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Investigating Design

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INTRODUCTION

Design is ascendant. Steve Jobs' legendary obsession with design was widely regarded as Apple's comparative advantage, and that lesson has not been lost on its competitors. Design thinking is a growth industry, in business and at universities,[2] and design professionals continue to take on increasingly significant roles within firms.[3] The increasing economic significance of design has been reflected in an explosion of design patent applications and increasing amount of design litigation.[4] The long-running Apple/Samsung conflict, one part of which reached the Supreme Court,[5] may be the most well-known example, but recent battles over the design of cheerleading uniforms and replacement auto parts demonstrate the range of contexts in which design protection is at issue and affects the economic welfare of both national and global industries.[6]

Despite design's growing economic and legal importance, relatively little is known by legal scholars and policymakers about designers or the design process. That lacuna is particularly striking in light of the empirical turn in modern intellectual property scholarship,[7] and more specifically the wide range of creators and creative

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[2] *See, e.g.*, Falon Fatemi, *Why Design Thinking is the Future of Sales*, FORBES (Jan. 15, 2019, https://www.forbes.com/sites/falonfatemi/2019/01/15/why-design-thinking-is-the-future-of-sales/?sh=143cd9934683; Clark G. Gilbert, Michael M. Crow & Derrick Anderson, *Design Thinking for Higher Education*, STAN. SOC. INNOVATION REV., Spring 2018, at 36.

[3] Vivien Walsh, *Design, Innovation and the Boundaries of the Firm*, 25 RSCH. POL'Y 509 (1996).

[4] Prior to 1990, the ratio of design patents issued to design patent applications each year roughly tracked the ratio for utility patents. In 1990, however, the ratio of issued design patents to applications jumped from 50% to 70% and averaged 77% between 1990 and 2012. During the same period, the ratio for utility patents declined from about 60% to about 45%. Consequently, the ratio of design patents issued to utility patents issued, which had hovered near 6% since around 1960, jumped to about 10%, peaking at 16% in 2008. Over the period from 1990 to 2013, approximately 10% of all issued patents were design patents. *See* Patent Statistics, U.S. PAT. & TRADEMARK OFF. (Apr. 4, 2015), http://www.uspto.gov/patents/stats/index.jsp (providing data on which these calculations are based).

[5] Samsung Elecs. Co. v. Apple Inc., 137 S. Ct. 429 (2016).

[6] Star Athletica LLC v. Varsity Brands, Inc., 137 S. Ct. 1002 (2017) (design of cheerleader uniforms); Auto. Body Parts Ass'n v. Ford Glob. Techs. LLC, 930 F.3d 1314 (Fed. Cir. 2019) (design of automotive parts).

[7] One indication of the influence of empirical studies in IP is the fact that empirical studies is the only methodologically-organized intellectual property subject matter

contexts that have been the specific subject of empirical study. This paper addresses that gap and is drawn from original data collected over several years interviewing designers, observing where and how they work, and listening to the explanations of their practice.

Studying designers and the practice of design is not only economically and culturally relevant, it is legally relevant because design has been an enduring puzzle in intellectual property law. To some extent, that is because of the nature of design and its relationship to the objects of IP protection. In both theory and structure, each area of IP works outward from paradigmatic subject matter.[8] Copyright law originally protected books, maps, and charts;[9] patent law protected machines and chemical compositions;[10] trademark law focused on words and logos affixed to the goods or to their labels and tags.[11] For many years, these narrowly-construed categories of subject matter excluded most design, and particularly industrial design. Congress developed the design patent system in 1842 to fill that gap, creating a new form of patent protection for the design of articles of manufacture—things like textiles, stoves, silverware, dishes, and furniture.[12] Design patents protected the way articles looked, in contrast to utility patents, which focused on the way the articles worked.[13]

But design's fit within a patent system has always been awkward. For many years, courts vacillated between approaches that, at one extreme, seemed to deny meaningful protection for designs, and at the other extreme, amounted to backdoor utility patents.[14] Congress eventually settled on "ornamentality" as the distinguishing feature of design patent subject matter. Ornamentality was meant to contrast with the "utility" that marks the subject of utility patent protection.[15] But

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ejournal on SSRN. All the rest of the ejournals are denominated by substantive area of IP (copyright, trademark, patent, and "other"). *See* eLibrary, THE SSRN https://papers.ssrn.com/sol3/DisplayJournalBrowse.cfm (last visited June 24, 2021).

[8] BRAD SHERMAN & LIONEL BENTLY, THE MAKING OF MODERN INTELLECTUAL PROPERTY LAW: THE BRITISH EXPERIENCE, 1760–1911 (1999).

[9] See *infra* Part I.

[10] *Id*.

[11] *Id*.

[12] *Id*.

[13] Jason J. DuMont & Mark D. Janis, *The Origins of American Design Patent Protection*, 88 IND. L.J. 837 (2013).

[14] *See* Mark P. McKenna & Katherine J. Strandburg, *Progress and Competition in Design*, 17 STAN. TECH. L. REV. 1, 32–36 (2013); *see also* Peter S. Menell & Ella Corren, *Design Patent Law's Identity Crisis*, 236 BERKELEY TECH. L.J. (forthcoming 2021).

[15] Act of May 9, 1902, Pub. L. No. 57-109, §4929, 32 Stat. 193.

requiring "ornamentality" (whatever that is) didn't solve the problem of keeping design patent clear of utility patent. Because design patent offers protection for the designs of articles like stoves and silverware that are obviously useful, courts have always struggled to differentiate the ornamental and useful aspects of those articles. Controversially, at least from the perspective of most academics, the Federal Circuit has "solved" that problem by interpreting ornamentality as mere nonfunctionality and then defining functionality so narrowly that vanishingly few designs are disqualified on that basis.[16] That approach appears to resolve any conflict with utility patent law, but only by waving the conflict away.

Design protection is also now complicated by the fact that copyright and trademark law have both expanded dramatically in the years since the first design patent statute. Where once there was a gap between these intellectual property regimes, now there is overlap: today parties commonly claim multiple forms of protection for precisely the same features of a design.[17] For example, in a lawsuit against Forever 21, Puma asserted design patent, copyright, and trademark infringement based on alleged copying of the same features of a shoe it developed in collaboration with singer Rihanna, which it alleged Forever 21 copied.[18]

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[16] Mark P. McKenna, *Fixing Functionality in Design Patent*, BERKELEY TECH. L.J. (forthcoming 2021); McKenna & Strandburg, *supra* note 15; Chris Buccafusco & Mark A. Lemley, *Functionality Screens*, 103 VA. L. REV. 1293 (2017). The Patent Office and Federal Circuit have also enabled parties to claim small fragments of articles, bringing even more functional features within the system. *See* Sarah Burstein, *Whole Designs*, 92 COLO. L. REV. 181 (2020).

[17] Or, at least, probably the same features. Because there are meaningful differences in the claiming methodologies in each of these systems, it's sometimes hard to tell if the legal claims are identical. *See* Jeanne C. Fromer & Mark P. McKenna, *Claiming Design*, 167 U. PENN. L. REV. 123 (2018).

[18] Amended Complaint at 3-12, Puma SE v. Forever 21, Inc., 2017 WL 3309169 (C.D. Cal. Apr. 4, 2017) (No. 2:17-cv-02523-PSG-E) [hereinafter Puma Amended Complaint]. *See also* Complaint at 11-17, Skinny Brand Jeans LLC v. QVC, Inc., 2018 WL 4177993 (E.D. Pa. May 14, 2018) (No. 2:18-cv-02011-JCJ) (asserting trade dress, unfair competition, and copyright infringement claims against QVC, which allegedly copied Skinny Brand Jeans's "unique, innovative, distinctive and recognizable slimming wash pattern" and "stomach restraining panel" for women's jeans).

Puma's "Bow Slide"	Defendant's "Bow Slide"
	
	

As these IP regimes have expanded, copyright and trademark have struggled to develop rules for eligibility and for infringement in relation to design.[19] One reason is that extending trademark or copyright protection to design introduces the same problem of backdoor protection of functional features. Copyright and trademark law have, in general, taken that concern more seriously than design patent law, and both have legal doctrines to police the boundary with utility patent law. Although those doctrines take different forms, they all seek radical separation of "functional" and nonfunctional ("aesthetic" or "source-indicating") features on the theory that functional matter "belongs" to utility patent and not to the other areas of intellectual property law.[20]

The problems these channeling doctrines seek to solve are foundational and urgent. And yet, those doctrines are some of the most difficult in all of IP. For one thing, all of those doctrines reflect persistent disagreement about the reasons for refusing protection to functional features. Sometimes those doctrines focus on concerns about undermining utility patent law, and other times they prioritize issues of competitive need.[21] Perhaps more fundamentally, it turns out to be very hard to operationalize rules for identifying and separating "functional features." Doing that

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[19] *See, e.g.,* Mark A. Lemley & Christopher Buccafusco, *Functionality Screens*, 103 VA. L. REV. 1293 (2017), *supra* note 16, at XX.

[20] McKenna & Strandburg, *supra* note 14 (referring to this as the "utility patent supremacy principle"). The policy of channeling particular kinds of work to certain forms of protection reflects a view that each system balances public and private interests differently, and that respecting the judgments made by the appropriate system best advances the constitutional goal of "progress of science and the useful arts." U.S. Const., Art. 1, §8, cl. 8.

[21] *See* Mark P. McKenna, *(Dys)Functionality*, 48 HOUS. L. REV. 823 (2012); Mark P. McKenna, *Fixing Functionality*, *supra* note 16.

requires a clear sense of what "functions" are relevant, and it requires a methodology for identifying and assessing functionality in individual cases.

One significant challenge is that all of the channeling doctrines draw a binary distinction between functional features, on the one hand, and aesthetic or source-indicating features, on the other hand. But as our research confirms, design often defies that binary: designers frequently seek to integrate form and function, and as a result, features routinely are *both* aesthetic and functional, and they are often blended in ways that prevent features from easily being categorized as one or the other. Design practice, it turns out, is an existential challenge to the doctrinal separation of IP regimes and thus also to competition policy that justifies that separation.

Design has also sometimes been a challenging fit in the IP system because designers are not its typical protagonists.[22] Each IP system envisions archetypal creators who pursue specific goals, produce types of output, and work in particular ways or according to identifiable processes. Authors produce creative works, and copyrightability is entirely bound up with the process of creation – the making by a human of an original work of authorship that springs from their personality.[23] Patent law focuses on invention, a particular human activity directed toward "technological innovation."[24] Trademark law protects source-identifying signs – distinctive names and logos – but largely only for the purposes of preventing confusion about the commercial origins of products or services.

Disputes about subject matter boundaries (about whether certain outputs more naturally belong to patent, copyright, or trademark) often are at least in part about whether what is claimed is the result of the process the invoked IP system recognizes and whether protection reflects the policies toward which that system is directed. Design practice with its inherent interdisciplinarity in object and process fundamentally challenges these disciplinary boundaries, putting pressure on their subject matter canons.

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[22] Jessica Silbey, *Mythical Beginnings of Intellectual Property Law*, 15 GEO. MASON L. REV. 319 (2008).
[23] *See* discussion *infra* at XX.
[24] *See* discussion *infra* at XX. *See also* Mark P. McKenna & Christopher Jon Sprigman, *What's In and What's Out: How IP's Boundary Rules Shape Innovation*, 30 HARV. J. L. & TECH. 491 (2017) (describing the focus on technological innovation and its inconsistent application).

The designers in our study do not fit the "author" or "inventor" paradigms on which our IP systems have developed.[25] In some ways, designers are hybrids; in other ways, they are meaningfully different from both authors and inventors. In several notable respects, our designers' goals and conceptions of design excellence are uncomfortably misaligned with IP doctrine.[26]

First, our designers emphasize process over product, inverting the focus of the IP system, which focuses specifically on outputs.[27] Designers describe this process as intentionally and thoroughly multidisciplinary. Designers frequently work in teams comprised of people with complementary disciplinary training – for example, architecture, engineering, graphic art, and ethnography. Even when teams are small or designers are working solo, they draw on multiple disciplines or approaches, reaching for broad "precedent" or practice exemplars and melding technical training with anthropological approaches that are intended to discern user needs and address consumer desires. There are very few romantic authors in design, nor are there eureka inventors. Copying and iterating are routine. As social science and technology scholar Bruno Latour writes, to "design is always to redesign,"[28] an understanding of originality and creativity that challenges IP's traditional orientation.

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[25] Dare we say, they are "tertium quid"? *See* Wal-Mart v. Samara Bros., 529 U.S. 205, 215 (2000) (referring to restaurant design as "tertium quid" – neither product packaging nor design).

[26] Studying design practice's alignment or misalignment with intellectual property law is a new addition to existing studies on the gap between law on the books and law on the ground. For such a study on copyright, trademark, and utility patent and everyday creators and innovators, see JESSICA SILBEY, THE EUREKA MYTH: CREATORS, INNOVATORS AND EVERYDAY INTELLECTUAL PROPERTY (2015).

[27] It's also true that IP rights attach to intangible works and inventions, not their tangible embodiments, but that does not change the fact that IP rights generally focus on outputs rather than the processes of creating them. That is true notwithstanding the inclusion of processes in utility patent subject matter. It is no surprise that courts have long struggled to cabin that category, and for a long time emphasized that patentable processes must produce "useful, concrete, and *tangible* result[s]." State St. Bank & Tr. Co. v. Signature Fin. Grp., Inc., 149 F.3d 1368, 1373 (Fed. Cir. 1998) (quoting *In re* Alappat, 33 F.3d 1526, 1544 (Fed. Cir. 1994). And it 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. *In re* Comiskey, 554 F.3d 967, 980 (Fed. Cir. 2009).

[28] Bruno Latour, Sciences-Po, A Cautious Prometheus? A Few Steps Toward a Philosophy of Design (with Special Attention to Peter Sloterdijk) (Sept. 3, 2008), *in* 112-DESIGN CORNWALL, 2008, at 1-13, 5.

Second, designers describe their process one of problem finding and problem solving. The result of that process may be a new way of doing something or a new tool or object to experience the world. But the "problems" designers seek to solve are extraordinarily wide-ranging and do not fit neatly in the categories IP doctrines recognize in their attempts to differentiate subject matter.[29] Designers may seek greater usability – e.g., a better electric toothbrush – but "better" here is judged in terms of both style and ease of use, and those may be indistinguishable from each other. Functionality is not merely utilitarian but a feature of desirability and elegance, and sometimes also a fit within brand language.

Third, designers repeatedly described their quest for an essential *coherence*, a melding of form and function and the elimination of excess. Design is always striking a "not only ... but also" balance.[30] Useful and beautiful features are inseparable and every feature serves a purpose. [31] Writing about just this inseparability, Latour explains that "[t]oday everyone with an iPhone knows that it would be absurd to distinguish what has been designed from what has been planned, calculated, arrayed, arranged, packed, packaged, defined, projected, tinkered, written down in code, disposed of and so on."[32] Coherence is the gold standard in design. And yet that coherence, the inseparability of form and function, profoundly frustrates IP doctrine.

Our goal in this Article is not to argue for or against any particular legal protection for design. Instead, our research offers a new (albeit partial) explanation for the difficulty of developing design protection rules within or adjacent to other IP regimes. Descriptive accounts and practices of design professionals demonstrate how design is different from the archetypal objects of patent, copyright, and trademark law, and how designers are different from the typical protagonists of these legal regimes. As lawyer and legal scholars, we tend to think outwardly from the systems we have, but our research shows that design is different in important ways, making the evolution from existing IP systems fraught with problems from the outset.

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[29] "[D]esign has been spreading continuously so that it increasingly matters to the very substance of production. What is more, design has been extended from the details of daily objects to cities, landscapes, nations, cultures, bodies, genes, and … to nature itself." *Id*. at 2.

[30] *Id*.

[31] Design literature describes this coherence not just as a formal feature of "good" design, but as an ethical consideration for the practice as a whole. Bruno Latour describes the transformation of the metric of "good or bad" design into an ethical question as a "matter of concern." *Id*.

[32] *Id*.

Designers' processes differ from those imagined by existing IP regimes, and they value their outputs for different reasons.

This paper proceeds in three parts. First, we briefly explain the archetypal protagonists of IP law and its subject matter, as well as the doctrinal controversies and puzzles aiming but failing to make sense of the rules setting boundaries between IP regimes and limiting the protection of functionality to utility patents. The second part is the focus of this Article and our original contribution to the field. There we describe and analyze interview data that demonstrates how design practice is structured around professional disciplinary features that render it inherently unsuitable for the legal rules established for existing intellectual property regulation. In particular, we recount the celebrated interdisciplinarity of design work, the prioritization of process over product, and the goal of cohesive and elegant design that leaves no excess features and prioritizes certain values over others, celebrating a "design ethic."[33] There is much more in the interview data than these three themes.[34] But we focus on these as a beginning for our on-going research project to initiate the conversation and unlock what we hope will be the first step towards a more appropriate and tailored design law regime.

Though we focus specifically on intellectual property protection for design, our discussion implicates larger trans-substantive legal questions. One concerns the

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[33] As one example of design ethics, *see* IDEO, THE LITTLE BOOK OF DESIGN RESEARCH ETHICS (2015). *See also* Latour, *supra* note 28, at 5 (describing the "fifth and decisive advantage of the concept of design is that it necessarily involves an ethical dimension which is tied into the obvious question of good versus bad design."); *see id*. at 11 ("there is something inherently normative in design because of the necessary follow up question, 'Is it well or badly designed?' … if for each detail the question of good and bad has to be raised; if every aspect has become a disputed matter of concern and can no longer be stabilized as an indisputable matter of fact; then we are obviously entering into a completely new political territory.").

[34] As we describe in Appendix A (Research Methods), the hallmark of qualitative empirical research is to identify the relevant variants among heterogeneous data with which to generate hypotheses that explain a particular phenomenon (here design law's doctrinal challenges with design practice's output). These three themes are common among the heterogenous data, stratified along relevant axes, but variations within these themes exist, as do other themes. This Article is one aspect of the research. Other descriptions and analyses of the data will follow in other articles. *See* Appendix A (describing in more detail the empirical research method) and Appendix B (relevant details of the interviewees representing our stratified sample).

benefit of channeling certain causes of action to particular regimes and avoiding overlap, a common problem within legal practice that raises thorny preemption and double-recovery problems.[35] Another question concerns when to evolve existing law to new practices and professions (as copyright and trademark have evolved toward design) and when *sui generis* regimes should be the default (as in the design patent law system, which is largely duplicative and not exclusive).[36] We do not purport to answer those questions definitively, but our data brings relevant context to these important and broader debates.

We end the Article with our thoughts regarding where to go from here, including more data analysis, further legal research, and practical law reform. We also draw some conclusions about the relationship between design law, design practice, and intellectual property law and scholarship more generally, situating this project within empirical legal scholarship that aims to understand and explain complex phenomena in order to promote progress through fair, evidence-based lawmaking.[37] Of course, intellectual property protection for design need not be structured solely by reference to the goals and norms of design practice—the right institutional design depends also on broader cultural and economic considerations, just as in all other areas touched by intellectual property law. But it would be exceedingly odd to ignore design practice completely while claiming to promote the progress of design.

I. Background on Design and IP Law

"Design" is an extremely broad and ill-defined category. Indeed, as we describe below, it's often difficult for designers themselves to define the category, except by reference to some traditionally-identified disciplines. Design scholar Karl Ulrich defines design in extremely broad terms, as "conceiving and giving form to artifacts

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[35] *See*, e.g., Mark Lemley, *The Surprising Virtues of Treating Trade Secrets as IP Rights*, 61 STAN. L. REV. 311 (2008) (describing how channeling between IP rights is important for efficiency purposes, to reduce overinvestment, and encourage public disclosure of information).

[36] Sui generis regime debate has been on-going within IP law, as in other legal regimes. *See, e.g.*, Peter Yu, *Data Producer's Right and the Protection of Machine-Generated Data*, 93 TULANE L. REV. 859 (2019); Jan Osei-Tutu, *A Sui Generis Regime for Traditional Knowledge: The Cultural Divide in Intellectual Property Law*, 15 MARQ. INTELL. PROP. L. REV. 147 (2011).

[37] Two appendices follow the article's conclusion describing in more detail the empirical research method (Appendix A) and relevant details of the interviewees (Appendix B).

that solve problems."[38] Herbert Simon similarly explained in his now famous "Science of Design: Creating the Artificial" that a designer is one "who devises a course of action aimed at changing existing situations into preferred ones."[39]

Intellectual property law is not particularly more precise. Some types of design fit quite comfortably within existing IP systems, even conventionally understood. Copyright has long protected works of fine art, including sculptural works and many forms of graphic design—even highly "functional" ones like maps and charts.[40] Trademark law has always protected "devices" (what we would now call logos), and modern law protects, without much controversy, the design of packaging.[41] But for the most part, when IP lawyers and scholars talk about protection for "design," they have in mind the design of functional products – computer equipment, cars, furniture and housewares – which can be protected under multiple different IP systems.

Copyright law protects the broad class of "original works of authorship fixed in any tangible medium of expression," which includes "pictorial, graphic, and sculptural works."[42] But, among other limitations, the design of a useful article is copyrightable only to the extent that its features are "separable" from the utilitarian aspects of the article.[43] Trademark law protects "trade dress,"[44] which includes both product packaging and product design. Those categories, however, are subject to different legal rules. According to the Court in *Wal-Mart Stores, Inc. v. Samara Brothers, Inc,* product packaging, is used "most often to identify the product's source of the product."[45] By contrast, "[c]onsumer predisposition to equate [product design features] with the source does not exist" because "[c]onsumers are

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[38] *Id*. at 2 (emphasis omitted).
[39] Herbert A. Simon, *The Science of Design: Creating the Artificial*, 4-12 DESIGN ISSUES 67-82 (1988).
[40] The subject matter of the first U.S. copyright act from 1790 was "maps, charts, and books." U.S. Copyright Act of 1790, Pub. L. No. 1-15, 1 Stat. 124.
[41] Wal-Mart v. Samara Bros., 529 U.S. 205 (2000).
[42] 17 U.S.C. § 102(a) (2012).
[43] Id. § 101 ("[T]he design of a useful article . . . shall be considered a pictorial, graphic, or sculptural work only if, and only to the extent that, such design incorporates . . . features that can be identified separately from, and are capable of existing independently of, the utilitarian aspects of the article.").
[44] *See* Two Pesos, Inc. v. Taco Cabana, Inc., 505 U.S. 763, 765–67 (1992) (holding that inherently distinctive, non-functional trade dress is protectible under § 43(a) of the Lanham Act without proof of secondary meaning). We say primarily because there is a design element to many logos and stylized trademarks, which are not trade dress.
[45] Wal-Mart,529 U.S. at 212.

aware of the reality that, almost invariably, even the most unusual of product designs—such as a cocktail shaker shaped like a penguin—is intended not to identify the source, but to render the product itself more useful or more appealing."[46] As a result, unlike product packaging, which can be inherently distinctive, trade dress protection is available for product design only upon a showing of secondary meaning.[47] Characteristic of the lack of clarity around the concept of "design," the Supreme Court never defined the categories of product design or packaging.[48]

Design patents are available for any "new, original and ornamental design for an article of manufacture."[49] As Sarah Burstein demonstrates, courts once had a reasonably constrained idea of what "article[s] of manufacture" were, and configurations and surface ornamentations of those things were patentable.[50] But modern design patent law is more capacious: The Supreme Court defined an article of manufacture as "simply a thing made by hand or machine."[51] Design patents now issue for things like nuanced features of a screw, parts of the underside a sneaker, and a particular curved angle of a car window.

The next sections describe some of the primary reasons design has proven such an enduring puzzle—specifically focusing on how design and the design process differ from other IP subject matter, and IP doctrine's insistence on separating form and function when design seeks their union.

A. Difficulty Extrapolating to Design: The Subject Matter Problem

One of the primary challenges for assimilating design into the various IP systems is that design and designers are not the archetypal subjects of IP. Like origin

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[46] *Id*. at 212-13.

[47] This differential treatment is particularly appropriate, according to the Court, because a producer "can ordinarily obtain protection for a design that is inherently source identifying (if any such exists), but that does not yet have secondary meaning, by securing a design patent or a copyright for the design." *Id*. at 214.

[48] The Supreme Court acknowledged this problem, but instead of defining the categories, it simply created a default rule, instructing courts to treat ambiguous subject matter as product design and require secondary meaning. Id. at 215.

[49] 35 U.S.C. § 171(a) (2012).

[50] Sarah Burstein, *The "Article of Manufacture" in 1887*, 32 Berkeley Tech. L.J. 1, 83 **(2017)** (arguing that courts understood "article of manufacture" to mean a "tangible item made by humans--other than a machine or composition of matter--that had a unitary structure and was complete in itself for use or for sale").

[51] Samsung Elecs. Co. v. Apple Inc., 137 S.Ct. 429, 435 (2016).

stories that authorize current situations through the force of narrative explanation, archetypal IP originators (and the work they produce) persistently structure these areas of law.[52] As our data show, designers are not authors who seek only creative expression, nor are they inventors pursuing only technological innovation. In some ways, designers are hybrids of authors and inventors; in other ways they are neither. There is no U.S. legal regime that applies well to designers, and each IP regime diminishes designers by attempting to characterize them in terms recognizable to that system.

1. Designers are not "Inventors"

Patent law is directed at "invention," which it understands to be a particular kind of human activity. Those who engage in that activity are "inventors." At least paradigmatically, inventors solve particular kinds of scientific and technological problems.[53] Invention is a mental activity more than a physical one—it is, famously, "not the work of the hands, but of the brain."[54] Patent doctrine traditionally reflected that notion by prioritizing conception of the invention in the mind of the inventor over the work necessary to reduce the invention to practice.[55] But invention is not mere discovery. Laws of nature, like the correlation between metabolites in a patient's blood and the dosage of a medication, are not patentable because they are not invented but merely found.[56] The same is true of abstract ideas and natural

[52] Jessica Silbey, *Mythical Beginnings of Intellectual Property Law*, 15 GEO. MASON L. REV. 319 (2008). Although IP policy espouses an ideology of democratic opportunity and access – e.g., anyone can be a creator or innovator – these archetypes have been criticized for their grounding in socio-political situations that historically privilege certain kinds of people and contexts. *Id*. *See also* ANJALI VATS, THE COLOR OF CREATORSHIP (2020).

[53] We can dispute this rigid characterization and the ones that follow about authorship, but the point is that IP law instantiates them for the purposes of channeling and regulating the activity and output. *Supra* note 8.

[54] Edison v. Foote & Randall, 1871 C.D. 80 (Comm'r Pat. 1871)

[55] *In re* Hardee, 223 U.S.P.Q. 1122, 1123 (Comm'r Pat. & Trademarks 1984) ("The threshold question in determining inventorship is who conceived the invention … Insofar as defining an inventor is concerned, reduction to practice per se is irrelevant.").

[56] Mayo Collaborative Servs. v. Prometheus Labs., Inc., 566 U.S. 66, 77 (2012) ("While it takes a human action (the administration of a thiopurine drug) to trigger a manifestation of this relation in a particular person, the relation itself exists in principle apart from any human action.").

phenomena—particular people might be the first to discover an idea or phenomenon, but those people do not *invent* them through ingenuity or experimentation.[57]

Inventions are patentable only when they are novel, non-obvious, and useful, but many scholars believe nonobviousness is the primary substantive hurdle to patentablility today.[58] Importantly, nonobviousness is judged from the perspective of the hypothetical "person having ordinary skill in the art" (the PHOSITA). The inventor displays "ingenuity" and is not merely someone with mechanical or artisanal skills.[59] The Supreme Court recently explained obviousness this way:

> 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 [the Patent Act]. [60]

Interviews with designers make clear that designers are not merely inventors in this sense. Designers emphatically work with their hands *and* their minds. They build prototypes and test models. Iteration, not discovery or revelation, is the primary method of problem-solving. Many designers differentiate design from engineering precisely by reference to this iterative process.[61] Designers explain (and our data

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[57] Alice Corp. Pty. Ltd. v. CLS Bank, Int'l, 573 U.S. 208 (2014); Ass'n for Molecular Pathology v. Myriad Genetics, Inc., 569 U.S. 576 (2013).

[58] See, e.g., Laura Farina Pedraza and Ryan Whalen, *A Network Theory of Patentability*, 87 CHI. L. REV. 63 (2020) (drawing on novel network approach to evaluate the difficult questions of what is a non-obvious invention and how do we measure non-obviousness in specific contexts). Novelty implies difference from what came before, but only in the narrow sense that it is not exactly like another invention. To anticipate, a single prior art reference must disclose every element of the claimed invention. The utility 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. *See* Brenner v. Manson, 383 U.S. 519, 533 (1966). 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).

[59] Graham v. John Deere Co. of Kan. City, 383 U.S. 1, 13-14 (1966); Hotchkiss v. Greenwood, 52 U.S. 248, 267 (1850).

[60] KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 421 (2007).

[61] *See infra* Part II.

elaborates) that their work is based on tinkering, brainstorming, and is more emergent.[62] Rarely is there a lightbulb or eureka moment in the design process. Also, most designers don't work alone but, as the data describes in detail, they work in interdisciplinary teams, a hallmark of their practice.[63] And designers rarely consider their final output a "first" or "novel." Instead designers generally regard their work as iterative and building upon things that came before, which is what makes the work relevant and useful but also familiar and desirable.

Moreover, while utility patent law imagines inventors as skilled in a particular art and therefore evaluates obviousness in relation to "pertinent art,"[64] designers tend to roam broadly. For many designers, hewing closely to the "analogous" or "pertinent" field would be incomplete research and unlikely to produce good design. Designers describe a regular and expected practice of borrowing and taking inspiration from a wide range of fields and objects.

Like inventors, designers consider themselves to be doing useful work, solving problems (or "finding and solving" problems, as the data explain). But designers conceive of the "problems" they identify and solve in much broader terms—they are not just solving scientific or technical problems. Designers often explain that part of what makes their work useful is that it is also beautiful, and the "invention" is the seamless blending of form and function, the aesthetic and useful. In all of these ways, designers differ from the prototypical inventor of utility patent law—a concept design patent law builds upon, given its doctrinal and conceptual structure, however ill-suited the comparison is in fact.

2. Designers are not "Authors"

Like inventors, authors have been variously described as having "creative genius"[65] and as being driven by a "creative spark."[66] Copyright law's sine qua non

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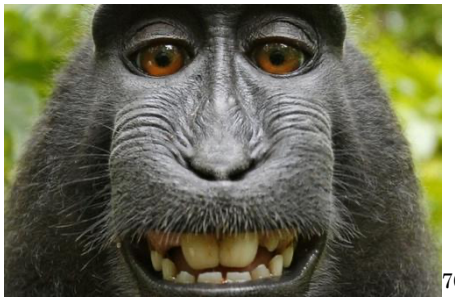
[62] *Id*.
[63] *Id.* (Even the designers who are more like studio artists, for example Felicia Ferrone and Jonathan Adler in our study, work with teams to facilitate scale manufacturing and conceptual changes that arise in the production processes. Id.)
[64] *See, e.g.*, MPEP 2164.05(b): "Specification Must Be Enabling to Persons Skilled in the Art," *in* MANUAL OF PATENT EXAMINING PROCEDURE (2020); *See also* Rebecca, *Obvious to Whom? Evaluating Inventions from the Perspective of PHOSITA*, 19 BERKELEY TECH. L.J. 885 (2004).
[65] U.S. v. Paramount Pictures, Inc., 334 U.S. 131, 158 (1948).
[66] Feist Publ'ns. v. Rural Tel. Serv. Co., 499 U.S. 340, 345 (1991). The "romantic author" has come in for much criticism from scholars, who often characterize authorship rhetoric as a front for the interests of major content owners. MARK ROSE,

is "originality," which does not literally mean unique but simply independently created by a person. An author is "he to whom anything owes its origin,"[67] and in this way, copyright authors and authorship are one, a unified self or personality that is celebrated in the most famous copyright law cases.[68] "Personality always contains something unique. It expresses a singularity even in handwriting, and a very modest grade of art has in it something irreducible, which is one man's alone."[69]

Consider the monkey selfie case.

 [70]

This photograph would unquestionably be copyrightable if it were taken by a human being. When it's taken by a monkey, it's not copyrightable—not because there's something different about the photograph itself, but because it's not the product of

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AUTHORS AND OWNERS: THE INVENTION OF COPYRIGHT (1993); *see also* Martha Woodmansee, *The Genius and the Copyright: Economic and Legal Conditions of the Emergence of the 'Author,'* 17 EIGHTEENTH-CENTURY STUD. 425 (1984); Peter Jaszi, *On the Author Effect: Contemporary Copyright and Collective Creativity*, *in* THE CONSTRUCTION OF AUTHORSHIP: TEXTUAL APPROPRIATION IN LAW AND LITERATURE, 29, 31 (Martha Woodmansee & Peter Jaszi eds., 1994).

[67] Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53, 58 (1884).

[68] According to Mala Chatterjee, works of authorship are to be contrasted with inventions because the former are "author-individuated" while the latter are "structure-individuated." Mala Chatterjee, Understanding Intellectual Property: Expression, Function, and Individuation (July 27, 2021) (draft on file with authors). Inventions are defined by their structure, and therefore there 2 people cannot independently invent the same thing (meaning that we do not call the second version of the same thing an "invention" precisely because invention requires novelty in relation to structure). Works of authorship, by contrast, cannot be conceived of independently of the mind that brought that work into being. Two works that originate from different people can be structurally identical and still be distinct works precisely because works are inviduated in terms of their source. For an earlier argument along similar lines, see ABRAHAM DRASSINOWER, WHAT'S WRONG WITH COPYING? (2015).

[69] Bleistein v. Donaldson Lithography Co., 1888 U.S. 239, 250 (1903).

[70] Naruto v. Slater, 888 F.3d 418 (9th Cir. 2018).

authorship. Authorship is fundamentally a *human* activity.[71] To be more precise, it's a particular kind of human activity that is directed toward creative expression. Copyright law does not protect facts or ideas, not because they do not sometimes originate with particular people, but because they are not the results of that creative activity. Facts and ideas may be new, but they are not *authored*.[72]

Few designers regard their work as driven by their own creative genius or individual originality. Many designers work in multi-disciplinary teams, and in that respect, if they resemble copyright authors, it would be as joint-authors for whom individual contributions are intentionally merged into an inseparable whole.[73] More significantly, as the disciplinary and market trend of human-centered design implies, designers are beholden to the audience of their designed work – ultimately the users– who have particular needs, identities, and even cultures.[74] As the interview data show, designers consider their clients and consumers to be collaborators, and successful design incorporates their voices and experiences.[75] Even the most "author"-centered designers – those designing automobiles, home goods, and decorative objects (e.g., stemware and ceramics) – describe their process and products as less subjectively expressive and "authored" and more objectively empirical and historical, driven by material, aesthetic, and cultural constraints.[76]

Many designers describe successful design as "telling a story," and that certainly has tones of authorship. But we understood these explanations to be primarily about the coherence the designs bring to the life of the user in context.[77] The designed object or process brings new meaning to situations. This is not because designers are authors in the way we think of novelists or artists. Instead, designers are like anthropologists or sociologists – two fields of social inquiry upon which designers substantially rely to do their work – who explore the meaning and

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[71] *Id*. This has obvious implications for AI-created works.
[72] *See* DRASSINOWER, supra note 68 (making the point that authorship is a particular kind of human creative activity – in his view, a communicative act); *see also* Feist Publ'ns, Inc. v. Rural Tel. Serv., Inc., 499 U.S. 340 (1991).
[73] Thomson v. Larson, 147 F.3d 195, 200-01 (2d Cir. 1998).
[74] *See infra* Part II.
[75] *Id*.
[76] We understand many copyright authors would say the same thing about their process. We are not distinguishing designers from all creators but instead from the narrowly-construed doctrinal copyright author as producing a "personal reaction" and expressing something "unique" containing the author's "personality." Bleistein v. Donaldson Lithography Co., 1888 U.S. 239, 250 (1903).
[77] *See infra* Part II.

significance of lived culture and society to better understand and delineate their institutions and organization.[78]

Many designers we interviewed design brand materials and describe themselves as brand managers.[79] Even when not designing logos or other materials conventionally regarded as trademarks, designers often described a need for the design to fit a brand identity and exemplify the essence of the brand.[80] The best design exemplifies the brand's personality and drives an identity. As one designer explained about a redesigned OXO dustpan,

> "I was like, 'They just nailed it.' It was that tiny thing, that, like, I couldn't even do a good job of explaining, we certainly can't explain it well in copy, you just have to experience it, and you're like, 'They thought of it. They thought of everything.' It's those moments that make people fall in love with the brand."[81]

But excellent design is about more than identification. It melds form, function, and emotion. When designers describe themselves as designing "experiences," adding "delight" and "discovery" to people's lives with redesigned objects, and "not just adding more stuff to the world" – all of which is described in more detail in Part II – they are talking about brands as much broader concepts than trademark doctrine recognizes. Despite producing work that is often the object of patent, copyright, and trademark law, designers' professional practice is an uncomfortable fit within those IP regimes.

B. The Functionality Problem

As we described above, each area of IP has prototypical subject matter, which is conceived in part by reference to prototypical creators. Utility patent is widely described as focusing on "technological" innovation.[82] Congress created the design patent system because it didn't believe design was suited to utility patent protection;

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[78] Citation to design literature relying on social science.
[79] Michael Rock described this work in detail in his interview. *See infra* XX; Appendix B.
[80] Interview with Lee Moreau, Founder, Other Tomorrow's, in Bos., Mass. (Apr. 10, 2019).
[81] Interview with "Kate", Marketing and Design Professional, OXO, in N.Y.C, N.Y. (Dec. 11, 2018).
[82] In practice, "technological" is not as limiting as many assume. *See* Mark P. McKenna & Christopher Jon Sprigman, *What's In and What's Out: How IP's Boundary Rules Shape Innovation*, 30 HARV. J. LAW & TECH. 491 (2017).

it meant to create protection for the way articles looked, and utility patent was concerned with the way they worked.[83] Neither copyright nor trademark provided an answer, since both at that time excluded design. The design patent system was therefore created to fill a perceived gap; specifically, it was meant to protect the appearance, but not the function, of articles of manufacture.

It would have made little sense to create a distinct form of patent protection for design if that system turned out to be duplicative of utility patent, or—even worse—if it proved to be an alternative system by which parties could effectively protect the function of an article without meeting the purportedly rigorous requirements of utility patent law. The same concerns about backdoor utility patents presented, perhaps even more strongly in the copyright and trademark contexts (because of their longer term of protection) when those systems expanded to offer more protection to design..[84]

To address these concerns, all of the non-utility patent IP systems have long sought to distinguish the proper objects of protection from the functional aspects that "belong" to utility patent law. Each system does this somewhat differently, but copyright, trademark, and design patent all have doctrines premised on the same underlying principle: functional features are excluded from protection because utility patent law has the sole responsibility for determining the conditions under which functional features are protected.[85]

Design's intrinsic hybridity has always made that distinction a challenge. All of these functionality rules aim to separate how articles work from how they look—to determine if claimed features are either functional, on the one hand, or ornamental/aesthetic/source-identifying, on the other hand. As our data reveal, that is an impossible task, because most design features consist of multiple, overlapping characteristics.

Design patent law has all but surrendered to this problem, having reduced the ornamentality requirement to non-functionality and then excluding almost nothing on functionality grounds.[86] Under the prevailing rule, design patent law disqualifies a claimed design only when the design, as a whole, is "dictated by" functional

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[83] Jason J. DuMont & Mark D. Janis, *The Origins of American Design Patent Protection*, 88 IND. L.J. 837 (2013).
[84] *See* Mark P. McKenna, *(Dys)Functionality*, supra note 21 at XX.
[85] *See* McKenna & Strandburg, supra note 14..
[86] Sarah Burstein, *Intelligent Design & Egyptian Goddess: A Response to Professors Buccafusco, Lemley & Masur*, 68 DUKE L. J. ONLINE 94 (2019).

considerations—a standard that is met only when there are virtually no alternative designs available.[87] Unsurprisingly, that is exceedingly rare.

Trademark law has long been influenced by two distinct ideas about the purposes of functionality doctrine that manifest in contradictory approaches.[88] On one view, functionality is about channeling useful features to utility patent law—not necessarily because those features will be protected by utility patent, but because utility patent law should make the policy judgments regarding protection of those features. Courts influenced by this understanding of functionality exclude features that have any relationship to function, even if there are other ways to accomplish the function.[89] On the other view, features are functional only if their exclusive use would impose a significant competitive disadvantage on others. That is, a feature is not functional, no matter how much it impacts utility, unless there are very few alternative designs.[90] The Supreme Court's decision in *TrafFix* emphasized the first channeling approach and downplayed the second approach of competitive need.[91].Nevertheless, the functionality doctrine continues to reflect both of these views.

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[87] *See, e.g.*, PHG Techs., LLC v. St. John Cos., Inc., 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.'") (quoting L.A. Gear, Inc. v. Thom McAn Shoe Co., 988 F.2d 1117, 1123 (Fed. Cir. 1993)).

[88] *See* McKenna, *(Dys)Functionality*, *supra* note 21; McKenna, *Fixing Functionality*, *supra* note 16.

[89] *See, e.g.*, Eppendorf-Netheler-Hinz GMBH v. Ritter GMBH, 289 F.3d 351 (5th Cir. 2002); Specialized Seating, Inc. v. Greenwich Indus., L.P., 616 F.3d 722 (7th Cir. 2010); Ezaki Glico

[90] *See, e.g.*, Blumenthal Distrib., Inc. v. Herman Miller, Inc., No. 18-56471, 2020 WL 3458983, at *5 (9th Cir. June 25, 2020) (emphasizing that "the proper standard for whether a claimed trade dress consisting of an 'overall appearance' is functional is whether 'protecting the trade dress threatens to eliminate a substantial swath of competitive alternatives in the relevant market'"); Bodum USA, Inc. v. A Top New Casting Inc., 927 F.3d 486, 492 (7th Cir. 2019) ("Thus, to establish it has a valid trade dress, Bodum did not have to prove that something like a handle does not serve any function. It merely needed to prove that preventing competitors from copying the Chambord's particular design would not significantly disadvantage them from producing a competitive and cost-efficient French press coffeemaker.").

[91] TrafFix Devices, Inc. v. Mktg. Displays, Inc,, 532 U.S. 23, 33 (2001) ("Where the design is functional under the *Inwood* formulation, there is no need to proceed further to consider if there is a competitive necessity for the feature."). The Court found the claimed dual-spring design functional even though the record suggested other designs were available and not particularly costly. Mktg. Displays, Inc. v.

One way copyright deals with functionality is through the separability rule, which limits protection of useful articles to features that are "separable" from the utilitarian aspects of the article.[92] The separability doctrine has been the source of decades of confusion, which was streamlined but not helped by the Supreme Court's recent *Star Athletica* decision.[93] According to the Supreme Court, features that are incorporated into a useful article are separable, and thus potentially copyrightable, if they "(1) can be perceived as a two- or three-dimensional work of art separate from the useful article and (2) would qualify as a protectable pictorial, graphic, or sculptural work—either on [their] own or fixed in some other tangible medium of expression—if [they] were imagined separately from the useful article."[94] Conceptual separability has proven notoriously difficult to apply—and even scholars who typically disagree about other copyright matters are united in their criticism of the Supreme Court's attempt at clarifying the separability rule in *Star Athletica*.[95]

What these doctrines have in common is their attempt to separate and distinguish the "functional" aspects of a design from the non-functional or aesthetic aspects. Whatever the internal motivations for that approach (and mostly it is to channel protection of functional features to the utility patent system, with its supposedly rigorous examination process), the whole project is at odds with the process of design and designers' goals, as reflected in our research. While intellectual

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TrafFix Devices, Inc., 200 F.3d 929 (6th Cir. 1999), rev'd, 532 U.S. 23 (2001) (noting availability of other designs).

[92] 17 U.S.C. § 101 (1976) ("[T]he design of a useful article . . . shall be considered a pictorial, graphic, or sculptural work only if, and only to the extent that, such design incorporates . . . features that can be identified separately from, and are capable of existing independently of, the utilitarian aspects of the article."). A "useful article" is an article having an intrinsic utilitarian function that is not merely to portray the appearance of the article or to convey information. *Id*.

[93] Star Athletica, LLC v. Varsity Brands, Inc., 137 S.Ct. 1002 (2017).

[94] *Id*. at 1007.

[95] *See, e.g.*, Rebecca Tushnet, *Shoveling a Path After Star Athletica*, 66 UCLA L. REV. 1216, 1218 (2019) ("The best I can say about the case is that my copyright students' situation has improved: Instead of having to learn up to nine incompatible approaches to copyright protection for useful articles, as in the past, they only have to learn one that's self-contradictory."); Barton Beebe, *Star Athletica and the Problem of Panaestheticism*, 9 U.C. IRVINE L. REV. 275 (2019); *From Shovels to Jerseys: A Guide to Apply Star Athletica v. Varsity Brands*, UNIV. PA. L. REV. ONLINE (2017); Mark P. McKenna, *Knowing Separability When We See It*, 166 UNIV. PA. L. REV. ONLINE 127 (2017).

property doctrine seeks separation, designers typically seek integration of form and function.

These functionality doctrines also diverge from the work of designers in that the law conceives of "functionality" in narrower terms than do designers. While IP's functionality doctrines overwhelmingly focus on "technical" problems that are supposedly the domain of utility patent law, designers seek to solve a wide range of different kinds of problems and face many different types of constraints.[96]

To be sure, trademark law's *aesthetic* functionality doctrine contemplates other, non-technical contributions.[97] The shape of the round beach towel, for example, may or may not serve any kind of technical function.[98] Consumers, however, might want a round towel because it's fashionable.[99] If they do, that shape is considered aesthetically functional even though the "function" is quite different from a dual spring design for road construction signs.[100] But it's telling that aesthetic functionality is much more controversial than its utilitarian counterpart. Many courts continue to reject that doctrine or have looked for ways to avoid applying the

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[96] That does not mean there aren't plenty of problems trying to determine what functions count. For a description of that problem, *see* Mark P. McKenna, *Fixing Functionality in Design Patent*, BERKELEY TECH. L.J. (forthcoming 2021).

[97] *See* J. THOMAS MCCARTHY, MCCARTHY ON TRADEMARKS AND UNFAIR COMPETITION, at § 7:80 (5th ed. 2021). That trademark doctrine recognizes that products often "are bought largely for their aesthetic value" and so "their features may be functional because they definitely contribute to that value and thus aid the performance of an object for which the goods are intended." RESTATEMENT (FIRST) OF TORTS § 742 (AM. L. INST. 1938). According to the Supreme Court, in cases of aesthetic functionality, the question is whether exclusive use of the claimed features would put competitors at a "significant, non-reputation-related disadvantage." TrafFix Devices, Inc. v. Mktg. Displays, Inc., 532 U.S. 23, 32–33 (2001).

[98] We note that the round beach towel was the subject of a utility patent, and the claimed utility was that it allowed sunbathers to reposition their bodies without having to move the towel. *See* Jay Franco & Sons, Inc. v. Franek, 615 F.3d 855, 858-59 (7th Cir. 2010).

[99] *Id*. At 859-60 ("But let us suppose with Franek—who opposed summary judgment and who is thus entitled to all reasonable inferences—that round towels are not measurably better for spinning with the sun. … No matter. Franek's mark still is functional."); *Id*. At 860 ("Fashion is a form of function.").

[100] *See* TrafFix, 532 U.S.at 25 ("Temporary road signs with warnings like "Road Work Ahead" or "Left Shoulder Closed" must withstand strong gusts of wind. An inventor named Robert Sarkisian obtained two utility patents for a mechanism built upon two springs (the dual-spring design) to keep these and other outdoor signs upright despite adverse wind conditions.")

doctrine even when it seems called for.[101] Features that are functional in the utilitarian sense raise concerns about interference with utility patent law. Features that are aesthetically desirable, whatever their competitive significance, don't seem as important for courts to guarantee their access. Data from design practice elevates the importance of the *aesthetic* "function" thereby broadening the category of what counts as "functional," and challenging the narrow doctrinal conception in IP law.

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As these brief descriptions suggest, copyright, trademark, and design patent all attempt in one way or another to exclude at least some functional features from protection on the ground those features "belong" to utility patent law. But all face significant challenges, in part because they all seek to identify and separate the "useful" or "functional" aspects of a design. None of the doctrines has consistently done that well to the consternation of lawyers and their clients who seek clarity in the application of these regulatory regimes that are central to multi-national businesses. As the research we describe below indicates, the reason may be, at least in part, because there's a fundamental disconnect between IP law's attempts to separate form and function (the "aesthetic" and the "utilitarian") and the reality of professional design standards and designers' goals. IP law may have its own goals, but those goals do not align with design or design practice, which is nonetheless squarely regulated by IP law.

II. Three Dimensions of Design

Our methodology for this Article, described in detail in Appendix A, consists primarily of long-form interviews of designers, with our sample being stratified over relevant variations within the design field.[102] A qualitative empirical interview

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[101] *See* Christian Louboutin S.A. v. Yves Saint Laurent Am. Holdings, Inc., 696 F.3d 206, 221–26 (2d Cir. 2012) (bending over backwards to avoid applying aesthetic functionality); Bd. of Supervisors for La. State U. Agric. & Mech. Coll. v. Smack Apparel Co., 550 F.3d 465, 487–88 (5th Cir. 2008) (questioning whether the doctrine exists); Au-Tomotive Gold, Inc. v. Volkswagen of Am., Inc., 457 F.3d 1062, 1072–74 (9th Cir. 2006) (refusing to apply the doctrine to use of logos on keychains and license plate covers despite recognizing that "[c]onsumers sometimes buy products bearing marks such as the Nike Swoosh, the Playboy bunny ears, the Mercedes tri-point star, the Ferrari stallion, and countless sports franchise logos, for the appeal of the mark itself, without regard to whether it signifies the origin or sponsorship of the product.").

[102] *See infra* Appendix A.

method allows us to identify, categorize, and analyze the variations in and vocabularies related to design practice from working design professionals. Following this approach, we elicit from designers their attitudes and perceptions towards, and experiences with, design as a profession and practice. Appendix B lists all the interviewees, some anonymized according to research protocols.[103] Face-to-face interviews allow us to deeply probe our subjects' explanations, knowledge, and behaviors. Their responses are often independently verifiable through their public-facing work or on their websites. As Appendix A explains, interview transcripts and our qualitative analysis of them through coding, comparison, and thematic identification, form the core of our empirical methodology for the reasons we explain therein. But our data also include field notes from visits to design studios and consultancies. The richness and nuance of narrative and observational data provides a broad and solid foundation for understanding professional design practice as it is evolving in the internet age.

A. Purposive Interdisciplinarity

We learned early in our interviews that the goal and practice of interdisciplinarity pervades design work. Interviewees explained that early design practice and education was often organized around particular design disciplines, the boundaries of which have always been emergent and dynamic.[104] Over the course of the twentieth and early twenty-first centuries, however, design practice expanded and fields evolved—some were redefined, some faded and others emerged. So, for example, designers now recognize a wide range of related design fields, including packaging design, type-design, book design, information design, film and video graphics design, game design, service design, wayfinding and display design, software design, experience design (UX), user-interface design (UI), interaction design (IX), and strategic design, just to mention a few. Design schools also offer specialties in design management and design research, sustainable and regenerative design, critical race design, speculative design and design futures.[105] All of these other fields are adjacent to but connected with research and practice disciplines of mechanical, industrial, and civil engineering, art, art history, sociology,

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[103] *See infra* Appendix B.

[104] Many of our interviewees referred to traditional categories of graphic design, architecture, automotive design, and industrial design.

[105] MFA in Design for Responsible Innovation, U. OF ILL. URBANA-CHAMPAIGN SCH. OF ART & DESIGN, https://art.illinois.edu/programs-and-applying/masters-programs/mfa-design-for-responsible-innovation/ (last visited June 6, 2021). *See also* IIT INSTITUTE OF DESIGN, https://id.iit.edu/ (last visited June 6, 2021).

anthropology, and political science. And many are cross-cutting, explicitly combining areas of practice and context of use with ethics of sustainability or racial justice, for example.[106] When designers talk about striving for interdisciplinarity, they are talking about all of these things. And that is a tall order.

Designers and design firms described to us how they aim for interdisciplinarity at several levels of practice: at the level of the firm, the team, and the individual. We spoke with firm or company managers and individual designers who describe hiring to build an interdisciplinary firm with interdisciplinary capacities. This means ensuring their designers can work on interdisciplinary teams – work across disciplines and with variety of field-experts. It also means that each individual has the capacity to develop their own practice, learn new skills, and expand their range of expertise. Designers' theory of interdisciplinarity's benefits -- of more creative and innovative problem-solving and systemic inclusivity -- structures the design firm, design teams, and the individual designers' skills. And as mentioned above, this systemic interdisciplinarity frustrates categorical boundaries that IP law insists upon to promote its policies.

1) Interdisciplinary Industry Structure

Each of the designers we interviewed had slightly different ways of describing how their firm or company was structured to achieve the desired interdisciplinarity. But all of them described the ways those entities drew on the value of discrete disciplines and on their intersection in one place.

Jay Newman, at a design strategy firm Jump Associates, in Redwood City, California, described his firm as combining three different conceptual approaches to design under one roof. He drew a Venn diagram of three circles that overlap in the middle, each containing a distinct strategic focus and that clients need all three.

> "Our strategy practice lives at the intersection of business strategy, how do you make money, how do you scale things, how do you like take advantage of an organization's strengths and capabilities. [Then there is] social research,

[106] "Good design learns from anthropology, … social work, … community organizing." George Aye, "It's Time to Define what "good" means in our Industry," Design Observer, Opinion, March 14, 2019. *See also* Peter Asaro, *Transforming Society by Transforming Technology: The Science and Politics of Participatory Design*, 10 ACCOUNTING MGMT & INFO. TECH. 257, 277 (2000) ("Participatory design emerges (1) to rectify political imbalances caused by technologies in workplace and to protect workers from technological change and (2) evolution of techno-rationalism which sought to increase the success and efficiency of new systems.").

> or applied anthropology, or design research, which is how do you identify what are the unmet needs of the world? What do people most care about? What are their cultural values, and what types of meanings do they give to things? And how can you use that as a source of new ideas? And then [there is] design and technology, which is how do you make things real? … And our specific unique take on that has been … the way we hybridize those things together, so we really only recruit people who have backgrounds in all three of those fields, and interests in all three of those fields, and then we develop their capabilities across all three of those fields."[107]

Populating the three fields of business strategy, social research, and design at Jump Associates are professionals with background in finance, fine art, industrial design, computer science, and architecture. Jay's characterization of interdisciplinarity builds on the melding of traditional university disciplines to form meta-categories that blend them all but claims a distinct focus to serve their diverse clients, which included government agencies, health care and management, and consumer good companies.

In New York City, Michael Rock, the founder and principal at 2 x 4 Design, characterizes his company in slightly different terms as being made up of groups with what he calls "proficiencies." He describes the proficiencies in terms of the disciplinary backgrounds of the professionals who practice them. He explains some did not start as designers, but instead as anthropologists or historians. But today all are designers in his celebrated design firm.

> "The way this usually is organized, is … into five proficiencies …. There's strategy, and those people are mostly not designers, they came out of all kinds of backgrounds. The head of strategy studied anthropology at the University of Chicago, we have one who went to Williams and then went to MOMA. They come from very different backgrounds. Then there's a group that deals mostly with digital activations, and that means how digital intersects with space, three-dimensional space, and that guy, right there, actually, went to Yale and studied history, I think, but then he became a designer after that, … and then worked for MoveOn ...There's strategy, digital activation, then there's branding, which we couple into branding all different kinds of print media...

[107] Interview with Jay Newman, Director, Jump Assocs., in Redwood City, Cal. (Feb. 26, 2020). Jay Newman described this three-circle Venn Diagram as specific to Jump Associates, but in our interviews with designers from other consultancies, we heard similar organizational explanations.

> And that would basically be books, posters, wallpaper, that's the hardcore graphic design part of it. Then there's environmental designers, so those are people who work with design in the space, so how you find your way, how do you understand the space, ... [and] Architecture is a team in itself, and those people are the people who deal with like actually three-dimensional objects in spaces that they're designing."[108]

Jay and Michael are both describing specific kinds of skills related to designing a product or an experience. "Strategy" is a word we heard a lot, which we interpreted as related to business development and market opportunity research. Both Jay and Michael name "strategy" as critical but do not claim it as the exclusive expertise of finance or businesspeople. To the contrary, at 2 x 4, the strategy designers "came out of all kinds of backgrounds" such as anthropology and a liberal arts background. The distinct idea is that business development and identifying opportunity is a holistic or at least humanistic endeavor as much as it is an economic and market-driven one. Michael's description of the five proficiencies at his firm also conceptualizes different media experiences for the consumer – digital, print, three-dimensional space, and built objects in space. One can imagine that "digital activations" includes a lot of web-designers, but notice how "that guy, right there" in the digital activation department "studied history" before he became a "designer." And digital activation designers work necessarily with those designing the three-dimensional space. The separate proficiencies are clear to Michael Rock in his firm, but their interactions and intersections are inevitable and necessary for its success.

The designers explained that interdisciplinary firm organization serves the goal of better design. It is not that with more proficiencies the firms can simply do more for clients. It's not the same as a law firm, for example, with many departments staffed by lawyers with specific specialties (e.g., intellectual property, tax, real estate), or a management consulting firm whose associates and partners each have experience in specific business areas (retail, healthcare, education). The benefit here is not compartmentalization and aggregation, but what to them were the new ways of identifying and approaching problems that deep interdisciplinarity and melding of proficiencies produced. We see here in this initial observation about firm structure

[108] Interview with Michael Rock, Partner and Creative Director, 2x4, in N.Y.C., N.Y. (May 15, 2019).

and interdisciplinary ideals the resistance to separation between form and function and the embrace of design as characteristically holistic.[109]

We reached this conclusion after hearing designers' answers to our question about what distinguishes the interdisciplinarity they seek in their firms from the diversity of experience evident in large law firms and management consulting practices. They describe the interdisciplinarity of design practice – which is constitutive of the firm as well as the teams and individuals – as broadening the impact of their designs in terms of the products or experiences they helped design and the clients they served. It produces a new way of identifying and solving problems and actuates their clients in ways previously unappreciated. This sounds idealistic, we realize, but designers are both idealistic and pragmatic. Here are two examples of the transformative change that interdisciplinary design practice can affect, one deeply pragmatic, the other more idealistic. The first is from a manager at IDEO, a global design firm whose proud history is as one of the premier and original design consultancies, founded in 1979 in Palo Alto as a purported originator of human-centered, interdisciplinary approach to design.[110]

> "There's a deliberate sort of shifting of realizing that as we can incorporate different types of people and different disciplines, we can tackle different types of problems, so originally we're hired to design the thing, you know, the product, and we team up to be able to do that, and that's a subset of … engineer, designer, electrical engineer, a software engineer. But as we start to realize that we can actually have a bigger impact if we can also think about the brand, we can also think about the packaging, we can also think about the website and the communications and the app and all the other things that surround the experience, then we can design a more holistic experience and therefore have a broader impact, right? So that's how we went from sort of designing things to designing experiences, right? Holistic experiences.

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[109] This insight was made in management literature at the turn of the century when design consultancies first started experiencing exponential growth. Bill Nixon, *Evaluating Design Performance*, 17 INT'L J. TECH. MGMT. 814, 814 (1999) ("The span of design over a product's life cycle, encompassing form (appearance), function (performance) and fit (ergonomics) is just one reason why the design function may be located in R&D, manufacturing or marketing: this diffusion of the design activity increases the difficulty of evaluation.") *Id.* at 818 ("Design is a multi-dimensional activity that interacts in different ways with customers, technology, research, finance, marketing, distribution and logistics as well as information technology.")

[110] *IDEO at a Glance*, IDEO (June 25, 2021, 8:43:58 AM), https://www.ideo.com/about/ideo-at-a-glance.

> Because, then, the next part of it was are the organizations that we're working with capable of sustaining, maybe going into a new, completely new business, or a new way of working? … [T]he outcome of our work could be a new product or service, but it could also be sort of launching a completely new business that the organization is not necessarily capable of doing as they exist today. And that prompted the work that we're doing around organizational design, which is how do we help organizations build the capabilities for innovation, or to be able to work in different ways, or to be able to launch new businesses."[111]

This manager's description is pragmatic but also evolutionary, understanding that serving the whole client can vastly expand its opportunities and capacities. It echoes the "science of design" philosophy of Herbert Simon but adapted to a more self-consciously human-centered design practice, teaching "designing without final goals because, in the dynamic social realm, changing situations over time create new goals."[112] IDEO doesn't have headquarters, eschewing the idea of hubs and centers. It is a global design firm with over 600 designers who are described on the main website as "co-creators" with clients and as "teachers" helping diverse clients "cultivate the confidence they need to step into the future with optimism and creativity."[113] For this IDEO executive, interdisciplinary firm structure goes as far as to empower clients as de-facto members of the design team.[114]

We didn't need to confirm the idealism of Jump Associates by checking a website. Jay Newman was explicitly idealistic when describing the goal of his firm and the reason for its interdisciplinary structure.

> "The question we're constantly asking ourselves and hoping to get our clients to ask themselves of, is, it starts from that question of 'Who are you at your core?' Right? What is your bigger purpose in life, or the reason that your organization should exist, what's your big why? And that is all about an understanding of centuries-long things that you derive meaning from, things that will go beyond you in life, as well as, you know, your own articulation of what matters most and how you want to be, values, right? We tend to define values as basically how do we want to act and make decisions when we're together, what are the things that we're gonna prize? And so our team here

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[111] Interview with "Allen," IDEO, in Cambridge, Mass. (Apr. 11, 2019).
[112] Huppatz, *infra* note 150, at 39.
[113] *Supra* note 110.
[114] As will be clear from the analysis that follows, human-centered design and participatory design, is a movement within design that is not only affecting firm structure but design practice more generally.

> has a very strong center magnetic force around purpose, and the way we define our purpose is to transform lives through learning and growth, … and all of those words are critical, right, like, 'transform,' which is the ability to change, and we mean to transform organizations, but we also mean like our own individual lives, and the people we affect to create change. 'Lives' is like individuals, very personal, right?[115] And 'learning and growth,' learning is new ideas, and growth is individual personal development."[116]

This is weighty utopian thinking on Jay's part. But he was earnest, stabbing his finger on the table and looking at us with intensity. He really wants Jump Associates to accomplish these goals as a firm and for its employees and clients. Like IDEO, the idea is to think and act holistically – through but beyond specific proficiencies and expertise – to affect positive change for clients and the communities the clients serve and to make clients into self-actuating problem-solvers alongside the design professionals.[117]

2) Team Interdisciplinarity

The result of this industry structure, according to the designers we interviewed, is that teams of designers are more intentionally collaborative than one might imagine of creators and innovators within a traditional IP framework populated by authors and inventors. The lack of siloing within firms that might

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[115] This resonates with George Aye's assessment when he writes that "good design makes space for those without formal training to shape and control the project itself." Aye, "It's Time to Define What 'Good' Means in our Industry," supra note 106.

[116] Interview with Jay Newman, Director, Jump Assocs., in Redwood City, Cal. (Feb. 26, 2020).

[117] There is, of course, a lot of anti-social design, including design that promotes addiction or erodes privacy. *See, e.g.*, NATASHA DOW SCHÜLL, ADDICTION BY DESIGN: MACHINE GAMBLING IN LAS VEGAS (2012); WOODROW HARTZOG, PRIVACY'S BLUEPRINT: THE BATTLE TO CONTROL THE DESIGN OF NEW TECHNOLOGIES (2018). The fact that there is a "dark side" to design work does not change the fact that professionals in interviews and the theoretical literature consistently explain ideals for their practice. *See supra* notes 47 and 109; *see also infra* Part II.C. Unlike the medical and legal professions, which have ethical codes (and individualized deviations from them that may be sanctioned by licensing institutions), the design profession appears to be developing an ethics that incorporates similar ideals (e.g., of "do no harm" or "duty of candor") but has yet to establish a professional organization accrediting designers and excluding those that fail to meet ethical standards. The emergence of a professional ethics is a hypothesis we describe in our conclusion as ripe for further study.

otherwise lead to deep and specific expertise among professionals means that teams confront and solve problems iteratively, regularly adjusting constraints and inputs according to the diverse inputs from the team members. Although designers have to start with someone and somewhere, their iterative and collaborative teamwork means that "design never starts from scratch … ideas never come from thin air, they never come from the God trick, and no one ever is the sole conjurer of something. This point is crucial and one reason … [to see] possibility in design – it is an antidote to hubris, certainty, origins and radical departures."[118] This framing is a radical departure from IP doctrine's conception of authors and inventors and the kinds of work they perform.[119]

Denise Burchell, a California-based designer since before the dot.com boom in the late 1990s, worked first in web design from a background in sculpture and sociology, and then worked in a consultancy, Frog, which was an early-innovator, like IDEO, in design firms. She describes the benefit of working in teams of designers at this early stage of her career as changing the way she "live[s] and breathe[s] … design."

> "All the rage [at Frog] at the time was this notion of a multidisciplinary team. So, I got exposure for the first time to industrial designers, mechanical engineers, digital designers, coders. Like that was the area I was comfortable in [coding], and I could bring some knowledge to, but there were people who had been working in design agencies for, you know, decades ahead of me. So I wanted to learn from them, you know, what does it look like to live and breathe and critique design for the sake of being a better designer."[120]

Working alongside diverse designers on the same project generates an iterative and creative process of ideation and critique. The point of working together and not just in the same company is to share and develop each other's contributions as the project works through in multiple possible manifestations. This exposes designers with expertise in one field to constraints and contributions from other design fields. The

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[118] Julian Bleekcer, *Five Advantages of The Concept of 'Design*,' THE NEAR FUTURE LABORATORY (May 13, 2010), https://blog.nearfuturelaboratory.com/2010/05/13/five-advantages-of-the-concept-of-design/.

[119] Although it is by no means a radical departure from how authors or inventors in fact work. See SILBEY, EUREKA MYTH, supra note 26.

[120] Interview with Denise Burchell, Designer, Salesforce, in S.F., Cal. (Feb. 26, 2020).

notion of the team means all contributions are considered in conjunction with each other on a lateral and not hierarchical field.

George Aye, a senior designer based in Chicago with significant experience at both IDEO and in-house, and who now runs his own firm, describes the teams as "tightly linked." This makes each designer with special expertise better not only within their own specific design field but in general. He provided an example of this interdisciplinary team function in terms of manufacturing processes.

> "Industrial design is mostly concerned with … the creation of ideas that can be physically manufactured. So that often meant that the material choice had a huge impact on whether or not you could design it, or should design it. So if you knew that this thing can only be made of a cheaper plastic that has to be made at ten cents apiece, [and] this is a thousand-dollar object, and you're only gonna make a hundred of them, you have a completely different strategy on whether you're gonna make it by hand, or mass produce them in the millions or billions. Right? So what I found to my amazement was just how tightly linked the industrial designers were at the studio at IDEO … and how closely linked they had to work with an engineering team. So your ability to be a designer, that basically became like a junior engineer, made you a better designer …. That kind of like nudge into the next field over, like one step down the line, I thought was really inspiring."[121]

George is explaining that closely linking designers in teams enabled each team to creatively and efficiently confront the particular design challenges of each project. In this example, he describes how design projects need to address constraints of material and cost, for example. There are, of course, many other constraints he doesn't explicitly mention here, such as usability, aesthetics, manufacturability, and marketability. The designers we interviewed explained that confronting the challenges of constraints is both a professional calling and mark of excellence. Identifying the particular constraints was part of the "problem finding" process. Interdisciplinary teams are better at both identifying problems and overcoming them because many constraints arise from the siloing of expertise (engineering, finance, graphic design). Combining that expertise in a single team that works synchronously to design an outcome may raise the complexity of the problem to address but may also revolutionize the nature of the solution. At least that is what designers explain.

[121] Zoom Interview with George Aye, Co-Founder, Greater Good Studio, in Chi., Ill. (June 12, 2020).

For example, Michael Kahwaji, a manager and senior designer at Whirlpool, described this feature of interdisciplinary teams – addressing constraints – as engaging in translation and conflict management. Kahwaji has been at Whirlpool for fifteen years. The company's design departments formally include industrial design, graphic art, user experience, color-finish-material, engineer, consumer insights, and production graphics. But at what Michael calls a "day-one event,"[122] these professionals create working teams across these departments to overcome the focus and constraints of each. He leads the kitchen team designing stoves, ovens, refrigerators, and dishwashers. His team consists of one of each of these kinds of designers from the different departments. They don't necessarily all report to him – e.g., the graphic designers have direct reports in the graphic design department – but each team has a member from each of these departments. The point of "co-locating" as he called working together is to "translate" each other's job functions and problems for the other members of the team.[123] As Michael gave us a tour of the office, he described co-locating as a game-changer, in part because they had not achieved the transformative effect of synchronous collaboration before. He says the "studio engineers … [are] just like engineers, but they have a design sensitivity, and so they understand how to interpret what we want, and understand more the manufacturing challenges, and they work closer and better with our engineers to say, they're looking at optimization and cost-cutting."[124] Walking around the Whirlpool offices we could see these different team members sitting in adjacent cubicles and sharing models, looking at each other's screens, and passing samples back and forth. Michael confirmed that this was part of the design process.

> "We always have dialogue … Every kind of conflict we have, we want to unpack it with a conversation. And so some specific examples would be Usability and Industrial Design. Usability's primary goal is to ensure that the consumer has the best possible experience and success rate in executing and action. From Industrial Design, we want the same thing, but it needs to look good and feel good and satisfy the brand aesthetic needs as well. And we also have a direct connection with the consumer. Like we believe we understand usability very well. So some things that Usability might deem severe as a

[122] Interview with Michael Kahwaji, Senior Design Manager, Whirlpool, Benton Harbor, Mich. (Aug. 7, 2019).
[123] *Id.* "So my team that consists of industrial designers only, that have a direct report to me, I have dotted lines of Graphic Design, UX, Consumer Research, those all sit, some of them co-locate with my team. Our Studio Engineering, this helps us translate our ideas."
[124] *Id.*

problem, Industrial Design might say, 'It's not that big of a deal, because the frequency of that use is once every two months.' So if there's a pain point for ten seconds on something you're gonna use four times a year, and you're gonna compromise something that they're gonna see every time they open the door, then we're gonna have a discussion about this. And then that either gets resolved through good, healthy dialogue, or it gets escalated to a manager."[125]

Michael's description about how interdisciplinary teams work to address constraints through regular translation of expertise and dialogue to iterate the product or service was echoed in many interviews. This is a result, in fact, of an evolution in the industry when designers were in fact more siloed and trained for particular skills but had to adapt to new problems clients were facing. Ann Marie Conrado, a designer and professor of design at Notre Dame University, explained this evolution of interdisciplinary skill-building and interdisciplinary team development as way to craft new tools for cutting edge problems.

"Graphic designers make two-dimensional things, and that's their skill, in laying stuff out on the page, and putting it in a compelling visual, whereas product designers are 3D, and we make objects, right? So at the start of my career and for a long time into it, I was an object maker, you know. And I'm doing that for companies. And what I think has really blurred is … the problems nowadays that we face are too complex to kind of fall into those simple buckets. And the problem with those buckets tends to be that you become a carpenter solving everything with a hammer, because that's your tool. And sometimes a problem doesn't need a hammer, it needs something entirely different, and so I think we've become more sophisticated in allowing the problems and the needs to sort of initiate the best pathways to solve them, and so a designer now has to be able to recognize sometimes when they're not best equipped to solve a problem for their traditional background, right? So like I said, I'm an object maker, but maybe the outcome needs a campaign. Well, then I'll work with a graphic design firm, and say, "We don't need a product here, I need to work with you to help me develop this website," or whatever."[126]

Interdisciplinary teams can approach problems holistically and iteratively, addressing the various constraints as they arise rather than after the fact if produced

[125] *Id.*

[126] Interview with Ann Marie Conrado, Professor of Industrial Design, Univ. of Notre Dame, in South Bend, Ind., (Aug. 7, 2019).

sequentially from department to department. Working on these teams enables designers to identify the limitations of their own expertise and appreciate the skills their designer-colleagues bring to the project.[127] This produces nimble, adaptable, open-minded teams and individual members with appreciation for and expectation of an enormous range of problems that design practice can address.[128]

The purposive interdisciplinarity our designers describe contrasts sharply with patent law's idea of inventors working within a particular field, which circumscribes the obviousness evaluation.[129] The contrast with the structure of design patent law's obviousness doctrine is especially clear. Under prevailing Federal Circuit law, a court considering obviousness must first identify "a single reference, 'a something in existence, the design characteristics of which are basically the same as the claimed design.'"[130] Only if there is such a primary reference can the court consider whether secondary references are "so related [to the primary reference] that the appearance

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[127] The automotive designers we interviewed described this problem in the reverse. As a legacy design industry and still one of the most elite and isolated from the rest of design practice, the automotive designers told us that some of the major challenges they faced at places like BMW and Ford was getting certain departments within engineering to work together in a collaborative and not antagonistic fashion. According to Richard Gresens, "… there's always this battle, no matter what design field you're in, whether you're in product, graphic, car, industrial, you know, engineers and designers, right, it's always kind of this. And it isn't because they don't like each other. It's just that the engineers are thinking, you know, 'I've got to build it for this and it's got to do this.' The designer's saying, 'I want it to look this good. That means it may cost a little bit more to build what I want, because of what I'm trying to do.' So there is that inherent battle. Where the two groups come together and they work seamlessly, that's where you have the most success." Zoom Interview with Richard Gresens, Designer, in St. Joseph, Mich. (June 25, 2020).

[128] Bruno Latour, A Cautious Prometheus, *supra* note 28 at 2 ("Design has been extended from the details of daily objects to cities, landscapes, nations, culturs, bodies, genes, and … to nature itself. … The range of things that can be designed is far wider now than a limited list of ordinary or even luxury goods."). *See also supra* note 109.

> "[What a designer was] It was much more fixed when I started my career, so I've been twenty-six years in design, and so the labels and the boundaries of what design is was pretty traditional…. And it's really changed, what a designer is, the product, the end products of what their work is. The kinds of problems, and the nature of those problems that they solve has dramatically changed. And so it's opened up a much bigger umbrella…"

[129] *See supra* at XX.

[130] Durling v. Spectrum Furniture Co., 101 F.3d 100, 103 (Fed. Cir. 1996) (quoting In re Rosen, 673 F.2d 388, 391 (C.C.P.A. 1982).

of certain ornamental features in one would suggest the application of those features to the other."[131] That approach conceives of designers as mere tweakers of existing designs—people who would regard a design as obvious only when it makes trivial changes to an already-existing design that responds to exactly the same need. Our designers would not recognize that process.

By embracing interdisciplinary in firm and team structure, designers no longer solve particular kinds of problems – which by contrast is how IP defines the various categories of creators and innovators in order to channel to the individual regimes – designers are problem solvers. This way of conceptualizing what design is, how design practice proceeds, and the value or benefit it produces presents profound challenges for IP law. IP is a set of legal regimes that largely focus on identifying originators (authors, inventors) in order to establish ownership or control of a tangible product, which evaluation is made through the framework of the originators' field-specific process and contribution. These legal concepts do not translate to interdisciplinary design practice defined by dissolving boundaries, eschewing originality or novelty, and embracing hybridity of process and output.

3) Individual Hybridity

One might think that designers form teams and the teams define the firm, but as the data so far demonstrates, it is the reverse. The firm conceptualizes itself into a particular form in order to address what it considers to be cutting-edge design problems, and that form involves teams that are constituted and function in a specific way. The structure shapes the people, not the other way around. This appears to be true even for new designers, solo designers, and in-house designers because their education and professionalization has been framed through the same philosophy and practice of interdisciplinarity. The end result are designers who may have particular expertise but are importantly "hybrid" or "generalists."

A young designer, still in the early stages of her career, described how when she first started working at Yahoo! as a contract employee, her expertise was in user-experience and web design. But "because the designers at Yahoo were expected to be a little bit more of a hybrid, be able to do a lot of this architecture work as well as like actual visual design" she started getting "a lot more exposure to visual design."[132] Another young designer, Alissa Rantanen, at the time of the interview worked for Insight, a company that designs medical devices and services health care companies.

[131] Id.
[132] Zoom Interview with "Jennifer", Designer, Facebook, in Mountain View, Cal. (Oct. 28, 2020).

She explained how she not only works as an industrial designer but "I do UI-UX. I do graphic design. I do research. I do the design strategy. I do all of that, which is really great. It makes me a generalist."[133]

This "hybrid" or "generalist" design professional was the goal of design education and practice, as it turned out. The more senior designers with decades working in design firms and companies described the intentional development of the design professional as producing a "t-shaped" person.

> "IDEO's always looked for T-shaped people, meaning … if you imagine the letter T, the vertical of the T is having a depth in a particular area. 'I'm deep in graphic design,' 'I'm deep in mechanical engineering,' 'I'm deep in industrial design,' deep in interaction design, deep in org design, deep in business design, like it goes on and on, right? …[A]nd then the horizontal part is the breadth, and that's sort of your ability to engage with different types of challenges, be able to dabble in different areas, you know, you have people who are, you know, I'm a really good industrial designer, but I can also like make video, and I can also do animations, and I can also make in the shop, … my T came from the technical, but over time I built up other skills. And that comes from just years of working with other really talented designers and you pick up skills, you try things, you have lots of opportunities to do something different than your core discipline, because the work demands that we stretch in different ways. It's never the engineer does the engineering, the designer does the design, but it's always a team."[134]

This senior designer at IDEO explains that the "t-shape" designer has depth of experience in a particular design field but also develops breadth across design fields by their working with other designers on teams. As previously described, the work on the team is not delegated by expertise, but coordinated and integrated among team members so, as this designer says "you have lots of opportunities to do something different."

Sharing of responsibilities despite specific expertise changes and reshapes the individual designer. Lee Moreau is a senior designer with decades of experience across design fields. His specialty is in architecture. He explains this reshaping of individual designers through the work process not only in terms of skillsets and

[133] Interview with Alissa Rantanen, Design Manager, Insight Product Development, in Chi., Ill. (Feb. 5, 2018).
[134] Interview with "Allen," IDEO, in Cambridge, Mass. (Apr. 11, 2019).

applications of skills to problems but in terms of the effectivity of communication both internally within the team and externally to clients:

> "I think to be good at this job, you have to be a generalist in some sense. So, you know the T-shape person … concept, that's true, which means you need to have a strength in one thing, right? Something you're good at. For me it's space and architecture, but you need to be broadly conversant about lots of other things, and that allows you … when you put a team together and you put one engineer on it, that engineer has to not just be kind of badass at what they do, they also have to communicate the value of their capability to people in the internal team, but also to the clients, and that is hard. Not every engineer, as you can imagine, can do that."[135]

By being "hybrid" and "t-shaped" the designer can dissect and reconnect pieces of the problem with ease, facilitating synergies among the disciplines in ways that professionals without the cross-disciplinary nimbleness cannot. Instead of the depth of expertise designating the designer as the person who does X, that expertise becomes the basis of making connections and developing new abilities, stretching the range of problems to be solved and the methods by which to solve them. Indeed, the evolution of what it means to be an "expert" within design practice led to the rise of user-centered and participatory design a central tenet of which is that users and consumers should be understood to have critical knowledge to impart and be experts on their own experiences.[136]

We conducted interview after interview seeking to discern the definition of a "designer" and what makes a designer a designer. We thought it would come down to educational origins and specific skills in particular disciplines. We thought it could

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[135] Interview with Lee Moreau, Continuum (formerly), in Bos., Mass. (Apr. 10, 2019).

[136] Peter Asaro, *Transforming Society by Transforming Technology: The Science and Politics of Participatory Design*, *supra* note 106, at 270 ("As a worker in one project remarked to the researchers: 'But you don't always listen to us – you do what you think is right for us and the project And, you are the expert; so who are we to dispute your decisions?' … The common response to this problem was to send experts 'into the field.' Rather than trying to rely exclusively upo special interviews or meetings to learn about users' work practices … researchers utilized 'action research' methods whereby they spent a great deal of time observing and interacting with workers in their workplace. The reported consequences of this were an enhanced appreciation on the part of both workers and experts for workers' knowledge, and an increased understanding by workers of technology and its influence on their work practices.").

also be about the kinds of clients or problems designers confront. But it turns out that the hybrid orientation and generalist skill development focused on solving multidimensional problems and the interdisciplinary structure and approach, whether solo, in-house, or in a consultancy, are what designers describe as defining "design work." Being a designer is about following a method and a process to approach problems they identify or that clients ask them to solve, clients who might also rely on lawyers and management consultants to arrange their business affairs but who do so with different goals and using different tools. Even when working in new areas previously "undesigned" – such as data science and artificial intelligence – designers describe the process in familiar terms. An IDEO manager explained:

> "We call it 'Design for Augmented Intelligence.' And it's about augmenting human capabilities … it's an example of a new discipline that we brought into IDEO … and we've also needed to figure out sort of how to build that into our process … it's weird because it's the one group that like, a 'data designer' is a very much a misnomer, and therefore we call them data scientists, because that's what people call them out in the world, but, yes, by the same rationale that business designer is a designer, a data scientist is a designer, they're just designing with different tools."[137]

No matter the designer's particular focus – housewares, visual graphics, three-dimensional space, information architecture, web design, business strategy, brand development, or data, to name only a few – designers consider their identity as grounded in an interdisciplinary, human-centered practice. Contrary to IP law's conceptual and categorical framework, designers are not merely form-givers or inventors, even though they take any subject and approach its possible transformation or reconfiguration in ways that are entirely new, usable, and attractive. They don't define themselves by the tangible output they produce, which may or may not be valued or protected as property, the way authors and inventors do. It is the interdisciplinary process that defines the designer's contribution. It is to this feature of process over product we now turn.

B. Process over Product

Designers talk about the work they do in terms of the problems they solve. But the idea of "problem solving" for designers is both complex and subtle. The nature and definition of a "problem" is very broad, going far beyond the technical, mechanical, useful, or even aesthetic problems that are the focus of IP's individual

[137] Interview with "Allen," IDEO, in Cambridge, Mass. (Apr. 11, 2019).

regimes. Problem definition is interactive and transformative, so that designers often describe themselves as both "problem finders" and "problem solvers" (and, indeed, rarely distinguish between the two). Further, the practice of "problem finding" or "problem solving" focuses on human behaviors and experiences, and as the previous section described, is practiced in teams through discourse, experimentation, and iteration. As a result, designers produce new insights about how to restructure everyday activities—whether it be sweeping a floor, finding one's way through an airport, or promoting a particular college curriculum. And those insights help them to identify new "problems" whose solution adds value to their client's business.

The end result is not necessarily a new object—although sometimes it is—but a new or improved experience whose value is assessed in terms of a combination of features or characteristics that IP law's individual regimes do not recognize or instead hierarchize and attempt to keep separate. IP law prioritizes the functional or technological over the aesthetic or expressive for stronger but shorter protection. And IP law promotes accumulation at the expense of quality, whereas designers resist the idea of making "more stuff"[138] and celebrate qualitative excellence. Designers' practice does not focus on making things but instead on certain processes that may produce things, spaces, or experiences. And their professional discipline defines metrics and values – such as whether the design addresses real human needs – for evaluating that which is designed.[139] We will have something to say later about whether these are really "needs" as opposed to "desires," but to designers they are all of a piece. And that is critical for design's interaction with IP law, which brutally insists on distinctions between utility and the aesthetic. Designers radically oppose the idea of separability and celebrate optimized integration and coherence. Furthermore, the expression of values and identification of needs as central to design work means that designers have explicitly normative goals for their work, which as the last section below describes, distinguishes between "good design" and "bad

[138] Barton Beebe, Bleistein, *The Problem of Aesthetic Progress, and the Making of American Copyright Law*, 117 COLUM. L. REV. 319 (2017) (describing copyright law's twentieth-century accumulationist orientation to aesthetic progress). *See also* Jessica Silbey, *Against Progress: Interventions About Equality in Supreme Court Cases About Copyright Law*, 19 CHI.-KENT J. INTELL. PROP. 280, 281 (2020) (arguing that the twentieth-century IP evolution followed a "progress is more" paradigm, "more copyrighted works, more patents and more trademarks" and citing the literature on expanding scope of IP subject matter over the same period).
[139] *See infra* Part II.C(3).

design."[140] Designers' normativity about design stands in stark contrast to the value neutrality upon which IP doctrine insists.[141]

1) Problem Solving and Problem Finding

In almost every interview, we heard designers say where they started with a client or a project was the beginning of a journey whose end was unknown. The iterative, generative, and dialogic process of designing meant that the path was going to be unpredictable and stochastic. A client might come with a problem of a company's revenue loss, the desire to rebrand their services, or a designer might seek to redesign a product. But designers regularly described their practice of designing as starting with redefining the problem into something more abstract producing more opportunity, as Lee Moreau said, into something "just scary enough."[142]

Denise Burchell, a designer currently at Salesforce, described the beginning of a new project in terms of an "IDEO chestnut" – an object lesson in a pithy story. "Somebody comes to you and they say, 'We want you to design us a toaster,' and the response is, 'We think you're actually trying to warm bread. Is that true? Right? Because that opens it up." Other designers both younger and seasoned explained this opening-up in varied ways. An IDEO manager called it "tuning the problem statement" by helping clients "see the opportunity broader than maybe they have."[143]

Specific examples throughout the interviews illuminated the diversity of objects this strategy serviced. A brand and design professional at OXO said the company's "true magic … is when we solve problems people don't realize are problems until we solve them."[144] She was talking about many of OXO's products but called out its measuring cup in particular with measurement indicators visible from above

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[140] *Id.*

[141] In fact, design theory and research advocates for the idea of technology as not neutral. Peter Asaro, *Transforming Society by Transforming Technology: The Science and Politics of Participatory Design*, supra note 106. This isn't a new idea but expanding into multiple fields and disciplines. *See* Langdon Winner, *Do Artifacts Have Politics?,* 109 DAEDALUS 121 (1980); *see also* LANDGON WINNER, WHALE AND THE REACTOR: A SEARCH FOR LIMITS IN AN AGE OF HIGH TECHNOLOGY 19-29 (1986),

[142] Interview with Lee Moreau, Continuum (formerly), in Bos., Mass. (Apr. 10, 2019).

[143] Interview with Denise Burchell, Designer, Salesforce, in S.F., Cal. (Feb. 26, 2020).

[144] Interview with "Kate", Marketing and Design Professional, OXO, in N.Y.C, N.Y. (Dec. 11, 2018).

rather than the side, obviating the need to tilt one's head when pouring and measuring. Alissa Rantanen, a young designer at a medical device company, explained the process of opening up of the "problem" to reveal new opportunities in the context of medical devices in the following way.

> "Out of research we have opportunities that are not prescriptive, they don't say 'You should do this solution.' They're much more open-ended, of 'The opportunity is better traceability.' And then the design staff takes a look at that says, 'Ok. How do we improve traceability? Well, we can look at grocery stores and see how they do that. We can look at how other people handle inventory management.' We can leverage all this, come up with a bunch of ideas … bounce ideas off of each other with the client, and then ultimately filter out what doesn't align with the client's capabilities or vision."[145]

Critical to the design "problem finding" process is going outside the particular field (here medical devices) and locating what is perceived to be analogous systems or solutions in unrelated places, such as in grocery stores or factories. This broad search for problems and their solutions expands the scope of design practice and expertise and resists compartmentalization and hierarchy.

Mike Smith, a designer at Jump Associates in Redwood City, explained the difference between the narrow "solution" of a back-button on a phone and the broader "problem question" of how "to give people an easy way to go back to the last place they were."[146] He explained "good designers … are … experts at building design principles from strategy and things that we are seeing in the world."[147] In each of the above examples, the thing being produced – a cell phone, a medical device, a kitchen utensil – is not the end in itself. Instead, the value of the design practice and strategy is to identify more fundamental needs or experiences and magnify them through the object's form or use in a particular context.

The interdisciplinarity of teams and open field of information and experience for solving design problems contributes to the generativity and diversity of problems, processes for approaching them, and solutions. Michael Kahwaji, at Whirlpool, was one of many to put this problem-solving nature of design practice in historical context.

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[145] Interview with Alissa Rantanen, Design Manager, Insight Product Development, in Chi., Ill. (Feb. 5, 2018).
[146] Interview with Mike Smith, Designer, Jump Assocs., in Redwood City, Cal. (Feb. 26, 2020).
[147] *Id.*

> "There's been a shift … from designers thinking of themselves as form-givers to thinking of themselves as problem-solvers, multidisciplinary. [My friend at] Google, for example, she … went from a director to a lead in UX, but she's formerly an industrial designer. … She doesn't do UX work. So this is where I think the future is … you just wear many hats. It doesn't matter what your title is, you just solve the situation. ... the topic at hand, because designers are capable of wearing many hats."[148]

The fluidity of design "fields" was apparent in almost all of our interviews. Being a "problem solver" means looking for opportunities and unmet needs by looking beyond the particular object and its formal or experiential history. As a designer at Smart Design in New York said, designers "learn[] what we need to learn to design the best products," and that means not being confined to specific categories or contexts.

Design problems and their solutions are inevitably broad. As Bruno Latour writes, "design has been extended from the details of daily objects to cities, landscapes, nations, cultures, bodies, genes, and … to nature itself."[149] They are not solely or strictly technical, mechanical, useful or even aesthetic.[150] Felicia Ferrone, who originally studied architecture but currently has her own studio in Chicago designing glassware and housewares, describes her process as having all of those dimensions.

> "My stuff kinda pushes the boundary a lot of times of material production, so for example the people who make my glassware don't make glassware like my glassware. They do either scientific stuff, or the sort of decorative butterflies … you need to find a person who's the true craftsman, who's up for the challenge. … for me, to carry a piece forward, there has to be something really innovative about it, otherwise why do it? … there has to be something truly … pushing the boundary of our expectations of what a stem is, what a wineglass is, how tall a wineglass should be, or, you know, whatever it is,

[148] Interview with Michael Kahwaji, Senior Design Manager, Whirlpool, Benton Harbor, Mich. (Aug. 7, 2019).
[149] Latour, *supra* note 28, at 2.
[150] *Id. See also* DJ Huppatz, *Revisiting Herbert Simon's 'Science of Design',* 31-2 DESIGN ISSUES, 29-40 (Spring 2015) (explaining how the design methods movement defines design as problem solving, process-oriented activity rather than the production of physical artefacts).

there needs to be something that's really kind of adding to the discourse and history timeline."[151]

In this quote, Felicia describes using the craft of delicate glasswork for new forms for useful glassware, which she creates by questioning proportions (tall glasses) and combining them with certain necessary features (stems). What are wine glasses for, she is asking, and can that question open up opportunities for what they look like? Felicia's intriguing mention of "discourse and history timeline" indicates she approaches this question of what glasses are for by situating her own glassware in a continuum of designed objects drawing significance both for their place in that history and their distinction from it. Her glasses say something about the past, by referring to older designs and being manufactured with classic materials but with new shapes and uses. She explains this further in the story of the origin of her best-selling collection.

"The Revolution Collection certainly came from a very architectural standpoint, where it was at the end of a dinner, you know, especially in Italy, where I was at the time, there are three million different types of glasses on the table. Wines and waters and liqueurs and grappas and, whatever, afterwards, and so for me it was just like total visual chaos. And so I was like, 'Oh, how could we kind of clean this up?' And architects are obsessed, or used to be obsessed with datums, everything aligning, so that collection is this repeating proportion that you can find throughout, so there's this consistent datum across the table at the end of the meal."[152]

Felicia's Revolution Collection has fluted columns on all the glassware, some with very short stems and some with no stem at all, some that hold a lot of liquid, some that hold less. The problem she solved was not to make something attractive, or sturdy, or never seen before in glassware. She sought instead to resolve visual chaos at the dining table while accommodating the demands of many drinks and engaging with familiar aesthetic features in a revolutionary manner (hence the name of the collection).

In a completely different context – the milk industry – Ann Marie Conrado describes reframing the problem for her client (the dairy industry lobby) as not about "how to sell more milk" but "to look at how people are making decisions about everything they put in or on their bodies and use that to then understand how they're

[151] Interview with Felicia Ferrone, Housewares and Furniture Designer, in Chi., Ill. (Feb. 6, 2019).
[152] *Id.*

making decisions around milk."[153] This "problem finding" process reorients the problem of the dairy industry from price glut and over-production to a more abstract opportunity to serve consumers who are looking for reasons to drink milk. "It was a massive study," Ann Marie said, "because we were trying to make some pretty big overarching conclusions, right? And the beauty of it, like, as I was saying, like we don't know what we're gonna find, and that's a scary thing."[154] What Ann Marie's team found after visiting five metropolitan areas and interviewing and observing hundreds of people in their homes was that there are "core values that are most associated with food and drink" which enabled the dairy industry to redirect their products in particular forms and markets.[155] For example, one of the values was

> "adventurousness. … A group of people are driven, when they eat and drink, to explore the world. So I'm a small dairy in Wisconsin, what can I do with that? Well, maybe I could come up with milk mixes, so I could buy a gallon of white milk, and then all of a sudden put in dulce de leche, shake it up, and now I've got tasty flavored milk. … Or let's do adventurousness with delivery mechanisms. So maybe now we do home delivery and every week it's a different milk."[156]

As both of these examples demonstrate, the kind of problems designers solve are wide-ranging and defy categorization, and their problem-solving approaches are profoundly interdisciplinary. In fact, what makes these design problems and not something else (like a finance or business problem), at least according to those we interviewed, was precisely the nature of the process and not the output. Felicia makes glassware, but she is a designer because of the way she makes glassware, which includes technical form giving, aesthetic appreciation, and cultural understanding. Ann Marie "redesigned" the dairy industry without reshaping any object but she engaged complex ethnographic methods, extracted social significance from observations and interviews, and proposed structural and substantive changes to what the dairy industry sells ("adventurousness" through new access and flavor choices). It is no wonder the design field resists clear regulation by IP law; its

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[153] Interview with Ann Marie Conrado, Professor of Industrial Design, Univ. of Notre Dame, in South Bend, Ind., (Aug. 7, 2019).
[154] *Id.* This resonates with Lee Moreau's statement that the problem-finding process optimally ends in a design that is "just scary enough." Interview with Lee Moreau, Continuum (formerly), in Bos., Mass. (Apr. 10, 2019).
[155] Interview with Ann Marie Conrado, Professor of Industrial Design, Univ. of Notre Dame, in South Bend, Ind., (Aug. 7, 2019).
[156] *Id.*

processes or objects include mechanical, aesthetical, and cultural innovations, but in combinations and a chronology that defies disaggregation.

2) Human-Centered Research and Value-Based Goals

We asked designers how they are different from management consultants, or, for the designers like Felicia and Jonathan Adler who design home goods, how they are different from artists. They were insistent on their difference, which arises from the process and their goals. First, their process is human-centered and empirical. They understand problems and generate ideas for their solution from studying and understanding specific human experience.[157] Second, their goals center on certain values. Designers insist they are not *just* "making more stuff" -- although they sometimes are making more stuff! -- but are instead improving people's experiences of everyday life by filling real human needs.[158] IP law speaks only of "progress of science and the useful arts" (for copyright and patent, anyway). The moral imperative of improving human welfare is at best implicit in IP law and usually beside the point.[159]

Most designers we interviewed go to where people live and work to understand the problems better. "Design research" includes eating in restaurants with customers, visiting their homes to see how they prepare food, and walking through airports to learn how people follow directional signage. Lee Moreau explained that from this

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[157] Human-centered design is a core concept in much design practice. Tim Brown, *Design Thinking*, HARV. BUS. REV. (June 2008), https://hbr.org/2008/06/design-thinking [https://readings.design/PDF/Tim%20Brown,%20Design%20Thinking.pdf]. Recently, more attention has been paid to human-centered design as a feature of social justice work to render technological affordances more inclusive and less harmful. *See* Sasha Costanza-Chock, *Design Justice, AI, and the Escape from the Matrix of Domination*, J. OF DESIGN & SCI. (July 18, 2018), https://jods.mitpress.mit.edu/pub/costanza-chock/release/4 ("we must redesign these systems based on the lived experience of those they harm").

[158] We understand this statement as aspirational and idealistic, with the appreciation that the existence of professional ideals doesn't mean there aren't outliers or deviants. See supra note 117 regarding the "dark sides" of design.

[159] Patent utility is famously broad and limited only by the specific and practical utility doctrines. Juicy Whip, Inc. v. Orange Bang, Inc., 292 F.3d 728 (Fed. Cir. 2002). It is in fact questionable whether IP law cares about improving human welfare given its accumulationist trends without regard to sustainability or distributive justice. Jessica Silbey, Against Progress: Intellectual Property and Fundamental Values in the Internet Age (forthcoming 2022), p. XX.

process a designer discerns values to amplify and discovers new problems that need addressing. By contrast,

> "a management consultant will tell you how, they have a known answer. So they already know what the answer is. … [They] engineer a process to hit that target….When we do our work with design consulting, you don't know what the answer is. It's unknown outcome, so our learning is generative. ...[W]hen we're out doing that learning, that qualitative learning … I'm trying to generate ideas from the experience I'm having. Not evaluate between good and bad. This is not AB testing, it's not red versus blue, it's 'Hm. These are the experiences people are having. This is what people value.' … And what people care about is not what kind of food they buy at Chili's. What they care about is their long-term health. They care about the health of their children. And then you see, are they making choices, is the marketplace allowing them to make choices that supports their value system. And quite often, they don't."[160]

This qualitative learning includes in-depth interviews, at-home observation, and on-going conversations with people whose needs the designer seeks to understand and meet. Ann Marie, talking about her work with the dairy industry, explains how she and her team would "follow and shop with every single person" she studied and "with one person, we watched him smoke meat for four hours because that was his passion … [and] I wanted to see the activities around food and drink that excited them."[161] Conversations with people are

> "guided inquiries, so, 'I notice you're doing that. Tell me, why are you doing that?' And ... they'll tell me like, 'Oh, when I make these five meals, and lah-dah-dah-dah,' so we kind of pull that out, and so for us, you know, it's a fishing expedition. And I think that's another big difference. With the market research or whatever, you sort of have an end goal in mind. We went in not knowing what we would find in the least, you know, but we believe in our process, that, you know, if we go in and we're open enough, the problems, the opportunities will make themselves known."[162]

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[160] Interview with Lee Moreau, Continuum (formerly), in Bos., Mass. (Apr. 10, 2019).
[161] Interview with Ann Marie Conrado, Professor of Industrial Design, Univ. of Notre Dame, in South Bend, Ind., (Aug. 7, 2019).
[162] *Id.*

Human-centered research like this produces exponentially more opportunities and ideas for new solutions to existing problems. It is diffuse, exploratory, iterative, and derivational, building from what already exists to excavate deeply felt desires or needs and harness them. The goals of this human-centered design practice are not necessarily or only business efficiencies and profits. And the result is usually not described as merely an object to purchase. Designers describe their goals as meeting people where they are to change their behavior in ways that matter to them.

Laura Forlano describes in abstract terms how design changes behavior. She is a professor of design and teaches "design futures" among other classes at ITT Institute of Design.[163] She says that "in the history of design, … everyone goes back to original definitions, like Herb Simon, [to say] a design is taking an existing situation and putting it into a preferred situation. And some of that's aligned with cybernetics, like early notions of changing the world, or changing systems."[164] Many designers provided concrete examples of how design changes behavior, whether it encourages more toothbrushing or makes certain kitchen appliances more accessible for all kinds of bodies. Lee Moreau told us the success story of the Swiffer floor mop the along these lines.

> "What it does is it changes the behavior. It enables a behavior, which is 'I'm just gonna … tidy up a bit' [because], it actually cleans the stuff off your floor, because it has the technology in those towelettes, it's either electrostatic or a liquid technology that actually takes the dirt off the floor, so it's very effective, and you feel a sense of accomplishment. You take that dirty thing off, and you're, 'Ewww,' and you put it in the trash, and you know it works. It shows you that. So that behavior change [of more frequent and satisfying cleaning] is really what the Swiffer enables. It's just that to get that feeling you have to buy a Swiffer, and you have to do it, but the product is just enabling this feeling of accomplishment, and what we're enabling is the sense that people who value the cleanliness of their floor because they feel it's a reflection of themselves when company comes over... So that's kind of a gateway design, which, if we get that right, and people use it right, if we can change their behavior."[165]

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[163] Biography of Laura Forlano, IIT INSTITUTE OF DESIGN, https://id.iit.edu/people/laura-forlano/ (last visited June 25, 2021).
[164] Interview with Laura Forlano, Associate Professor of Design, Inst. of Design at the Ill. Inst. of Tech., in Chi., Ill. (Nov. 14, 2019).
[165] Interview with Lee Moreau, Continuum (formerly), in Bos., Mass. (Apr. 10, 2019).

The Swiffer acts on the consumer to not only accomplish everyday tasks (clean the floor) but enable new behavior (clean it more regularly) and that feels good (because it is so satisfying and easy). To experience the satisfaction of this kind of "Swiffer" clean, a person has to buy a Swiffer. It's not as if commercial objects aren't relevant. But there are features of the objects other than the thing itself that design elevates as central to the practice of design work.[166] It solves a real human need (to have a clean floor) and does so in a delightful way bringing joy to the activity. The design of the Swiffer is not necessarily to be appreciated for its look or some technological achievement. It's appreciated for the effects it has on human behavior, which are emotional and relational, which, needless to say, cannot be the object of IP law's exclusivity. These descriptions of "delight" and "joy" refer to the feeling the object promotes in its use, which is why the object is valued, but not traits or features that define its legal valuation.[167]

Repeatedly we heard exclamations of delight and joy as a marker of design success. Richard Gresens, an automotive designer for most of his career, described the kinds of problems he's solving as a designer explicitly in these emotional and experiential terms in addition to formal and mechanical constraints.

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[166] Latour, *supra* note 28, at 2 (describing the reductive and binary way of thinking about designed objects "as if there were really two very different ways of grasping an object: one through its intrinsic materiality, the other through its more aesthetic or 'symbolic' aspects …[T]he typically modernist divide between materiality on the one hand and design on the other is slowly being dissolved away. The more objects are turned into things – that is, the more matters of facts are turned into matters of concern – the more they are rendered into objects of design through and through.").

[167] Dieter Rams, the German mid-twentieth-century industrial designer who pioneered the "less is more" approach, provided design metrics designers celebrate today that resonate with feelings and experience as much as form, including "honest," "long-lasting," "understandable," and "unobtrusive." George Aye, principle at Design for Good, adds to these metrics to include "builds power" and "honors reality" such that design that affects millions of people incorporates those who are most needy. George Aye, "It's Time to Define what 'Good' Means in Our Industry," *supra* note 106, at 5. "Good design honors reality. No one has the right to be an expert on someone else's life, but so often in the social sector, major decisions that affect millions of people living on the edge of poverty are made by those most insulated from that precarity. Why is the value of lived experience so discounted? … So reflecting on projects on can ask: How well has this project/team sought to understand the cultural, political and historical context that led to today's reality?" *Id*.

> "[The problem] you're solving a lot of times it depends on the vehicle, right? ... Let's take for example a minivan. So a minivan, there's a certain set of parameters that you have to meet, right? You have to carry this much, you have to make it easy, you have to have so many cup holders in it. You have to make sure that children can easily get into it, it has a sliding door, it has these other things. All of these things you have to design around, and then make it look good, or make it look like it's really fancy … And that's always the challenge, because there's a stigma with that type of vehicle. Right? So you want to make it look like, 'Hey, I feel proud to drive this vehicle.' So there's one of the things that you design around, as well as the package. How much space can I get in this vehicle? Can I give the people more space in the middle? The center console's a big issue for people. I'll use an example. So I had an older model of the Ford Expedition, and loved the vehicle. Big vehicle. The center console, extremely small inside for that size of vehicle. And so small was frustrating. The new Ford Expedition … you'll notice that that center console's almost twice the size. So it matches the size of the vehicle. So what a designer will do in automotive is, you know, and probably in interior there's more problem solving because that's where you spend 95 percent of your time is on the inside. You know, how can we give you freedom of motion, but still have enough space for things? What little areas can we make that would be a nice surprise and delight for somebody to utilize?"[168]

Cars through their various affordances produce delight, but so do medical devices—Alissa said that she aimed to make the products "more enjoyable, or more delightful."[169] And so too web design and digital tools—Denise said she aims to make products "beautiful and delightful."[170] An OXO executive described her own experience with one of their products (an angled dustpan) in terms of it changing her mood after a really bad day.

> "I got my lock broke a year ago, my mortise lock. And I was like locked in my apartment. I had to get like a locksmith in the middle of the night. And the guy drilled into my apartment, and my doormen were like, "I don't know what to do. Super's on vacation," it was like a nightmare. So like two o'clock in the

[168] Zoom Interview with Richard Gresens, Designer, in St. Joseph, Mich. (June 25, 2020).
[169] Interview with Alissa Rantanen, Design Manager, Insight Product Development, in Chi., Ill. (Feb. 5, 2018).
[170] Interview with Denise Burchell, Designer, Salesforce, in S.F., Cal. (Feb. 26, 2020).

> morning they finished drilling into my apartment, I had like shards of metal all over the floor, I had a door that wouldn't lock, I mean, it was like a nightmare. So I had just gotten from work this OXO hand-held dustpan. It wasn't even like a fancy one. It was like, you know, you had to get down on your knees and do this. And I was like tired, I was furious, I was worried about my safety, like they were like drilling in my door, whatever, long story short, the simplest products from the portfolio, and I did it, I went, 'Damn. This is so lovely.' Like the actual broom, it wasn't a straight broom, it curved ever so slightly, so my arm had to curve ever so less slightly, so in the most frazzled, angry, not thoughtful state I probably have been in my life in the recent past, I was like, 'They just nailed it.' Like it was that tiny thing, that, like, I couldn't even do a good job of explaining, we certainly can't explain it well in copy, you just have to experience it, and you're like, 'They thought of it. They thought of everything.' So it's those moments that make people fall in love with the brand. And there's always opportunities for that. So it's not like, I am the biggest proponent of don't mess with a good thing, and as a matter of fact, celebrate it. Understand it. Embrace its iconic status, and like learn from it. But, you know, sometimes there're just delightful moments you can incorporate in something."[171]

Many designers affirmed the emotions and experience produced by well-designed products or services. Jonathan Adler, the home goods designer, described his work as "clean and minimal … with a kind of optimistic spirit."[172] Michael Kahwaji described successfully designed kitchen appliances as about whether "the design delivers the emotion we want the brand to feel."[173] We may be skeptical about the sincerity of this happy talk about consumer goods like cars, dishwashers, lamps, dustpans, digital tools or medical devices. But interview after interview, designers expressed that the *experience* of the good or service was paramount, and primary when compared to its isolated mechanical or aesthetic features.

We pressed interviewees on these descriptions of the object of design and explanations for successful design practice. Lee described the exercise as "separating

[171] Interview with "Kate", Marketing and Design Professional, OXO, in N.Y.C, N.Y. (Dec. 11, 2018).
[172] Interview with Jonathan Adler, Designer, in N.Y.C., N.Y. (Dec. 10, 2018).
[173] Interview with Michael Kahwaji, Senior Design Manager, Whirlpool, Benton Harbor, Mich. (Aug. 7, 2019).

what really matters from what's interesting"[174] and many confirmed that they didn't just want to make "more junk." Alissa, one of the younger designers we interviewed, said

> "I really appreciate aesthetics, and look and feel, and beautiful things, and that's part of my passion. But I do not want to do something superficial. Because I don't think this world needs more junk, for lack of a better word. ..., the ideal is some balance ... and something that I know will have a real impact."[175]

Mike Smith, at Jump Associates, confirmed that "the main anchor of solving the problems is we go find the needs that people have, we don't go look for wants that people have."[176] Sometimes that means not making something that can be made and sold to just add to the landfills. The OXO executive said you have to ask yourself, "does the world need yet another pizza cutter? I feel like there needs to be a real rationale, especially for a brand like ours, as to why everything exists. It needs to be purposeful, it needs to be doing something different."[177]

What does "purposeful" mean in this context? What is "real impact" or, as many of the designers said what is design that "tells a story" and is "meaningful"?[178] These descriptions arose in widely diverse design contexts, places where it might seem strange to find "stories" or "meaning" in the objects they produce or processes they innovate. For example, Felicia explains that some housewares she designed have not been as successful because she is "not telling the story right. Something need[s]

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[174] Interview with Lee Moreau, Continuum (formerly), in Bos., Mass. (Apr. 10, 2019).
[175] Interview with Alissa Rantanen, Design Manager, Insight Product Development, in Chi., Ill. (Feb. 5, 2018).
[176] Interview with Mike Smith, Designer, Jump Assocs., in Redwood City, Cal. (Feb. 26, 2020).
[177] Interview with "Kate", Marketing and Design Professional, OXO, in N.Y.C, N.Y. (Dec. 11, 2018).
[178] Design theory describes these dimensions as "sending a message" or as "semiotic." *See, e.g.,* Ansgar Ohly, *Buy Me Because I'm Cool: The 'marketing approach' and the overlap between design, trademark and unfair competition law,* THE EU DESIGN APPROACH, Aug. 16, 2008 (describing how successful design sends out a strong message, which is not only about beauty but also perhaps even predominantly about lifestyle."); Christian Homburg, Martin Schwemmle, and Christina Kuehnl, *New Product Design: Concept, Measurement and Consequences*, 79 J. OF MKTG. 41 (May 2015) (describing three dimensions of design as "utilitarian, hedonic, and semiotic").

more context for someone to understand it."[179] Kathleen Low, a designer in Silicon Valley at Impossible, a design consultancy, complained that when clients

> "want designs really fast, … we can create beautiful designs for them, and they're going to love it, but for us, it's not meaningful because they didn't want to speak to users, they didn't let us understand what the problems are, and create a solution where it could be ten times better than we propose. … To me, it's the design process, what is the intention? What is the meaning? How did you get there? Where do you plan on going to next? I think that is the substance, and that's what's so important, than just creating something beautiful."[180]

For Kathleen, meaning comes from the process of exploration and the qualitative, iterative, and collaborative investigation of the problem and solutions. But what is its substance? What is its impact and significance? Jay, from Jump Associates, explained that "the questions that design often brings are ones of meaning making, form-giving, or intent, and how do you make something real and useable."[181] We hear answers like this and scratched our head, asking for more clarification.

What meaning or whose meaning? We heard lots of different answers at varying levels of generality. But most answers connect to fundamental values of human well-being and social progress broadly construed. For example, Jay describes his company's approach as "conscious capitalism" by working with clients on growth along at least two dimensions.

> "We happen to love the fact that like growth has two meanings in our world, there's deep economic growth that is interconnected to the growth that comes at the individual level, and certainly like a billion dollars of value might mean like big returns, but it also might mean a billion dollars of impact on a local community, right? Or, you know, a billion people lifted out of poverty. So these things are all interconnected into each other, I think. That's the place we start. We start with that bigger why for the organization, like who are you and why do you exist? And we often hope to bring our clients along the same types of questions."[182]

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[179] Interview with Felicia Ferrone, Housewares and Furniture Designer, in Chi., Ill. (Feb. 6, 2019).
[180] Zoom Interview with Kathleen Low, Senior Design Manager, Impossible, in Menlo Park, N.J. (Oct. 20, 2020).
[181] *Supra* note 107.
[182] *Id.*

Landscape architects Michelle Crowley and Naomi Cottrell, who own their own firm, describe their "bigger why" as having

> "to do with love, accessibility, and getting people in the front door equitably, right? Like forever it was, 'You can go around the back, and there's a ramp in the back to the loading dock, and you can take some freight elevator up,' right? I mean everything now is changing, which is great. It's: 'we want everybody going in the front door.' So we integrate all of our accessibility as best as we can into the landscape so that anyone who is disabled feels like...they belong in there, or everybody's just using the same way. … So that's a real positive, and that's really tricky, because so many architects are just like, 'We'll just put the ramp on here,' and we integrate it so that it's not a ramp. Or if there is a ramp, you don't feel like it's off to the side, or whatever. So that's one of the things I really enjoy, because it's tricky....if it's a brand-new building, sure, we can all figure out something. But if it's a historic building, we want to do it really tastefully."[183]

Michelle and Naomi were not the least bit shy about calling out their "meaning" and "intent" as achieving "love" and belonging within the constraints of existing landscapes and building design. The problem to be solved each time for them was how "to get people in the front door equitably" and the impact was inclusion and elegance. This is the value they believe they bring in their design process and to their designed landscapes. To them, it is what it means to "design" landscape. These are intangible values, to be sure, but not represented or appreciated by intangible property regimes like IP.

These are deeply normative goals that may seem like justifications for the prices designers charge for their expertise and output or the profits their clients make from the designed processes and products designers produce. But designers' insistence on defining the human need that design practice addresses and their emphasis on the emotional and experiential values that design practice elevates emphasize the importance to the designers of the purpose the object or service plays in the life of its users . Interrogating that function as a feature of design exposes design practice as values-driven and seeking meaningful coherence in purpose and practice. Designers strive that their designs have "reasons" and one way they accomplish this is to assure that all features have purpose and nothing is wasted. As Michael Rock of 2x4 said, "design is a way of organizing the world, right? As a basic

[183] Interview with Michelle Crowley and Naomi Cottrell, Co-Partners, Crowley and Cottrell, in Bos., Mass. (Apr. 11, 2019).

way you could say what design is, [laughs] is a way of creating coherence around things … coherence can change in scale, but, you know, a brand is a coherence. A typeface is a coherence. A book is a coherence. … it's in voice, it's in materiality, it is in context, there's lots of different ways of thinking about coherence. … the job of a designer is to figure out how to achieve those coherences, which are usually fictional."[184]

The next and final part investigates this "coherence" as a feature of design practice that is rooted in normative values not only of social progress like inclusivity and wealth equity, but also of identity distinctiveness, formal simplicity, and human sustainability. These are not values IP law explicitly champions. And regarding features of simplicity and sustainability, in particular, IP law may be antagonistic towards them.

C. Coherence

When we asked designers "what makes good design" or how to evaluate the output of design, many used phrases like "timeless, iconic, and powerful" or "elegant and delightful." These are emotional or affective traits that designers consider as important as others.[185] To be sure, designers discuss aesthetic and functional aspects in terms of predictable binaries of beauty and useability, or form and function. But more often they spoke in terms of triads, such as "desirable, viable, and feasible" (Lee Moreau) or "social research, design, and business" (Jay Newman). To the importance of form and function, these triads add the critical aspects of emotionality, sociality, and attachment in their qualitative evaluation. Coherent design, a gold-standard for designers, includes the seamless melding of these three critical metrics. What does coherence achieve? How do we know it when we see it? Here are three answers from the interviews that further explain how the holistic standard for excellence in design fit uncomfortably with the IP standards of protection and their express statutory purposes.

1) Coherence as Identity Declaration

In interviews, designers described the value of coherence often in the context of projects seeking clarity of identity as a visually represented brand. An OXO

[184] Interview with Michael Rock, Partner and Creative Director, 2x4, in N.Y.C., N.Y. (May 15, 2019).

[185] "Human centered design has established empathy as a baseline in design education and gives credence to having enough humility that the designer might not have all the answer." George Aye, *Design Education's Big Gap: Understanding the Role of Power*, MEDIUM.COM (June 2, 2017).

designer explains that a design "toolkit ensures clarity from a strategy standpoint, like idea-wise, and messaging-wise, and then it creates visual consistency and clarity, … your toolkit of parts and pieces that will then ensure you to seamlessly deploy this across the brand journey. And we're all playing off the same song sheet."[186] This toolkit helps justify and constrain design choices to amplify distinctiveness in the market.[187] She continues: "There needs to be a real rationale, especially for a brand like ours, as to why everything exists. It needs to be purposeful, it needs to be doing something different or have a slightly different point of view within the world of the brand, otherwise you'll just make multiples, you know, it's like you're actually adding complexity to the design equation."[188] To be clear, complexity is bad; simplicity and clarity of message and identity is good. Good design is both simple and clear.

Some designers described this coherence of identity as helping to anchor the company's values to solidify its relationship with consumers. Michael Rock of the design firm 2x4 in New York asks of his clients that that they be able to answer these questions as the first step to help them with design problems.

> "What are we? Why do we exist? What makes us great? What are we against? What are our core values? What's our ethos? What's our tone of voice? And how do we act in the world? … It's surprisingly difficult to answer those questions actually, and to really get down to something that everyone can agree on … that doesn't become so anodyne [so] that it's not useful. Like you have to keep it somehow useful."[189]

Identity coherence is not only about visual clarity and distinctiveness but about values the company shares with people and other communities. In the next quote, Michael compared Apple and Nike, which have strong, identifiable, and simple brand identities and core values, designed to be "declarations" of identity, with Hyundai, whose identity was unknown, both to itself and others.

> "Declaration' is kind of an important calling into being, right? Like a declaration is a way of saying that it exists, somehow. And if you make that

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[186] Interview with "Kate", Marketing and Design Professional, OXO, in N.Y.C, N.Y. (Dec. 11, 2018).
[187] Bill Nixon, *Evaluating Design Performance*, 17 INT'L. J. TECH. MGMT. 814, 825 (1999) (describing how design "is the primary differentiator in crowded market segments").
[188] Interview with "Kate", Marketing and Design Professional, OXO, in N.Y.C, N.Y. (Dec. 11, 2018).
[189] Interview with Michael Rock, Partner and Creative Director, 2x4, in N.Y.C., N.Y. (May 15, 2019).

> declaration, and … you get people to adopt it, then it becomes real, right? And then it becomes a driver of coherence, right? … Like Apple, and Nike, companies we work with all the time, they're companies that have very strong ideas about what their core is, and therefore they can have very coherent ways of presenting themselves in the world because they're going back to these very simple core principles they have, right? … Nike's maybe even a better example. I can be very Nike-like talking to kids in Brazil who love football, and kids in Manchester, England, who love football, and I can talk in very different languages to them, but it would both have this kind of Nike-like quality to it. So it's not about templating, but it's about keeping this core value, and saying, you know, 'we believe in certain things. We believe in the individual athlete. We believe in the everyday person."[190]

And then he explains that "to love a brand you need to know what the edges of it are, like what it's not, right? So I need to know these things. … Hyundai is different. It wasn't that its image was blurry, I think that it didn't have very much of an image at all. It was almost that it had this totally generic image, like people bought it 'cause it was cheap, and people didn't buy it 'cause they loved Hyundai and they wanted like, 'I can't wait to see what Hyundai's gonna come out with next.'"[191] This talk of identity coherence is about being seen and understood as distinctive, visually and in terms of specific values; good design achieves that coherence.[192] This resembles the purposes and function of trademark law, which are to protect distinctiveness in the marketplace and goodwill of the trademark owner. But the designers' standards of coherence exceed the semiotic function of the mark and its value to brand owners.[193] It includes specific hierarchies of values – professional ethics – that designers appear still to be developing as part of their evolving professional identity in the twenty-first century.

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[190] *Id.*

[191] *Id.*

[192] The role of design in generating product distinctiveness was confirmed in the marketing and business literature. *See, e.g.*, Homburg et al., *supra* note 178, at 41 ("design has become a principle means of making products differentiable"); Ohly, *supra* note 178, at 116-17 (explaining how successful design sends out a strong message, which is not only about beauty but predominantly about lifestyle, building distinctiveness).

[193] Barton Beebe, *The Semiotic Analysis of Trademark Law*, 51 UCLA L. REV. 621 (2004) (describing the role of source distinctiveness relevant to subject matter protection of trademarks and differential distinctiveness as relevant to confusion analysis).

Great designers translate simple, clear identity and substantive values into a combination of visual forms and useful features. We heard repeatedly that designers are "interpreters" or "translators" crossing aesthetic and technical fields to produce a new experience for consumers.[194]

2) Coherence as Merging Desire and Utility

Clarity of identity and values are achievable and useful goals for a company. But when we consider the value of consumer goods or services, most of us consider their value on a spectrum of usefulness and pleasure. This is another way of understanding the goal of "coherence" for excellent design: the merging of utility and desire. Our designers demonstrated discomfort ranking one feature above another, often describing their importance as mutually interdependent, doubling down on the importance of integration and coherence of the product's design and the experience it produces.

Maggie Waller, a young designer with experience in fashion, industrial design, and user-experience web-design, said

> "in industrial design, we talk about the two Fs, Form and Function, and, you know, sometimes when you're focused on something that's more like art studio, you might think like, 'Oh, well that looks really pretty,' but like what is the function of it? And sometimes it's trying to marry form and function together, sometimes designers don't quite think about the functionality of something that they're designing. It looks really cool, but in the long run, is it working the way that you need it to work?"[195]

Designers insist on the simultaneity of working toward beautiful form and useful functionality and defend inseparability of these features as ideational goals for producing physical objects or new processes. We asked designers for them or their field whether form was more important than function, or vice versa. They routinely refused to answer such questions. This is how a designer at Smart Design in New York answered the question

> "I have no problem to say that beauty is extremely important. I mean, one of the most important things for me is that we build beauty around us. I don't

[194] Zoom Interview with Kathleen Low, Senior Design Manager, Impossible, in Menlo Park, N.J. (Oct. 20, 2020) ("I feel like designers are translators and communicators").
[195] Interview with Maggie Waller, Designer, Hypebeast, in N.Y.C, N.Y. (Dec. 12, 2018).

> think it's superficial. I think it's, on the contrary, very deep and important. I think that beauty can be two different things. It can be just aesthetically the emotion coming out of it, but it can be the beauty of how well it works, you know. The beauty of how it clicks together, it fits perfectly well, in those pieces, that's beautiful for me, too."[196]

Turning form into function, this designer explains these features perform similarly in terms of the user experience of both utility and pleasure. Beauty can be part of the function and can perform useful functions. Even in the automotive industry, which one might think focuses on the technical and useful, the automotive designers we interviewed insisted on the value of sculptural beauty and emotional attachment to the car to evaluate its design excellence. Patrick Schiavone, who worked at Ford for decades and is the person credited with designing the iconic Ford F-150, said:

> "It's more sculptural. There's a real physicality to it. That's why I always maintain it's closer to figure sculpting than it is to product design, for example. Even though it's one of the most technical products that you can buy. We had an army of engineers, electrical engineers, mechanical engineers, you name 'em, chemical engineers. We had armies and armies and armies of 'em. And we were a very small organization, but we didn't have to worry about a lot of the technical side of it all. All we had to worry about was sculpin' that clay. So the real thing was the emotional connection that a customer would make with the vehicle that you're doing. And the beauty of the vehicle that you're doing."[197]

Patrick celebrates and praises the designers of the functionality of the vehicles, explaining that the car's reliability, durability, and ride quality all matter to customers. But the sculptural physicality of designing a car was equally if not more important to consumers to produce an "emotional connection" they seek with their car. Technical success without the beauty of the car would be a design failure. And, in the end, it wasn't clear that these features were distinguishable to designers or to their consumers. John Traub, a young designer who worked for Pepsi, Smart Design, and teaches design at Parsons, described the feeling of the unity of form and function in a manner that resembled erotic attraction. He's talking in the following quote about a designed houseware – a pitcher.

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[196] Interview with "Frank", Designer, Intuitive, in N.Y.C., N.Y. (May 15, 2019).
[197] Zoom Interview with Patrick Schiavone, Chair for Product Design, College for Creative Studies, in Watervliet, Mich. (June 11, 2020).

> "First, so you're like looking at it on-shelf, and it's far away, it's like the first thing -- you haven't been able to touch it yet, so you don't even know if it works well, but you see it there and it's like, like a really beautiful object, I think that's a huge one ... And then you go up to it and you can see some of the details, and you can touch it. The interface makes sense, hopefully. And then, yeah, you get into more practical functionality, like oh, this fits well, or they thought about, say it's a pitcher, does it fit into your refrigerator well, like those little things."[198]

Coherence along these dimensions of form and function means a unity that produces a magnetism, a forceful desire. Some trademarks help to imbue that magnetism, especially those that contribute to brands that are famous and strong, like Nike and Apple. But designers seek broader coherence that demarcates brands from everything else, and that includes many design artifacts that are not recognizably trademark subject matter. As Michael Rock explained in the context of designing signage for a university campus, this coherence produces elite identities and also defends against chaos.

> "And it is reinforcing the idea of private property, it's reinforcing privilege, all these things like that, like how do I know when I'm on campus, you know. If you think of those blue security lights, right? There's a kind of network that says, 'I'm within this network now.' You can think basically about ways you move through the world. You move through all these different kinds of coherences all the time, like, 'I'm on the federal highway system, now I'm off the federal highway system,' how do I know? Because of the green signs, right? So you always have a kind of graphic representation of invisible systems. … it's an absolutely natural way that we try to organize the world in a way that makes us all understand it, right? Otherwise it's chaos."[199]

Designers further emphasized coherence when explaining that excellent design has no extra features, when unity of form and function seems complete. Designers describe this ideal eventuality as deeply satisfying, like they've solved a particular puzzle, as if an answer exists for achieving this unity and they've figured it out. Alissa, working for a medical device company Insight, said that "one of the most satisfying projects I worked on was one similar to the insulin pen example. I could explain why it was the way that it was, down to every detail. There was a

[198] Interview with John Traub, Designer, in N.Y.C., N.Y. (Dec. 10, 2018).
[199] Interview with Michael Rock, Partner and Creative Director, 2x4, in N.Y.C., N.Y. (May 15, 2019).

rational logic, reason, behind every decision that we made … Nothing is 'just because.' Which … mean[s] that there's nothing extra."[200] This echoes the OXO executive's explanation that for good design "there needs to be a real rationale … as to why everything exists. It needs to be purposeful."[201]

Designers with decades of experience were emphatic about knowing when they achieve that unity and when nothing needs to be added or taken away. In the interviews, these declarations of design superiority resembled "aha" moments except they did not come from a unique inventor or author and were instead culminations of anonymous or team-member contributions over time that eventually unified beauty with functionality. Here are two such examples, one about the design of the smart phone, and another about car design.

An IDEO executive provides the smart phone example.

> "we've been having a conversation with iPhones and phones in general, … they're sort of all converging to the same thing, and it's a flat screen, it's probably almost no interactions, there're subtle differences on the radius of the corner, and on the thickness and the shape of the camera, but in the end a lot of these things reduce down to their fundamental instantiation, if you will. And a lot of that happens especially in design of objects, it's like you're trying to create a simplicity, and we're firm believers in not creating unnecessary complexity, right? Like why are we adding features, whether it's functional features, or design elements or features, with no reason? So if you

[200] Interview with Alissa Rantanen, Design Manager, Insight Product Development, in Chi., Ill. (Feb. 5, 2018).

[201] Interview with "Kate", Marketing and Design Professional, OXO, in N.Y.C, N.Y. (Dec. 11, 2018). Here's another example: "There's different values to it. I think one first value is probably emotional. When you look at something, and it triggers a[n] emotion, good emotion, it's a good sign of a good design. … Then there's obviously the functional value. If that works, that delivers the purpose. These two are important. I think that for me, personally, when I did something, and I feel like it makes sense, it seems simple, but if it makes sense, it's actually a very strong way [to know good design] ... So, it makes sense [laughs], I feel like it makes sense for us to produce these kind of objects now. If it's something that I feel is not necessary, or is not finished, or could have been way better, it's not gonna be satisfying. One thing that I see sometimes, on some projects, that I did and I like, is when I cannot remove anything from it.... So if I look at it, and everything's there for a reason, that's why it makes sense. Like everything is there for a reason. It's not random. It serves a purpose, inside and out." Interview with "Frank", Designer, Intuitive, in N.Y.C., N.Y. (May 15, 2019).

> start to think that way, then a lot of aesthetically pure and beautiful designs have a logical conclusion, and many times those conclusions are actually shared by others, designers doing good design, looking at similar problem, right? And it's not that you're copying their design, you're maybe arriving at a similar place, because, and there're some examples out there in the world, the phone being one of them, but I can think of others, where companies arrive at a similar-looking thing and it's not because anyone had access to the other person's designs, it's because it's kind of a logical one."[202]

Designers are adamant this is not a subjective evaluation but an objective one. The IDEO executive describes it as "logical." Patrick, the automotive designer, says standards of formal beauty are physical and therefore not really up for debate. They are constrained both by cultivated expectation and physical responses to form.

> "You know, everybody talks a lot about art and design being subjective, and I actually don't believe that at all. I mean, if you look at another person or a person's body, you know what a beautiful body is, you know what a beautiful person looks like, there's not really a hell of a lot of debate about it. Right? And I believe the same thing in design. car design, even more so than product design, is that there's a certain way that a fender flows, and curves as it's going around the corner, and the way the light dances on the surfaces and things like that. There's that physicality to it."[203]

Patrick's explanation, comparing cars to people, has been studied by sociologists to explain incidents of road rage and violence.[204] Car accidents and near misses are experienced as personal affronts, with intentionality and malice aimed at the driver individually and specifically, despite the anonymity of the situations.[205] We can contest universal standards of human beauty especially in terms of the systematic harm of hierarchy and exclusion the imposition of universal beauty standards produce. But the insistence by designers that there are logically derivative or inevitable forms that are objectively desirable because of how they look and how they function appeared throughout the interviews. Many designers described this achievement in terms of "balance," "elegance," and "serenity," or as mentioned above in terms of "delight" and "joy."

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[202] Interview with "Allen," IDEO, in Cambridge, Mass. (Apr. 11, 2019).
[203] Zoom Interview with Patrick Schiavone, Chair for Product Design, College for Creative Studies, in Watervliet, Mich. (June 11, 2020).
[204] JACK KATZ, HOW EMOTIONS WORK (1999).
[205] *Id.*

Michael Kahwaji connects these experiences and describing the standard of form/function coherence being met when the product is intuitive, "simplifies people's lives," and "doesn't need instructions."

> "Designers that are really in it because … the form and the aesthetics … are really, really important … because that originally was the crux of our discipline. We need them because pretty things are desirable. Like we want to be surrounded by balance and serenity and I think that aesthetically pleasing items help enhance life, and good design products also give you the semantics of how a product is supposed to be used. You know what I mean? Like a well-designed product doesn't need instructions. So there's a lot of things like that. …[A] well-designed product doesn't require instructions. How do we simplify people's lives?"[206]

Desire and utility merge when the designed object or experience becomes like an extension of the person, when its use and value is so intuitive it needs no instructions. This makes the role it plays in one's life seems inevitable, or at least obvious and simple that it needs no justification for its creation or continuing existence. "You're trying to create simplicity, and we're firm believes in not creating unnecessary complexity. … a lot of aesthetically pure and beautiful designs have logical conclusions," said the IDEO manager. We might think of smart phones that way, or search engines, but to designers the well-designed object, process, space or experience can apply to almost anything. The inevitability of this result cohering form and function in a particular object also means that first movers who seek protection for them, through one form of IP or another, can exclude others from the intuitive or "logical conclusion" that is the design. Many designers we interviewed considered exclusivity over this kind of inevitable balance of form and function – be it in a smart phone or car – as counterproductive, although not all did. Most just didn't consider the IP issues at all, motivated as they were by the professional standards of coherence not the property rights that could attach to the designed object or process.[207]

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[206] Interview with Michael Kahwaji, Senior Design Manager, Whirlpool, Benton Harbor, Mich. (Aug. 7, 2019).

[207] This is not to say that designers with corporate clients did not care about IP. We did not interview the clients, although we did interview in-house designers and designers who designed for themselves. Felicia Ferrone, who is an independent designer, spoke about IP in ambivalent terms in part because of her frustration with the inability to receive copyright protection over a vase she designed, precisely because of the inseparability of its form and function. Jonathan Adler, who has his

3) Coherence as Aligning with Human Needs

A third way of understanding the goal of "coherence" for excellent design is its satisfaction of an identifiable human need. This concept repeatedly arose in the interviews, especially when discussing "human-centered design practice" that includes interviews and observations with focus groups and relevant populations. But it also arose in the context of more artisan products, such as glassware, decorative objects, and cars, where "need" is contestable because predecessor objects work as well or are good enough. Designers talked about this form of coherence in terms of "alignment" and "connecting the dots" in ways that both identify the problem and open up the situation to new solutions.

Determining alignment requires understanding users both before the project begins but also iteratively as the project develops. Alissa, working with medical devices, says "the goal for us, the way we like to work, is to actually bring those visions [of the design] back out into research. Put them in front of pharmacy directors, nurses, and hospital C-suite, or whatever, to verify that the value we are trying to deliver aligns with the needs, or actually really does meet the needs that we identified early on."[208] Denise, the designer now at Salesforce who has been a web-designer and information architect most of her career, explains that what she "live[s] for" as a designer are the "mental gymnastics of actually coming up with an elegant solution to a brand-new problem. For me it's about the novelty of making sure the people involved in the problem that I'm solving, with all of their unique nuances, are on-board with it, right? I love aligning people. I love inspiring people toward a new direction, and coming up with something new in the world."[209] The return to user experiences to check whether the design makes sense to users and suits their needs is one way alignment is achieved.

Ann Marie Conrado, who teaches design and consults as part of her on-going practice, describes alignment of needs and new designs as "connecting the dots" to produce a new "ways of seeing the world" and of "understanding and comprehending the world. It's not about right or wrong. It's about the productivity of that

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own housewares firm, dismissed intellectual property protection as also fairly useless to him.

[208] Interview with Alissa Rantanen, Design Manager, Insight Product Development, in Chi., Ill. (Feb. 5, 2018).

[209] Interview with Denise Burchell, Designer, Salesforce, in S.F., Cal. (Feb. 26, 2020).

framework."[210] How does she know when she and her team have arrived at coherence of understanding or "alignment" of needs and a solution?

> "The reframing is in your gut. You know that this is an issue. You've done the research, you've immersed yourself in the challenge, … I tell students, 'A great insight is one that is both novel, like surprising, and familiar,' It's surprising because you hadn't looked at it that way before, but it's familiar in that you knew as soon as you realized that, you knew that's what was going on. … [T]hat reframing is key. And like I said, you'll know it, you just know it. I mean … you've immersed yourself so far along the way that by the time you've settled on that, you just know it's right, because you've learned enough about people. It's compelling because it connects the dots in a way that really opens up, like this is what's going on.."'[211]

Even when objects are designed in a physical context – for example glassware or housewares – alignment as a form of problem solving comes from finding identifiable gaps in the existing forms. We've already heard Felicia Ferrone discussing the design of stemware describe how this alignment happens. She needs to be "pushing the boundary of our expectations of what a stem is, what a wineglass is … there needs to be something that's really kind of adding to the discourse and history timeline."[212] Finding that gap and filling it, but making sense within the trajectory of the form, is both alignment and coherence – identifying a need and filling it – in her practice.

We were conscious of the possibility that designers create new desires rather than address existing needs, and the conflation of the two justifies (to them) their practice as both a business and moral matter.[213] When we asked about this dynamic,

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[210] Interview with Ann Marie Conrado, Professor of Industrial Design, Univ. of Notre Dame, in South Bend, Ind., (Aug. 7, 2019).
[211] *Id*.
[212] Interview with Felicia Ferrone, Housewares and Furniture Designer, in Chi., Ill. (Feb. 6, 2019).
[213] As described in Appendix A (Methods), part of the benefit of qualitative empirical work based in long-form interviews (as opposed to surveys or certain quantitative metrics that assume the meaning or significance of words or values) is that we could probe and "cross-examine" the interviewee on their statements and descriptions, asking follow-up questions and asking for illuminating examples and evidence from practice and behavior that aligns (or doesn't) with stated descriptions. For a further explanation of the benefit of qualitative methods to probe meaning and interpretation of statements as compared with the ambiguity of quantitative empirical analysis, *see* Jessica Silbey, *Intellectual Property and Ethnography: A Qualitative Research Approach*, in HANDBOOK OF INTELLECTUAL PROPERTY

many designers responded as Lee Moreau does below, indicating that designers have to make self-conscious and ethical choices about moving forward. This resonates with the theme of not wanting to just make "more stuff" in the world. Lee explains:

> "After a sixteen-week engagement, in a perfect world, we would've identified what the ideal vision [for the project] is [on behalf of the client]. It's an experience, and oftentimes represented as consumer behaviors, which is, 'This is what your consumer's doing now. We did this qualitative research. This is what they value, and what they aspire to, and this is a new behavior that we believe they will have in the future. Nobody else is giving them this behavior. Nobody else is forcing them to do this, but if they do it, they're gonna want it more and more.' And so that's where the ethics come in, is this actually something that's good for the world?"[214]

To answer that question, "is it something that's good for the world?" designers who work in consultancies or for companies can pursue the work with the client or in the company, or they can choose not to. That, too, appears to be part of the ethics of design that strives for coherence in multiple dimensions. Recall Jay Newman and others above asking clients to determine "their big why." Aligning specific goals with bigger human needs and social purpose was a theme throughout the interviews. George Aye, a designer with decades of experience, like Lee, both in-house and at global consultancies such as IDEO, started his own design firm called Greater Good Studio. He narrated the decision-making process that leads to alignment and coherence in the relationship between designer and client as well as between the product or service and need of consumers.

> "So we have done thirty breakup emails in the nine years we've been around. I teach classes on how to do this, on how to gently and respectfully break up with [a client]. And the last one was from Pepsi. They had some slightly flawed idea of what they wanted to do around community engagement, and really all they wanted was a logo and a story. So when we asked them, like, this was the key question. 'The users that we think about, we drive our work based on their needs. Can you tell me who the users are for this project?

RESEARCH: LENSES, METHODS, AND PERSPECTIVES (Irene Calboli & Maria Lillà Montagnani, eds., 2021).

[214] Interview with Lee Moreau, Continuum (formerly), in Bos., Mass. (Apr. 10, 2019). See also *supra* note 117 (regarding difference between ideals and practice among designers).

> They're like, 'There aren't any.' I said, 'Yeah, I thought so. I don't think we can do a project together. But I do know people who will be happy to help you. ."[215]

Michelle Crowley, a landscape architect, explained more plainly her goals as a designer of alignment and connection. "I believe that designed landscapes, especially in the urban or suburban environment, where we've lost our connection to nature, is an essential part of humanity. And will save the world. Quote me on that."[216]

Coherence as addressing human needs arises both as an ideal goal and a process of doing the work. There are ethical and normative valences to this dimension of "good design," which may be debated between professional designers. But we heard no dissent on this issue, only variations on this theme. We were left with many questions about how these ethics and norms are routinized or standardized beyond the constraints of human-centered research, business-based considerations, and technological affordances. When we asked designers if there was a code of ethics or professional responsibility – as there is medicine or law, for example – most designers tilted their head and paused, eventually saying something like "no, but it feels like there should be" or "one may be evolving." We think that perhaps the importance of coherence in design practice along these variations is a beginning to thinking about a code of ethical design and a way to consider how legal regulation of design may support that endeavor.[217]

At present, intellectual property has no ethics, per se. Its vision of the "good" or the "just" is only vaguely baked into standards of protection, both subject matter scope and infringement, as explained by a balance within each regime between rights granted to incentivize certain activity and the preservation of a public domain to enable all to benefit. Whether IP law must or should align better with design practice is a different question than the data explores. That IP law does not support goals of good design cannot be denied based on our empirical findings.

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[215] Interview with Jay Newman, Director, Jump Assocs., in Redwood City, Cal. (Feb. 26, 2020).

[216] Interview with Michelle Crowley and Naomi Cottrell, Co-Partners, Crowley and Cottrell, in Bos., Mass. (Apr. 11, 2019).

[217] As we explain in the conclusion, this is one of our hypotheses worth pursuing in further research and contemplating for appropriate law reform. It resembles, to us, the reform movement among software engineers and internet platform companies about algorithmic discrimination, content moderation, the harms from both, and whether professional self-regulation or legal regulation (or some combination) is the right way forward to address the identified harms. *See, e.g.*, https://techethicslab.nd.edu/.

CONCLUSION

Design has been an enduring puzzle for IP law. Congress created the design patent system because it recognized that design was different than the traditional subject matter of utility patent, copyright, and trademark law. But design patent law, has always reflected the struggle to conceive of features as *either* functional *or* aesthetic. Copyright and trademark law, both of which later expanded to accommodate design, have had the same difficulty, perhaps even to a greater degree. Each of our IP systems demands that we choose a side of functional/nonfunctional binary, because utility patent is supposed to be the only system that provides protection for the functional dimensions.

Our research helps explain why that approach has been so difficult and largely unsuccessful. Whatever IP law's reasons for insisting on separating out the "functional" aspects of design, that aim is in direct conflict with designers' explicit goals of coherence and integration. Designers typically do not conceive of particular aspects of designs as separate or separable; good design makes form and function inseparable. Designers also understand function and usability much more broadly than IP doctrine. Because the impulse to separate comes from an intention to channel protection for functional features to the utility patent system, the various functionality doctrines prioritize a particular kind of utilitarian function and denigrate the value of and role for the aesthetic and the formal. But designers aim to solve a much more diverse set of problems, integrating the experience of objects with their look and feel, so the "functions" of various features resist being categorized along the dimensions on which IP doctrines insist, if even for good public policy purposes.

IP doctrine, of course, does not necessarily need to pursue the same goals as designers. It might, for example, prioritize certain kinds of competition even if designers themselves would conceive of the market and professional priorities differently. But it is difficult to develop legal rules for particular subject matter to achieve certain policy reasons when those rules require categorization along dimensions that are foreign to the relevant actors. IP may have important values that are served by separation, but our data suggests that task may be impossible as a practical matter in design practice, whose significant economic and cultural impact is today undeniable. That IP law may be irrelevant or uncomfortable for design professionals leads to a general ambivalence toward or irrelevance of IP/design law for those people and firms for whom it should be most pertinent.

The data for this Article also raises other questions about design practice and its regulation that is ripe for further study. What is the role of ethics and political

values in intellectual property law today? Is the emergence of a professional ethics among designers indicative of a trend among other experts in the digital age that produces tensions with regulatory schemes – think of scientists and engineers who today might advocate for more open access to data than IP laws contemplate. Is the aim of neutrality in IP law a worthwhile ideal or a pipe dream that law reformers should confront to lay bare choices in order to debate them? Finally, what about the choice between sui generis regimes (such as the design patent system) and evolving, adaptable legacy statutes, such as copyright and trademark? Does channeling to one regime rather than allowing overlap produce optimal protection or wasteful redundancy? Does studying the specificity of design practice tell us which route is better here? Our data tends in the direction of a *sui generis* regime that narrows protection to an original and precise combination of form and function, leaving copyright and trademark to their own policy goals and standards, channeling each to their own goals of innovation incentives. But whether fifteen years is the optimal length of design exclusivity is an open question. The hallmark of qualitative empirical research is that it produces hypotheses for further exploration and testing. We have no shortage of such hypotheses based on this initial foray into the original data set. We invite others to join us to further explore this data and the lessons it provides for intellectual property regulation in the digital age.

APPENDIX A

I. Research Methodology: Qualitative Methodology and Its Advantages

Qualitative research identifies the relevant variations or variants in lived experiences of individuals. The term "variation" or "variant" means one from the set of possible types of experiences people might have of a particular phenomenon. It does not connote frequency or variation from a standard or ideal. For example, one designer might describe a dominant metric of excellence in their field as simplicity of form, whereas another designer might describe emotionality as the central feature of excellent design. Under the qualitative approach used in this study, we discern when the differences in individuals' accounts are significant enough to consider them distinct and therefore to demand separate explanations in terms of the phenomena being studied. Based on literature from the field and inductive analysis of the interview data, the researcher identifies categories of variations (e.g., metrics of design excellence) and distinctions within those categories (e.g., simplicity of form, emotionality) that are meaningful for the research questions at hand. We identify the variations by collecting, comparing, and juxtaposing accounts and observations of experiences of multiple individuals.

Qualitative work does not rely on the individual as the sole unit of analysis, however. Nor does it look for causal mechanisms. It rejects the notion that an aggregation of individual behavior should be treated as a proxy for group behavior. Instead, qualitative work investigates social structures, institutions, and relationships between people and organizations from the accounts elicited in structured interviews. This orientation toward explanation instead of causation, and toward both formal and informal institutions and systems of practice, demands data collection methods like in-depth interviews and observational field work to greatly enhance understanding of complex social phenomena.

Qualitative research seeks to understand the complexity of institutions, social norms, and common practices that explain individual and collective behavior. Interview research gathers individual accounts of those structures and studies the way people justify and explain particular attitudes and behaviors. Identifying the possible reasons that may explain behavior and practices—for example, why a particular type of design practice might be growing or why some designers (but not others) avoid or ignore design patents as a business tool—is important to understand the actual mechanisms of the socio-economic activity, including any legal mechanisms. Interviews facilitate a broad and deep understanding of the many factors involved in the phenomenon of design practice among professional designers

and its similarities and distinctions from other forms of creativity, innovation, and intellectual property regimes.

In contrast to quantitative methods, interview research does not use a random or representative sample, nor does it provide a measure of the frequency that variations appear.[218] Instead, the qualitative researcher aims to identify a comprehensive set of relevant variations in the studied experience or practice. To get there, the researcher identifies the population to be studied and the key dimensions that are hypothesized to generate distinctions in the experience under analysis, "stratifying" the population into relevant sub-groups within those dimensions.[219] Talking to people across many sub-groups increases the chances of identifying relevant variations and achieving comprehensiveness in the explanation of the phenomena. Having a complete set of variations may be impossible, but the goal is to discern as full a set as possible. The signal that a researcher has identified as full a set as possible is known as "saturation"—the point when the most recent interviewees are providing accounts that align with previous accounts.[220] Another major contrast between quantitative and qualitative work is that the latter will not lead to a statistical measure of correlations among variables or a mathematical test of causal inference. But a core benefit of interviews, and the key reason qualitative methods are superior for the questions we ask in this Article, is the ability to generate multifaceted and nuanced explanations for complex social phenomena.

Although our interviewing and field observations are as broad and open-ended as possible, we nonetheless started this project with certain hypotheses. These hypotheses are based on trends in the design field, including its rapid expansion into business consultancies and educational programs. We started with the hypothesis that the ascendancy of design can be explained in part by the rise of digital technologies and the "democratizing" of tools of the creative and innovative industries that encourages sharing and celebrates interdisciplinary borrowing. We further presumed that digitization, internet connectivity, and the platform economy has made design in its diverse manifestations more relevant and more accessible for social and economic activities. Pre-internet, we understood graphic design to be an essential part of advertising for businesses; today that narrow feature of design has expanded to all websites and includes user-interface, usability, and informational

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[218] Mario Luis Small, *'How Many Cases Do I Need?'*, 10 ETHNOGRAPHY 5 (2009); *see also* SILBEY, *supra* note 26 (describing limitations to this approach in Appendix A).
[219] In the next section, we explain the stratification we used to seek out interview participants. *See infra* Section I.B.
[220] *See* Small, *supra* note, at 25–28 (explaining the concept of saturation).

architecture. Witnessing the diversifying of designs dimensions, broadening of design expertise, and the proliferation of its application in the internet age, we wondered how, if at all, is intellectual property law contributing to or affecting this evolution given what we understood to be the doctrinal puzzles facing design law? In addition, the ability to produce objects – form giving – has democratized with cheap manufacturing, 3D computer software simulations, and 3D printing. Previously expensive and heavy equipment, used in factories and only for select items, are now available to more designers and now also to non-designers. Copying, modeling, and iterating – features of design practice as we will explain – has never been easier. We started from the assumption that this is changing design practice and pushing it to distinguish itself from and make itself essential to adjacent fields such as engineering, computer science, and business consultancies, which are the forbearers of the 20th century technological revolution. Related to this, we hypothesized that post-industrial competition in the information age raises the value of design. Our economy demands churn and consumption, and companies need ways to differentiate other than on function and price.

From these trends, our interviews centered around several broad themes about the relationship between the internet age and professional design practice. (1) How does one become a designer today, how has that changed since the mid-20th century, what are the sub-fields of design and how have they evolved, and has the communication revolution and the internet's affordances changed design practice? (2) What distinguishes design work from other creative and innovative businesses and expertise? (3) What are the metrics of excellence in design practice and design professionals and how have they evolved? (4) What are the opportunities and challenges in design practice today?; and (5) What role, if any, does legal regulation play in the success or failures of contemporary design practice? We do not ask about these topics directly but instead by eliciting grounded, particularized accounts of work and professional life through specific questions of each design professional.[221]

B. Interview Data Collection

After developing and gaining Institutional Review Board (IRB) approval for an interview protocol designed for professional designers, we sent letters to a range of potential interviewees. We targeted seven (7) groups of designers based on the history of design practice: automotive, household goods, user-interface, fashion, graphic design, medical and technological devices, and service design. Within those

[221] Our template for interview questions is available for those interested in more detail about how we broached these subjects.

categories, we sought to interview designers in consultancies and in-house designers, as well as established, legacy designers and younger, emerging design professionals. Some designers work across these sub-groups or have developed expertise in more than one area. As explained more in Part III, many designers consider interdisciplinary and boundary-blurring essential to excellence in design and thus, despite expertise in a particular sub-field (in medical devices, for example, or user-interface design), many reject categorization. This is not true of all designers, as we note. Some automotive and graphic designers we interviewed described sticking to their specialization as both a preference and a field characteristic.

Most interviews lasted about one hour in length and most were in-person.[222] We used the approved IRB protocol for the semi-structured interview, which allowed us to standardize all the interviews. But the protocol also allowed us to deviate and follow up when necessary to clarify potential contradictions or dig deeper into apparent idiosyncrasies or parallels. Our interviewees could elect to be on or off the record. Most interviews were not confidential, which means we could attribute quotes and accounts to the particular photographers. Some interviews are off the record, which means the interviewees agreed to the interview on the condition that we make their responses anonymous by providing them with pseudonyms. And some interviews were a combination of both. All of the interviews were recorded and transcribed by a professional transcriber.[223]

As we conducted interviews and read transcripts, then reread and analyzed them, revising our understandings and interpretations of the phenomenon on which we were focused. We analyzed the interviews in various steps. First, after each interview, we wrote a memo summarizing it in two to three pages. This included any notes made during the interview, description of the offices we visited and other people we met, a description of notable stories related by or quotations from the interviewee, and a list of overarching themes from the interview. Memos were co-drafted and shared to produce a common framework of the ongoing analysis.

Second, after the interviews were completed, we read the transcripts closely. We studied the interviews at the level of language (word choice, narrative structure, and content) and conceptual themes, which are drawn from reading across the transcripts and from the literature on design practice. We then generated a list of

[222] Some of our last interviews were conducted over video-conference after the COVID-19 pandemic halted all travel.
[223] For biographies of the designers we interviewed, properly made anonymous where required, please see Appendix B.

code words developed deductively from preliminary findings and inductively from the emergent language, repetitions, narrative structure, and conceptual themes contained in the interviews.

Third, we read the transcripts again to code them, first by hand and then using a system developed as a team using Excel.[224] Coding allows us to search and sort the data by code or any other category we establish. Coding together and interpreting the interviews as a research group enhances intercoder reliability, which is critical to the descriptive and interpretive validity of qualitative empirical analysis.[225] By its nature, working with qualitative data is an interpretive process. But strong consensus can be achieved by regularly sharing coding on a common text and collectively developing common parameters for interpretation.

[224] We worked with a research assistant, Brittany Von Reuden, to whom we are enormously grateful. Brittany was an integral part of the data analysis team, developing the Excel spread sheets and enabling pivot tables to search the coded transcripts and combine and contrast transcript excerpts with coded portions for both more granular and more general thematic analyses.

[225] For a discussion of intercoder reliability and coding practices, *see* JESSICA SILBEY, THE EUREKA MYTH: CREATORS, INNOVATORS AND EVERYDAY INTELLECTUAL PROPERTY, Appendix A: Methodology (2015). For a discussion of validity in qualitative research, *see* Joseph A. Maxwell, *Understanding and Validity in Qualitative Research*, 62 HARV. EDUC. REV. 279, 287–291 (1992).

APPENDIX B

Designers Interviewed, 2018-2020

Designers were given the option of anonymity on the consent forms that each signed to participate in this study. Where indicated, pseudonyms have been provided for those designers who elected to remain anonymous. The biographies for confidential interviews lack additional detail to honor that promise of anonymity. As with Sets 1 and 2 above, I aim to provide enough information for readers to evaluate the stratification of the sample but not so much that anonymity is compromised. Graduation dates are provided in the cases of younger designers. Where full names are provided, designers consented to their name being used. Interviewees are listed in alphabetical order by their first name or pseudonym. All information is current at the time of the interview and does not reflect changed circumstances since 2020.

Alissa Rantanen. Chicago-based designer working as a Design Manager at Insight Product Development, where she conducts ethnographic research to create design-based solutions largely for medical and health care devices. She previously worked as a freelance graphic designer. She graduated in 2013 with a BFA in Industrial Design.

Allen (a pseudonym). Cambridge-based designer at IDEO. Before joining IDEO, he worked in Palo Alto as a mechanical engineer and project leader.

Ann-Marie Conrado. Professor of Industrial Design at the University of Notre Dame and a consultant for Fortune 500 companies. Since 1993, she has been an active designer with extensive experience in industrial design.

Denise Burchell. San Francisco-based designer at Salesforce with over twenty-years of experience in the design industry and a specialty in user experience design. Previous work experience includes *Mother Jones,* CNET, Inc., AKQA and IDEO.

Felicia Ferrone. Chicago-based industrial and furniture designer. She began work in 1994 as an architect in Milan before returning to the United States to found *fferrone*, her international namesake brand, in 2010. She also serves as the Director of Graduate Studies in Industrial Design at the University of Illinois at Chicago School of Design, where she is also a Clinical Associate Professor.

Frank (a pseudonym). San Francisco-based designer currently working for Intuitive as an industrial designer. His previous experience in industrial design

includes four years with Smart Design. He graduated with a Masters in cross-cultural design in 2012.

George Aye. Co-Founder and Director of Innovation at Greater Good Studio with several decades of design experience. He is an Adjunct Professor at the School of the Art Institute of Chicago. He worked for seven years at global innovation firm, IDEO, before joining the Chicago Transit Authority as its first human-centered designer.

Jennifer (a pseudonym). Bay Area-based designer working at Facebook on user interface and product design for internal and external products. Prior to working at Facebook, she worked at Yahoo on similar design projects. She graduated with a degree in human factors design and ergonomics in 2009.

Jay Newman. Bay Area-based designer who works as a Director at Jump Associates. He prototypes new tools for modeling businesses through financial forecasting, discovery driven planning, and human-centered design. Before joining Jump Associates, he worked at First Annapolis Consulting where he helped financial institutions and retailers evaluate markets, launch products, adopt technologies, and enter strategic partnerships.

John Traub. Brooklyn-based designer with multi-national brand clients. Prior to establishing his own design firm, he worked at Pepsi Col., Smart Design, and Evo Design as an industrial designer. He is also a member of the Design Faculty at the New School. Traub graduated in 2011 with a BFA in Industrial Design.

Jonathan Adler. Potter, designer, and author with retail stores in New York City, Miami, Dallas, Los Angeles, San Francisco, and London. In addition to the household goods for which he and his brand are famous, he also designed hotels, public art installations, and the Barbie 50th Anniversary Dream House.

Kathleen Low. User-design strategist based in California, currently at Impossible as a Senior Design Manager. She also helped launch the educational start-up company EdgeMakers, Inc. as the Head of Design and Media, working there for four and a half years. She has degrees in human-centered healthcare design and visual communication from 2010.

Kate (pseudonym) New York-based marketing and design professional currently working at OXO. Prior to OXO, she worked in various strategy positions at firms, such as Pearlfisher and The Partners.

Kevin Lam. California-based motion designer employed at BCG Digital Ventures. He previously worked as a motion graphics designer at Masimo Corporation. He graduated with a BFA in graphic design in 2011.

Laura Forlano. Chicago-based Associate Professor of Design at the Institute of Design at the Illinois Institute of Technology and Director of the Critical Futures Lab. Her research interests focus on the socio-technical systems and infrastructures at the intersection of emerging technologies, material practices, and the future of cities.

Lee Moreau. Boston-based founder of Other Tomorrows, a design and strategy consultancy based in Boston. He has extensive experience as a designer in cutting-edge design firms, such as Continuum (Boston), 2x4 (New York), and IDEO (San Francisco). He is also a Lecturer in MIT's design program.

Maggie Waller. New-York based designer and former Global Design Manager at HypeBeast. Her previous experience includes as a Graphic Designer at Levi's and PONY. She graduated with a BA in Industrial Design in 2011.

Michael Kahwaji. Senior design manager responsible for brand implementation and product development in the global refrigeration category at Whirlpool, where he was previously the design lead. Prior to his position at Whirlpool, he worked as an industrial designer at Zircon Corporation in California developing DIY and commercial grade tools.

Michael Rock. Founding partner and creative director at the graphic design studio 2x4 and Adjunct Professor of Graphic Design at Yale School of Art since 1991, and a Professor at the Columbia University Graduate School of Architecture. At 2x4, he leads both cultural and commercial projects for a variety of international and national clients.

Michelle Crowley. Co-Partner and landscape architect at Crowley and Cottrell, a Massachusetts landscape architecture firm. She has twenty years of experience in landscape design and her projects range from private residences to land reclamation projects.

Mike Smith. San Francisco-based designer and director at Jump Associates. For the past twenty years, he has focused on strategy consulting from a design perspective. Prior to joining Jump Associates, he worked as an industrial designer at Flextronics and Design GmbH, and RnR Products. He also co-founded both Good Stuff Labs and Spark Factor Design.

Naomi Cottrell. Co-partner at Crowley and Cottrell with an extensive design practice. With fifteen years of experience, she previously worked at Reed Hilderbrand and LeBlanc Jones before joining Crowley and Cottrell.

Patrick Schiavone. Detroit-based designer currently serving as the Chair for Product Design at the College for Creative Studies. For more than twenty years, he worked for Ford Motor Company where he led the design of three generations of the Ford F-150. Thereafter, he worked as Vice President of Whirlpool Corporation Global Design where he led seven design studios around the globe and helped update the look and expand the usability of Whirlpool's global brands.

Richard Gresens. Michigan-based designer who runs his own design, strategy, and innovation consultancy. Previously, he was the Vice President of Industrial Design at Newell Brands, a Senior Director for Global Laundry Design at Whirlpool, and before that, Chief Designer of North American Trucks at Ford Motors. He was also chief designer at William M. Schmidt Associates.