114. See, e.g., U.S. Patent No. 5,190,458 (issued March 2, 1993) (“Character Assessment Method”).

tramercial, “advances in nontechnological disciplines — such as business, law, or the social sciences.”¹¹⁵

III. UTILITY PATENT’S DOMAIN IN CHANNELING DOCTRINES

As we’ve seen, the law of utility patent has been unclear on a central subject matter question — what sort of innovation counts? Despite widespread agreement that patent law focuses on technological innovation, patent doctrine enforces that understanding only inconsistently. Indeed, one would be hard-pressed to extract from patent doctrine and practice any coherent sense of categorical limitations.

That is odd because all of the other branches of IP act as if patent law’s domain is reasonably clear and stable. Indeed, one might say that the other branches of IP have accepted the rhetorical characterization of utility patent law as focused on technological innovation, perhaps having internalized that view of patent law before its modern expansions. For the most part — albeit, as we shall see, with some exception in the trademark cases — courts enforcing this view in non-utility-patent IP cases have proceeded as if functionality is a straightforward empirical question. Rarely do they recognize, let alone acknowledge, functionality’s essential normativity. Features of designs, trade dress, and works of authorship can be functional in a variety of ways. Sometimes features are technologically functional, in the sense that they “do work” in the world. Sometimes they are phenomenological, in the sense that they operate to change perceptions or preferences. Are the latter also “functional”? Courts in non-utility-patent IP cases are approaching that question reductively and intuitively. In the process they are creating problems in the doctrine. The next section discusses how design patent, trade dress, and copyright have approached the determination of whether particular product features are functional.

A. Challenges in Design Patent

Because utility patent law traditionally has been focused on technological innovation, the ornamental features of articles of manufacture were understood to require a separate legal regime — design patent. The notion that ornamentality is the obverse of functionality is built into design patent’s subject matter rules. In defining the subject matter of design patent, courts have construed ornamental to mean non-functional, ostensibly to prevent parties from using design patent

115. *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 721 (Fed. Cir. 2014).

law to gain protection for the kinds of useful features that properly belong in utility patent.¹¹⁶

Perhaps not surprisingly, neither utility nor design patent has consistently been able to distinguish the functional and the ornamental. Design cannot categorically be excluded from utility patent because design features sometimes can be described in functional terms — when, for example, the shape of a machine affects its speed. In those cases, it might seem possible to describe separately the design's technological utility (its effect on the machine's speed) and its ornamentality (the way the machine looks), even if they are inextricably intertwined. Thus, design may in some cases fit comfortably in utility patent's domain. But that isn't a complete explanation for utility patent law's incursion into design; indeed, as the many utility patents on jewelry designs indicate,¹¹⁷ utility patent law only inconsistently rules out designs at the ornamental end of the spectrum. On its own, it's possible that claiming of design features in utility patent isn't that serious of a concern. After all, design patent's novelty and nonobviousness requirements seem significantly less onerous than those of utility patent, so perhaps there isn't much incentive to opt into utility patent rather than design patent.¹¹⁸

Design patent law's difficulty developing rules to channel functional features to utility patent is of greater concern. There are a variety of reasons for that difficulty, and not all of them are the result of conceptual confusion about utility patent's domain. One significant reason is that the distinction is pitched as an either/or — between functional features, on the one hand, and ornamental features on the other. Yet design defies that simple binary; the design of nearly every article of manufacture is, to a greater or lesser degree, both ornamental and functional (and indeed the same is true of the design of individual product features as well).¹¹⁹ Design patent's functionality doctrine, like trademark's functionality doctrine and copyright's useful articles doctrine, really has to determine the point at which the balance between ornamentality and functionality tips too strongly in

116. See McKenna & Strandburg, *supra* note 6, and cases cited. Sarah Burstein has recently argued that ornamentality need not (and indeed should not) be reduced to non-functionality. Burstein, *supra* note 37, at 1456. Burstein may be right, normatively, but as a descriptive matter ornamentality means non-functionality in current doctrine.

117. See *supra*, Section II.B.

118. See Dennis Crouch, *Design Patent Rejections*, PATENTLYO (Jan. 19, 2010), <https://patentlyo.com/patent/2010/01/design-patent-rejections.html> [<https://perma.cc/3SQN-2WXA>] (finding a very low prior-art-based rejection rate on design patents of 1.2%, of which 61% were obviousness-based).

119. See McKenna & Strandburg, *supra* note 6, at 46 (“The attempt to make a sharp distinction between the *useful* features of industrial designs . . . and their *ornamental* or *aesthetic* features . . . is doomed to failure because overall designs (as distinct from surface ornamentation) nearly always are, to a greater or lesser extent, *both* useful and aesthetic.”).

the direction of function. Yet because design patent law conceives of these characteristics in a binary way, it has no effective way of conceptualizing or articulating the relevant tipping point.

But even if the distinction were recalibrated to focus on the balance between functionality and ornamentality, this kind of channeling faces a more fundamental challenge. Ornamental features have a function, often simply because they contribute to a product's appeal to consumers, either by provoking an emotional response or by shifting consumer preferences. As traditionally conceived, utility patent law does not focus on that kind of non-technological function. But that does not mean it does not exist. Because utility patent law deals with these questions at least partly on the basis of intuition and lacks a fully-specified and analytically robust account of the kinds of function that count, courts are apt to not be rigorous in policing the boundary line in their decisions about what's in and what's out.

Take, for example, the recent decision in *Prestige Jewelry*.¹²⁰ In that case, Prestige argued that the claimed design of diamond jewelry lacked ornamentality (in other words, was functional) because, the designer admitted, this arrangement “performed the best” in light box refraction tests, having “the best refraction.”¹²¹

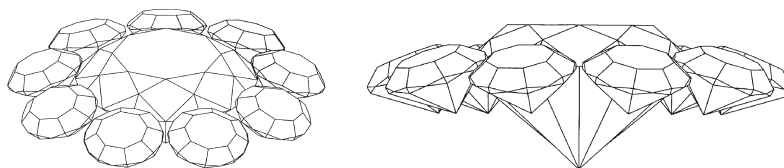


Figure 1: Images from Design Patent 618,132 from *Prestige Jewelry*

The court rejected that argument, which it characterized as “incorrectly blur[ring] the distinction between ornamental and functional designs.”¹²² Notwithstanding the designer’s statements about the performance of the design, “the ultimate purpose of the [patented] design is to have a pleasing appearance — a quintessentially ornamental purpose.”¹²³ That does not change “simply because [the] inventor experiment[ed] with alternative designs or use[d] rudimentary tools and

120. *Prestige Jewelry Int’l, Inc. v. BK Jewelry HK*, No. 11-CV-2930-LAP, 2014 WL 11344395 (S.D.N.Y. Sept. 15, 2014).

121. *Id.* at *9.

122. *Id.*

123. *Id.*

tests.”¹²⁴ The design was “unquestionably ornamental” because it was “arranged solely to be pleasing to the eye.”¹²⁵ According to the court, being pleasing to the eye is not the kind of function that belongs in utility patent law; it’s precisely the kind that belongs in design patent.

Yet the USPTO has repeatedly allowed utility patents on inventions with precisely this kind of function, in some cases allowing design and utility patents on the very same invention.¹²⁶ Indeed, several of the pieces of prior art that the *Prestige Jewelry* court considered were utility patents that claimed nothing more than the arrangement of diamonds in a setting.¹²⁷ Many cases have held that “the unique inventive contribution reflected in an ornamental design can be identical to the unique inventive contribution of a mechanical process.”¹²⁸

This kind of uncertainty about the relevant functionality can be a serious problem because the ornamentality rule is, at least in significant part, supposed to prevent parties from using design patent to gain protection for useful features without having to go through the more rigorous utility patent process. It could also be a problem if courts considering the validity of design patents were picking up on the functional considerations inhering in many design decisions, ejecting from design patent a lot of industrial design innovations (assuming we could understand what “innovation” means in this context), and consigning those innovations to a utility patent system that is set up not to recognize them.

The Federal Circuit has avoided this second difficulty by defining design patent’s functionality bar down to nearly nothing. Under the prevailing rule, design patent law disqualifies a claimed design only when the design, as a whole, is “dictated by” functional considerations.¹²⁹ In a few cases, the Federal Circuit has suggested that, in determining whether a claimed design is functional under this standard, a court may consider several factors:

124. *Id.*

125. *Id.*

126. *See, e.g.*, U.S. Patent No. D467,833 (issued Dec. 21, 2002); U.S. Patent No. 7,146,827 (issued Dec. 12, 2006). The utility patent explains that the claimed “mixed cut gemstone enables the appreciation of the desirable characteristics of a diamond in ways that prior art cuts do not allow.” ‘827 Patent, at [57].

127. *See* U.S. Patent No. 7,762,104 (issued July 7, 2010).

128. *Wahl v. Rexnord, Inc.*, 624 F.2d 1169, 1179 (3d Cir. 1980) (citing *Transmatic, Inc. v. Gulton Indus., Inc.*, 601 F.2d 904 (6th Cir. 1979)); *Ropat Corp. v. McGraw-Edison Co.*, 535 F.2d 378 (7th Cir. 1976); *Application of Thorington*, 418 F.2d 528, 536 (C.C.P.A. 1969).

129. *See, e.g.*, *PHG Techs., LLC v. St. John Cos.*, 469 F.3d 1361, 1366 (Fed. Cir. 2006) (“The design of a useful article is deemed to be functional when the appearance of the claimed design is dictated by the use or purpose of the article.”) (quotations omitted) (quoting *L.A. Gear, Inc. v. Thom McAn Shoe Co.*, 988 F.2d 1117, 1123 (Fed. Cir. 1993)).

- (1) Whether the protected design represents the best design;
- (2) Whether alternative designs would adversely affect the utility of the specified article;
- (3) Whether there are any concomitant utility patents;
- (4) Whether the advertising touts particular features of the design as having specific utility; and
- (5) Whether there are any elements in the design or an overall appearance clearly not dictated by function.¹³⁰

In general, however, courts in design patent cases have heavily emphasized the availability of alternative designs. If alternatives seem plausible, then the design in question is not dictated by its function. Not surprisingly, courts taking this approach have only very rarely found a claimed design to be functional. In fact, the Federal Circuit has, since its inception, considered the question of whether claimed features lack ornamentality more than thirty times. It has found the claimed design invalid on functionality grounds only five times, most recently in 2001.¹³¹ Most of the cases in which the Federal Circuit found functionality were also unique in some important way. *Best Lock*, for example, involved the design of a key blade, which of course must fit a corresponding lock in order to work.¹³²

Because the Federal Circuit has focused on alternative designs to determine whether a design is “dictated by function,” design patent courts rarely have to face squarely the decision of whether the claimed features belong in utility patent.¹³³ But the cost of that avoidance is

130. *High Point Design LLC v. Buyers Direct, Inc.*, 730 F.3d 1301, 1315–16 (Fed. Cir. 2013) (alterations in original) (quoting *PHG Techs.*, 469 F.3d at 1366). These factors are highly reminiscent of the Federal Circuit’s *Morton-Norwich* factors, which it uses to assess functionality in the trade dress context. *In re Morton-Norwich Prods., Inc.*, 671 F.2d 1332, 1340–41 (Fed. Cir. 1982) (determining functionality by considering: (1) the existence of an expired utility patent; (2) whether the designer “touts the utilitarian advantages through advertising”; (3) the availability of alternative designs; and (4) whether the design results from a “simple or cheap method” of manufacture). Notably, those factors were inspired by the competitive necessity view of functionality the Supreme Court downplayed in *TraFFix Devices, Inc. v. Marketing Displays, Inc.*, 532 U.S. 23, 33 (2001).

131. *Five Star Mfg., Inc. v. Ramp Lite Mfg., Inc.*, 4 Fed. App’x 922, 922 (Fed. Cir. 2001); *In re Chung*, No. 00-1148, 2000 WL 1476861, at *3 (Fed. Cir. Oct. 4, 2000); *Berry Sterling Corp. v. Pescor Plastics, Inc.*, No. 98-1381, 1999 WL 674514, at *3–4 (Fed. Cir. Aug. 30, 1999); *Best Lock Corp. v. Ilco Unican Corp.*, 94 F.3d 1563, 1566–67 (Fed. Cir. 1996); *Power Controls Corp. v. Hybrinetics, Inc.*, 806 F.2d 234, 238–240 (Fed. Cir. 1986). The Federal Circuit remanded on the issue in two other cases. *See PHG Techs.*, 469 F.3d at 1369; *Chrysler Motors Corp. v. Auto Body Panels of Ohio, Inc.*, 908 F.2d 951, 955 (Fed. Cir. 1990).

132. *See Best Lock*, 94 F.3d at 1566.

133. *See Perry J. Saidman, The Demise of the Functionality Doctrine in Design Patent Law*, *NOTRE DAME L. REV.* __ (forthcoming 2017) (draft at 24) (noting that, “if the func-

that design patents are available to many designs with clear technologically functional characteristics. As a result, design patent, with novelty and non-obviousness requirements that are pitched lower than utility patent's, may be used to circumvent utility patent and protect a wide range of design innovations that an ordinary observer would recognize as useful.

To a limited extent, the Federal Circuit has tried to remedy that looseness at the validity stage by allowing courts to consider functionality when assessing infringement—essentially limiting the scope of a party's rights by discounting similarities that can be explained in terms of function. In *Richardson v. Stanley Works, Inc.*,¹³⁴ the Federal Circuit effectively endorsed a sort of abstraction/filtration approach analogous to what some copyright courts have employed to divide expressive from functional elements in software code.¹³⁵ The *Richardson* court construed the design patent claims in light of “the distinction between the functional and ornamental aspects of a design”¹³⁶ and then assessed the similarity between the accused design (right) and the plaintiff's patented design (left) only after having accounted for the functionality of the features of the design.¹³⁷

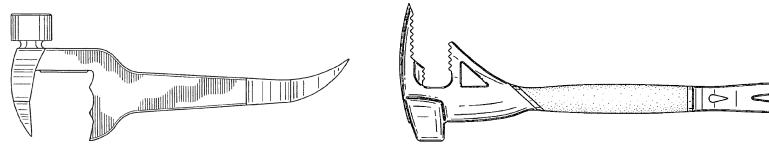


Figure 2: The Patented Design (left) and the Accused Design (right)

But even if this were generally an adequate way of accounting for functionality, subsequent decisions have seriously undermined *Richardson*. For one thing, courts have had trouble with the filtering approach in cases in which claim construction and infringement are addressed at different stages (which is the majority of cases).¹³⁸ The

tion of a claimed design is defined in general, broad terms, there will always be alternatives that can perform substantially the same function and not look like the patented design. That is true even for the simplest of designs.”).

134. 597 F.3d 1288 (Fed. Cir. 2010).

135. See, e.g., *Computer Associates Int'l, Inc. v. Altai Inc.*, 982 F.2d 693 (2d Cir. 1992).

136. *Richardson*, 597 F.3d at 1293.

137. *Id.* at 1296 (“We also agree that, ignoring the functional elements of the tools, the two designs are indeed different.”); see also *Ethicon Endo-Surgery, Inc. v. Covidien, Inc.*, 796 F.3d 1312, 1334 (Fed. Cir. 2015) (construing the claimed design to eliminate the functional aspects of the design).

138. See, e.g., *Weber-Stephen Prods. LLC v. Sears Holding Corp.*, 2014 WL 5333364, at *10 (N.D. Ill. Oct. 20, 2014) (“[U]nlike the typical case, the *Richardson* trial court was able

even greater difficulty can be traced to design patent's current infringement standard, which does not explicitly focus on the protectable features of the claimed design. Since the Federal Circuit's decision in *Egyptian Goddess v. Swisa*,¹³⁹ infringement has been evaluated by asking "whether an ordinary observer, familiar with the prior art, would be deceived into thinking that the accused design was the same as the patented design."¹⁴⁰ Before *Egyptian Goddess*, courts accounted for the so-called "point of novelty" in making this comparison, finding infringement only if the accused design incorporated novel and nonobvious aspects of the patentee's claimed design.¹⁴¹ Several cases had extended that rule to account for functionality.¹⁴² But *Egyptian Goddess* expressly repudiated the point of novelty test, holding that the ordinary observer test is the sole test for determining infringement,¹⁴³ even when "the patented design incorporates numerous functional elements."¹⁴⁴

Perhaps more significantly, courts have not interpreted *Richardson*'s approach to be particularly constraining. In *Apple v. Samsung*,¹⁴⁵ for example, the Federal Circuit upheld the district court's jury instructions, which did not require the jury to exclude the functional elements of the designs when assessing substantial similarity.¹⁴⁶ According to the Federal Circuit:

[T]he claim construction in *Richardson* did not exclude those components in their entirety. Rather, the claim construction included the ornamental aspects of those components: "the standard shape of the hammer-head, the diamond-shaped flare of the crowbar and the top of the jaw, the rounded neck, the ori-

to consider claim construction and functionality together, with the benefit of a fully developed record at trial.").

139. 543 F.3d 665 (Fed. Cir. 2008) (en banc).

140. *Id.* at 672.

141. *Id.* at 670–71.

142. *See, e.g., Lee v. Dayton-Hudson Corp.*, 838 F.2d 1186, 1188 (Fed. Cir. 1988) ("[I]t is the non-functional, design aspects that are pertinent to determinations of infringement.").

143. *Egyptian Goddess*, 543 F.3d at 678.

144. *Richardson v. Stanley Works, Inc.*, 597 F.3d 1288, 1295 (Fed. Cir. 2010). The Federal Circuit has also concluded that the point of novelty is no longer relevant to design patent validity either. *See, e.g., Int'l Seaway Trading Corp. v. Walgreens Corp.*, 589 F.3d 1233, 1237–38 (Fed. Cir. 2009). For a critique of the Federal Circuit's rejection of the point of novelty, see Mark A. Lemley, *Point of Novelty*, 105 NW. U. L. REV. 1253 (2011).

145. 786 F.3d 983 (Fed. Cir. 2015).

146. *Id.* at 983.

entation of the crow-bar relative to the head of the tool, and the plain, undecorated handle.”¹⁴⁷

Moreover, “the language ‘dictated by their functional purpose’ in *Richardson* was only a description of the facts there; it did not establish a rule to eliminate entire elements from the claim scope.”¹⁴⁸ Thus, the ordinary observer need not ignore utilitarian aspects of the products in comparing the designs. Indeed, the court also deemed it unnecessary to instruct jury members to compare only the ornamental appearance of the accused product with the claimed design, as long as the instructions “as a whole” informed them that the patents claimed “the ornamental design” of the devices.¹⁴⁹ That is, of course, no constraint at all, since it merely repeats statutory subject matter of design patents.

In summary, despite acknowledgement that design patent law should not allow parties to protect functional features without having to traverse the more stringent utility patent standards, in practice courts have largely avoided the difficult task of defining the types of function that belong to utility patent. They have done so by defining the functionality doctrine so narrowly that hardly anything is disqualified from design patent protection on that basis. But as the *Prestige Jewelry* case demonstrates, when confronted with the question of what kinds of function counts, design patent courts distinguish between technological function (which, at least in principle, raises concerns) and other functions (which do not).¹⁵⁰

B. Trade Dress Functionality

Trademark law refuses protection to functional features, which the Supreme Court has defined as features that are “essential to the use or purpose of the article” or “affect[] the [article’s] cost or quality.”¹⁵¹ The reasons for doing so have long been the subject of some

147. *Id.* at 998 (quoting *Richardson v. Stanley Works, Inc.*, 610 F. Supp. 2d 1046, 1050 (D. Ariz. 2009)).

148. *Id.*

149. *Id.* at 999. See also *Sport Dimension, Inc. v. The Coleman Co.*, 820 F.3d 1316, 1323 (Fed. Cir. 2016) (acknowledging that certain elements of the claimed design served a useful purpose, but rejecting the district court’s construction and refusing to eliminate those elements from the claim, instructing the fact finder not to “focus on the particular designs of these elements when determining infringement, but rather focus on what these elements contribute to the design’s overall ornamentation”).

150. *Prestige Jewelry Int’l, Inc. v. BK Jewelry HK*, No. 11-CV-2930-LAP, 2014 WL 11344395, at *1 (S.D.N.Y. Sept. 15, 2014).

151. See *Traffix Devices, Inc. v. Marketing Displays, Inc.*, 532 U.S. 23, 32 (2001) (quoting *Qualitex Co. v. Jacobson Prods. Co.*, 514 U.S. 159, 165 (1995)).

debate,¹⁵² but the modern justification, reflected in the Supreme Court's *TrafFix* decision, focuses on the relationship between trademark and patent law.¹⁵³ Functional features are refused trademark protection because those features should be protected, if at all, only by the utility patent system.¹⁵⁴

At the extreme, some trademark courts have reduced the functionality question to whether the features alleged to be functional were in fact claimed in a utility patent.¹⁵⁵ Most courts, however, have understood functionality to be a broader inquiry about whether the features at issue are useful, for which the existence of a patent is just good evidence.¹⁵⁶ Because they believe that trademark's exclusion of functional features aims primarily to ensure that trademark stays out of patent law's way, these courts have focused on the types of utility that they believe are the province of utility patent law:

So if a design enables a product to operate, or improves on a substitute design in some way (such as by making the product cheaper, faster, lighter, or stronger), then the design cannot be trademarked; it is functional because consumers would pay to have it rather than be indifferent toward or pay to avoid it.¹⁵⁷

This is the doctrine of utilitarian (or mechanical) functionality, and the reference to making a product "cheaper, faster, lighter, or stronger" is characteristic.

It is, of course, not inevitable that the law would have evolved this way. In the early to middle part of the twentieth century, most courts (and, most significantly, the Supreme Court) took a more categorical approach, excluding the design of a product from trademark protection altogether. While that categorical approach also aimed to differentiate the domains of trademark law and patent law, it did not depend on determinations of the utility of the features at issue. In-

152. See Mark P. McKenna, *(Dys)Functionality*, 48 HOUS. L. REV. 823, 825–26 (2012).

153. See *TrafFix*, 532 U.S. at 34–35.

154. See, e.g., *Kellogg v. National Biscuit Co.*, 305 U.S. 111, 119 (1938) ("The patented machines used were designed to produce only the pillow-shaped biscuits. And a design patent was taken out to cover the pillow-shaped form. Hence, upon expiration of the patents the form, as well as the name, was dedicated to the public."); *Singer Mfg. Co. v. June Mfg. Co.*, 163 U.S. 169, 185 (1896) ("[O]n the termination of the patent there passes to the public the right to make the machine in the form in which it was constructed during the patent.").

155. See *Fuji Kogyo Co., Ltd. v. Pacific Bay Int'l, Inc.*, 461 F.3d 675, 687 (6th Cir. 2006).

156. See *Jay Franco & Sons, Inc. v. Franek*, 615 F.3d 855, 857 (7th Cir. 2010); *Specialized Seating, Inc. v. Greenwich Indus., L.P.*, 616 F.3d 722, 726–27 (7th Cir. 2010).

157. *Jay Franco & Sons*, 615 F.3d at 857.

stead, these cases uniformly held that competitors had a general right to copy unpatented product features¹⁵⁸ because those features “provide the baseline of free competition upon which the patent system’s incentive to creative effort depends.”¹⁵⁹ As a result, parties could not restrain copying of unpatented features; they could only call on unfair competition law to require labeling in order to avoid passing off.¹⁶⁰

Importantly, “unpatented” in these cases meant free from protection under either utility or design patent.¹⁶¹ Indeed, the Supreme Court made many of its most famous pronouncements about the importance of copying to competition in cases that involved design patents.¹⁶² In *Sears*, the Stiffel Company asserted infringement of both utility and design patents, as well as unfair competition. The patent claims fell out of the case on appeal after the district court found the patents invalid.¹⁶³ Likewise in *Compco*, Day-Brite originally alleged design patent infringement in addition to unfair competition.¹⁶⁴ The design patent claim was no longer at issue at the Supreme Court level only because the Seventh Circuit had affirmed the district court’s finding that the design patent was invalid on the ground that the design was functional.¹⁶⁵ Thus, the conflict with which the Supreme Court was concerned in those cases included a conflict with design patent, not just utility patent (and in the case of *Compco*, the only conflict was with design patent).¹⁶⁶ *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*,¹⁶⁷ on which the Court relied in *TrafFix*, explicitly equated the social bargains involved in utility and design patenting, noting with respect to both that “[t]he attractiveness of [the patent] bargain, and its effectiveness in

158. See, e.g., *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 156 (1989); *Compco Corp. v. Day-Brite Lighting, Inc.*, 376 U.S. 234, 237–38 (1964), *rev’g* 311 F.2d 26 (7th Cir. 1963) [hereinafter *Compco*]; *Sears, Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225, 231–32 (1964); *Kellogg*, 305 U.S. at 116–17; *Singer Mfg.*, 163 U.S. at 185.

159. *Bonito Boats*, 489 U.S. at 156; see also McKenna, *supra* note 152, at 840–43.

160. See McKenna, *supra* note 152, at 836–43.

161. See *Kohler Co. v. Moen Inc.*, 12 F.3d 632, 648 (7th Cir. 1993) (Cudahy, J., dissenting). For a detailed exploration of this dissent and its context, see Katherine J. Strandburg, *Rounding the Corner on Trade Dress: A Tribute to the Jurisprudence of Judge Richard D. Cudahy*, 29 YALE J. REG. 387 (2012).

162. See, e.g., *Sears*, 376 U.S. at 225; *Compco*, 376 U.S. at 234.

163. *Sears*, 376 U.S. at 226.

164. *Day-Brite Lighting, Inc. v. Compco Corp.*, 311 F.2d 26, 27 (7th Cir. 1963), *rev’d Compco*, 376 U.S. 234 [hereinafter *Day-Brite Lighting*].

165. See *Day-Brite Lighting*, 311 F.2d at 28 (“The District Court’s decision that the design of the cross ribs was functional and dictated by the limitations of the manufacturing process is fully supported by the evidence.”).

166. See *Compco*, 376 U.S. at 234, 237–38 (“[T]he trial court found that the configuration of Day-Brite’s fixture identified Day-Brite to the trade because the arrangement of the ribbing had, like a trademark, acquired a ‘secondary meaning’ . . . But if the design is not entitled to a design patent or other federal statutory protection, then it can be copied at will.”).

167. 489 U.S. 141 (1989).

inducing creative effort and disclosure of the results of that effort, depend almost entirely on a backdrop of free competition in the exploitation of unpatented designs and innovations.”¹⁶⁸

Because these courts were not uniquely focused on a conflict with utility patent law, the exclusions these courts developed did not depend on some characterization of the features at issue — in particular they did not depend on a determination that the features were functional. As the Court said in *Compco*:

That an article copied from an unpatented article could be made in some other way, that the design is “nonfunctional” and not essential to the use of either article, that the configuration of the article copied may have a “secondary meaning” which identifies the maker to the trade, or that there may be “confusion” among purchasers as to which article is which or as to who is the maker, may be relevant evidence in applying a State’s law requiring such precautions as labeling; however, and regardless of the copier’s motives, neither these facts nor any others can furnish a basis for imposing liability for or prohibiting the actual acts of copying and selling.¹⁶⁹

This approach therefore did not depend in any significant way on courts’ ability to determine what belonged in utility patent law, so that they could keep those features out of trademark law.

As courts began interpreting the Lanham Act to extend a federal cause of action for unregistered marks, including trade dress, they began to regard the *Sears/Compco* line of cases primarily in preemption terms.¹⁷⁰ The issue in *Sears* and *Compco* was the conflict between the patent laws and unfair competition. Because, after the *Erie* decision, courts understood unfair competition claims to arise under state law,¹⁷¹ when courts began accepting that trade dress infringement could be remedied under the Lanham Act, *Sears* and *Compco* no longer seemed directly on point.¹⁷² The issue was then whether one

168. *Id.* at 151.

169. *Compco*, 376 U.S. at 238.

170. See William McGeeveran & Mark P. McKenna, *Confusion Isn’t Everything*, 89 NOTRE DAME L. REV. 253, 268–70 (2013) (explaining these developments).

171. See *Pecheur Lozenge Co. v. Nat’l Candy Co.*, 315 U.S. 666, 667 (1942) (“The only cause of action that [the] record could possibly support is for unfair competition and common law ‘trademark infringement,’ to which local law applies.”).

172. See *Kohler Co. v. Moen Inc.*, 12 F.3d 632, 640 (7th Cir. 1993) (explaining “no Lanham Act issue was raised in either *Sears* or *Compco*” and “the Court in *Compco* noted that a

federal law limited another. To courts that might otherwise have been inclined to expand protection, that served as an opening to adopt a different approach — one that was more consistent with the emerging practice of the Trademark Office, which was registering product configurations as trademarks.¹⁷³ Not surprisingly, courts in the decades following began focusing their exclusion doctrines on functionality — a much less categorical approach that required a methodology for evaluating the nature of the features.

Implicit — and sometimes explicit — in the terminology of this reframing was a narrowing of the way courts perceived the conflict with patent law. Whereas earlier cases worried about conflict with both utility and design patent law, the language of functionality demoted and then erased any concern about possible conflict with design patent. Going forward, the only kinds of features that would be excluded were functional ones, and functionality was taken as focusing on technologically useful features and not ornamental features. Indeed, as the U.S. Court of Customs and Patent Appeals (“CCPA”), the predecessor court to the Federal Circuit, ruled in *In re Morton-Norwich Prods., Inc.*,¹⁷⁴ “functional means utilitarian.”¹⁷⁵

It is worth noting that many courts, influenced by the CCPA’s decision in *Morton-Norwich*, came to evaluate whether particular features were functional by asking whether the features were competitively necessary.¹⁷⁶ It seems quite clear that, aside from wishing to limit the extent to which functionality barred protection, these courts treated competitive need as indicative of functionality because they assumed that only utilitarian features imposed real competitive

defendant may copy at will if the design is ‘not entitled to a patent or other federal statutory protection’”) (quoting *Compco*, 376 U.S. at 238).

173. Indeed, the Trademark Office was registering product configuration contemporaneously with *Sears* and *Compco*. See Application of Minn. Mining & Mfg. Co., 335 F.2d 836 (C.C.P.A. 1964).

174. 671 F.2d 1332 (C.C.P.A. 1982).

175. *Id.* at 1338. The *Morton-Norwich* court traced that thinking to some earlier twentieth century registration decisions that had held that “the configuration of an article having utility is not the subject of trade-mark protection.” *Id.* (citing *In re Dennison Mfg. Co.*, 39 F.2d 720, 720 (C.C.P.A. 1930)). Those cases did indeed talk in terms of utility, but they meant that articles having utility overall could not be registered — not that features would be individually evaluated to determine their particular utility. In that respect, though they used the language of utility, they were more like *Sears* and *Compco* in their approach. Indeed, that is why *Morton-Norwich* insisted that later cases had moved away from the question of whether the article has utility and had focused on whether the particular features did. See *Morton-Norwich*, 671 F.2d at 1338 (noting that the question of functionality is in reference to the design of the article, not to the utility of the article itself).

176. *Id.* at 1339 (“[C]ourts in the past have considered the public policy involved in this area of the law as, not the right to slavishly copy articles which are not protected by patent or copyright, but the need to copy those articles, which is more properly termed the right to compete effectively.”) (emphasis in original).

harm.¹⁷⁷ Implicit in this view is that features that are not useful in a technological sense are not valued by consumers in a way that makes them competitively significant.

Nevertheless, the language of the test these courts used focused on competitive need and not specifically on the utilitarian nature of the features. And it turned out that in some cases it was obvious that features that were not technologically useful could nonetheless be described as competitively important or even necessary. Most significantly, these features might have been necessary because they made products more aesthetically appealing or otherwise more attractive to consumers. As Judge Easterbrook memorably put it, “[f]ashion is a form of function. A design’s aesthetic appeal can be as functional as its tangible characteristics.”¹⁷⁸ This is the doctrine of aesthetic functionality, and it is one the Supreme Court has clearly embraced.¹⁷⁹

So trademark came, to some extent, to recognize other functions, but not comfortably. Indeed, there remains significant resistance to the wider vision of functionality. The persistent claims by many courts and leading commentators that aesthetic functionality is an oxymoron reflect the deep sense that, despite having formulated the test in terms of competitive need, there really is something to the nomenclature of functionality. Function here means something particular about the way a product works, something technological rather than phenomenological.¹⁸⁰ Indeed, Professor McCarthy goes so far as to say that the

177. See J. THOMAS MCCARTHY, MCCARTHY ON TRADEMARKS AND UNFAIR COMPETITION § 7:81 (4th ed. 2016) (“[T]he range of possible aesthetic designs and configurations is as infinite as are the tastes that desire them, [so] according trademark protection to aesthetic features would not greatly hinder competition.”) (quoting Deborah J. Krieger, *The Broad Sweep of Aesthetic Functionality: A Threat to Trademark Protection of Aesthetic Product Features*, 51 FORDHAM L. REV. 345, 380 (1982)); see also *Kohler*, 12 F.3d at 648 (Cudahy, J., dissenting) (“The argument for distinguishing between the subjects of design and utility patents is that, although freedom to copy functional features may be essential to competition, freedom to copy aesthetic features is not essential.”) (citing *W.T. Rogers Co. v. Keene*, 778 F.2d 334, 339 (7th Cir. 1985) (stating that trademark protection for “ornamental, fanciful shapes and patterns” does not hinder competition)).

178. *Jay Franco & Sons, Inc. v. Franek*, 615 F.3d 855, 860 (7th Cir. 2010).

179. See *TrafFix Devices, Inc. v. Marketing Displays, Inc.*, 532 U.S. 23, 33 (2001). *TrafFix* was concerned with the functionality of a dual-spring design for road signs — what most courts refer to as “utilitarian” or “mechanical” functionality. But in articulating the relevant rule (that features are functional when they are essential to the use or purpose of an article, or affect the article’s cost or quality), the Court expressly distinguished cases of aesthetic functionality, saying that the proper test in those cases is whether exclusive use of the feature would put competitors at a significant, non-reputation-related disadvantage. *Id.* (“It is proper to inquire into a ‘significant non-reputation-related disadvantage’ in cases of esthetic functionality . . .”).

180. See, e.g., *Clicks Billiards, Inc. v. Sixshooters, Inc.*, 251 F.3d 1252, 1260 (9th Cir. 2001) (“[T]rade dress cannot be both ‘functional and purely aesthetic.’ Such a formulation is internally inconsistent and at odds with the commonly accepted view that functionality denotes utility.”); *Publ’ns Int’l, Ltd. v. Landroll, Inc.*, 164 F.3d 337, 339 (7th Cir. 1998) (noting that the merger of the utilitarian and the aesthetic is “mischievously vague”).

concept of aesthetic functionality makes no sense because “ornamental aesthetic designs are the antithesis of utilitarian designs.”¹⁸¹ Thus, the tacit adoption of patent law’s traditional technological framing of utility underlies trademark law’s continuing struggle with the concept of aesthetic functionality. Many courts simply cannot accept that there is such a thing as aesthetic functionality because they understand the concept to be focused on features with the kind of utility that belongs in utility patent law.¹⁸²

Even when courts accept the concept of aesthetic functionality, they use a different test for it than they do for utilitarian functionality. They do so because they see aesthetic functionality as having a different purpose. Whereas *TrafFix* took the emphasis off of competitive need in the utilitarian functionality context, it doubled down on competitive need as the relevant consideration for aesthetic functionality.¹⁸³ The Court seemed to simply assume, without discussion, that aesthetic or ornamental features would not fall under *Inwood*’s rule that trade dress protection is unavailable for a feature that “is essential to the use or purpose of the article or . . . affects the cost or quality of the article.”¹⁸⁴ As a result, unlike in the *Sears/Compco* era, the outcome of a trademark case can depend significantly on whether a court

181. MCCARTHY, *supra* note 177, at § 7:81.

182. The Fifth Circuit has notoriously rejected the doctrine of aesthetic functionality altogether. *Bd. of Supervisors for La. State Univ. Agric. & Mech. Coll. v. Smack Apparel Co.*, 550 F.3d 465, 487 (5th Cir. 2008) (“Our circuit has consistently rejected the concept of aesthetic functionality.”); *see also id.* at 487–88 (“We do not believe that the Court’s dictum in *TrafFix* requires us to abandon our long-settled view rejecting recognition of aesthetic functionality.”). Other courts are more equivocal. *See Ferrari S.P.A. Esercizio v. Roberts*, 944 F.2d 1235, 1246–47 (6th Cir. 1991) (“[T]he precedent in this circuit suggests that aesthetic functionality will not preclude a finding of non-functionality where the design also indicates source.”); *In re DC Comics, Inc.*, 689 F.2d 1042, 1050 (C.C.P.A. 1982) (Rich, J., concurring) (“[I]t is arguable that there is no ‘doctrine’ of aesthetic functionality which stands alone, without consideration of the more traditional source identification principles of trademark law. To the extent that there may be — at least with respect to ex parte prosecution practice — it has been previously rejected by this court.”).

183. *TrafFix*, 532 U.S. at 23 (holding that the appropriate inquiry in cases of aesthetic functionality is whether “exclusive use of [the claimed] feature would put competitors at a significant non-reputation-related disadvantage”). Today’s aesthetic functionality doctrine also treats utility patents and design patents entirely differently. For example, while *TrafFix* made no explicit reference to design patents, the Court suggested that it might be possible to “carry the heavy burden of showing that [a feature claimed in a utility patent] is not functional, for instance by showing that it is merely an *ornamental*, incidental, or arbitrary aspect of the device.” *Id.* at 30 (emphasis added).

184. *Id.* at 32 (quoting *Inwood Labs, Inc. v. Ives Labs, Inc.*, 456 U.S. 844, 850 n.10 (1982)). Lower courts have entrenched differential treatment of design and utility patents in other ways as well. Most significantly, while *TrafFix* made clear that utility patents are strong evidence of functionality, many courts have held that design patents covering the features at issue are evidence that the design is “ornamental,” rather than “functional” — and hence weigh *against* a finding of functionality. *See, e.g., In re Becton Dickinson and Co.*, 675 F.3d 1368, 1380 (Fed. Cir. 2012) (applying *In re Morton-Norwich Prods., Inc.*, 671 F.2d 1332, 1342 n.3 (C.C.P.A. 1982)).

sees the relevant features as useful — thereby triggering the (now relatively harsh) rules for utilitarian functionality — or as something else, thereby triggering, if anything, the narrower “significant non-reputation-related disadvantage” inquiry into competitive effect.

*C. Copyright’s Exclusion of Ideas, Systems, and Useful Things*¹⁸⁵

Like trademark and design patent law, copyright law purports to exclude useful things. Like those other areas of IP law, copyright’s efforts to draw a stable and predictable line between expressive and useful things has produced continuing difficulties — difficulties that can be traced in part to copyright’s attempt, without a clear understanding of patent law’s own concept of its domain, to send to patent subject matter which it believes belongs there. To trace that development, we must begin with a bit of history.

From its inception, copyright has faced difficult questions about how to treat functional things, which it has never fully excluded from its domain. This was true of the first 1790 Copyright Act,¹⁸⁶ which extended copyright protection to just three forms of subject matter — books, maps, and charts (i.e., maps of water).¹⁸⁷ Two of the three categories of original subject matter — maps and charts — have obvious function in the sense that they help people navigate the physical world. So, from its beginning, copyright has reached subject matter that is appreciated not simply for its value as expression but also — in the case of maps and charts, overwhelmingly — because it is useful.

Founding-era copyright law may have seemed unconcerned with the inclusion of useful things, but it didn’t remain so. As early as 1880, in its seminal opinion in *Baker v. Selden*,¹⁸⁸ the Supreme Court drew lines between protectable expression and unprotectable useful ideas.¹⁸⁹ As copyright’s subject matter expanded to include three-dimensional sculptural works, a category that could include most of the field of industrial design, copyright’s entanglement with functionality deepened.

Copyright has employed two primary doctrines to distinguish between protectable expression and unprotectable utility: (1) the idea-expression distinction, and (2) the so-called useful articles doctrine. The following Sections will examine each in turn.

185. Portions of this Section are adapted from McKenna & Strandburg, *supra* note 6.

186. Copyright Act of 1790, 1 Stat. 124 (1790).

187. *Id.*

188. 101 U.S. 99 (1879).

189. *Id.* at 101–02.

1. The Idea-Expression Distinction

Section 102(b) of the Copyright Act provides “[i]n no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.”¹⁹⁰ The exclusion from copyright of ideas (including concepts and principles), facts (discoveries), and various types of systems (procedures, processes, methods of operation) functions in part to establish the boundary between copyright and patent — in essence, by remanding to patent things like systems that are patentable if novel, non-obvious, and useful. The exclusion also establishes, in part, the boundary between copyright and the public domain. For example, it sends to the public domain ideas, concepts and principles that lack novelty or are too foundational to patent (such as laws of nature).¹⁹¹ What is reserved to copyright — original expression that does not involve any of the excluded categories — is known only via reverse implication.

Two primary difficulties have attended courts’ application of the 102(b) exclusion. First, the categories are not self-defining, and courts have struggled to decide whether a particular piece of subject matter belongs within one of the excluded categories or not. Second, and perhaps more importantly, courts have dealt inconsistently with things that lie within the excluded categories but are nonetheless expressive. Some courts have held that the exclusion applies even to very creative systems and ideas. Others have focused on the creativity and refused to exclude the disputed subject matter from copyright.

*American Dental Ass’n. v. Delta Dental Plans Ass’n.*¹⁹² is an example of the first difficulty. That case involved the copyrightability of a code invented by the American Dental Association (“ADA”) that was used to identify dental procedures. The ADA code is highly useful — it improves the efficiency of dental billing. Dentists using the code produce standardized bills, which reduces the time and labor required for insurance companies to process and pay.¹⁹³ Delta Dental, an insurance company, published a billing guide that copied most of the ADA’s code, and the ADA sued.¹⁹⁴ Judge Easterbrook reversed a district court judgment holding that the ADA code was an uncop-

190. 17 U.S.C. § 102(b) (2012).

191. See *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.Ct. 1289, 1296–97 (2012) (finding that correlation between a drug’s metabolite and levels of that drug present in a patient’s blood is an unpatentable law of nature).

192. 126 F.3d 977 (7th Cir. 1997).

193. *Id.* at 981.

194. *Id.* at 977.

rightable taxonomy (i.e., a system for naming things). According to Judge Easterbrook, the ADA code was copyrightable because it was creative, and it was not a system excluded from copyright protection.¹⁹⁵

What was the creativity involved in the code? The ADA organized dental procedures into groups, assigned long and short linguistic descriptions to each, and also assigned each a 5-digit number. But what sort of creativity is this? The aim of the ADA's creative work was not to be expressive — the ADA code is not a poem or a song or even a computer program — but rather to be useful to dentists and insurance companies in the enterprise of making and paying dental insurance claims. According to the IP system's own logic, patent is the domain of creative choice that produces utility. The code is, in short, a system.

Judge Easterbrook considered this possibility in *Delta Dental*, but he rejected it, highlighting the fact that, while § 102(b) excludes systems, that term is not defined in the Copyright Act.

Delta asks us to affirm the judgment on [the] ground . . . that the Code is not copyrightable because it is a “system.” . . . But what could it mean to call the Code a ‘system’? This taxonomy does not come with instructions for use, as if the Code were a recipe for a new dish.¹⁹⁶

For Judge Easterbrook, systems are defined by the presence of instructions for use.

We grant that it may be easier for courts to identify and exclude a system when a case also involves instructions that may be distinguished from the system itself. Indeed, the distinction between instructions and systems goes all the way back to the Supreme Court's opinion in *Baker v. Selden*,¹⁹⁷ which held Selden's instructions for the use of his accounting system copyrightable but excluded from protection the system that the book explained.¹⁹⁸ But that doesn't demon-

195. *Id.* at 980–81.

196. *Id.*

197. 101 U.S. 99 (1879).

198. *Id.* at 104. It is worth noting that in a couple of cases that are very similar to *Delta Dental*, courts excluded from copyright protection numbering systems and the numbers they produced. For example, in *ATC Distribution Grp., Inc. v. Whatever It Takes Transmissions & Parts, Inc.*, 402 F.3d 700, 707 (6th Cir. 2005), the Sixth Circuit found that a classification scheme for organizing auto transmission parts was a system excluded by 102(b) — the scheme itself contained nothing but uncopyrightable *ideas*. Moreover, the expression of that classification system in the contents of ATC's parts catalog was also excluded because it merged into the system. *Id.*

strate that systems must have instructions, only that systems and instructions are different things. Since systems are excluded from copyright because they are thought to be the province of utility patent law, utility patent law would have been the natural place to look for a definition of systems. Unfortunately, as we've seen, patent law is particularly unclear in this respect.

This brings us to the second difficulty with § 102(b)'s separation of useful from expressive — courts have divided over whether the § 102(b) exclusions are categorical, in the sense that anything that falls within one or more of the categories is excluded, or conditional, in the sense that a thing that falls within an excluded category may nonetheless be admitted if it is creative. The difference is profoundly important. If the § 102(b) categories are categorical, then all systems, processes, and methods of operation will be remanded to patent, and, to be protected, will have to meet patent's stiff entry conditions. If, on the other hand, copyright's § 102(b) exclusions are conditional, then copyright will protect a much wider range of useful things and the domain of copyright and patent will overlap substantially.

The Federal Circuit treated § 102(b) as conditional in its opinion in *Oracle America, Inc. v. Google Inc.*¹⁹⁹ In that case, Oracle claimed that Google violated Oracle's copyrights in its Java Application Program Interfaces ("APIs") when the Internet search giant included Oracle's declaring code in the implementation of Java that it uses in its Android mobile operating system.²⁰⁰ Oracle's declaring code names each operation (or "method") contained in the APIs and defines how the methods are organized within Java. The declaring code allows developers to create references to the API methods in their software code, which references in turn tell the computer where to go to run the methods. API methods are invoked in a particular format — `java.package.Class.method()` — which mirrors the organization of the declaring code. Therefore, the APIs can be used in any Java project as long as the declaring code stays constant.

The actual functionality of a method is defined by the method's implementing code, which consists of the step-by-step instructions the computer follows to carry out the declared operation. And yet the declaring code is the key to the utility of the APIs. The purpose of the Java APIs is to define in advance a set of common operations that programmers can use in their software without having to know the implementing code and re-write it in every project. Instead, all a programmer needs to know to execute a function is the declaring code. Using the command structure defined by the declaring code results in

199. 750 F.3d 1339 (Fed. Cir. 2014).

200. *Id.* at 1347.

the programmer's software operating the method from the APIs. So it seems plain that the declaring code — which was the only code that Google copied — is an uncopyrightable method of operation. It is a useful thing that, if it is to be protected at all, belongs to patent.

In attempting to avoid this conclusion, Oracle took a page from Judge Easterbrook's opinion in *Delta Dental* and argued that the declaring code was not a method of operation, but rather a taxonomy — that is, a system for naming things. In Oracle's view, taxonomies may be copyrighted if, like Java's declaring code, they are creative.²⁰¹ There is nothing inevitable, Oracle asserted, about the specific `java.package.Class.method()` arrangement of Oracle's Java operations — Oracle's programmers could have chosen some other structure or naming convention for its declaring code without affecting their functionality.²⁰²

A district judge rejected Oracle's argument, but the Federal Circuit accepted it on appeal. The appellate court acknowledged that Java declaring code was indeed a method of operation but held that “the [copyright] protection accorded a particular expression of an idea” is not extinguished “merely because that expression is embodied in a method of operation.”²⁰³ In other words, in the Federal Circuit's view, if the implementation of a particular method of operation involves some creative choice, then it will be copyrightable.

There are two things to say about the Federal Circuit's ruling in *Oracle v. Google*. First, it is in considerable tension with the language of § 102(b). That provision makes clear that subject matter falling within the listed categories is uncopyrightable “regardless of the form in which [they are] described, explained, illustrated, or embodied.”²⁰⁴ This suggests that the method of operation of the Java APIs is uncopyrightable even if the manifestation of that method in Oracle's declaring code involves creativity.²⁰⁵ Second, the decision represents

201. *Id.* at 1351.

202. *Id.*

203. *Id.* at 1357 (quoting *Mitel, Inc. v. Iqtel, Inc.*, 124 F.3d 1366, 1372 (10th Cir. 1997)).

204. 17 U.S.C. § 102(b) (2012).

205. Not long after the Federal Circuit's opinion, which in fact purported to apply Ninth Circuit law on the scope of the 102(b) exclusion, *Oracle*, 750 F.3d at 1353, the Ninth Circuit itself, in *Bikram's Yoga Coll. of India, L.P. v. Evolution Yoga, LLC*, 803 F.3d 1032 (9th Cir. 2015), held precisely the opposite. In *Bikram*, the Ninth Circuit considered the copyrightability of the sequence of yoga poses selected and arranged by hot yoga impresario Bikram Choudhury. The court found that Bikram's sequence is a system or a method “designed to ‘systematically work every part of the body, to give all internal organs, all the veins, all the ligaments, and all the muscles everything they need to maintain optimum health and maximum function.’” *Id.* at 1038. Such a system, the court held, was excluded from copyright protection by 102(b). *Id.* at 1039. Nor was Bikram's contention relevant “that the Sequence's arrangement of postures is ‘particularly beautiful and graceful.’” *Id.* at 1040. Beauty, the court said, “is not a basis for copyright protection”, and the beauty of a process “does not permit one who describes it to gain, through copyright, the monopolistic

copyright's struggles to understand its relationship to patent law. Oracle's declaring code could, if it meets patent's entry requirements, be patented as a useful system. It is a useful thing that also contains expression. In fact, it is useful *because* of its expression — the choice of a naming structure for software becomes useful once programmers learn the naming structure and rely on it to build software. Does this expressive utility belong in patent? Patent law is equivocal, and the absence of a clear signal from patent may contribute to copyright's inconsistency on the nature of the § 102(b) exclusions.

2. The Useful Articles Doctrine

If courts applying § 102(b) have had mixed success in predictably and defensibly separating the useful from the expressive, the record of copyright's other primary mechanism for accomplishing this separation, the useful articles doctrine, has been no better. This may be in part because the courts have had less time to work out a stable rule. The first substantial articulation of the doctrine dates to only 1954 and the Supreme Court's opinion in *Mazer v. Stein*.²⁰⁶ In that case, the Court held that a statuette used as part of a lamp base could be copyrighted.²⁰⁷ The statuette, the Court observed, was a copyrightable sculpture that did not forfeit copyright eligibility merely because it had been affixed to a lamp.²⁰⁸

Today the Copyright Act brings copyrightability into question for any pictorial, graphic or sculptural work having "an intrinsic utilitarian function."²⁰⁹ The design of any such work is copyrightable "only if, and only to the extent that, such design incorporates pictorial, graphic, or sculptural features that can be identified separately from, and are capable of existing independently of, the utilitarian aspects of the article."²¹⁰

Courts face two difficult problems in assessing the copyrightability of useful articles: (1) determining when an article has an "intrinsic" utilitarian function, and (2) if the first question is answered affirmatively, determining whether the article's functional and aesthetic components are in some sense separable. It is the first problem that concerns us most. To make the separability analysis run, courts in copyright cases must have some idea of what count as utilitarian as-

power to exclude all others from practicing it. This is true even where, as here, the process was conceived with at least some aesthetic considerations in mind." *Id.*

206. 347 U.S. 201 (1954).

207. *Id.* at 201.

208. *Id.* at 215–17.

209. 17 U.S.C. § 101 (2000 & Supp. III 2004).

210. *Id.*

pects of useful articles. They must have a sense of what usefulness means, so that intrinsically useful articles can be kept out of copyright. On that front, copyright lacks a theory.

Consider copyright's differential treatment of apparel and toys. Apparel, even the most aesthetically rich sort, such as a designer dress, is treated as useful because it covers the body. It doesn't matter to copyright law that no woman buys a \$5,000 dress because it covers her body and keeps her warm. She buys it for its aesthetic appeal. On the other hand, consider children's toys. Some of them are quite useful: for example, a toy airplane might be purchased to keep children entertained and quiet. The toy airplane might be attractive, but in most instances the purchase is motivated by a practical, functional concern. And yet the toy is treated like a purely aesthetic thing.²¹¹

More generally, although it is obvious that most articles appeal on both aesthetic and functional levels, copyright lacks a theory of how much function is sufficient to remove a particular article, or class of articles, from its domain. A drop of functionality is sufficient to kill copyright in the ladies' dress. A generous dollop of functionality does not prevent the law from extending copyright to the toy. An enormous preponderance of functionality does not prevent software from being copyrightable.

One can make the same observation across a range of subject matter. Apparel is not copyrightable, but jewelry is. Much apparel is purchased with the same desire for adornment that motivates jewelry purchases — actually, motivates *some* jewelry purchases: large diamonds and thick chains of gold are sometimes purchased as portable bank accounts.²¹² Or, jewelry is purchased as a status signifier. Is an object's capacity to store wealth or signify status not an element of its usefulness? Copyright law does not contemplate jewelry's functionality; it sees only its use in adornment.²¹³ But is adornment not a form of usefulness? It is if you want to attract attention. According to utility patent's traditional technological conception of its domain, adornment

211. *See, e.g.,* *Gay Toys, Inc. v. Buddy L. Corp.*, 703 F.2d 970, 973 (6th Cir. 1983) (reversing district court determination that a toy airplane was a useful article: "[o]ther than the portrayal of a real airplane, a toy airplane, like a painting, has no intrinsic utilitarian function.").

212. *See* Gold Demand in India Never Fades, SEEKING ALPHA (May 11, 2015), <http://seekingalpha.com/article/3167136-gold-demand-in-india-never-fades> [<https://perma.cc/7ZEB-6TJQ>] ("Gold as a store of wealth is deep-rooted in Indian culture, especially for India's predominantly rural population, where people do not have many choices for investment other than real estate and retail participation in equity markets is very meager.").

213. *See* Charles E. Colman, *The History and Doctrine of American Copyright Protection for Fashion Design: Managing Mazer*, 7 HARV. J. SPORTS & ENT. L. 150, 183–90 (2016) (detailing history of copyright protection for jewelry wherein courts grant protection of varying scope, but view jewelry as an aesthetic rather than useful object).

is not utility. Copyright, which has absorbed this traditional conception, therefore conceptualizes adornment as expression, and includes within its domain articles that provide it.

The difficulty of conceptualizing the precise nature of an article's utility was perhaps most clearly demonstrated in the recent Sixth Circuit decision in *Varsity Brands, Inc. v. Star Athletica, LLC*,²¹⁴ which the Supreme Court recently decided.²¹⁵ In *Varsity Brands* the question was whether the design of cheerleading uniforms, and particularly the specific layout of chevrons and other design elements on the uniforms, was useful.



Figure 3: Varsity Brands' Allegedly Infringed Designs

The majority of the Sixth Circuit concluded that the designs were not useful. Speaking generally, the court held that, before addressing separability, a court should ask “[w]hat are the utilitarian aspects of the useful article?”²¹⁶ Here the example the court gave was telling: “the utilitarian aspect of a chair is to provide a place for a person to sit.”²¹⁷ The court felt compelled to focus its inquiry at that level of generality because “[p]ortray[ing] the appearance of the [useful] article’ and ‘convey[ing] information’ are two utilitarian aspects that courts may not use to determine whether pictorial, graphic, or sculptural features are separable.”²¹⁸ So, for example, masquerading is not

214. 799 F.3d 468 (6th Cir. 2015).

215. *Star Athletica, L.L.C. v. Varsity Brands, Inc.*, No. 15-866, 2017 WL 1066261, at *1 (U.S. Mar. 22, 2017).

216. *Varsity Brands*, 799 F.3d at 487.

217. *Id.*

218. *Id.* (quoting 17 U.S.C. § 101) (alterations in original).

a useful function because it involves only “portraying the appearance of something (like a lion, ladybug, or orangutan).”²¹⁹ Turning to the cheerleading uniforms at issue, the court described the relevant utilitarian functions simply as “cover[ing] the body, wick[ing] away moisture, and withstand[ing] the rigors of athletic movements.”²²⁰ Identifying the wearer as a cheerleader did not count, so the claimed design features were clearly separable from the utilitarian function.

The dissent disagreed, particularly taking the majority to task for describing the function of the uniforms at such a high level of generality, noting that the majority’s definition “could be used to describe all athletic wear.” That wasn’t good enough for the dissent, because “[w]ithout stripes, braids, and chevrons, we are left with a blank white pleated skirt and crop top,” which the reasonable observer would not associate with cheerleading.²²¹ For the dissent, being recognizable as a cheerleading uniform counts as a function, and the design was not separable from that function.²²²

It’s worth adding that copyright sometimes just gives up and accepts functional items within its domain. Take software, for example. U.S. copyright law classifies computer software as a “literary work”²²³ and recognizes the expressive qualities of computer code as perceptible by educated consumers of code. But the vast majority of people have no appreciation of software’s aesthetic content; they consume code for what it does — that is, for its usefulness as an aid in creating documents or crunching numbers. Copyright has accepted software within its subject matter, and courts have developed tests

219. *Id.* at 488 (quoting *Chosun Int’l., Inc. v. Chrisha Creations, Ltd.*, 413 F.3d 324, 329–30n.3 (2d Cir. 2005)).

220. *Id.* at 490 (quoting Brief for Appellant, at 57).

221. *Id.* at 495 (McKeague, J., dissenting).

222. Professors Christopher Buccafusco and Jeanne Fromer filed an amicus brief in *Varsity Brands* urging the Supreme Court to recognize that clothing designs made to “look good on” the wearer also have intrinsic utilitarian function. See Brief of Professors Christopher Buccafusco and Jeanne Fromer as Amici Curiae Supporting Petitioner, *Star Athletica, LLC v. Varsity Brands, Inc.*, 2017 WL 1066261 (U.S. Mar. 22, 2017) (No. 15-866). Buccafusco and Fromer, who have expanded their analysis in an academic article, do not argue that “looking good on” is a function that belongs to utility patent, nor do they offer a theory of the types of function excludable from copyright. See Christopher Buccafusco & Jeanne Fromer, *Fashion’s Function in Intellectual Property Law*, 93 NOTRE DAME L. REV. (forthcoming 2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2826201 [<https://perma.cc/B7C4-WS63>]. As noted previously (see note 25, *supra*), the Supreme Court’s opinion in *Varsity Brands* avoided entirely the dispute regarding how precisely to identify the utilitarian aspects of the cheerleading uniform.

223. 17 U.S.C. § 101 (“‘Literary works’ are works, other than audiovisual works, expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects, such as books, periodicals, manuscripts, phonorecords, film, tapes, disks, or cards, in which they are embodied.”).

designed to filter out functional aspects.²²⁴ But those tests are clearly not foolproof.²²⁵

For another example, consider architectural designs embodied in buildings. It is unlawful to copy without permission a set of architectural blueprints,²²⁶ which are functional because they serve as the template for the construction of a building but are nonetheless protected by copyright. However, until recently, it was entirely lawful, if one possessed a set of those blueprints, to erect a building based on them.²²⁷ Similarly, it was lawful to examine an already-existing building, take measurements, and then erect a facsimile. Buildings, in the eyes of copyright law, were functional, and thus uncopyrightable.²²⁸

That changed in 1990, when Congress amended the Copyright Act to extend protection to a category of architectural works. In the AWCPA, Congress defined a protected architectural work to include “the design of a building as embodied in any tangible medium of expression, including a building, architectural plans, or drawings.”²²⁹ The same provision that extended copyright law to built architecture also delimited the scope of that protection, providing that “[t]he work includes the overall form as well as the arrangement and composition of spaces and elements in the design, but does not include individual standard features.”²³⁰

Copyright law's inclusion of buildings, which surely mix aesthetic with significant functional content, and simultaneous exclusion of other forms of subject matter — like designer apparel — in which the functional aspect is relatively muted, illustrates the absence of a theory governing how the presence of functionality is supposed to govern what's in and what's out of copyright. The only consistency in copyright's treatment of utility is its ad hoc nature.

224. See, e.g., *Computer Assocs. Int'l, Inc. v. Altai, Inc.*, 982 F.2d 983 (2d Cir. 1992); *Lotus Dev. Corp. v. Borland Int'l, Inc.*, 49 F.3d 807 (1st Cir. 1995).

225. See discussion *supra* Section III.C.1; see also *Oracle America, Inc. v. Google Inc.*, 750 F.3d 1339 (Fed. Cir. 2014).

226. 17 U.S.C. § 102(a) (2012) (including as copyrightable subject matter, *inter alia*, “pictorial, graphic, and sculptural works,” a class that includes architectural blueprints).

227. For a discussion of pre-Architectural Works Copyright Protection Act (“AWCPA”) copyright, see Kevin Emerson Collins, *Economically Defeasible Rights to Facilitate Information Disclosure: The Hidden Wisdom of Pre-AWCPA Copyright*, (Washington University in St. Louis Legal Studies, Research Paper No. 15-09-01, 2015), <http://ssrn.com/abstract=2655743> [<https://perma.cc/BS9L-NWF2>].

228. See generally *id.*

229. 17 U.S.C. § 101 (2012).

230. *Id.*

IV. CONSEQUENCES

A. Internally Incoherent Doctrine

Intellectual property law sorts subject matter into a variety of different regimes, each with different terms of protection and different rules of protectability, infringement, and defenses. For that sorting to be effective, IP needs principles to distinguish the subject matter of each system, even if some amount of overlap is inevitable. If we are going to have an IP system with different types of rights, then surely there must be reasons why certain rules apply to particular subject matter.

Some might suggest that different forms of rights are needed because some subject matter is costlier to produce and more difficult to exclude others from. But even though that observation is undeniably true, it has virtually no explanatory power regarding existing doctrinal rules. Nothing in the eligibility rules for patent law limits it to costly subject matter, and indeed there are many patents on inventions that were relatively inexpensive to develop.²³¹ At the same time, many types of copyrightable subject matter (such as blockbuster movies) are quite expensive to produce.²³² The sorting rules we have simply cannot be explained in terms of costs. Some other principles must be at work.

Yet as we have argued, IP law's sense of utility patent law's domain is poorly theorized, and courts' understanding of the boundaries of utility patent is mostly reductive and intuitive. While it is clear that claimed inventions must be useful, courts inconsistently enforce a technological understanding of utility. That view of utility is normative rather than empirical. Its under-theorization has consequences for patent law itself, consequences that cascade across the other forms of IP because each of the other systems defers protection for these useful or functional features to utility patent.

For those who believe the primary purpose of IP is to create incentives, this state of affairs should be a source of significant concern. Patent rules differ from copyright rules and from trademark rules, and each set of rules creates different incentives. Thus the sorting rules

231. See, e.g., Clayton Park, *Easy fix for Eyeglasses lands Daytona Beach Shores inventor on national TV*, THE DAYTONA BEACH NEWS JOURNAL (Apr. 15, 2015), <http://www.news-journalonline.com/news/20150415/easy-fix-for-eyeglasses-lands-daytona-beach-shores-inventor-on-national-tv> [https://perma.cc/VX65-M6AZ] (detailing invention of patented kit that eases eyeglass repair).

232. See generally Kristen Acuna & Jason Guerrasio, *The 30 most expensive movies ever made*, BUSINESS INSIDER (Mar. 22, 2016), <http://www.businessinsider.com/most-expensive-movies-ever-2014-6> (last visited Mar. 24, 2017).

cannot help but shape the nature and direction of innovation. For example, the incentives to develop new or improved placebo triggers could vary considerably depending on whether we recognize the utility of those triggers and sort them into utility patent (and out of trademark). Similarly, the incentives regarding software are necessarily shaped by the ways we sort some aspects into patent law and others into copyright.

Let us give another example of the policy tradeoffs that are at stake. A 2008 study by economist Yi Qian examined counterfeiting in China of branded shoes.²³³ In particular, Qian exploited a natural experiment created by the Chinese government's "reallocation of [intellectual property] enforcement resources away from monitoring footwear and fashion products to other sectors in response to several food-poisoning and gas-explosion accidents in the early 1990s."²³⁴ She did so in order to study the behavior of footwear companies that operate in low enforcement environments.²³⁵ Qian found that brands with less effective copyright and trademark protection used several strategies to differentiate, including investing in product attributes or technological features which are difficult to imitate.²³⁶

In other words, one effect of weaker copyright and trademark enforcement is to encourage innovation in tangible product qualities, largely of the type we might associate with utility patent law. While that particular shift was the result of external factors making enforcement of some forms of IP less reliable rather than doctrinal rules that excluded certain features from particular forms of protection, the general point holds: the unavailability of one form of IP creates incentives for parties to invest in the types of features for which other forms of protection might be available. That means, at least at the margins, that we get different types of innovation.

The takeaway for policy is almost entirely normative — optimal institutional design depends on what sort of innovation we prefer, and why. Referring to the example directly above, imagine we think that better shoe technology creates more social value, perhaps through the creation of positive externalities (for example, more willingness to walk, leading to better fitness, leading to lower health care costs) relative to the proliferation of otherwise meaningless symbols and ornamental elements of shoe design. If we favor this "technological" sort

233. Yi Qian, *Impacts of Entry by Counterfeiters*, 123 Q.J. ECON. 1577 (2008).

234. *Id.* at 1578.

235. The data set includes both domestic Chinese brands and those of multinational companies operating in China. *Id.*

236. *Id.* The branded companies also set up their own brand-protection offices and invested in self-enforcement, created licensed company stores (vertically integrated), and used pricing signals, among other things. *Id.*

of shoe innovation, then maybe we prefer an environment of low IP enforcement (or at least low enforcement of trademarks and design rights). More generally, whatever the theory of IP is, we need to account for why we care about some sorts of innovation rather than others, or at least why we think different sorts of innovation should be subject to different rules. This is the case not least because in some instances it may be important to leave some sorts of innovation open to competition while encouraging other types through propertization.

Even those who are less focused on incentives ought to be concerned about the under-theorization of the concept of utility and its corresponding effects on the boundary policing doctrines. For one thing, whatever one's theory of IP, we still need some way of understanding the divided nature of the IP system, and we still need some way of sorting subject matter into those systems. We need to recognize that, as the legal landscape currently stands, parties make strategic use of different forms of IP, often frustrating those sorting doctrines.

B. Normative Choices About Competition and Innovation

The choice of IP systems will also have significant competitive consequences. Different mixes of IP regimes (and of IP regimes with other types of regulatory exclusivity) will promote competition along different dimensions. A patent-heavy system will promote competition along utilitarian or conventionally functional characteristics, and systems that rely more on trademark/advertising are going to promote competition along other, more phenomenological dimensions.

Until we appreciate all forms of utility, and until we have a calculus for understanding their relative value, we can't think coherently about which types of competition we want to promote or the costs of promoting that type of competition. Nor can we even think about how best to satisfy consumers' actual demand, or how different IP regimes can help shape that demand. We are blind to a variety of considerations that affect consumer welfare when we view products only in terms of their physical characteristics.

How we construct each of the IP systems, and how we conceive of the interaction among those systems, necessarily embeds a choice about the type of competition, and therefore the type of innovation, we want to produce. There is no neutral here, for each of the different branches of intellectual property law must decide a foundational question: *what's in* — that is, what elements of a product count as innovation or as relevant to consumer choice and are therefore recognized and protected by the law — and *what's out* — that is, what features are not protected because they are not recognized as innovation (even when they are, indeed, new)? Or, perhaps even more profoundly, what

product features are not protected because they are not even recognized by the law as comprising part of the “product” that consumers experience?

We do not contend that utility patent law is necessarily wrong to focus only on certain kinds of utility. Nor do we argue that trademark law or any of the other regimes are wrong to borrow this conception of utility as the basis for excluding things from those systems.²³⁷ But we should recognize that this technological focus is normative rather than empirical. Technological utility clearly is not the only kind of utility. Utility patent law nonetheless sees only certain kinds of utility. If that were a well-theorized and conscious choice, it would be one thing. But in reality the choice to preference technological utility is obscured by rhetoric that pretends utility has a clear, singular meaning. That choice has a strong tendency to bias evaluation of the sources of relevant utility.

Failure to recognize these choices is why utility patent’s technological focus is only inconsistently apparent in doctrine. We need a better understanding and fuller explication of what counts as utility or functionality in each branch of IP, and why.

If one believes that overlapping rights (or cumulation of rights) is a problem (as we do), then we need to recognize that this is one significant part of the explanation for the cumulation we are witnessing. Even when courts want to channel, they cannot do it effectively without a clear sense of what belongs in utility patent. The inability to define the boundaries of patent law undermines the whole project of channeling.

There are at least a few possible approaches to dealing with that problem. One approach would be to more aggressively exclude things from non-utility patent areas of IP. If utility patent law is in fact open to much more than technological innovation, and if we believe in a patent supremacy principle, then our channeling doctrines might well be too narrow. Trying to exclude only things that are technologically useful actually is under-representative of the policy judgments of patent law. Maybe patent law is meant to contain things that are useful in much more than the technological sense. So innovations that are valuable because they shape preferences, or improve the appeal of products, or affect competition, would be brought firmly within the domain of patent law.

The result of this more aggressive channeling to utility patent law might well be a contraction in the effective total scope of IP protec-

237. Indeed, one of us has argued fairly extensively that the functionality doctrine should serve this sort of channeling role. McKenna, *supra* note 152; McKenna & Strandburg, *supra* note 6.

tion. If applied consistently, patent's rigorous entry requirements would filter out a lot. But of course there is always the risk that more aggressive channeling to utility patent would lead to the softening of patent's entry requirements, with a consequent broadening of the effective scope of IP law.

Alternatively, if we thought that patent law was actually catholic about its domain, we might conclude that there is less reason to think patent law should be supreme and that utility patent law should develop more doctrines to exclude things from its domain because they belong to other regimes.²³⁸ That would be a channeling system less about the superiority of one area and more about equivalent domain-based deference between all the areas.

Of course, doing that would require a clear delineation of the subject matter of *all* of the regimes. And it may be that, as economic theory has focused so much on value and efficiency, we have lost the ability to describe subject matter categories in ontological terms, making it much harder to explain the specificity of each of the systems.²³⁹

Lastly, we might decide that we really do think that utility patent law is and should be limited to technological innovation. We would need to think harder about what exactly that means, but it would give us a much clearer basis on which to operationalize a utility patent supremacy principle.

That last approach would not solve all the problems regarding channeling doctrines, of course. There are still difficult questions about where to draw the line: in the common case in which features are both functional and aesthetic, how aggressive should a system be in excluding those features?²⁴⁰

But this approach would allow us to see clearly the ways in which we make normative choices about the types of innovation and utility that we sort, without pretending that functionality is self-defining. The meaning of these terms should not be driven by their lexical boundaries, which are in any case imprecise. Our decisions regarding what's in and what's out of each branch of IP should be driven by what we perceive as the best innovation policy. Importantly, this means that we must understand and take into account how the different branches of IP law, which (at least tacitly, and at best inconsistently) employ these different understandings of what innovation is, and incentivize the creation of different sorts of innovation. Understanding what the best innovation policy is requires that we make a decision regarding what

238. One might explain the printed matter doctrine that way, but there would be more examples and they would be much broader.

239. Cf. ABRAHAM DRASSINOWER, WHAT'S WRONG WITH COPYING? *passim* (2015) (criticizing "value" as incapable of generating IP rules with specificity).

240. Should a drop of function disqualify? Must the article be predominantly functional?

sort of innovation we want. Then we must shape the law — including the relationship between the different branches of the IP law — to obtain it.