Nonobvious Design

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ABSTRACT: To earn patent protection, a claimed product design must be "nonobvious." Yet while nonobviousness has been described as "the heart" and "cornerstone" of the utility patent system, in the design patent context, the term has become next to useless. Instead of actually policing nonobviousness in design, modern courts grant patent rights to any work that is not an exact replica of another. The problem, judges maintain, is that comparing one visual design against another demands the use of aesthetic judgment and aesthetic judgment is an instinctual, subjective process incapable of legal definition. Recent neuroscientific studies of aesthetic judgment dispel some of the mystery surrounding perception of industrial design. These studies show, contrary to longstanding judicial assumptions, that design innovation tends to reduce visual enjoyment. We prefer the "aesthetic middle": the range of designs comprised of not the avant-garde or the tried and true, but something in between. New insight into the functioning of the aesthetic middle shows the need for a reevaluation of the nonobviousness standard and offers guidance for returning the standard to its former place as a meaningful limit on design patent protection.

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INTRODUCTION

It is really easy to obtain a design patent. Design patents protect the way an article looks, whereas utility patents protect the way an article is used.[1] Patent rights require that a patent—design or utility—issue from the U.S. Patent and Trademark Office ("PTO"). The PTO initially rejects nearly ninety percent of all utility patent applications,[2] yet it approves ninety percent of all design patent applications.[3] Like the PTO, federal courts conduct their own review for compliance with patent eligibility requirements, but they rarely deem a design patent invalid either.[4] In fact, much of the differential between utility and design patent approval can be laid at the feet of the Federal Circuit, which promulgates binding national interpretations of patent law.[5] As one expert in the field writes, recent Federal Circuit decisions on issues of design patent validity have "made it nearly impossible for the USPTO to reject any

1. U.S. PAT. & TRADEMARK OFF., MPEP § 1502.01 (9th ed. Rev. 10.2019, June 2020).

2. Vic Lin, *Design Patents vs. Utility Patents: What Are the Differences?*, PAT. TRADEMARK BLOG, https://www.patenttrademarkblog.com/design-patents-vs-utility-patents-differences [https://perma.cc/XT27-VZ2J]. The long odds against obviousness are no secret to the patent bar. Although unsuccessful, one infringement defendant asked the court to take judicial notice "of the fact that design patents have a high allowance rate" before the Patent and Trademark Office. Poly-Am., LP. v. API Indus. Inc., 74 F. Supp. 3d 684, 695 n.15 (D. Del. 2014).

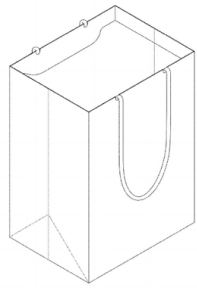
3. Sarah Burstein, *Is Design Patent Examination Too Lax?*, 33 BERKELEY TECH. L.J. 607, 610 (2018).

4. Tracy-Gene Durkin, Pauline Pelletier, Daniel Gajewski & Deirdre Wells, *Design Patents Prove Successful on Enforcement, Defense*, LAW360 (May 4, 2020, 12:36 PM), https://www.law360.com/articles/1254579/design-patents-prove-successful-on-enforcement-defense [https://perma.cc/8H8S-XGNJ] (finding that design patents survive validity challenges in eighty-two percent of federal court cases).

5. John M. Golden, *Patentable Subject Matter and Institutional Choice*, 89 TEX. L. REV. 1041, 1043, 1049 (2011).

design patent claim—regardless of how ordinary, banal, or functional the claimed design might be."[6]

Take, for example, this "ornamental design for a bag":



The design appears completely typical, far outside of any common understanding of visual innovation. Nevertheless, the PTO issued a patent to Apple for its bag,[7] giving the tech giant the ability to block the sale of the same bag—"or any colorable imitation"[8]—through 2032.

Determining whether the current anything-goes approach to design patent validity is acceptable requires some conception of design patent law's underlying purpose. Design patents are justified as necessary to incentivize the production of articles of aesthetic merit.[9] To the extent courts have provided any guidance as to what makes a design aesthetically meritorious, a review of past decisions reveals two desired qualities. A patentable design must be "nonobvious," which means a design is not protected if "one of ordinary skill would have combined [the] teachings of the prior art to create the same overall visual appearance as the claimed design."[10] In determining whether a design is nonobvious, judges have articulated their role as approving only those designs that are "beautiful" or "inventive" as compared to what came before.[11] In highlighting these two particular design qualities, the courts

6. Burstein, *supra* note 3, at 611.

7. U.S. Patent No. D785,463 (filed July 15, 2016).

8. 35 U.S.C. § 289 (2018).

9. *See* Gorham Mfg. Co. v. White, 81 U.S. (14 Wall.) 511, 524 (1871) (stating that design patents "were plainly intended to give encouragement to the decorative arts"); Peter Lee & Madhavi Sunder, *Design Patents: Law Without Design*, 17 STAN. TECH. L. REV. 277, 293–96 (2013).

10. Durling v. Spectrum Furniture Co., 101 F.3d 100, 103 (Fed. Cir. 1996).

11. *E.g.*, Smith v. Whitman Saddle Co., 148 U.S. 674, 679 (1893) (agreeing that design patents require "originality and beauty"); Glen Raven Knitting Mills Inc. v. Sanson Hosiery Mills, Inc., 189 F.2d 845, 851 (4th Cir. 1951) (stating that nonobviousness requires "an exercise of the inventive faculty"); J.R. Wood & Sons, Inc. v. Abelson's, Inc., 74 F.2d 895, 895 (3d Cir. 1934) (stating that design patent law requires a design that is "novel, beautiful, appealing to the eye, and causing a buying demand for the design"); Steffens v. Steiner, 232 F. 862, 864 (2d Cir. 1916) ("[T]he design as a whole and the impression it makes on the eye . . . must be considered.");

deciding design patent cases throughout the past century made a critical assumption: Observers naturally form an aesthetic preference for innovative designs. In other words, design innovation is synonymous with aesthetic preference.

Unlike their predecessors, today's judges rarely discuss the design qualities patent law is meant to encourage. Instead, under the recent guidance of the Federal Circuit, courts disclaim most investigations of a design's inventiveness or visual appeal. They describe aesthetic judgment as an instinctual, subjective process that is incapable of legal definition or even rational understanding.[12] Anxious over their capacity to decide what makes a design pleasurable or innovative, they adopt a minimalist approach to nonobviousness that leaves it to the marketplace, not courts, to select aesthetically favorable designs.[13]

Today's judges may refuse to probe the links (or lack thereof) between design innovation and aesthetic judgment, but others are not so bashful. Both academic psychologists and market researchers study what makes for pleasing design.[14] Recently, these groups have turned their attention to the neuroscientific study of aesthetic judgment. Because people are not very good at explaining their own design preferences, neuroscience holds great promise; it can reveal things about our thought processes that we cannot articulate on our own.

This research shows that we consider designs pleasing if they fall into a zone labelled the "aesthetic middle." Aesthetic preference is strongly tied to the ease with which an observer can mentally process a particular design.

Matthews & Willard Mfg. Co. v. Am. Lamp & Brass Co., 103 F. 634, 639 (D.N.J. 1900) ("[A] design . . . is patentable if, as a whole, it produces a new and pleasing impression on the aesthetic sense."); *see also* Lancaster Colony Corp. v. Aldon Accessories, Ltd., 506 F.2d 1197, 1199 (2d Cir. 1974) (stating that a design patent must demonstrate "a creative skill surpassing that of the routine" (citing Int'l Silver Co. v. Pomerantz, 271 F.2d 69 (2d Cir. 1959))); G.B. Lewis Co. v. Gould Prods., Inc., 436 F.2d 1176, 1178 (2d Cir. 1971) (stating that a design patent must "reflect 'some exceptional talent beyond the skill of the ordinary designer'" (quoting Neufeld-Furst & Co. Inc. v. Jay-Day Frocks Inc., 112 F.2d 715, 716 (2d Cir. 1940))); Heritage Quilts, Inc. v. New Haven Comfort Prods., Inc., 466 F. Supp. 229, 230 (S.D.N.Y. 1979) (same).

12. Christopher Buccafusco, *Making Sense of Intellectual Property Law*, 97 CORNELL L. REV. 501, 526 (2012) ("Throughout the better part of the twentieth century, courts in design patent cases routinely scrutinized products for any indication that their design appealed to the eye or excited the aesthetic senses or emotions. In the last decade of the century, however, courts appear to have gotten increasingly uncomfortable with the 'largely subjective' nature of these inquiries." (footnote omitted)); Andrew W. Torrance, *Beauty Fades: An Experimental Study of Federal Court Design Patent Aesthetics*, 19 J. INTELL. PROP. L. 389, 390 (2012) ("[B]oth legal doctrine and empirical data reflect a decline in the importance of aesthetic considerations in design patent decisions by federal courts over the last three decades."); *see also* Christine Haight Farley, *Judging Art*, 79 TUL. L. REV. 805, 810–19 (2005) (arguing that courts should avoid defining the term "art").

13. Buccafusco, *supra* note 12, at 524–27 (chronicling increasing judicial anxiety over visual aesthetics in design patent law); Rebecca Tushnet, *The Eye Alone Is the Judge: Images and Design Patents*, 19 J. INTELL. PROP. L. 409, 409 (2012) ("Judges and lawyers in general are highly uncomfortable with images . . . .").

14. Vanessa M. Patrick, *Everyday Consumer Aesthetics*, 10 CURRENT OP. PSYCH. 60, 60 (2016) (describing a surge in interest in consumer aesthetics over the past decade).

Although a limited amount of inventiveness may be needed to gain the observer's attention, consumers insist on simplicity, familiarity, and congruence with the relevant product category in designs—all qualities making an object easier for observers to comprehend. Instead of correlating with what an audience considers pleasing, innovation in design, after reaching an optimal level, quickly begins to trigger aesthetic distaste as mental processing of the design becomes more challenging.

Neuroscience's confirmation and explanation of the functioning of the aesthetic middle reveals the need for a reevaluation of the nonobviousness standard. Courts hearing design patent cases contend that there is little that can be done to rehabilitate nonobviousness, since asking whether a visual composition is so similar to what came before as to be obvious is an unavoidably subjective determination. Yet study of the aesthetic middle offers specific criteria that can be used to determine if a design represents an innovative break from the past. Instead of continuing as a mere rubber stamp, nonobviousness analysis should be revised to focus on visual elements that are not already rewarded in the marketplace—those that *challenge* audience predispositions with complexity, novelty, and incongruence. Rather than granting monopoly power to the simple, familiar designs consumers instinctually prefer and businesses are already likely to produce to meet consumer demand, design patent protection should be reserved to incentivize designs less likely to meet with immediate consumer favor because they reside outside of the aesthetic middle.

Part I of this Article describes the current standards for design patent eligibility, focusing most intently on the requirement of nonobviousness. As currently applied, nonobviousness rarely presents a challenge to a would-be design patentee. Yet nonobviousness represents the most logical avenue for realigning the mechanics of design patent law with its larger purpose. Part II catalogs the recent research on design preference, spotlighting the consistent convergence of observers on the aesthetic middle and unpacking the qualities known to make up the aesthetic middle. Part III discusses the costs of today's laissez-faire approach to nonobviousness and then describes how to build a better test for nonobviousness, one that deploys the teachings of the aesthetic middle to reward design innovation.

I. NONOBVIOUSNESS AND ITS RELATIONSHIP TO DESIGN PATENT ELIGIBILITY

This Part provides an overview of the requirements for design patent protection, with a particular focus on the nonobviousness requirement. It then examines three doctrinal changes to nonobviousness by the Federal Circuit and explains how they make nonobviousness easier to satisfy.

A. VALIDITY REQUIREMENTS

There are three primary requirements for a patentable design. According to federal statute, a protectable design must be "ornamental" and "new."[15] The third requirement, nonobviousness, is judge-made, added through common law decision-making, though subsequently enshrined through legislation.[16]

To be ornamental, the design at issue must not be functional. For example, if a particular shape renders one car mirror more aerodynamic than any alternative car mirror design, that shape lacks the necessary ornamentality to be protectable.[17] To avoid the establishment of anti-competitive monopolies around features that make products work better, functional design elements are supposed to be diverted to the differently calibrated system of utility patents and, therefore, excluded from design patent protection.[18]

The requirement that a design be "new" is referred to as the novelty requirement. Although novelty is determined by the same general rules that apply in the utility patent context—a claimed item fails to satisfy the requirement if the item is anticipated by prior art—design patent novelty is comparatively easy to satisfy.[19] Proof of insufficient novelty demands a strict identity between the prior art and the claimed design at issue.[20] Moreover, only ornamental elements can be part of this matching process as any

15. 35 U.S.C. § 171(a) ("Whoever invents any new, original and ornamental design for an article of manufacture may obtain a patent therefor, subject to the conditions and requirements of this title."). Despite the plain language of the statute, "originality" is not treated as an independent requirement for patentability. The Federal Circuit explains that although "originality" has a specific meaning under copyright law—a copyrightable work must be independently created by the author rather than copied and possess a minimal amount of creativity, see *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 345 (1991)—that meaning does not apply to design patents. Int'l Seaway Trading Corp. v. Walgreens Corp., 589 F.3d 1233, 1238 (Fed. Cir. 2009); *see also* Sarah Burstein, *How Design Patent Law Lost Its Shape*, 41 CARDOZO L. REV. 555, 561 (2019) (contending that the word "original" "ha[s] not been given [any] independent significance in the case law").

16. 35 U.S.C. § 103*; see also* Litton Sys., Inc. v. Whirlpool Corp., 728 F.2d 1423, 1441 (Fed. Cir. 1984) (explaining that the requirement of nonobviousness under the statute for utility patents "applies with equal force to a determination of" design patent validity).

17. *See* Rosco, Inc. v. Mirror Lite Co., 304 F.3d 1373, 1378 (Fed. Cir. 2002).

18. *See* Christopher Buccafusco, Mark A. Lemley & Jonathan S. Masur, *Intelligent Design*, 68 DUKE L.J. 75, 82–86 (2018). In reality, a great deal of overlap between ornamentality and functionality is tolerated as a design is considered functional only if its overall appearance is "dictated by function" and the design as a whole is functional. Richardson v. Stanley Works, Inc., 597 F.3d 1288, 1295 (Fed. Cir. 2010); L.A. Gear, Inc. v. Thom McAn Shoe Co., 988 F.2d 1117, 1123 (Fed. Cir. 1993). Because commercial product designs are seldom completely functional, courts rarely deny protection on grounds of lack of ornamentality. *See* 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, 520 (2017).

19. Jeanne C. Fromer & Mark P. McKenna, *Claiming Design*, 167 U. PA. L. REV. 123, 136 (2018) (judging design patent law's novelty requirement "not a significant limitation on patentability . . . particularly relative to the parallel requirements in utility patent law").

20. *Int'l Seaway Trading Corp.*, 589 F.3d at 1240.

correspondence must be based on how the product looks rather than how it works.[21] As a consequence, like ornamentality, lack of novelty rarely prevents the issuance of a design patent.

The third requirement for design patent eligibility is nonobviousness. A design patent must not issue when "differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made."[22] Though they sound somewhat similar, novelty and nonobviousness are distinct requirements governed by different legal analyses and set out in separate provisions of the Patent Act.[23]

This Article focuses on the nonobviousness requirement, rather than the novelty requirement, for a few reasons. Nonobviousness is broader than novelty and, as a result, may be a more likely avenue for doctrinal modification. For novelty purposes, a successful match requires prior art on all fours with the claimed design.[24] But prior designs, even if not an exact match for the proffered design, can theoretically make the proffered design obvious and therefore invalid.[25] In addition, the nonobviousness assessment can take into account more information than the more restricted novelty determination, which looks only to prior art. For example, the skill of the "ordinary designer,"[26] functional considerations that "teach away from the claimed design,"[27] and objective evidence of a design's commercial success or critical

21. Matthew A. Smith, Design Patents 7–8 (Dec. 17, 2012) (unpublished manuscript), https://patentlyo.com/media/docs/2012/12/2012-12-17_design_patents.pdf [https://perma.cc/U8ZH-HLKN]; Sarah Burstein, *Intelligent Design & Egyptian Goddess: A Response to Professors Buccafusco, Lemley & Masur*, 68 DUKE L.J. ONLINE 94, 113 (2019).

22. Litton Sys., Inc. v. Whirlpool Corp., 728 F.2d 1423, 1441 (Fed. Cir. 1984) (quoting 35 U.S.C. § 103, *amended by* Leahy–Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2012)).

23. Although not specifically addressed to design patents in the statute, the nonobviousness requirement is mandated for utility patents under section 103 of the Patent Act and all provisions of the Patent Act apply to design patents except as otherwise provided. The Patent Act of 1952 codified the nonobviousness requirement for patentability. *See* 35 U.S.C. § 103. This was a considered revision of the law for *utility* patents. Unfortunately, no real consideration was given to whether an identical nonobviousness requirement for *design* patents made sense, even though that was the effect of the law. *See In re* Nalbandian, 661 F.2d 1214, 1219 (C.C.P.A. 1981) (Rich, J., concurring); Jason J. Du Mont, *A Non-Obvious Design: Reexamining the Origins of the Design Patent Standard*, 45 GONZ. L. REV. 531, 597–98 (2009).

24. *Int'l. Seaway Trading Corp.*, 589 F.3d at 1239.

25. The division between novelty and nonobviousness has narrowed over time. A primary reference virtually identical to the design patent was once only necessary to show lack of novelty. Now, this is also required to show obviousness. Titan Tire Corp. v. Case New Holland, Inc., 566 F.3d 1372, 1381 (Fed. Cir. 2009); *see also* Mark P. McKenna & Katherine J. Strandburg, *Progress and Competition in Design*, 17 STAN. TECH. L. REV. 1, 42 (2013) ("[T]he Federal Circuit's standards for nonobviousness in design patent law are relatively low, as compared to utility patent standards . . . . [Its] approach comes dangerously close to collapsing obviousness and novelty altogether.").

26. *In re* Maatita, 900 F.3d 1369, 1377 (Fed. Cir. 2018).

27. *In re* Haruna, 249 F.3d 1327, 1335–36 (Fed. Cir. 2001).

approval can all be evaluated in assessing nonobviousness.[28] Given its relatively rote and inflexible application, novelty seems a less suitable candidate for substantial reform than the nonobviousness requirement.

In addition, nonobviousness, in the utility patent context, is already celebrated as the most important requirement for patent protection and one directly linked to patent law's central purpose. Nonobviousness has been referred to as "the heart of the patent system and the justification of patent grants."[29] By limiting patent rights to only those creations that truly add to the corpus of human knowledge, the nonobviousness requirement directly aligns with the constitutional edict that patent grants "promote the Progress of Science and useful Arts."[30] As a result, it is generally understood that nonobviousness "stands as the cornerstone of the patent bargain," outshining other patent requirements in importance and theoretical depth.[31] This understanding makes nonobviousness a promising area for meaningful doctrinal reform whereas novelty looms less large in the judicial imagination.

Finally, as detailed in the next Section, the courts, primarily the Federal Circuit, have recently altered the nonobviousness requirement for design patents. This has produced a divergence from the same requirement's treatment in the utility patent context. In the main, courts try to avoid significant doctrinal discrepancies between utility patent and design patent law.[32] Of course, determining whether a method or machine is obvious based on what it does is a very different question from whether an object is obvious based on how it appears. Nevertheless, there may be more sympathy in the judiciary for reforming design patent doctrine through realigning the nonobviousness standards in utility patent and design patent law than by creating an entirely new design patentability standard.

B. THE FEDERAL CIRCUIT NEUTERS NONOBVIOUSNESS

Thanks to three doctrinal moves, nonobviousness challenges to a claimed design rarely succeed, either before the PTO or the federal courts. By insisting on a primary reference in the prior art nearly identical to the claimed design, adopting a holistic approach to design that refuses to declare some visual elements more important than others, and relying too heavily on evidence of

28. Apple, Inc. v. Samsung Elecs. Co., No. 11-cv-01846, 2011 WL 7036077, at *27 (N.D. Cal. Dec. 2, 2011) (citing Iron Grip Barbell Co. v. USA Sports, Inc., 392 F.3d 1317 (Fed. Cir. 2004) ("[E]vidence of commercial success can support non-obvious determination of patent.").

29. Giles S. Rich, *Laying the Ghost of the "Invention" Requirement*, 1 AIPLA Q.J. 26, 26 (1972).

30. U.S. CONST. art I, § 8, cl. 8.

31. Laura G. Pedraza-Fariña & Ryan Whalen, *A Network Theory of Patentability*, 87 U. CHI. L. REV. 63, 65 (2020).

32. Auto. Body Parts Ass'n v. Ford Glob. Techs., LLC, 930 F.3d 1314, 1322 (Fed. Cir. 2019) ("[W]e apply the same rules to design and utility patents whenever possible."); Hoop v. Hoop, 279 F.3d 1004, 1007 (Fed. Cir. 2002) ("We apply the same standard of inventorship to design patents that we require for utility patents." (citing *In re* Rousso, 222 F.2d 729, 731 (C.C.P.A. 1955))).

commercial success, the Federal Circuit has turned nonobviousness into a dead letter.

Under Federal Circuit doctrine, a finding of obviousness demands two separate inquiries: (1) assessing whether a single example from the prior art (called a "primary reference" or "*Rosen* reference") "create[s] basically the same visual impression" as the claimed design; and (2) determining whether that single example, after it has been modified by relevant secondary references, "create[s] a design that has the same overall visual appearance as the claimed design."[33] Any secondary references must be "so related [to the primary reference] that the appearance of certain ornamental features in one would suggest the application of those features to the other."[34] If no suitable primary reference exists, there is no need to proceed to the second inquiry and the claimed design cannot be obvious.[35] The determination of suitable primary and secondary references is made from the perspective of a designer with "ordinary skill in the art,"[36] though the ultimate visual comparison is made from the perspective of the "ordinary observer."[37]

Therefore, to declare a claimed design obvious, there must be a primary reference already in existence having design characteristics that "are basically the same as the claimed design."[38] This exacting standard makes obviousness extremely difficult to prove.[39] For example, the Federal Circuit held that the look of other tablet computers could not serve as a primary reference for Apple's tablet, the iPad, even though the tablets had several ornamental features in common with the iPad.[40] The trial court found that a previous tablet, the Fidler/Knight Ridder tablet, had, like the iPad, four rounded corners, a flat glass-like surface without any ornamentation, and an overall

33. MRC Innovations, Inc. v. Hunter Mfg., LLP, 747 F.3d 1326, 1331 (Fed. Cir. 2014) (quoting Durling v. Spectrum Furniture Co., 101 F.3d 100, 103 (Fed. Cir. 1996)).

34. Titan Tire Corp. v. Case New Holland, Inc., 566 F.3d 1372, 1381 (Fed. Cir. 2009) (quoting *Durling*, 101 F.3d at 103 (alteration in original)); *see also MRC Innovations*, 747 F.3d at 1331 (noting that primary reference requires finding "a something in existence, the design characteristics of which are basically the same as the claimed design" (quoting *Durling*, 101 F.3d at 103)).

35. *Durling*, 101 F.3d at 103.

36. Campbell Soup Co. v. Gamon Plus, Inc., 939 F.3d 1335, 1339 (Fed. Cir. 2019) (quoting Arctic Cat Inc. v. Bombadier Recreational Prods. Inc., 876 F.3d 1350, 1358 (Fed. Cir. 2017)).

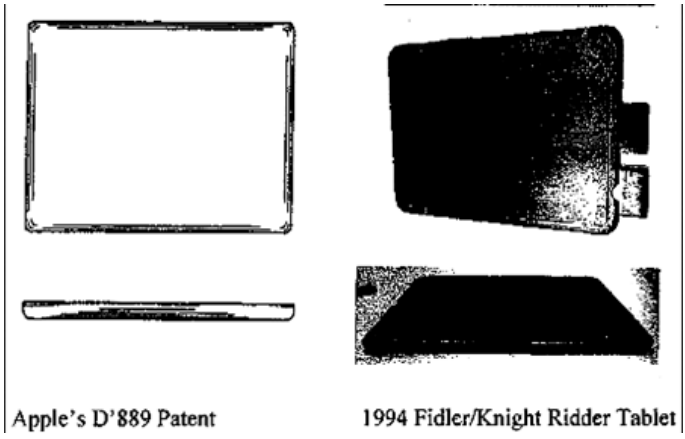
37. Int'l Seaway Trading Corp. v. Walgreens Corp., 589 F.3d 1233, 1240–41 (Fed. Cir. 2009).

38. *In re* Rosen, 673 F.2d 388, 391 (C.C.P.A. 1982).

39. Maureen Long, *The Nonobviousness Requirement for Design Patents: What Is the Standard and Why Shouldn't It Obviously Be Modified After* KSR*?*, 45 AIPLA Q.J. 193, 213 (2017) ("[T]he obviousness analysis of a design patent cannot even begin unless there exists a prior art reference that is so close to the claimed design that it would almost meet the requirement of anticipation under section 102."); McKenna & Strandburg, *supra* note 25, at 39 (arguing that the "stringent" nature of the primary reference requirement "leads to few invalidations or rejections").

40. Apple, Inc. v. Samsung Elecs. Co., 678 F.3d 1314, 1332 (Fed. Cir. 2012).

design that conveys thinness, thereby "creat[ing] basically the same visual impression."[41]



The Federal Circuit disagreed, reversing the trial court's finding of obviousness. The Federal Circuit explained that despite these striking similarities, various differences, including a greater contrast between the screen and the rest of the older tablet, meant that the previous tablet could not serve as a primary reference for the iPad.[42] Without a primary reference, the game was up: Apple's design patent had to be considered nonobvious, paving the way for a half a billion dollar infringement verdict against Samsung.[43] The *Apple* trial court notwithstanding, courts rarely identify works exhibiting the necessary degree of similarity to the patentee's design to be a primary reference.[44] The same holds true for examiners at the PTO.[45]

This approach is very different from past determinations of nonobviousness. In earlier cases, obviousness did not require disclosure of the claimed design in a single reference.[46] Not coincidentally, courts in the prior period frequently declared claimed design patents obvious and, therefore,

41. Apple, Inc. v. Samsung Elecs. Co., No. 11-cv-01846, 2011 WL 7036077, at *12, *25 (N.D. Cal. Dec. 2, 2011), *aff'd in part, vacated in part*, 678 F.3d 1314 (Fed. Cir. 2012).

42. *Apple*, 678 F.3d at 1331–32.

43. Jury Verdict at 2–3, Apple, Inc. v. Samsung Elecs. Co., No. 11-cv-01846 (N.D. Cal. May 24, 2018) (No. 3806) (approving jury award of $533 million for Samsung's infringement of Apple's design patents).

44. Burstein, *supra* note 3, at 616.

45. *Id.* at 617.

46. *See, e.g.*, Cardiac Pacemakers, Inc. v. Coratomic, Inc., 535 F. Supp. 280, 283 (D. Minn. 1982).

invalid.[47] Scholars could describe the law of design nonobviousness in this era as demanding much more than a finding of some visual difference from a single reference.[48]

As it demands a nearly identical primary reference, the Federal Circuit also insists on a holistic approach to nonobviousness. This means that instead of focusing on design aspects that might be more noticeable or important to consumers, the modern nonobviousness test must take in everything at once. Uncertain of their ability to channel the public's design perceptions and preferences, judges fall back on the safe belief that all design elements are created equal. This design agnosticism is gospel when it comes to comparing the claimed work to the prior art. "[T]here are no portions of a design which are 'immaterial' or 'not important,'" explained the Federal Circuit's predecessor.[49] "A design is a unitary thing and all of its portions are material in that they contribute to the appearance which constitutes the design."[50] More recent decisions insist only "the visual impression of the designs as a whole" can be considered, not "selected, separate features of the prior art."[51] Judges must be cautious even when describing what they see as "[l]isting details of ornamentation is an inappropriate construction because it does not project the overall visual impression of the design."[52]

This insistence that no one part of the design is more important than another might sound like it would make nonobviousness more difficult to prove, thereby making it more difficult to claim a valid design patent. Things look more similar the less detailed your perspective is.[53] If courts can only take a broad view of the entire design, then it might be harder to point out differences between the claimed design and the prior art.

In actuality, however, design agnosticism makes it easier to show nonobviousness. If one detail cannot be prioritized over another, then *any*

47. *See* Ralph S. Brown, *Design Protection: An Overview*, 34 UCLA L. REV. 1341, 1356 (1987) (contending that design patents are declared invalid seventy percent of the time in federal litigation); Thomas B. Lindgren, *The Sanctity of the Design Patent: Illusion or Reality? Twenty Years of Design Patent Litigation Since* Compco v. Day-Brite Lighting, Inc., *and* Sears, Roebuck & Co. v. Stiffel Co., 10 OKLA. CITY U. L. REV. 195, 223 (1985) ("The most frequent legal ground utilized in the Second Circuit to hold a design patent invalid was the legal rationale of obviousness under section 103.").

48. Lindgren, *supra* note 47, at 222 ("A design is not patentable merely because it can be distinguished in appearance from the prior art.").

49. *In re* Blum, 374 F.2d 904, 907 (C.C.P.A. 1967).

50. *Id.*

51. *In re* Harvey, 12 F.3d 1061, 1065 (Fed. Cir. 1993).

52. Ashley Furniture Indus., Inc. v. Lifestyle Enter., Inc., 574 F. Supp. 2d 920, 928 (W.D. Wis. 2008); *see also* Titan Tire Corp. v. Case New Holland, Inc., 566 F.3d 1372, 1383 (Fed. Cir. 2009) (cautioning against the "tendency to draw the court's attention to individual features of a design rather than the design's overall appearance").

53. Oskar Liivak, *Rescuing the Invention from the Cult of the Claim*, 42 SETON HALL L. REV. 1, 51 (2012) ("From a distance, much of copyrightable subject matter looks the same—from a distance all 'writings' look similar.").

detail becomes a potential difference from the prior art—a difference that prevents an earlier design from serving as the necessary primary reference. As discussed, in the *Apple* case, the Federal Circuit second-guessed the trial judge's determination that another tablet possessed the same key stylistic features as Apple's iPad.[54] The Federal Circuit noted differences that it said made the iPad design nonobvious, but it made no effort to explain why the differences it pointed out were more important than the similarities identified by the district court.[55] The importance or materiality of a particular design feature to consumers is not part of the current nonobviousness analysis, which makes it all the easier for the design patent holder to find at least one difference between its creation and what came before.[56] Even features not visible to onlookers at the point of sale are now considered relevant to the ordinary observer and potential grounds for distinguishing the prior art and declaring a design nonobvious.[57]

Finally, nonobviousness has become easier to prove given the courts' generous treatment of evidence of a design's "commercial success." In the utility patent context, the Supreme Court lists "commercial success" and "long felt but unsolved needs" as relevant "secondary considerations" in determining nonobviousness.[58] Lower courts added industry praise and a defendant's intentional copying to the list.[59] "Generally [speaking], secondary-considerations evidence [only] supports a finding of nonobviousness."[60] This evidence is probative, it is theorized, in that a feature that is obvious to others would be unlikely to succeed in the marketplace, be unique, earn plaudits, or become the target of copyists.[61]

In the design patent context, commercial success is one of the secondary considerations raised most frequently.[62] This evidence typically favors the patent holder and, though labelled a "secondary" consideration, can tip the scales away from a finding of obviousness.[63] According to the Federal Circuit,

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54. Apple, Inc. v. Samsung Elecs. Co., 678 F.3d 1314, 1330–32 (Fed. Cir. 2012).

55. *Id.* at 1331.

56. *Cf.* Gorham Co. v. White, 81 U.S. (14 Wall.) 511, 527 (1871) (contending that "human ingenuity has never yet produced a design, in all its details, exactly like another, so like, that an expert could not distinguish them").

57. Contessa Food Prods., Inc. v. Conagra, Inc., 282 F.3d 1370, 1381 (Fed. Cir. 2002).

58. Graham v. John Deere Co., 383 U.S. 1, 17–18 (1966).

59. Geo. M. Martin Co. v. All. Mach. Sys. Int'l LLC, 618 F.3d 1294, 1304–05 (Fed. Cir. 2010).

60. Natalie A. Thomas, *Secondary Considerations in Nonobviousness Analysis: The Use of Objective Indicia Following* KSR v. Teleflex, 86 N.Y.U. L. REV. 2070, 2077 (2011).

61. *See, e.g.*, L.A. Gear, Inc. v. Thom McAn Shoe Co., 988 F.2d 1117, 1124 (Fed. Cir. 1993).

62. *See* Sarah Burstein, *Visual Invention*, 16 LEWIS & CLARK L. REV. 169, 194 (2012).

63. *See, e.g.*, Catalina Lighting, Inc. v. Lamps Plus, Inc., 295 F.3d 1277, 1288 (Fed. Cir. 2002) ("[O]bjective indicia may often be the most probative and cogent evidence of nonobviousness in the record." (alteration in original) (quoting Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1579 (Fed. Cir. 1997))).

"evidence rising out of the so-called 'secondary considerations' must always when present be considered en route to a determination of obviousness."[64]

Courts routinely caution that, by itself, commercial success is not enough to deem a design nonobvious.[65] There must be some demonstration of a nexus between success and the ornamental aspects of the design, as opposed to other factors like improved functionality. But once the patentee establishes a product's general commercial success and that the same product is disclosed and named in the design patent, there is a prima facie case of sufficient nexus.[66] At this point, it becomes the defendant's burden to rebut the link between the design and commercial success.[67] The result can be a fairly smooth glide path to nonobviousness for a patent holder.[68] By fostering such a receptive approach to evidence of commercial success, the Federal Circuit makes determining that a design is obvious less likely.

II. THE AESTHETIC MIDDLE

The end result of the three doctrinal moves described in Part I is a nonobviousness filter that catches almost nothing in its net. Although design patents become legally cognizable only after examination and issuance of a patent by the PTO, the PTO does little screening of design patent applications. According to one study, the PTO rejects only approximately one out of every one hundred designs for obviousness or lack of novelty.[69] The odds do not change when one considers the nonobviousness analysis of the federal courts.[70]

To evaluate whether such a generous approach to design patent validity makes sense, we need to have a sense of the purposes behind design patent protection as well as a better understanding of consumer perception of design. Courts interrogating design nonobviousness contend that it is impossible to objectively intuit the aesthetic responses of outside observers, but that it is safe to assume a natural attraction to innovative design. Neuroscientific research reveals that this assumption is inaccurate. Instead,

64. High Point Design LLC v. Buyers Direct, Inc., 730 F.3d 1301, 1315 (Fed. Cir. 2013) (quoting Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1538 (Fed. Cir. 1983)).

65. *See, e.g.*, Petersen Mfg. Co. v. Cent. Purchasing, Inc., 740 F.2d 1541, 1549 (Fed. Cir. 1984); Tyco Indus., Inc. v. Tiny Love, Ltd., 914 F. Supp. 1068, 1081 (D.N.J. 1996).

66. *In re* GPAC Inc., 57 F.3d 1573, 1580 (Fed. Cir. 1995).

67. Demaco Corp. v. F. Von Langsdorff Licensing Ltd., 851 F.2d 1387, 1392 (Fed. Cir. 1988).

68. *E.g.*, Crocs, Inc. v. Int'l Trade Comm'n, 598 F.3d 1294, 1310–11 (Fed. Cir. 2010).

69. Buccafusco et al., *supra* note 18, at 113*; see also* Michael Risch, *Functionality and Graphical User Interface Design Patents*, 17 STAN. TECH. L. REV. 53, 68 (2013) (criticizing PTO's lax treatment of design nonobviousness); Sarah Burstein & Saurabh Vishnubhakat, *The Truth About Design Patents*, 71 AM. U. L. REV. 1221, 1274–79 (2022) (noting difficulties in determining final grounds for PTO rejections but "[i]n any case, the available data indicate that acquiring design patents is much easier than the conventional wisdom holds").

70. Buccafusco et al., *supra* note 18, at 79–80 (describing the nonobviousness threshold in federal litigation as "trivially low").

we prefer designs with only a modicum of originality. We reward familiar designs or ones that fit our preconceived notions with high aesthetic ratings because they are easier for our brains to process. As a result, pegging nonobviousness to the public's aesthetic preferences will not promote design innovation.

A. DESIGN PATENT LAW'S REASONS FOR BEING

The dominant account of intellectual property protections in the United States posits that special legal privileges are needed to incentivize certain kinds of creative activities.[71] Under this theory, for every kind of intellectual property, there is an empirical question and a normative one. The empirical question asks whether the kind of creative work will be less than optimally supplied by the marketplace in the absence of legal intervention.[72] The normative question asks whether production of that kind of work is socially valuable. Congress appears to have already answered these questions with regard to design patents, legislating design patent protection almost two centuries ago and taking steps over the ensuing decades to strengthen such protection.[73] Yet it is still worth investigating these questions, particularly since the legislative history is less than clear as to why Congress came up with the answers that it did.

For the empirical question, one might ask why designers need legal encouragement to make beautiful products. It does not take a marketing expert to realize that consumers like things that simultaneously work well and look good. If a business takes steps to make a better-looking blender or a more stylish running shoe, those efforts would seem to prompt more sales and be their own reward.[74]

The problem, it is theorized, is that there is not enough of a natural or market incentive to make products that are functional yet also pleasing to the

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71. Gregory N. Mandel, *The Public Perception of Intellectual Property*, 66 FLA. L. REV. 261, 269–70 (2014).

72. Not every cultural product or inventive activity requires legal protection to preserve incentives for its creation. For example, catchy advertising slogans and brand names will continue to be created out of a desire to sell underlying products, even without a legal incentive for their creation and without limiting the pool of choices for future advertisers. Guthrie Healthcare Sys. v. ContextMedia, Inc., 826 F.3d 27, 42 (2d Cir. 2016) ("One seller's monopolization of a particular term does not deprive competitors of anything of value because the number of arbitrary or fanciful marks available for use is infinite . . . ."). *But see generally* Barton Beebe & Jeanne C. Fromer, *Are We Running Out of Trademarks? An Empirical Study of Trademark Depletion and Congestion*, 131 HARV. L. REV. 945 (2018) (examining the possibility that there is a finite amount of competitive trademark possibilities).

73. *See generally* Jason J. Du Mont & Mark D. Janis, *The Origins of American Design Patent Protection*, 88 IND. L.J. 837 (2013) (analyzing the history of modern American design patent systems).

74. McKenna & Strandburg, *supra* note 25, at 48 n.235 ("Producers of . . . articles [of manufacture] have strong incentive to make their products attractive to consumers so that consumers will demand their products rather than those of their competitors. It is hard to imagine that incentive disappearing if others copy the design . . . .").

eye. Some published decisions explain that the purpose of design patents is to promote the "decorative arts."[75] The decorative arts "[t]raditionally . . . included furniture, metalwork, ceramics, glassware, and jewelry."[76] Those working in these disciplines find themselves arguably more constrained by physical barriers than someone writing a song or painting a canvas. They must heed the physical limitations of the field.[77] Functional components need accommodating, which requires additional effort and expense. As a result, manufacturers may be less likely to invest in creative design, especially if a rival could immediately use the same design to sell its own particular version of the decorative art.[78] That is where design patents come in to give industrial designers a nudge, an additional incentive, to put extra effort into aesthetic concerns by constraining copying by other designers.[79]

The normative question requires some understanding of exactly which sort of designs will be socially beneficial. In both utility patent and copyright law—thanks to decades of judicial decisions, statutory and doctrinal adjustments, and reams of scholarship—there is an articulated sense of the kinds of works that are good for society. Design patent law lacks the decades of doctrinal development and common law theorizing of utility patent and copyright law that describe which designs should be considered socially

75. *E.g.*, Avia Grp. Int'l, Inc. v. L.A. Gear Cal., Inc., 853 F.2d 1557, 1563 (Fed. Cir. 1988).

76. Burstein, *supra* note 62, at 172. Today, design patents cover much more than these particular areas. *See generally, e.g.*, Campbell Soup Co. v. Gamon Plus, Inc., 939 F.3d 1335 (Fed. Cir. 2019) (concerning a design patent for grocery store soup can dispensers); Contessa Food Prods., Inc. v. Conagra, Inc., 282 F.3d 1370 (Fed. Cir. 2002) (concerning a design patent for shrimp serving trays).

77. Peter H. Bloch, *Seeking the Ideal Form: Product Design and Consumer Response*, 59 J. MKTG. 16, 18 (1995) (discussing technical constraints on designer freedom).

78. The traditional definition of decorative arts is much narrower than the broad categories of goods eligible for a modern design patent. For example, display icons for computer software enjoy design patent protection even though it is hard to envision many functional limitations on their development. *See* U.S. PAT. & TRADEMARK OFF., MPEP § 1504.01(a)(I)(A) (9th ed. Rev. 07.2015, Oct. 2015) (citing *In re* Hruby, 373 F.2d 997, 1001 (C.C.P.A. 1967)). Even if potters and jewelers face significant physical constraints on their craft, this may not be so for other commercial designers that have fewer limitations on their creative freedom. Today's capacious approach to design patent subject matter is another reason to seek out means of tightening the nonobviousness standard so as to avoid granting monopoly protection to designs that would have been made without the added incentive of a patent.

79. Some contend that any design patent regime is unnecessary because alternative forms of intellectual property protection or market forces already supply sufficient incentives for design creation. Lee & Sunder, *supra* note 9, at 296 ("In short, beautification may be a worthy goal, but it is still not clear that the promise of a patent is required to produce the desired result."); Janice M. Mueller & Daniel Harris Brean, *Overcoming the "Impossible Issue" of Nonobviousness in Design Patents*, 99 KY. L.J. 419, 428 n.34 (2010) ("Copyright or trademark law provide more suitable forms of protection for designs."). These scholars may be correct, but this Article takes the general need for some system of design patent protection as a given and instead seeks a way to better fine-tune that system. Given design patent law's long history in the United States, it seems unlikely that lawmakers could be convinced to end design patent protection altogether.

valuable and, hence, legally protectable.[80] Nevertheless, the existing jurisprudence, meagre as it is, offers some clues to answering the normative question for design patents.

Across the span of design patent case law, one can see two accounts for the social value of industrial design. According to the first account, design patent law's reason for being is hedonic. Design patents stimulate the production of visually appealing products, which is gratifying to consumers. As explained by one court, "Congress intended to encourage ornamentation and beautification in manufactured articles so as to increase their saleability and satisfy the aesthetic sense of the purchaser."[81] Declaring a cement mixer an appropriate subject of design patent protection, a court explained that Congress, in creating a system of design patent protection, "had in mind the elimination of much of the unsightly repulsiveness that characterizes many machines and mechanical devices which have a tendency to depress rather than excite the esthetic sense."[82]

Hence, one guiding light for design patent doctrine is beautification. Design patents facilitate "the enjoyment of [manufactured articles] by the public" by prompting firms to pay greater attention to industrial design.[83] Under this rationale, design patent protection hinges on the courts' best guess as to whether a claimed design imparts "a pleasing impression" to the eye of ordinary observers.[84] Items that do not spark sensations of beauty or pleasure or that lack any "appeal to the aesthetic sense" do not need to be protected.[85] As a primary gatekeeper for design patent protection, the nonobviousness doctrine reflects the beautification rationale: "The decisive question [for nonobviousness] is whether or not the design imparts a pleasing impression to the eye of ordinary observers."[86] A design that fails to generate aesthetic pleasure does not provide hedonic benefits for society and should therefore be declared obvious.[87]

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80. Dennis D. Crouch, A Trademark Justification for Design Patent Rights 2 (Aug. 10, 2010) (unpublished manuscript) (on file with the Harvard Journal of Law & Technology).

81. Rains v. Cascade Indus., Inc., 269 F. Supp. 688, 693 (D.N.J. 1967), *rev'd on other grounds*, 402 F.2d 241 (3d Cir. 1968).

82. *In re* Koehring, 37 F.2d 421, 422 (C.C.P.A. 1930).

83. *In re* Torgersen, 104 F.2d 194, 195 (C.C.P.A. 1939). Non-legal normative arguments for incentivizing pleasing design make similar points. Bloch, *supra* note 77, at 16–17 (contending that "the quality of our lives" is enhanced by design that provides "sensory pleasure and stimulation," particularly for durable products that may be part of the "sensory environment" for years).

84. Rains v. Cascade Indus., Inc., 402 F.2d 241, 247 (3d Cir. 1968); R. M. Palmer Co. v. Luden's, Inc., 236 F.2d 496, 501 (3d Cir. 1956).

85. Flexible Plastics Corp. v. Black Mountain Spring Water Inc., 357 F. Supp. 554, 556 (N.D. Cal. 1972). *See, e.g.*, *id.* at 555–56 ("It is perhaps an understatement to say that it is not a thing of beauty—it has not the slightest appeal to the aesthetic sense.").

86. Blumcraft of Pittsburgh v. Citizens & S. Nat'l Bank of S.C., 286 F. Supp. 448, 456 (D.S.C. 1968), *rev'd on other grounds*, 407 F.2d 557 (4th Cir. 1969).

87. *Id.*

The second account of design patent law's purpose provides a different answer to the normative question. Although perhaps less frequent in today's judicial language, many older design patent decisions proclaim a need "to stimulate the exercise of inventive faculty in improving the appearance of articles of manufacture."[88] According to this view, only design efforts that reflect real innovation deserve patent protection.[89] It is the "ingenious producer" of aesthetic improvements or those exercising "inventive faculty" that the law seeks to aid.[90] This means that designs lacking ingenuity fail the normative test and do not deserve protection. Design patents are meant to "reward, and thereby to encourage, creative artistic activity rather than mere changes of detail which may produce 'novelty' but do not reflect 'invention.'"[91] Instead of focusing on the consumer's aesthetic pleasure, this account speculates that it is a design's innovation over what came before, rather than its strictly hedonic appeal, that constitutes the "progress" justifying a design patent.[92]

Whether these two justifications for design patent protection can be reconciled depends on consumer preference. The nonobviousness requirement demands speculation as to the aesthetic judgment of consumers.[93] For the most part, to the extent they address nonobviousness's ideological underpinnings,

88. Stein v. Expert Lamp Co., 188 F.2d 611, 613 (7th Cir. 1951); Hueter v. Compco Corp., 179 F.2d 416, 417 (7th Cir. 1950); *see also* Durdin v. Kuryakyn Holdings, Inc., 440 F. Supp. 2d 921, 923 (W.D. Wis. 2006) (considering design nonobvious "because it was the product of the inventive process and is not a mere reproduction or imitation of the human form").

89. *See* S. Dresner & Son v. Doppelt, 120 F.2d 50, 52 (7th Cir. 1941) (citing Nat Lewis Purses, Inc. v. Carole Bags, Inc., 83 F.2d 475, 476 (2d Cir. 1936)) ("'[I]nvention' in design patents means the same exceptional talent that is required for a mechanical patent, so that the fact that the design 'may have been new and pleasing enough to catch the trade' is not alone enough. The factor of inventive genius must be present.").

90. Gorham Co. v. White, 81 U.S. (14 Wall.) 511, 525 (1871); *Durdin*, 440 F. Supp. 2d at 936.

91. Int'l Seaway Trading Corp. v. Walgreens Corp., 599 F. Supp. 2d 1307, 1314 (S.D. Fla. 2009) (quoting Hadco Prods., Inc. v. Walter Kidde & Co., 462 F.2d 1265, 1274 (3d Cir. 1972)), *aff'd in part, vacated in part*, 589 F.3d 1233 (Fed. Cir. 2009).

92. *In re* Laverne, 356 F.2d 1003, 1006 (C.C.P.A. 1966) ("[T]he clear purpose of the design patent law is to promote progress in the 'art' of industrial design . . . ."); Sidewinder Marine, Inc. v. Starbuck Kustom Boats & Prods., Inc., 418 F. Supp. 224, 229–30 (D. Colo. 1976) ("The application of existing design lines from speed boats to family pleasure boats is not an invention warranting a design patent . . . While the emergence of family pleasure boats with racing boat lines met with much acclaim in the boating industry, such marketing insight is not the kind of promotion of 'the Progress of Science and the useful Arts' meriting the grant of a patent."); Coca-Cola Co. v. Whistle Co. of Am., 20 F.2d 955, 956 (D. Del. 1927) (weighing whether "the design patent statute must be given a construction that will make it of value in the progress of the useful arts").

93. *See In re* Grigsby, 5 F.2d 117, 118 (D.C. Cir. 1925) (noting nonobviousness requires assessment of "the taste and fancy of the average man"); Aileen Mills Co. v. Ojay Mills, Inc., 188 F. Supp. 138, 144 (S.D.N.Y. 1960) (holding that nonobviousness is judged by "the eye . . . of the ordinary purchaser"); Lindgren, *supra* note 47, at 197 ("The appearance of the ornamental design creates an impression upon the mind of the observer, and this appearance is the subject matter of design patents.").

judges presume that aesthetic pleasure and design innovation are synonymous. They contend that consumers prefer "inventive" or "ingenious" designs, believing that such designs provide hedonic benefits and should be encouraged.[94] If these speculations are incorrect, and it is determined that consumers find non-inventive industrial design pleasing and consider transformative design undesirable, there is a conflict between the two accounts at the center of design patent law.

The problem for any judge investigating nonobviousness is the modern concern that interrogation of human judgment of design cannot lend itself to a specific analysis and is, in fact, "impossible."[95] For the courts, objective evidence of a pleasing impression from design—what courts once described as "decisive" in determining nonobviousness[96]—is lacking.[97] The same goes for design innovation. There is a belief that the scientific inventiveness at issue with utility patents can be detected via objective comparison to past inventive activity whereas innovation in the visual arts does not allow for such a comparison. Even the court with the most expertise on this question, the Federal Circuit, confesses that it is necessarily flying blind. Considering the obviousness of the design of Crocs shoes, the Federal Circuit acknowledged its own lack of discernment: "Courts, made up of laymen as they must be, are likely either to underrate, or to overrate, the difficulties in making new and profitable discoveries in fields with which they cannot be familiar."[98]

Without objective criteria to apply, courts are left to rely largely on their own subjective sense to evaluate the imprint of the design on consumer perception.[99] "The essence of a design has been said to reside," explains one patent authority, "not in the elements individually, but to exist in that indefinable whole that awakens some sensation in the observer's mind."[100] An

94. *See supra* notes 11–13 and accompanying text.

95. Giles Rich, the "dean" of the Federal Circuit, referred to "obviousness in design patentability cases" as the "impossible issue." *In re* Nalbandian, 661 F.2d 1214, 1219 (C.C.P.A. 1981) (Rich, J., concurring).

96. Blumcraft of Pittsburgh v. Citizens & S. Nat'l Bank of S.C., 286 F. Supp. 448, 456 (D.S.C. 1968), *rev'd on other grounds*, 407 F.2d 557 (4th Cir. 1969); Swank Prods., Inc. v. Silverman, 21 F. Supp. 927, 929 (D.R.I. 1938); Try-Me Beverage & Compound Co. v. Metropole, 25 F.2d 138, 139 (E.D.S.C. 1928).

97. *In re* Nalbandian, 661 F.2d at 1218 (Rich, J., concurring) ("[C]ourts will, with phraseology of their own choosing, continue to find designs patentable or unpatentable according to their judicial 'hunches.'"); Plantronics, Inc. v. Roanwell Corp., 403 F. Supp. 138, 159–60 (S.D.N.Y. 1975) ("Thus, in the final analysis, a court's evaluation of the patentability of a design is essentially subjective and personal artistic tastes are unpredictable and inexplicable—one viewer's mural is another's graffiti.").

98. Crocs, Inc. v. Int'l Trade Comm'n, 598 F.3d 1294, 1310 (Fed. Cir. 2010) (quoting Safety Car Heating & Lightning Co. v. Gen. Elec. Co., 155 F.2d 937, 939 (2d Cir. 1946)).

99. Lindgren, *supra* note 47, at 223 ("The determination of patentability in design patent cases must finally rest on the subjective conclusions of each reviewing judge.").

100. 3 JOHN GLADSTONE MILLS III, DONALD CRESS REILEY III, ROBERT CLARE HIGHLEY & PETER D. ROSENBERG, PATENT LAW FUNDAMENTALS § 8:5 (2d ed. 2020).

oft-repeated statement of the law dating back to 1900 emphasizes the indescribable nature of a design's effect on viewers, the exact area of study for nonobviousness:

> Design, in the view of the patent law, is that characteristic of a physical substance which, by means of lines, images, configuration, and the like, taken as a whole, makes an impression, through the eye, upon the mind of the observer. The essence of a design resides, not in the elements individually, nor in their method of arrangement, but in the tout ensemble—in that indefinable whole that awakens some sensation in the observer's mind.[101]

Given this account of the subjective nature of aesthetic experience, experts can offer little insight. In fact, despite their own discomfort with evaluating nonobviousness, judges tend to believe that no special skill can be applied to determine when things look alike.[102]

Even attempting to discuss one's observation of a design is problematic. Although courts are required to provide some sort of account of their nonobviousness determinations, there is a skepticism as to how such a determination can be articulated into textual or even rational terms. "Words are often an inadequate substitute for the overall visual impression created upon the observer of the item at issue compared to that of its alleged predecessors."[103] Instead, the Federal Circuit instructs that "a 'trial court judge may determine almost *instinctively* whether the two designs create basically the same visual impression.'"[104] Thanks to their view that neither design beauty nor design ingenuity are open to interrogation or articulation, courts have been free to declare each design quality as instantiating the other.

B. THE NEUROSCIENCE OF DESIGN PREFERENCE

Neuroscientific experiments have led to a better understanding of the mechanics of aesthetic appreciation among psychologists and market researchers, if not judges. Brain imaging permits psychological processes to be studied in real time, rather than relying on the retrospective interpretations

101. Pelouze Scale & Mfg. Co. v. Am. Cutlery Co., 102 F. 916, 918–19 (7th Cir. 1900).

102. Sidewinder Marine, Inc. v. Starbuck Kustom Boats & Prods., Inc., 418 F. Supp. 224, 228 (D. Colo. 1976) ("I agree with [other circuits] requiring nonobviousness to be measured in light of the prior art at the time of the invention from the perspective of a designer of ordinary skill."); *see also* Splendor Form Brassiere, Inc. v. Rapid-Am. Corp., No. 70 Civ. 1846, 1975 WL 21101, at *10 (S.D.N.Y. May 13, 1975) (rejecting an expert's testimony as "verbal overkill" irrelevant to the nonobviousness determination).

103. Lindgren, *supra* note 47, at 225.

104. Spigen Korea Co. v. Ultraproof, Inc., 955 F.3d 1379, 1383–84 (Fed. Cir. 2020) (emphasis added) (quoting Durling v. Spectrum Furniture Co., 101 F.3d 100, 103 (Fed. Cir. 1996)).

of human subjects.[105] Verbal recountings of aesthetic experiences can be unreliable because they cannot access the subconscious processes that are at play when we perceive visual works. In some situations, efforts to describe and justify aesthetic response produce even more inaccuracy than more unthinking responses.[106] Neuroscientific recordings have the advantage of tracking immediate reaction to design, much of which occurs below the surface of conscious awareness, without relying on the considered articulations of the observer.

Neuroscience is particularly well-suited to interrogate the mechanics of the aesthetic appreciation of design. Visual processing is arguably the best understood mental process in modern neuroscience.[107] "[T]here is broad consensus on the . . . neuroanatomical substrates of different visual processes,"[108] as well as tools allowing researchers to infer mental states from neural data without needing to resort to self-report.[109] Functional magnetic resonance imaging allows researchers to determine what someone is imagining, a capability that highlights the central importance of visual mental imagery in aesthetic episodes.[110] Researchers can now look to tell-tale signs in the brain to untangle different areas of aesthetic evaluation. For example, a person's processing of an artist's style is neurally different from her processing of the artwork's visual content.[111]

One might be skeptical of the ability to quantify the perception of a visual stimulus as "beautiful" or "pleasing." Yet scientists can pinpoint specific neural activity that shows when we consider something attractive. Several experiments link the experience of beauty with activity in a particular area of the brain: the

105. Martin Reimann, Judith Zaichkowsky, Carolin Neuhaus, Thomas Bender & Bernd Weber, *Aesthetic Package Design: A Behavioral, Neural, and Psychological Investigation*, 20 J. CONSUMER PSYCH. 431, 432 (2010).

106. *See generally* Timothy D. Wilson & Jonathan W. Schooler, *Thinking Too Much: Introspection Can Reduce the Quality of Preferences and Decisions*, 60 J. PERSONALITY & SOC. PSYCH. 181 (1991) (finding in two separate studies that when non-experts spent time reflecting on which option of multiple was more optimal, the non-experts were less likely to agree with the experts than the control group who did not spend time reflecting before coming to a decision).

107. Zhihao Zhang, Maxwell Good, Vera Kulikov, Femke van Horen, Andrew Kayser & Ming Hsu, Toward a Neuroscientifically Informed "Reasonable Person" Test 3 (July 8, 2021) (unpublished manuscript), (available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3876774 [https://perma.cc/6H8N-T8AU]).

108. *Id.*

109. *See id.* at 2–3.

110. *See* Joel Pearson, *The Human Imagination: The Cognitive Neuroscience of Visual Mental Imagery*, 20 NATURE REVS. NEUROSCIENCE 624, 628–29 (2019).

111. M. Dorothee Augustin, Birgit Defranceschi, Helene K. Fuchs, Claus-Christian Carbon & Florian Hutzler, *The Neural Time Course of Art Perception: An ERP Study on the Processing of Style Versus Content in Art*, 49 NEUROPSYCHOLOGIA 2071, 2072 (2011).

medial orbit-frontal cortex, or mOFC.[112] Moreover, various studies purport to quantify the strength of such responses.[113] "[A] fundamentally different pattern of neurophysiological activation" exists for works the observer considers "best in terms of aesthetic quality"[114] or "the most aesthetically moving."[115]

Consumer experience with design represents a particularly rich vein of neuroaesthetic study. Thanks to motivated private actors, there is more data on the biomechanics of our perception of commercial design than other matters of aesthetic judgment. Businesses have become more precise in their identification of the correlates of successful visual presentation. For example, brain imaging purports to distinguish designs perceived as "cool"—a very desirable consumer sentiment—from those that are just humorous.[116] Other research maps out the biological hallmarks of image strength and vividness.[117] In sum, much more is understood about design preference today than in the past.

1. Preference and Processing Fluency

For our purposes, the most important finding when it comes to design and aesthetic preference is neuroscience's confirmation and explication of a theory of aesthetic preference labelled "the aesthetic middle." Studies reveal a consistent phenomenon when it comes to design preference: We approve of designs that deviate from the expected or status quo, but only moderately. The result is an inverted U: A design's novelty or complexity can enhance our aesthetic enjoyment but only up to an optimal point of nonobviousness. Once that point is reached, the level of preference begins to decrease. As illustrated in the graph below, we prefer the aesthetic middle: the range of designs

112. *See, e.g.*, Johan De Smedt & Helen De Cruz, *Toward an Integrative Approach of Cognitive Neuroscientific and Evolutionary Psychological Studies of Art*, 8 EVOLUTIONARY PSYCH. 695, 698–701 (2010); Juan García-Prieto, Ernesto Pereda & Fernando Maestú, *Neurocognitive Decoding of Aesthetic Appreciation*, *in* MULTIMODAL OSCILLATION-BASED CONNECTIVITY THEORY 87, 97 (Satu Palva ed., 2016).

113. Valorie N. Salimpoor et al., *Interactions Between the Nucleus Accumbens and Auditory Cortices Predict Music Reward Value*, 340 SCIENCE 216, 218 (2013) (finding that the degree of neural activity in particular brain regions predicted the amount of money study participants were willing to spend to listen to certain fragments of music again after initial exposure).

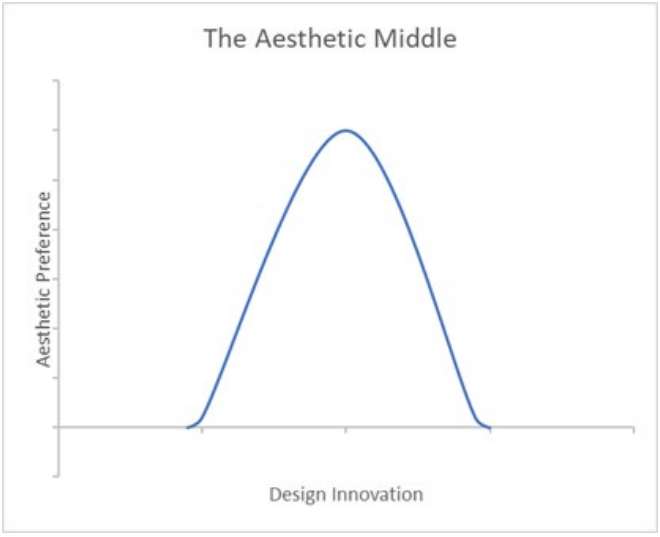
114. García-Prieto et al., *supra* note 112, at 100; *see* G. GABRIELLE STARR, FEELING BEAUTY: THE NEUROSCIENCE OF AESTHETIC EXPERIENCE 59–63 (2013).

115. Edward A. Vessel, G. Gabrielle Starr & Nava Rubin, *The Brain on Art: Intense Aesthetic Experience Activates the Default Mode Network*, 6 FRONTIERS HUM. NEUROSCIENCE, Apr. 12, 2012, at 9.

116. Caleb Warren & Martin Reimann, *Crazy-Funny-Cool Theory: Divergent Reactions to Unusual Product Designs*, 4 J. ASS'N FOR CONSUMER RSCH. 409, 417 (2019).

117. Pearson, *supra* note 110, at 627–28.

comprised of not the avant-garde or the tried and true, but something in between.[118]



The preference for aesthetic middle designs is remarkably durable. It translates to diverse populations and holds up across varying measures of behavioral intentions.[119] It can be found in various forms of industrial design as well as in architecture, music, and poetry. In general, there is more agreement as to aesthetics than popularly assumed. Despite some variability, "studies of aesthetic preference are reasonably consistent in their findings."[120] The dominance of aesthetic middle designs continues even when researchers vary subjects' background experience with relevant designs.[121]

Discussion of the aesthetic middle has been percolating among psychologists and market researchers for years, but neuroscience now reveals flaws in previous explanations of the phenomenon. For decades, researchers theorized that aesthetic preference was tied to mere arousal. According to this theory, the more arousing a stimulus, the more a person will prefer that stimulus, at least until a critical level is reached. Once the critical level of arousal is reached, an aversion system kicks in that becomes increasingly

118. *See* Anthony Chmiel & Emery Schubert, *Back to the Inverted-U for Music Preference: A Review of the Literature*, 45 PSYCH. MUSIC 886, 887–88 (2017) (discussing studies purporting to identify relationship between stimulus intensity and preference).

119. Joan L. Giese, Keven Malkewitz, Ulrich R. Orth & Pamela W. Henderson, *Advancing the Aesthetic Middle Principle: Trade-Offs in Design Attractiveness and Strength*, 67 J. BUS. RSCH. 1154, 1159 (2014).

120. García-Prieto et al., *supra* note 112, at 98. *See also* Mark Bartholomew, *Copyright and the Brain*, 98 WASH. U. L. REV. 525, 543–44 (2020) (discussing research showing generalized reliability of neuroscientific studies of aesthetic response).

121. Giese et al., *supra* note 119, at 1159.

dominant.[122] But psychologists found fault with this reliance on arousal to explain the aesthetic middle, pointing to studies showing aesthetic enjoyment of low-arousal stimuli.[123] Neuroscience has supplanted the arousal theory by uncovering and studying the "reward system" in the brain that determines preference.[124]

Instead of aesthetic preference simply being dependent on arousal, it seems that our preferences are formed in a more complex manner. Research now shows that aesthetic preference is tied to the fit between the cognitive resources made available by the observer to process a given design and the resources actually required to process that design. Processing fluency is key. For example, an elaborate design will require more resources for processing. At some point, the design will demand more from the consumer than she is willing to give, resulting in a resource mismatch that leads to dissatisfaction with the design.[125] A winning design must gain our attention but not in a way that overtaxes our cognitive resources. "[P]rocessing fluency theory . . . has established itself as the single most influential explanation of aesthetic appreciation."[126]

Fluency boosts the perception of beauty and other perceptual qualities central to aesthetic preference. "The more fluently the perceiver can process an object, the more positive is his or her aesthetic response."[127] Processing fluency provides hedonic rewards—it "feels" better when we do not find the effort to perceive a design as overtaxing.[128] Studies show that fluently

122. Chmiel & Schubert, *supra* note 118, at 887.

123. *See id.* at 904–05. Another theory posits that consumers tend to disbelieve claims of efficacy for highly attractive products as opposed to just moderately attractive products. Rishtee Kumar Batra, Frederic Brunel & Sucharita Chandran, *When Good Looks Kill: An Examination of Consumer Response to Visually Attractive Product Design*, 8 ADVANCES CONSUMER RSCH. 252, 252 (2009). However, this theory tends to beg the question as to which variables make a design more "attractive."

124. *See* Wolfram Schultz, *Neuronal Reward and Decision Signals: From Theories to Data*, 95 PHYSIOLOGICAL REV. 853, 853–55, 857 (2015); Benno Belke, Helmut Leder & Claus-Christian Carbon, *When Challenging Art Gets Liked: Evidences for a Dual Preference Formation Process for Fluent and Non-Fluent Portraits*, PLOS ONE, Aug. 26, 2015, at 2.

125. *See generally* Dena Cox & Anthony D. Cox, *Beyond First Impressions: The Effects of Repeated Exposure on Consumer Liking of Visually Complex and Simple Product Designs*, 30 J. ACAD. MKTG. SCI. 119 (2002) (finding that repeated exposure to visually complex dress designs increased a preference for the design); Joseph C. Nunes, Andrea Ordanini & Francesca Valsesia, *The Power of Repetition: Repetitive Lyrics in a Song Increase Processing Fluency and Drive Market Success*, 25 J. CONSUMER PSYCH. 187 (2015) (studying songs on Billboard Top 100 and revealing that more repetitive songs, which have greater processing fluency, did better in the rankings).

126. Belke et al., *supra* note 124, at 2.

127. Rolf Reber, Norbert Schwarz & Piotr Winkielman, *Processing Fluency and Aesthetic Pleasure: Is Beauty in the Perceiver's Processing Experience?*, 8 PERSONALITY & SOC. PSYCH. REV. 364, 365 (2004).

128. *Id.* at 366 ("[P]rocessing fluency feeds into judgments of aesthetic appreciation because people draw on their subjective experience in making evaluative judgments.").

processed products are liked more and judged as more beautiful.[129] On the other hand, a mismatch between the cognitive resources we bring to bear in analyzing a design and the cognitive resources necessary to process that design produces distress.[130]

Psychologists began to demonstrate the role of processing fluency in forming aesthetic preference through experiments that recorded the electrical activity of facial muscle tissue upon presentations of different stimuli. High fluency was associated with stronger activity in the facial muscles indicative of positive affect. These physiological responses occurred before participants had a chance to render an overt judgment of the stimulus.[131] Neuroscientific studies confirmed these results, detecting decreased activity in a part of the brain also indicative of positive affect—the posterior occipital cortex—when steps are taken to make visual processing more fluent.[132]

A key feature of the role of processing fluency in aesthetic preference, and one that could not be diagnosed through the reports of observers themselves, is its hidden nature. Subconscious influences steer aesthetic preference. Even very weak memories of a design—so weak that we may not realize they are being recalled—fuel more positive aesthetic evaluation.[133]

The temporal dynamics of aesthetic preference testify to the hidden mechanics of aesthetic preference formation. In general, the experience of processing fluency is outside of our awareness at the "fringe of consciousness."[134] Electrophysiological measurement demonstrates the lightning-fast way in which humans make aesthetic judgments.[135] It turns out that aesthetic

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129. *See, e.g.*, Ulrich R. Orth & Roberta C. Crouch, *Is Beauty in the Aisles of the Retailer?: Package Processing in Visually Complex Contexts*, 90 J. RETAILING 524, 524–25 (2014).

130. Laura K.M. Graf, Stefan Mayer & Jan R. Landwehr, *Measuring Processing Fluency: One Versus Five Items*, 28 J. CONSUMER. PSYCH. 393, 394 (2017); Dan King & Chris Janiszewski, *The Sources and Consequences of the Fluent Processing of Numbers*, 48 J. MKTG. RSCH. 327, 336 (2011).

131. Reber et al., *supra* note 127, at 367.

132. *Id.* at 372.

133. P. Andrew Leynes & Richard J. Addante, *Neurophysiological Evidence that Perceptions of Fluency Produce Mere Exposure Effects*, 16 COGNITIVE, AFFECTIVE, & BEHAV. NEUROSCIENCE 754, 755 (2016); Joel L. Voss, Heather D. Lucas & Ken A. Paller, *More Than a Feeling: Pervasive Influences of Memory Without Awareness of Retrieval*, 3 COGNITIVE NEUROSCIENCE 193, 194 (2012). Businesses are already aware of the role of memory and prior exposure in forming aesthetic preference. So-called "neuromarketers" study the formation of somatic markers, a collection of emotional responses stored in the brain that can be retrieved from memory upon exposure to a new but similar stimulus. There is even a name for the phenomenon of convincing consumers of past pleasurable experiences with brands, even when those experiences never actually took place: "the false experience effect." *See* Priyali Rajagopal & Nicole Votolato Montgomery, *I Imagine, I Experience, I Like: The False Experience Effect*, 38 J. CONSUMER RSCH. 578, 579 (2011).

134. Graf et al., *supra* note 130, at 395 (quoting Rolf Reber, Pascal Wurtz & Thomas D. Zimmermann, *Exploring "Fringe" Consciousness: The Subjective Experience of Perceptual Fluency and Its Objective Bases*, 13 CONSCIOUSNESS & COGNITION 47, 48 (2004)).

135. Helmut Leder & Marcos Nadal, *Ten Years of a Model of Aesthetic Appreciation and Aesthetic Judgments: The Aesthetic Episode—Developments and Challenges in Empirical Aesthetics*, 105 BRIT. J. PSYCH. 443, 448 (2014).

evaluations take place rapidly—within 600 milliseconds of exposure.[136] Even though the speed of such judgments suggests they occur without our immediate awareness, this is enough time for strong and stable preferences to form.[137]

Just the subjective feeling of visual processing fluency, even if that feeling is not accurate, increases aesthetic preference. In an ingenious experiment, researchers showed study participants various images while participants simultaneously received feedback on their skin conductance response.[138] Participants were told that high skin conductance readings meant ease of mental processing while low skin conductance readings translated to processing difficulty.[139] In reality, the conductance feedback was randomized and had nothing to do with actual processing fluency.[140] The more participants were made to feel that they were processing an image easily, the higher they rated the image.[141] Indeed, research shows that subjectively felt fluency has an even greater influence on aesthetic preference than objective measures of "ease of visual processing"[142] and that this influence is stronger when its source is unrecognized by the observer.[143]

A significant problem with earlier research on the relationship between fluency and aesthetic judgment was that it was difficult for researchers to isolate the effects of one type of processing fluency from another. Aesthetic preference might be bolstered by the simplicity of a design, but it could also be shaped by the observer's familiarity with that design. There was also the question of whether familiarity improved feelings of fluency because of prior experience with the particular design or because of familiarity with the general category of designs the particular design fell into. For example, someone who likes Picasso's *Bowl of Fruit, Violin and Bottle* may feel a subjective sense of processing fluency because of prior exposure to that particular painting or because of prior exposure to other examples of cubist art.

Neuroscience has helped psychologists begin to untangle these different strands of processing fluency, and thereby learn more about the aesthetic middle. *Perceptual fluency* influences aesthetic preference even without any recognition or memory of the stimulus, as with an image that is particularly visually clear or possesses sharp lines of contrast. *Repetition fluency* refers to how many prior exposures an observer has already had to a particular stimulus

136. García-Prieto et al., *supra* note 112, at 95.

137. Amy M. Belfi et al., *Rapid Timing of Musical Aesthetic Judgments*, 147 J. EXPERIMENTAL PSYCH.: GEN. 1531, 1532–35 (2018).

138. Michael Forster, Wolfgang Fabi & Helmut Leder, *Do I Really Feel It? The Contributions of Subjective Fluency and Compatibility in Low-Level Effects on Aesthetic Appreciation*, FRONTIERS HUM. NEUROSCIENCE, June 26, 2015, at 1, 2.

139. *Id.*

140. *Id.*

141. *Id.* at 8.

142. *Id.* at 2.

143. Reber et al., *supra* note 127, at 366 ("[F]luency has a particularly strong impact on affective experience if its source is unknown and fluent processing comes as a surprise.").

before rendering an aesthetic judgment. *Conceptual fluency* describes the degree to which a stimulus triggers the appropriate product category in someone's mind. A toy bank that appears like a miniature savings and loan has high conceptual fluency; a chair designed to look like a high-heeled shoe has low conceptual fluency.[144] Each fluency type has its own particular electrical signature in the brain.[145] Greater insight into the different kinds of processing fluency allows for further specificity in describing the formation and function of the aesthetic middle.[146]

2. Key Characteristics of the Aesthetic Middle

The aesthetic middle reflects the operation of a series of competing characteristics that consumers desire in balance.[147] Researchers identify three principal dyads: (1) simplicity/complexity; (2) familiarity/novelty; and (3) fit/incongruity. These dyads roughly map on to the kinds of processing fluency discussed above.

i. Simplicity/Complexity

People prefer stimuli of moderate complexity, i.e., those designs that do not overly tax the perceptual fluency of onlookers.[148] Stimuli that are either too simple or too complex receive lower aesthetic evaluations. Complexity can be assessed in various ways and includes a variety of factors, but one way to

144. *See* Wei-Ken Hung & Lin-Lin Chen, *Effects of Novelty and Its Dimensions on Aesthetic Preference in Product Design*, 6 INT'L J. DESIGN 81, 86–87 (2012).

145. Leynes & Addante, *supra* note 133, at 755; Bingbing Li, Jason R. Taylor, Wei Wang, Chuanji Gao & Chunyan Guo, *Electrophysiological Signals Associated with Fluency of Different Levels of Processing Reveal Multiple Contributions to Recognition Memory*, 53 CONSCIOUSNESS & COGNITION 1, 2–3 (2017).

146. One might resist the processing fluency account by calling to mind examples of fine art that exhibited challenging or disruptive aesthetic qualities, but which were eventually embraced by the public. Some psychologists and philosophers propose a dual account of aesthetic preference. In the first stage, immediate automatic processing assesses fluency which is translated into pleasure. In a second stage, instead of operating automatically, the perceiver considers her own interest, which is employed to moderate sensations of disfluency. In this second stage, it is theorized, observers consciously act to rationalize cognitive difficulty and thereby increase their enjoyment of the stimulus. Laura K.M. Graf & Jan R. Landwehr, *Aesthetic Pleasure Versus Aesthetic Interest: The Two Routes to Aesthetic Liking*, 8 FRONTIERS PSYCH., Jan. 2017, at 1, 13. Even if the dual account model is accurate, it may only apply to the particulars of fine art appreciation. Belke et al., *supra* note 124, at 6 ("Perceiving art may constitute a very special situation, that deviates in important aspects from that of every-day situations . . . ."). Unlike consumer designs, fine art is not meant to fulfill immediate utilitarian goals and therefore may trigger different expectations and correspondingly different levels of cognitive effort. *Id.* at 7.

147. Pauli Brattico, Elvira Brattico & Peter Vuust, *Global Sensory Qualities and Aesthetic Experience in Music*, 11 FRONTIERS NEUROSCIENCE, Apr. 2017, at 1, 2; Stefan Mayer & Jan R. Landwehr, *Quantifying Visual Aesthetics Based on Processing Fluency Theory: Four Algorithmic Measures for Antecedents of Aesthetic Preferences*, 12 PSYCH. AESTHETICS, CREATIVITY, & ARTS 399, 399 (2018).

148. Eline Van Geert & Johan Wagemans, *Order, Complexity, and Aesthetic Appreciation*, 14 PSYCH. AESTHETICS, CREATIVITY, & ARTS 135, 135 (2020).

think of visual complexity is as a measure of "the amount of information a stimulus contains."[149] Designs with greater numbers of elements or more kinds of elements are rated more complex than others.[150]

At the same time, other design aspects operate to make a design easier to process for onlookers. The more symmetrical a design, the more the design depicts commonly experienced objects, or the more a design repeats its own elements, the easier it is for observers to process the design, resulting in less need for cognitive resources.[151] High contrast in a design also adds to its simplicity, increasing perceptual fluency and, as a result, aesthetic preference.[152] Analyses of product preference demonstrate that an ability to discern recognizable patterns boosts aesthetic favorability ratings.[153]

All in all, designers need to tread a careful middle ground. A successful design must be visually arresting enough to capture attention as shoppers may simply pass over featureless designs.[154] Yet the design must not be so complex that it reduces perceptual fluency to the point of aesthetic dissatisfaction. Products that tend to be thought of as design classics, like the Horwitt watch shown below, employ very few elements and use readily processed vertical and horizontal orientations of those elements to create a feeling of perceptual fluency.[155]

149. Mayer & Landwehr, *supra* note 147, at 400.

150. Dharti R. Trivedi, Beauty Lies in the Mind of the Beholder: A Resource Matching Approach to Understanding the Halo Effect and the Aesthetic Middle Principle 23 (Aug. 2019) (Ph.D. dissertation, Kent State University) (ProQuest).

151. Mayer & Landwehr, *supra* note 147, at 400–01.

152. *Id.* at 401.

153. *See, e.g.*, R.A.G. Post, Janneke Blijlevens & Paul Hekkert, *'To Preserve Unity While Almost Allowing for Chaos': Testing the Aesthetic Principle of Unity-in-Variety in Product Design*, 163 ACTA PSYCHOLOGICA 142, 143 (2016); *see also* Paul Hekkert, *Design Aesthetics: Principles of Pleasure in Design*, 48 PSYCH. SCI. 157, 167 (2006) ("One of the most tested theories in aesthetics is the preference-for-prototypes theory.").

154. Bloch, *supra* note 77, at 21 ("Although there may be an innate preference for orderly, unified designs . . . too much unity at the expense of variety becomes boring and generally unwelcome.").

155. DEL COATES, WATCHES TELL MORE THAN TIME: PRODUCT DESIGN, INFORMATION, AND THE QUEST FOR ELEGANCE 197–99 (2003).

ii. Familiarity/Novelty

Another processing fluency variable at work in the aesthetic middle is familiarity. Measurements of blood flow and oxygenation in the brain offer ways to distinguish the role of familiarity from the role of novelty in forming aesthetic preference. Neural activity can reveal when someone is experiencing a reaction of surprise in response to a stimulus.[156] In fact, there are even specific "novelty neurons" as well as "familiarity neurons" pinpointed by researchers.[157]

The research shows that aesthetic preference increases (to a point) as the design becomes more prototypical, which is really a function of its familiarity to the viewer. People "tend[] to enjoy what matches their [existing] knowledge" base.[158] Studies on facial attractiveness confirm a strong aesthetic preference for average-looking faces as opposed to less prototypical ones.[159] Our visual processing of product design is similar, with measures of high visual typicality

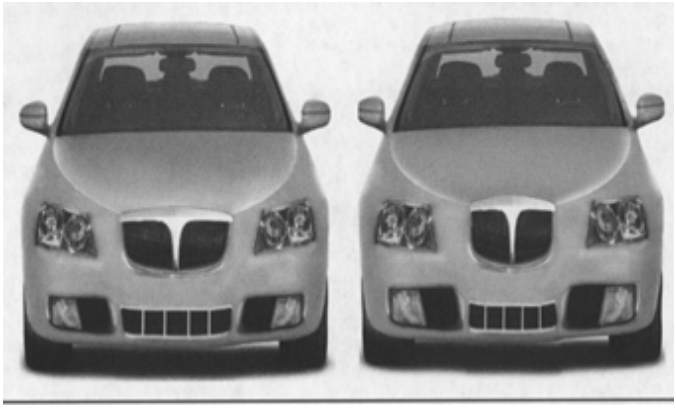
156. PAUL B. ARMSTRONG, HOW LITERATURE PLAYS WITH THE BRAIN: THE NEUROSCIENCE OF READING AND ART 22–23 (2013).

157. Moran Cerf, Eric Greenleaf, Tom Meyvis & Vicki G. Morwitz, *Using Single-Neuron Recording in Marketing: Opportunities, Challenges, and an Application to Fear Enhancement in Communications*, 52 J. MKTG. RSCH. 530, 534 (2015) (identifying "familiarity neurons" in the amygdala that show increased firing rates when observer views images that she had seen before); Jan Kamiński et al., *Novelty-Sensitive Dopaminergic Neurons in the Human Substantia Nigra Predict Success of Declarative Memory Formation*, 28 CURRENT BIOLOGY 1333, 1340 (2018) (identifying "novelty neurons" in the hippocampus that display larger firing rates when observer views novel rather than familiar images).

158. Belke et al., *supra* note 124, at 2.

159. Philippe Chassy, Trym A.E. Lindell, Jessica A. Jones & Galina V. Paramei, *A Relationship Between Visual Complexity and Aesthetic Appraisal of Car Front Images: An Eye-Tracker Study*, 44 PERCEPTION 1085, 1086 (2015).

correlating with measures of higher aesthetic preference.[160] For example, when car designs are altered to feature greater or lesser typicality, audience aesthetic preference changes accordingly. In the image below, the car design on the left was more reflective of typical cars in the midsize category than the car on the right. Research subjects preferred the design on the left.[161]



It is also true that novel things capture our attention more successfully than familiar things. The most pleasing designs are ones that offer an optimal combination of both familiarity and novelty, rather than excluding one variable in favor of the other.[162] Some designers refer to this as the MAYA—or most advanced, yet acceptable—principle, referring to those designs that best balance repetition with novelty.[163] The principle explains why we scoff at seemingly outrageous costumes introduced on high-fashion catwalks and offers a reason for why revisions that only slightly deviate from prior clothing designs can be so popular. Most successful industrial design tries to reach just the right amount of departure from what we have already seen and nothing more.

iii. Fit/Incongruity

A final key variable is congruence. The observer assesses whether the resulting design is appropriate to the product category.[164] The optimal design

160. *Id.* at 1091–92; Graf et al., *supra* note 130, at 403.

161. Jan R. Landwehr, Daniel Wentzel & Andreas Herrmann, *Product Design for the Long Run: Consumer Responses to Typical and Atypical Designs at Different Stages of Exposure*, 77 J. MKTG. 92, 104 (2013).

162. *See* Hekkert, *supra* note 153, at 167–68.

163. Lina M. Ceballos, Nancy Nelson Hodges & Kittichai Watchravesringkan, *The MAYA Principle as Applied to Apparel Products: The Effects of Typicality and Novelty on Aesthetic Preference*, 23 J. FASHION MKTG. & MGMT. 587, 587 (2019); *see* Hekkert, *supra* note 153 ("We tend to prefer products with an optimal combination of [typicality and novelty].").

164. Warren & Reimann, *supra* note 116, at 411–12, 417.

is one that has only moderate incongruity with regard to existing products in the category. A very limited amount of incongruity attracts attention and the devotion of greater cognitive resources, but without making categorization so difficult that it will frustrate the onlooker.[165]

In other words, ease of categorization, which is a function of conceptual fluency, is critical to aesthetic preference—successful design evokes the category of product the item is meant to be a part of.[166] A design that registers too much distance from the product category may attract attention, but this attention will be wasted from the perspective of marketers as consumers assign the design a negative aesthetic evaluation.[167] In one study, eye tracking technology was used to examine the gaze of prospective purchasers as they viewed images of various beer cans.[168] Participants were then surveyed about their design preferences when it came to the cans, as well as their thoughts on the suitability of each can design for the product category. Cans that featured unusual colors or names attracted significant visual attention yet were ranked low on suitability as well as overall aesthetic preference.[169] We like designs that fit our preconceived notions of what a design in that category should look like.

A good example of the relationship between congruence and the aesthetic middle is the story of the introduction of the Herman Miller Aeron chair, which is recounted in Malcolm Gladwell's 2005 bestseller *Blink: The Power of Thinking Without Thinking*.[170] The chair designer expressly sought a design that looked different from all other office chairs.[171] In contrast to the luxuriant padding and high backs of other premium office chairs, the Aeron "looked like the exoskeleton of a giant prehistoric insect."[172] Even though the chair was engineered to be ergonomically superior to its predecessors, those who tried it awarded it low marks for comfort.[173] Even after people tried the chair for a longer period and comfort scores ticked upward, the same people gave the chair extremely low aesthetic ratings.[174] Viewers had difficulty conceptually processing the chair—it did not look like an office chair, and

165. Bloch, *supra* note 77, at 20.

166. *See* Graf et al., *supra* note 130, at 395 (describing conceptual fluency as "the ease of mental operations concerned with assigning meaning to a stimulus").

167. *See* Melika Husić-Mehmedović, Ismir Omeragić, Zenel Batagelj & Tomaž Kolar, *Seeing Is Not Necessarily Liking: Advancing Research on Package Design with Eye-Tracking*, 80 J. BUS. RSCH. 145, 152 (2017).

168. *Id.* at 150.

169. *Id.* at 151–52.

170. MALCOLM GLADWELL, BLINK: THE POWER OF THINKING WITHOUT THINKING 167–74 (2005).

171. *Id.* at 167.

172. *Id.* at 169.

173. *Id.*

174. *Id.* at 170.

instead was compared by some observers to lawn furniture.[175] Herman Miller could afford to launch a long-term campaign for the aesthetic hearts and minds of office managers. Eventually, after the chair began to win over others in the design world and was featured on movies and television, the aesthetic scores went up.[176] But for years the reaction to the chair was negative because it did not fit the category of "office chair" in observers' heads.[177]

III. REFORMING DESIGN PATENT NONOBVIOUSNESS

Today's toothless nonobviousness test does little to promote design innovation. Under the test, patent protection is readily available to the simple, prototypical designs of the aesthetic middle, which consumers instinctually prefer and are likely to be produced absent such protection. To put design nonobviousness on the right track, courts need to be willing to recognize some design choices as more salient to the nonobviousness analysis than others. A difference from the prior art that tilts away from the aesthetic middle by making the design harder to process should be considered relevant to the nonobviousness determination. A difference from the prior art that enhances a design's perceptual, repetition, or conceptual fluency should not.

A. THE CASE FOR A MORE STRINGENT NONOBVIOUSNESS REQUIREMENT

Before outlining the specifics of how the nonobviousness standard might be revised to account for the aesthetic middle, it is worth discussing why we should pay attention to the nonobviousness requirement at all. Some might acknowledge that it is important to prevent design patent holders from claiming rights over basic designs that should be available for other designers to use (perhaps like the Apple shopping bag at the beginning of this Article) but believe that this can be accommodated through the infringement analysis rather than nonobviousness.[178] A claimed design should still routinely be found valid, they would argue, but at the infringement stage the trier of fact can become more judicious, only judging the claimed design sufficiently similar to the defendant's design when the two designs are nearly identical.[179] Better to focus on the infringement part of any patent litigation, the argument goes, where the trier of fact can compare the claimed design with the purported infringing design and gain a better sense of the relative values of

175. *Id.* at 171.

176. *Id.* at 172.

177. *Id.* at 168–72.

178. *See supra* notes 7–8 and accompanying text.

179. As currently structured, the test for design patent infringement resembles the test for nonobviousness. Both rely, in part, on the perceptions of a prototypical "ordinary observer." *See* Egyptian Goddess, Inc. v. Swisa, Inc., 543 F.3d 665, 677–78 (Fed. Cir. 2008) (en banc); Int'l Seaway Trading Corp. v. Walgreens Corp., 589 F.3d 1233, 1240–41 (Fed. Cir. 2009).

each design.[180] Perhaps in agreement, many published decisions involving design patents ascertain infringement first and then only subsequently address issues of patent validity, including nonobviousness.[181]

It does not make sense, however, to offload all the determination of what is protectable in a design patent to the infringement analysis. Without a real screen for design patent validity, great pressure is placed on the infringement determination, conflating multiple analytical tasks into one legal evaluation. This can be particularly difficult for jurors, who are unfamiliar with the different goals and concepts at play in design patent law.[182] In addition, research shows that staging different legal analyses instead of combining them into one holistic assessment helps prevent individual biases from infecting legal determinations.[183] Bifurcating the nonobviousness and infringement analyses should lead to better decision-making.

There is another deleterious consequence from failing to police designs for nonobviousness. Granting protection to almost all designs invites frivolous litigation from design patent holders.[184] The threat of "strike suits" is a concern for all areas of intellectual property but warrants extra attention in the design patent context. Design patents are different from other intellectual property like copyrights and trademarks in that a claimant must file for patent protection with the PTO. The stamp of approval from this government agency carries some weight with federal courts, particularly when no prior art is introduced beyond what was already before the PTO.[185] As a result, notice of a design patent may scare off downstream users seeking to use even pedestrian, commonplace designs. Even if they stand a good chance of winning on

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180. *See* Orit Fischman Afori, *Reconceptualizing Property in Designs*, 25 CARDOZO ARTS & ENT. L.J. 1105, 1135–41 (2008).

181. *See, e.g.*, Poly-Am., LP. v. API Industries, Inc., 74 F. Supp. 3d 684, 690, 695 (D. Del. 2014); Durdin v. Kuryakyn Holdings, Inc., 440 F. Supp. 2d 921, 933, 935 (W.D. Wis. 2006).

182. *Cf.* Mark A. Lemley & Mark P. McKenna, *Scope*, 57 WM. & MARY L. REV. 2197, 2218–19 (2016) (making the same argument with regard to copyright validity and infringement).

183. *See* Chris Guthrie, Jeffrey J. Rachlinski & Andrew J. Wistrich, *Blinking on the Bench: How Judges Decide Cases*, 93 CORNELL L. REV. 1, 41–42 (2007) (discussing the benefit of legal criteria that prompt judges to consider all relevant factors and "remind them of their responsibility to base decisions on more than mere intuition"); *see also* Joep Sonnemans & Frans van Dijk, *Errors in Judicial Decisions: Experimental Results*, 28 J.L. ECON. & ORG. 687, 714 (2012) (advocating for reforms to cause judges to be less reliant on intuition).

184. Buccafusco et al., *supra* note 18, at 108 ("[E]ven weak design patents can be used to file nuisance lawsuits and extract settlements. Potential damages from design patent infringement are so high that many defendants will settle rather than challenge patents that appear to be invalid or not infringed."); Sarah Burstein, *Costly Designs*, 77 OHIO ST. L.J. 107, 129 (2016) (describing the "significant toll" that invalid design patents can take on competition, even if never asserted against another party).

185. PowerOasis, Inc. v. T-Mobile USA, Inc., 522 F.3d 1299, 1304 (Fed. Cir. 2008) ("When no prior art other than that which was considered by the PTO examiner is relied on by the attacker, he has the added burden of overcoming the deference that is due to a qualified government agency presumed to have properly done its job . . . ." (quoting Am. Hoist & Derrick Co. v. Sowa & Sons, Inc., 725 F.2d 1350, 1359 (Fed. Cir. 1984))).

infringement, which admittedly requires a close match between the claimed design and the defendant's design, such users may conclude the risk and expense of litigation is not worth it. There are real costs from failing to rigorously scrutinize designs for validity.[186]

Another concern with the current ineffectual nonobviousness screen is the potential for businesses to use design patents to perform an end-run around utility patent law, which has established more demanding requirements for patentability. By making it easy to obtain design patents, the PTO and the courts potentially allow a business to sidestep the normal limitations that exist in other areas of intellectual property law on the propertization of functional elements.[187] Although a design must be "ornamental" rather than functional to claim design patent protection, a great deal of functionality is still tolerated. A design is considered functional only if its overall appearance is "dictated by function[]," [188] and the design as a whole is functional.[189] In copyright and trademark law, rigorous validity requirements exist to make sure that works with functional features are channeled to the utility patent regime. The lack of similar channeling features in design patent law makes an exacting nonobviousness review all the more critical.[190]

Those supportive of the status quo make a final argument about the need for aesthetic neutrality. They note that the current minimalist approach to nonobviousness has the benefit of getting courts out of the business of determining aesthetic merit.[191] The unknowable nature of aesthetic experience, it is argued, militates in favor of letting the commercial sphere determine design viability rather than unqualified legal actors. By rubber stamping any design that is not an outright copy of the prior art, courts and PTO examiners

186. *See generally* Michael D. Frakes & Melissa F. Wasserman, *Irrational Ignorance at the Patent Office*, 72 VAND. L. REV. 975 (2019) (detailing the benefits of decreasing the issuance of invalid utility patents and explaining why these benefits outweigh the additional costs of government time and resources devoted to more stringent PTO review). Rigorous screening for validity makes even more sense in the design patent context than with other kinds of intellectual property. Consider the contrast with copyright law. Unlike the situation in copyright law, which often puts the fair use defense front and center in a case, the plaintiff in a design patent case needs to clear only two hurdles: (1) establishing a valid patent; and (2) proving infringement. This makes the question of validity more critical in the design patent context, yet we have seen how feeble the nonobviousness part of that validity analysis is in its current incarnation.

187. Peter S. Menell & Ella Corren, *Design Patent Law's Identity Crisis*, 36 BERKELEY TECH. L.J. 1, 125–26 (2021).

188. Rosco, Inc. v. Mirror Lite Co., 304 F.3d 1373, 1379 (Fed. Cir. 2002).

189. *See* Richardson v. Stanley Works, Inc., 597 F.3d 1288, 1295 (Fed. Cir. 2010); L.A. Gear, Inc. v. Thom McAn Shoe Co., 988 F.2d 1117, 1123 (Fed. Cir. 1993).

190. Because a proffered design, particularly one claiming design patent protection, is rarely completely functional, courts hardly ever deny protection for lack of ornamentality. McKenna & Sprigman, *supra* note 18, at 520 ("If alternatives seem plausible, then the design in question is not dictated by its function. Not surprisingly, courts taking this approach have only very rarely found a claimed design to be functional.").

191. *See* Afori, *supra* note 180, at 1135–39; Mueller & Brean, *supra* note 79, at 521–22.

can avoid making an aesthetic assessment, leaving that task to the votes of buyers in the marketplace.

Yet a minimal nonobviousness standard is its own aesthetic judgment. By avoiding any considered evaluation of a claimed design against the prior art, the Federal Circuit has adopted an aesthetic theory, one that assesses aesthetic worth based on a design's commercial value.[192] Moreover, it is not clear that ceding the nonobviousness determination to market forces does the best job of advancing commercial design. There are benefits from prompting investment in unconventional forms of expression, and those benefits risk being lost or at least suboptimally realized if left only to the marketplace. Highly original works can trigger subsequent design advances.[193] At the same time, a high standard for nonobviousness reduces the cost for aspiring designers to produce their own works by limiting the number and scope of prior patented products they must design around.[194] Allowing mere purchasing power to set the standard for nonobviousness jeopardizes these benefits.

For all of these reasons, the nonobviousness requirement should not be left to languish but should be strengthened to serve the purposes behind design patent law. Although there are dangers to be sure from implementing a too robust screen for design patent validity,[195] under the Federal Circuit, the law of nonobviousness has swung too far in the other direction.[196]

B. CALIBRATING NONOBVIOUSNESS TO DESIGN INNOVATION

Even if we conclude that the nonobviousness bar should be raised, we need to address how this should be accomplished. As stated earlier, there are two discernable rationales—beautification and innovation—voiced by courts over the years to answer the normative question of which kinds of works design patent law is meant to incentivize.[197] The case law assumes that the two rationales are consistent in that a nonobviousness test reflecting audience aesthetic sensibilities also encourages the production of innovative designs.

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192. *Cf.* Barton Beebe, Bleistein, *The Problem of Aesthetic Progress, and the Making of American Copyright Law*, 117 COLUM. L. REV. 319, 330 (2017) (making a similar argument with regard to copyright law's refusal to scrutinize its own creativity requirement).

193. *See* 2 WILLIAM F. PATRY, PATRY ON COPYRIGHT § 3.33 (2020) (contending that "creative works culturally benefit society" in a way that other works do not); Jing Zhou, Xiaoye May Wang, Lynda Jiwen Song & Junfeng Wu, *Is It New? Personal and Contextual Influences on Perceptions of Novelty and Creativity*, 102 J. APPLIED PSYCH. 180, 180 (2017) ("Fundamentally, novelty drives differentiation and competitiveness; it is the engine of growth.").

194. *See* Gideon Parchomovsky & Alex Stein, *Originality*, 95 VA. L. REV. 1505, 1517–22 (2009) (discussing the benefits of reducing the scope of copyright protection in low originality works, including reducing the costs "for aspiring authors to produce their works").

195. Tushnet, *supra* note 13, at 420 (noting concerns over widespread litigation if a stricter validity screen was applied).

196. *See supra* Section I.B.

197. *See supra* Section II.A.

The recent research into design perception shows that this assumption is false. Our aesthetic tastes are conservative, and our sensory preferences do not align with design innovation. It may be hard to get excited by a stereo speaker that looks like every other stereo speaker, but a minimal amount of design evolution is all that is required to reach peak aesthetic preference. A stylistically curved speaker will enjoy a higher product evaluation than a pig-shaped speaker; even though the pig speaker is more inventive, its inventiveness goes far beyond the optimal point for aesthetic preference.[198]

One could accept that there is a disconnect between design innovation and aesthetic preference, yet make an argument that design patent law should be geared to the production and dissemination of pleasing but not necessarily pioneering designs. Citing beautification as the goal of design patent law only tells us so much about the standards that should be set for nonobviousness, however. There are issues normatively with trying to legally define pleasurable design as well as empirically with attributing the creation of such designs to the ability to secure patent protection.

Normatively, it is hard to know how to translate the goal of beautification into actionable content for the nonobviousness analysis. Even though neuroscience offers greater insight into human perception of design, it cannot tell us whether a legal definition of "beauty" should reflect current tastes or should be more aspirational. The Federal Circuit's current approach—in effect, defining beauty so capaciously that it includes any design that is slightly different from what came before—is no definition at all and effectively reads the nonobviousness test out of existence.

Even assuming an agreed-upon definition of beautiful design, the beautification rationale runs into empirical problems. There is no evidence that there is more beauty in the world than there was before the Federal Circuit watered down the nonobviousness analysis. And even if we could somehow detect an appreciable increase in the aesthetic quality of our commercial surroundings, there is no proof that the increase should be attributed to design patent protection. Given the public's desire for attractive products, it may be that businesses already have ample incentive to make visually pleasing products without the added reward of a design patent.[199] Overly generous patent rights can stifle the very activity they are trying to encourage. A federal judge aptly described the dilemma in another context: "Overprotecting intellectual property is as harmful as underprotecting it. Creativity is impossible without a rich public domain. . . . Overprotection stifles the very creative forces it's supposed to nurture."[200]

198. Warren & Reimann, *supra* note 116, at 416–17.

199. *See* Lee & Sunder, *supra* note 9, at 296 ("We need better empirical proof of the need for design patents, because there are costs to our democracy of limiting access to design and beauty.").

200. White v. Samsung Elecs. Am., Inc., 989 F.2d 1512, 1513 (9th Cir. 1993) (Kozinski, J., dissenting).

The blockbuster design patent battle between Apple and Samsung offers an illustrative example.[201] If people inherently like their phones flat and simplistic, cases like *Apple* make it less likely that such phones will be available to much of the population. Design patents lack the constraints of other intellectual property regimes—like copyright law's robust fair use defense or utility patent law's stringent validity screening—when it comes to preserving space for competition.[202] This means that recognition of a design patent in a simplistic, yet desirable, aesthetic feature gives the patent holder latitude to charge exorbitant rents and insulate itself from price competition. Even design patents that are never enforced can still have the effect of inhibiting competition in similar styles.[203] An entity wanting to produce a new consumer electronics product needs to navigate a thicket of existing design patents to determine if a similar design already exists.[204] In 2021, the PTO issued 438 design patents to just one company: Apple.[205] Perhaps then it is no coincidence that Apple's smartphones and tablets cost more than other smartphones and tablets.[206] The availability of patent protection for design features that audiences find most aesthetically preferable—i.e., features in the aesthetic middle—raises the price of pleasing design for consumers.

Once the beautification rationale is discarded, the alternative is structuring the law to promote design innovation. This is where the relationship between processing fluency and the aesthetic middle comes in. The inverted U curve of the aesthetic middle reveals the sort of designs that most need to be incentivized. They are the ones in the second half of the chart, above the tail of the inverted curve. The modern law of nonobviousness does little to promote such designs. Instead, it protects all designs, including those residing in the heart of the aesthetic middle that do not need a legal perk to spur their creation.

Nonobviousness should be calibrated to reward design choices that challenge processing fluency. Operation of the aesthetic middle shows that designs with a high degree of processing fluency are more likely to be rewarded in the marketplace. Simple designs, ones familiar to consumers, and those already established in the relevant product category are aesthetically preferred by the public. These are the sort of products most likely to be

201. *See supra* Section I.B.

202. Lee & Sunder, *supra* note 9, at 286–88.

203. Burstein, *supra* note 184, at 129.

204. Buccafusco et al., *supra* note 18, at 107–08 (noting that design patent law's lack of an independent creation defense means that new designers have no choice but to "comb through the thicket of existing designs").

205. *2022 Design Patent 100 List*, HARRITY, https://harrityllp.com/design-patent-100-list [https://perma.cc/XJ8V-LSLV].

206. Clancy Morgan & Jack Houston, *Why Apple Products Are So Expensive*, BUS. INSIDER (Sept. 16, 2020, 9:30 AM), https://www.businessinsider.com/why-apple-products-are-so-expensive-iphone-macbook-2019-11 [https://perma.cc/2JBR-YPR7].

commercially produced, as they are most likely to meet with immediate consumer demand. There is no need to privilege such designs with the legal monopoly of a design patent. Instead, it is the designs in the second half of the inverted U—the designs that are more complex, more unfamiliar to viewers, and more incongruous—that are less likely to meet with immediate public favor and have greater need for legal encouragement.

Reforming nonobviousness to take processing fluency into account performs the valuable service of limiting the incentive of design patent protection to the designs that need it most. Because design patents create anti-competitive costs—for consumers in the form of higher prices and for other designers who must transact around the rights of patent holders—patent protection should be reserved for only those situations where an incentive is needed to prompt the design to be produced in the first place.

It may seem somewhat counterintuitive to orient design patent law to reward designs that push against consumer preference. Tying nonobviousness to a lack of processing fluency does not mean, however, that design patents will only be awarded to worthless designs that consumers will never want. A design that does not match current preferences is not destined to remain that way forever. Avant-garde design can become tremendously popular. But this process usually takes time as repeated exposure can eventually overcome a new design's initial lack of processing fluency. Design patent protection makes most sense in this circumstance as the patent gives the designer a window to potentially change consumer perception without the concern that competitors will copy the design at just the moment when consumer resistance has been overcome.

The slow public embrace of Herman Miller's pioneering Aeron chair is a telling example.[207] To recoup their investment in this innovative design, Herman Miller's designers needed time for the design to incubate with the public. Absent the security of a patent, Herman Miller may have viewed a multi-year campaign to change public perception as economically unsound and elected to never produce the Aeron chair. Without some way to protect their investment while keeping it in the public eye, companies will be dissuaded from launching pioneering products, even if they believe such products will eventually enjoy mass appeal. In these situations, the anti-competitive costs of design patent enforcement may be worthwhile. But those designs to the left of the Aeron chair on the inverted U curve, i.e., those possessing conventionally pleasing design features, do not warrant patent protection. Because they display no inventiveness and can enjoy some immediate favor in the marketplace, such designs have less need of a legal incentive.

Of course, it is difficult to craft a law perfectly aligned with all the real-world influences involved in the creation and production of commercial products. Many things can factor into a business's decision to bring a

207. *See supra* Section II.B.2.iii.

particular design to market.[208] Ease of manufacture, the designer's personal aesthetic, or other considerations may shape this decision. Nevertheless, known sources of consumer demand have to be of overriding importance when it comes to assessing the incentive structure for commercial design.[209] Industrial designers are already aware of the principles of the aesthetic middle and processing fluency and act accordingly.[210] Correlating nonobviousness to design choices that run counter to those principles addresses design patent law's empirical question by reserving the incentive of patent protection for where it is most needed.

C. BUILDING A BETTER NONOBVIOUSNESS TEST

The Federal Circuit's doctrinal choices have turned nonobviousness into a toothless test. These choices reward design decisions that need no incentivizing because they already match the natural human preference for processing fluency. Nonobviousness should be recalibrated to promote designs that challenge viewers and need time to build followings in the marketplace. By giving extra weight to design choices that reduce processing fluency, ending the primary reference rule, and reducing reliance on evidence of commercial success, courts can reinvigorate the law of design nonobviousness.

1. Looking for Material Differences

Today's courts assume that the perception of design is so impervious to outside understanding that it is inappropriate to highlight some design choices over others when determining a claimed design's similarity to prior art. Instead, there is an insistence that design appreciation is holistic and any difference determinative. Just replacing a more ornate veneer with a plain one is enough to satisfy nonobviousness.[211] Or, even when possessing the very same features as the prior art, claimed designs can sufficiently distinguish themselves from the prior art by simply exhibiting more contrast between those features.[212] Instead of upgrading or downgrading a difference according

208. *See* Gaston Kroub, *Design Patents Are Different*, ABOVE THE LAW (Apr. 14, 2020, 11:51 AM), https://abovethelaw.com/2020/04/design-patents-are-different [https://perma.cc/87NK-YN9T] (discussing the influence of the COVID-19 pandemic on the look of commercial design).

209. *See* ADRIAN FORTY, OBJECTS OF DESIRE: DESIGN & SOCIETY, 1750–1980, at 7 (Ian Cameron ed., 1986) ("In capitalist societies, the primary purpose of the manufacture of artefacts, a process of which design is a part, has to be to make a profit for the manufacturer."); *see also* Sarah Burstein, *Moving Beyond the Standard Criticisms of Design Patents*, 17 STAN. TECH. L. REV. 305, 317–18 (2013) (distinguishing "art" from "industrial design").

210. *See* Derek Thompson, *The Four-Letter Code to Selling Just About Anything: What Makes Things Cool?*, THE ATLANTIC (Feb. 2017), https://www.theatlantic.com/magazine/archive/2017/01/what-makes-things-cool/508772 [https://perma.cc/35CB-SJU3].

211. Ashley Furniture Indus., Inc. v. Lifestyle Enter., Inc., 574 F. Supp. 2d 920, 932–33 (W.D. Wis. 2008).

212. *See* Sealy Tech., LLC v. SSB Mfg. Co., 825 F. App'x 795, 799 (Fed. Cir. 2020).

to its effect on consumers, almost any difference between the claimed design and the prior art, regardless of its actual relevance, is enough.

The disentangling of the different strands of processing fluency at work in the aesthetic middle offers a way to inject some materiality into the prior art comparison and thereby raise the nonobviousness bar. Instead of avoiding the question of design importance, the trier of fact should examine whether a design choice makes the design easier or harder for audiences to process. Design choices reflecting a decision to be more complex, less prototypical, or more incongruous in the product category should be rewarded. But choices to be simpler, more prototypical, or more congruous should be presumed to be lacking the originality needed for design patent protection.

By analyzing the effect of a design choice on processing fluency, courts can stop treating all design differences the same. Take, for example, a situation involving two similar designs that differ only as to a single design choice that enhances, rather than detracts, from perceptual fluency, i.e., fluency stemming from an object's overall simplicity. A Federal Circuit case from the early 1990s, decided before that court turned the nonobviousness requirement into a non-entity, involved a claimed design for a bottle with two compartments.[213] There were other dual-compartment bottles in the prior art, but the patentee contended that its bottle was nonobvious because it was "symmetrical around a plane vertically bisecting the bottle" whereas pre-existing designs did not "teach a symmetrical design."[214] Although it was true that the prior art did not exhibit the same symmetricality as the claimed design, the court correctly concluded that this was an immaterial difference.[215] Symmetry is a well-known design strategy for increasing aesthetic preference.[216] The court explained that designers are quite aware of the potential for making features in a design symmetrical, in fact "the *expected* design configuration is one of symmetry."[217]

A material design difference relating to perceptual fluency would be one that requires more cognitive resources to process. A design choice away from symmetry should be presumed a material difference. So should a choice to reduce the contrast between design features. Although not framed in terms of perceptual fluency, the Federal Circuit noted that the screens in older tablet computers stood out as opposed to the sleeker iPad design, which deemphasized the contrast between its screen and the rest of the device.[218] This is a difference worth noting as less contrast in the iPad design translates to less perceptual fluency.

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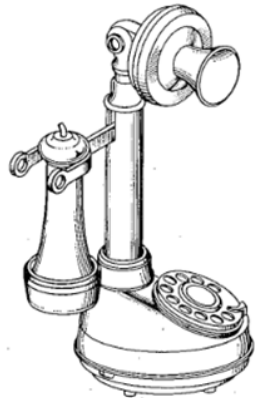
213. *In re* Carlson, 983 F.2d 1032, 1034 (Fed. Cir. 1992).
214. *Id.* at 1038.
215. *Id.* at 1039.
216. Mayer & Landweher, *supra* note 147, at 400–01.
217. *In re* Carlson, 983 F.2d at 1038–39.
218. Apple, Inc. v. Samsung Elecs. Co., 678 F.3d 1314, 1330–32 (Fed. Cir. 2012).

In addition to perceptual fluency, repetition fluency and conceptual fluency can also be used to determine relevant differences as well. Our natural inclination to the aesthetic middle means that familiar, prototypical designs are aesthetically favored whereas designs that are unfamiliar receive lower aesthetic rankings. A design difference from the prior art that moves away from familiar forms should be considered more relevant to nonobviousness than a design choice that hews to common prototypes.

The current nonobviousness analysis does little to encourage departures from everyday prototypical forms. A six-sided cardboard box can defeat a charge of obviousness, at least on summary judgment, even though the claimed aspects of a solid bottom and flaps that fit into slots are so common in various packaging forms as to be almost unnoticeable.[219] Design patents routinely issue for common geometric shapes, as for a graphical user interface displaying nothing more than three rectangles with a square beneath.[220]

Again, an older case, before liberalization of the nonobviousness standard, offers a better approach for evaluating design differences than the status quo. By designing a telephone with a mouthpiece mounted on a column and a receiver suspended from a hook on the column, a business tried to appeal to consumer nostalgia for the old-fashioned upright telephones of the early twentieth century.[221] The PTO granted the business's application for a design patent. A competitor challenged the design patent on the phone as obvious. Agreeing with the competitor, the court in review emphasized the designer's goal of invoking familiar phone prototypes.[222]



219. Poly-Am., LP. v. API Indus., Inc., 74 F. Supp. 3d 684, 686, 690–91, 697 (D. Del. 2014).

220. U.S. Patent No. D767,583 S (filed Sept. 27, 2016); *see also* Vera Ranieri, *Stupid Design Patent of the Month: Rectangles on a Screen*, TECHDIRT (Oct. 3, 2016, 4:29 PM), https://www.techdirt.com/2016/10/03/stupid-design-patent-month-rectangles-screen [https://perma.cc/SBR7-G67C].

221. U.S. Tel. Co. v. Am. Telecomm. Corp., No. B-594, 1979 WL 25151, at *1, *8 (D. Conn. Apr. 10, 1979).

222. *Id.* at *6 ("The design plainly follows the basic outline of the early models.").

Although there were some differences between the design and the prior art,[223] the "overall visual impression" was too similar to the prior art.[224] The court cautioned that merely trying for a "nostalgic effect" should not automatically render a design obvious. But the designer's clear effort to remind observers of the category of old phones made the court skeptical that it had sufficiently distinguished its phone from the prior art.[225]

While design choices reflecting the familiar should be given little weight, design choices that detract from repetition fluency should be considered material. Though more common now, Corelle's hook handle coffee cup design departed from all other familiar coffee cup prototypes of the time in that its ring handle was not attached at both ends to the cup.[226] Such a design choice to depart from the familiar should be considered material as it makes the design more difficult for the consumer to initially decode.[227]

Along similar lines, a design choice that lends itself to conceptual fluency should be considered presumptively obvious whereas a design that is incongruent with the product category decreases conceptual fluency and, hence, should be more likely to be considered nonobvious. Take the case of a motorcycle break lever in the shape of a naked human female body[228]:

223. *Id.* at *8.

224. *Id.* at *7; *see also id.* at *6 ("The [claimed] design is not only reminiscent of the early models, it looks like them.").

225. *Id.* at *7.

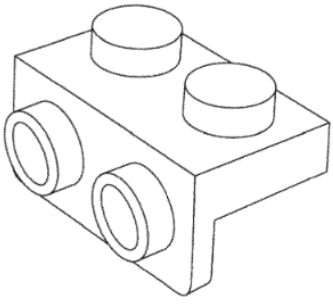
226. COATES, *supra* note 155, at 145, 220.

227. This image is taken from Del Coates, *Reconciling Affective and Ergonomic Objectives of Product Design*, *in* 14 ADVANCES IN AFFECTIVE & PLEASURABLE DESIGN 203, 207 (Yong Gu Ji & Sooshin Choi eds., 2021) and reprinted with the permission of AHFE International.

228. Durdin v. Kuryakyn Holdings, Inc., 440 F. Supp. 2d 921, 923 (W.D. Wis. 2006).

This design lacks *conceptual* fluency in that it confounds expectations for the category of motorcycle levers. Nothing about the form is a clue to the utilitarian item being sold. Seeing the female form as a motorcycle lever forces the observer to work harder than in a situation where the lever is represented in a form one is more likely to associate with motorcycles. A case involving a design for a doll utilizing a human form would be different. In that situation, the design has strong conceptual fluency as it aligns with the product being sold and a court should be more inclined to a finding of obviousness.[229]

The current nonobviousness analysis does not consider a design's conceptual fluency. Take the example of toy titan Lego. Lego holds several copyrights on the visual appearance of its toys. In recent years, it has also sought additional protection by securing design patents on the same items,[230] including the one depicted below:



229. *Id.* at 936.

230. *See, e.g.*, U.S. Patent No. D688,328 S (filed Aug. 20, 2013); U.S. Patent No. D641,053 S (filed July 5, 2011).

When the design was challenged as obvious by a rival toymaker in 2019, the same court that found the old-fashioned telephone obvious years before quickly declared the Lego brick nonobvious.[231] The court relied on the description of Lego's expert, who characterized the patent as follows:

> [A] sort of a really lovely, balanced form. So I'm talking about the proportion. So the length and width in proportion to all the other sides. It's kind of unique in that the top slab is slightly thicker than the front. I'm calling this the front. So the top is thicker. So that can imply a lot of different uses. It feels really open to be used in any direction, horizontal, vertical. And because there are two—these two stud projections, feels like they can become very decorative in their use as well.[232]

For another Lego design patent, the court deemed it significant that the same expert described the block as an "open-ended form" and "cute."[233]

A design that is "open-ended" or that can "imply a lot of different uses" does nothing to challenge an observer's conceptual fluency. This is an example of an expert (and a court relying on the expert) seizing on any difference with the prior art as opposed to diagnosing differences that matter. A better course would be to examine whether the design implicates a different product category from the actual proffered product. It is hard to see how this particular design does. The Lego design appears like many typical forms, both in general and in the category of toy building blocks, even if some minor differences may exist. Consideration of conceptual fluency offers a means for denying protection for designs that do nothing more than incorporate simple geometric forms while rewarding designs that depart from the tried and true.

This is not to say that every design that avoids confusing consumers as to its relevant product category should be considered obvious. Such an approach would be an overcorrection to the permissiveness of the current nonobviousness test. But conceptual fluency should be one consideration among others in evaluating whether a design's departure from the prior art is sufficient. There will be situations where a design is challenging when it comes to one type of processing fluency, but the design reinforces the teachings of the aesthetic middle for other types of processing fluency. For example, it may be that the general familiarity of the female form means that such a design has strong repetition fluency even as it lacks conceptual fluency in the category of motorcycle levers. Design choices hindering and helping processing fluency will need to be weighed against each other, and the default should probably

231. Lego A/S v. Zuru Inc., No. 18-cv-2045, 2019 WL 4643718, at *13–*14 (D. Conn. July 8, 2019).

232. *Id.* at *12 (quoting Transcript of Preliminary Injunction Hearing at 256:2–12, *Lego A/S*, No. 18-cv-2045 (D. Conn. Mar. 8, 2019), ECF No. 66).

233. *Id.* (quoting Transcript of Preliminary Injunction Hearing at 242:2–9, *Lego A/S*, No. 18-cv-2045 (D. Conn. Mar. 8, 2019), ECF No. 66).

be in favor of nonobviousness. Nevertheless, attention to processing fluency can at least aid the trier of fact in deciding when a difference is material, which is a better course than merely relying on "instinct"[234] or assuming that any difference from what came before should render a design nonobvious.

2. A More Searching Approach to Prior Art

If design patent law is supposed to spur design innovation, it is time to move away from the primary reference requirement. Under the requirement, any minor difference is sufficient for patentability even if the prior art could be combined to recreate the exact design at issue. Such a cramped analysis of the prior art encourages designers to make only the most minimal departures from what came before. By taking such a narrow view of relevant prior art for the nonobviousness determination, today's design patent law rewards designs in the aesthetic middle that likely would already be produced without the added attraction of a fifteen-year competitive blockade.

In the utility patent context, there is no requirement of a single primary reference before combining various references to determine whether the combination would have been obvious to one skilled in the art. In fact, not only does utility patent law eschew the requirement of a single, virtually identical referent, but the Supreme Court has cautioned lower courts against being too exacting when looking for evidence of a reason to combine relevant prior art to form the claimed invention. In *KSR Int'l Co. v. Teleflex Inc.*, the Supreme Court faulted the Federal Circuit for concluding that there had to be a "specific" "teaching, suggestion, or motivation" to combine the prior art in utility patent cases.[235] "The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way," the Court chastised.[236] The better course, explained the Court, was to adopt a flexible approach to nonobviousness, where instead of only considering evidence in the printed pages of an academic journal, the very nature of the problem at issue could provide sufficient impetus to make a combination of references obvious.[237]

KSR teaches that it is important not to adopt an overly circumscribed view of prior art. This lesson should apply beyond the utility patent context. Although courts need to avoid hindsight bias, they also need to realize that design patents cannot promote innovation if the nonobviousness test simply repeats the test for novelty. As it stands now, by demanding a virtually identical primary reference, the Federal Circuit allows any design to be deemed nonobvious if its duplicate does not already exist. Although such a standard prevents the outright copyist from securing patent protection, it sets

234. Spigen Korea Co. v. Ultraproof, Inc., 955 F.3d 1379, 1383–84 (Fed. Cir. 2020).
235. KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 418 (2007).
236. *Id.* at 419.
237. *Id.*

obviousness too low to promote ingenuity or more than minimal departures from the prior art.

Take, for example, the case of *American Beverage Corp. v. Diageo North America, Inc.*[238] A maker of frozen alcoholic drinks claimed that a competitor infringed on its particular foil pouch design.[239] Arguing obviousness, the competitor pointed to a product called "Party in a Pouch," which had been in existence for nearly a decade.[240] Like the plaintiff's design, the Party in a Pouch was a foil packet for holding alcoholic beverages.[241] Both pouches, as seen in the graphic below, had an hourglass shape so that the pouch tapered in the middle, both had "fins" extending from the side of their base, and both had a thin area at the pouch's top for closure.[242] Moreover, a host of other prior art references showed similarities with the claimed design that the Party in a Pouch lacked, like a "lenticular-shaped base," "sharp corners," and "tear notches."[243]

The court concluded that the Party in a Pouch was not a suitable primary reference, which allowed it to also decide that none of the other prior art references need be considered.[244] This unnecessarily cramped approach makes nonobviousness synonymous with novelty. Utility patent law allows for a broader consideration of prior art for nonobviousness, allowing several relevant references to be combined instead of insisting on a single reference virtually identical to the patent at issue. Adopting that approach here, the court could have considered the prior art in combination (including the Party in a Pouch) and found that the prominent elements of the claimed design—

238. Am. Beverage Corp. v. Diageo N. Am., Inc., 936 F. Supp. 2d 555, 567–68 (W.D. Pa. 2013).

239. *Id.* at 567.

240. *Id.* at 577.

241. *Id.* at 577–78.

242. *Id.* at 590–91.

243. *Id.* at 576–77.

244. *Id.* at 592–93.

hourglass shape, fins, oval base, sharp corners, and tear notches—all existed before the claimed design, rendering it obvious.[245]

Of course, one must not combine disparate elements of the prior art if it would not be obvious to a designer to do so. But there was no evidence that such a combination would have surprised the ordinary designer of frozen drink receptacles.[246] Instead, because no acceptable primary reference was found, the *American Beverage* court did not have to ever consider what such a designer would think about combining different references that were all squarely within the prior art.

KSR was a utility patent decision, and the Federal Circuit has offered no clear guidance as to whether it should apply in the design patent context.[247] But there seems to be little reason why it should not. In general, requirements that exist for utility patents apply to design patents as well, unless federal statute or common law decision-making explicitly call for a divergence in the two regimes.[248] By abandoning the primary reference rule and considering a greater array of prior art, courts can harmonize utility and design patent law while boosting the nonobviousness standard in a way that rewards only those designs with features that are relatively unfamiliar to their viewers. By requiring greater departures from the prior art, nonobviousness can spur designs with low repetition fluency located outside of the aesthetic middle.

3. Deemphasizing Design Success

The current permissive approach to nonobviousness aligns with a belief in linking nonobviousness to aesthetic preference. If courts take a laissez-faire approach, then market forces, not courts, are allowed to determine design worth. Doubling down on this free market philosophy, under the guidance of the Federal Circuit,[249] courts heavily weigh a design's commercial success in the nonobviousness balance, further tying design patent protection to sheer

245. The court in *American Beverage* also relied on the presence of a "sombrero hole"—a hole in the top of the pouch allowing for hanging—in the claimed design to distinguish the prior art. *Id.* at 573, 577. It seems unlikely that the hole in the pouch is material to the visual impression of outsiders, particularly since many such foil pouches apparently have similar holes. *Id.* at 573.

246. Remember that whether references should be combined is evaluated from the perspective of the "ordinary designer," but any combination must ultimately be judged against the claimed design from the vantage of the "ordinary observer." *See* Campbell Soup Co. v. Gamon Plus, Inc., 939 F.3d 1335, 1342 (Fed. Cir. 2019) (Newman, J., dissenting); *see also* Int'l Seaway Trading Corp. v. Walgreens Corp., 589 F.3d 1233, 1240–41 (Fed. Cir. 2009) ("[T]he ordinary observer test is the sole test for design patent invalidity under § 102.").

247. Long, *supra* note 39, at 223 ("Previously, the Federal Circuit did question *KSR*'s applicability to design patents. But now, the Federal Circuit does not even acknowledge *KSR* in its opinions on design patent nonobviousness analyses." (footnote omitted)).

248. *Id.* at 224–25.

249. *E.g.*, High Point Design LLC v. Buyers Direct, Inc., 730 F.3d 1301, 1315 (Fed. Cir. 2013).

commercial appeal. If audience tastes correlate with design innovation, then this generous approach to nonobviousness review makes sense.

We now know, however, that audience tastes and design innovation are not in alignment. If we believe that design patent protection should be reserved for designs that might not normally be produced in the absence of such protection, then we should be skeptical of associating commercial success with nonobviousness. A design may reap financial rewards for all sorts of reasons that have nothing to do with design innovation, like advertising efforts, more effective corporate management, or undercutting the competition on price.[250] Most importantly, courts should recognize that a design's commercial success is more likely to stem from satisfying the public's taste for aesthetic familiarity than from inventiveness.

Other intellectual property regimes that offer their own legal protections for design do not equate commercial success with rights eligibility. Like design patent law, trademark law tries to avoid protecting a design's functional elements.[251] Trademark law considers not only the mechanical functionality of a proposed trademarked design, but also its "aesthetic functionality."[252] If a product element does not make the product physically work any better, but its exclusive use "would put competitors at a significant non-reputation-related disadvantage," then the element cannot be protected with a trademark.[253]

As the aesthetic functionality standard evolved, courts had to determine how to best assess evidence of a design's competitive impact. They rejected an earlier determination that a design should be deemed functional if it was "an important ingredient in the commercial success of the product."[254] Trademark courts and scholars noted the danger of presuming a level of attachment to the design among the buying public simply based on strong sales figures.[255] This was considered an overbroad definition as it could deny

250. *See* Burstein, *supra* note 62, at 209; Glynn S. Lunney, Jr. & Christian T. Johnson, *Not So Obvious After All: Patent Law's Nonobviousness Requirement, KSR, and the Fear of Hindsight Bias*, 47 GA. L. REV. 41, 49–50 (2012) ("As others have pointed out, the inferential chain from the fact of commercial success to the question of obviousness is long, complex, and easily broken. Certainly, some nonobvious [designs] meet with commercial success, but it is equally true that some products meet with commercial success without any underlying innovation at all." (footnote omitted)).

251. TrafFix Devices, Inc. v. Mktg. Displays, Inc., 532 U.S. 23, 34–35 (2001). Similarly, to enjoy design patent protection, the design's appearance must not be "'dictated by' the use or purpose of the article." L.A. Gear, Inc. v. Thom McAn Shoe Co., 988 F.2d 1117, 1123 (Fed. Cir. 1993).

252. *See* Christian Louboutin S.A. v. Yves Saint Laurent Am. Holdings, Inc., 696 F.3d 206, 215 (2d Cir. 2012).

253. Abercrombie & Fitch Stores, Inc. v. Am. Eagle Outfitters, Inc., 280 F.3d 619, 641 (6th Cir. 2002) (quoting *TrafFix*, 532 U.S. at 32).

254. Pagliero v. Wallace China Co., 198 F.2d 339, 343 (9th Cir. 1952).

255. *E.g.*, *Christian Louboutin S.A.*, 696 F.3d at 220–21; David S. Welkowitz, *Trade Dress and Patent—The Dilemma of Confusion*, 30 RUTGERS L.J. 289, 335 (1999); *see also* Mark P. McKenna, *(Dys)functionality*, 48 HOUS. L. REV. 823, 851 (2011) (noting "[c]ourts that apply the aesthetic functionality doctrine today overwhelmingly" reject the "*Pagliero* test").

protection for a design simply because it was popular, without determining whether there were viable alternatives to the design available to competitors.[256] Now, "commercial success" has been explicitly rejected as an indicium of aesthetic functionality.[257]

Judges hearing design patent cases should take a page from trademark law and disclaim any reliance on a design's commercial success to determine design nonobviousness.[258] Although aesthetic functionality analyzes the level of commercial effect at which trademark protection must be denied to a design element and the commercial success factor is used to justify granting design patent protection, the two analyses are flip slides of the same coin. Both analyses look to a design's competitive impact. Yet while trademark's aesthetic functionality doctrine is careful to avoid viewing commercial success as determinative, design patent nonobviousness is less discerning of such evidence.[259] Greater skepticism of evidence of commercial success would return nonobviousness doctrine to a more sensible judicial attitude, before the interventions of the Federal Circuit, when courts recognized that "the sweet smell of success, without more, is an uncertain indicator" of nonobviousness.[260]

CONCLUSION

Understandably, courts are attracted to seemingly objective evidence like sales figures and hesitant to rely on their own subjective comparison of the claimed design against the prior art.[261] But scientific study of the aesthetic

256. Wallace Int'l Silversmiths, Inc. v. Godinger Silver Art Co., 916 F.2d 76, 80 (2d Cir. 1990).

257. *See, e.g.*, *Christian Louboutin S.A.*, 696 F.3d at 220–22.

258. This reliance on evidence of commercial success is not strictly a recent phenomenon. *See, e.g.*, J.R. Wood & Sons, Inc. v. Abelson's, Inc., 74 F.2d 895, 895–96 (3d Cir. 1934).

259. *See* Peter Lee & Madhavi Sunder, *The Law of Look and Feel*, 90 S. CAL. L. REV. 529, 562 (2017) ("[D]esign patent's conception of functionality . . . lacks the dynamic sensitivity to consumer expectations and market competition inherent in trademark law's conception of functionality.").

260. A & H Mfg. Co. v. Contempo Card Co., 576 F. Supp. 894, 900 (D.R.I. 1983); *see also* Benchcraft, Inc. v. Broyhill Furniture Indus., 681 F. Supp. 1190, 1205–06 (N.D. Miss. 1988) (deeming evidence of commercial success non-probative in furniture design case); Plantronics, Inc. v. Roanwell Corp., 403 F. Supp. 138, 159 (S.D.N.Y. 1975) ("Since the design patent covers only optional esthetic features . . . it is rarely possible to allocate the specific portions of the profits on a commercial product which are respectively attributable to its utilitarian advantages and to its visual appeal.").

261. *See, e.g.*, Crocs, Inc. v. Int'l Trade Comm'n, 598 F.3d 1294, 1310 (Fed. Cir. 2010) ("[[E]vidence of secondary considerations] is more reliable than prior conclusions drawn from vaporous, and almost inevitably self-dependent, general propositions." (first alteration in original) (quoting Safety Car Heating & Lighting Co. v. Gen. Elec. Co., 155 F.2d 937, 939 (2d Cir. 1946))); Ashley Furniture Indus., Inc. v. Lifestyle Enter., Inc., 574 F. Supp. 2d 920, 932–33 (W.D. Wis. 2008) (finding "sale[s] of 40,000 dressers embodying the patented design" and "25,000 beds of the patented design" to be "significant" and "persuasive" of nonobviousness even though court provided no evidence of a nexus between the ornamental aspects of the plaintiff's

middle now points the way to a more guided approach to this comparison than the standardless, holistic evaluation currently used to determine design nonobviousness. By specifically focusing on design choices that inhibit processing fluency, courts can reduce some of the inevitable subjectivity involved in comparing one design against another. Such an approach is superior to the modern approach to nonobviousness, which presumes that any difference from what came before should render a design nonobvious. Overly generous grants of patent protection can stymie the work of subsequent creators. Instead of continuing with a legal test that makes almost any visual work patentable, courts should use our growing knowledge of consumer aesthetics to reserve the rewards of patent protection for truly innovative designs.

products and those sales numbers or, for that matter, any context for evaluating how those sales numbers compared to other furniture industry sellers).