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# Trademark Boundaries and 3D Printing

Lucas S. Osborn

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## TRADEMARK BOUNDARIES AND 3D PRINTING

*Lucas S. Osborn\**

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### I. INTRODUCTION

On numerous websites users can find 3D printable items bearing unauthorized trademarks owned by others. Among the countless available items are phone cases,<sup>1</sup> key chains,<sup>2</sup> action figures,<sup>3</sup> and models of vehicles and spaceships<sup>4</sup> from movies.

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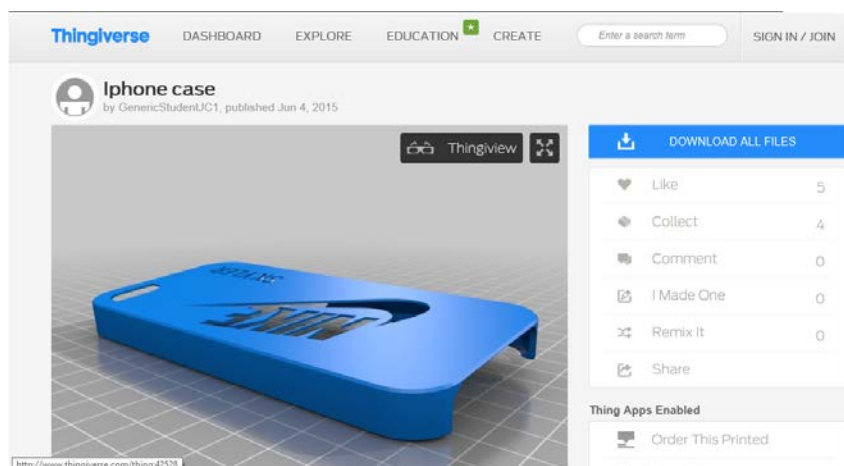
\* Visiting Associate Professor, University of Denver Law School, Associate Professor, Campbell University School of Law. The author would like to thank Bernard Chao, Kristelia Garcia, Deborah Gerhardt, Viva Moffat, and Harry Surden for their helpful comments. Thanks are also in order for the faculty of the University of Akron School of Law for hosting a wonderful event.

1. *iPhone Case*, THINGIVERSE (June 4, 2015), <http://www.thingiverse.com/thing:864824>.

2. *Apple Logo and Keychain*, THINGIVERSE (Dec. 16, 2014), <http://www.thingiverse.com/thing:595565>.

3. A Darth Vader from Star Wars can be found here: *Low Poly Darth Vader*, YOUIMAGINE, <https://www.youmagine.com/designs/low-poly-darth-vader> (last visited Nov. 30, 2016).

4. *Millenium Falcon*, THINGIVERSE (June 3, 2016), <http://www.thingiverse.com/thing:1598269>.



All fun and games with cute toys, right? Probably not—at least not to the rights holders of the intellectual property (IP) depicted in the objects. Indeed, under the Lanham Act, rights holders have sued to enjoin sellers of physical objects like phone cases containing their trademarks<sup>5</sup> and toy versions of cars depicted in TV shows.<sup>6</sup> Under current trademark law, the sale of a *physical* item that, without authorization, bears another’s trademark is generally an act of infringement.<sup>7</sup> But as more commerce moves into the realm of digital bits, laws built around a world of atoms will be challenged. Issues are likely to proliferate as 3D printing continues to mature and methods of printing in an increasing variety of materials become possible. People can already print shoes,<sup>8</sup> handbags and accessories,<sup>9</sup> magnets,<sup>10</sup> tools,<sup>11</sup> circuits,<sup>12</sup> and even buildings.<sup>13</sup>

5. *Some Chanel Phone Case Covers are Oh So Faux*, A PREPONDERANCE OF FASHION (Mar. 2015), <http://www.apreponderanceoffashion.com/fashion-law/chanel-sues-chanel-phone-case-copycats/>. *Chanel, Inc. v. Shop Jeen, LLC*, No. 1:14-cv-09861 (S.D.N.Y. filed Dec. 15, 2014) (case resolved through settlement); *Shop Jeen Settled Suit with Chanel, is Flattered to Have Been Sued*, THE FASHION LAW (Aug. 13, 2015), <http://www.thefashionlaw.com/home/shop-jeen-settled-suit-with-chanel-is-flattered-to-have-been-sued>.

6. *See, e.g., Warner Bros. v. Gay Toys, Inc.*, 658 F.2d 76 (2d Cir. 1981) (granting Lanham Act protection to the “General Lee” car as depicted in “The Dukes of Hazzard” TV show and indicating defendant’s toy version of the car would generate confusion as to manufacture or sponsorship).

7. 15 U.S.C. § 1125(a) (2016).

8. *Our Story*, FEETZ, <http://feetz.com/story> (last visited Feb. 7, 2016) (describing a 3D printing shoe store); *The Future of Running is Here*, NEW BALANCE (Apr. 15, 2016), <https://www.newbalance.com/article?id=4041> (describing a shoe with a 3D printed insole).

9. *3D Printing Purses, Belts and Other Pliable Fashion Accessories*, INSTRUCTABLES, <http://www.instructables.com/id/3D-Printing-Purses-Belts-and-other-Pliable-Fashio/> (last visited Feb. 7, 2017) (describing 3D printed purse and accessories printed in pliable nylon); Bridget Butler

Trademark-based lawsuits will undoubtedly multiply.

3D printing (also called additive manufacturing) technology will complicate these lawsuits, so it is imperative that courts understand the technology. Anything that can be 3D printed must first be created in a digital file that instructs the printer what to do.<sup>14</sup> As with digital music files, users can copy and share 3D printing files with ease. When these digital files (sometimes referred to generically as CAD files) contain depictions of trademark- or trade dress-bearing goods, trademark owners will likely want to control the dissemination of such files.<sup>15</sup>

Many courts today would be tempted to find that the seller of the digital file depicted above committed trademark infringement. Such a finding of infringement would be based on a property-centric view of trademark law that is divorced from traditional trademark policies focusing on consumer confusion and from more limited property perspectives that dominated before the mid-twentieth century. But 3D printing technology alters settled assumptions about manufacturing, design, and trademarks and thus precludes simplistic application of current trademark doctrine.<sup>16</sup> An understanding of the technology and its

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Millsaps, *Mixee Labs Produces Sleek, Sophisticated 3D Printed Line of Purses and Wallets* (Jan. 11, 2015), <https://3dprint.com/36409/mixee-labs-3d-printed-purses/> (describing handbags printed in with interlocking plastic pieces).

10. C. Huber, et al., *3D Print of Polymer Bonded Rare-Earth Magnets, and 3D Magnetic Field Scanning With an End-User 3D Printer*, 109 APPL'D PHYSICS LETTERS 162401 (2016); *Revolutionary 3D Printed Magnets by Polymagnet*, 3D-ERS (Mar. 24, 2016), <http://www.3ders.org/articles/20160324-revolutionary-3d-printed-magnets-by-correlated-magnetics-can-change-engineering.html>.

11. *Space Station 3-D Printer Builds Ratchet Wrench To Complete First Phase Of Operations*, NASA (Dec. 22, 2014), [https://www.nasa.gov/mission\\_pages/station/research/news/3Dratchet\\_wrench](https://www.nasa.gov/mission_pages/station/research/news/3Dratchet_wrench).

12. Simon Fried, *When 3D Printing Meets PCBs*, EE TIMES (Apr. 20, 2016), [http://www.eetimes.com/author.asp?section\\_id=36&doc\\_id=1329449](http://www.eetimes.com/author.asp?section_id=36&doc_id=1329449).

13. Michelle Starr, *Dubai Unveils World's First 3D-Printed Office Building*, CNET (Mar. 25, 2016), <https://www.cnet.com/news/dubai-unveils-worlds-first-3d-printed-office-building/>; Michelle Starr, *World's First 3D-Printed Apartment Building Constructed in China*, CNET (Jan. 19, 2015), <https://www.cnet.com/news/worlds-first-3d-printed-apartment-building-constructed-in-china/>.

14. Lucas S. Osborn, *Regulating Three-Dimensional Printing: The Converging Worlds of Bits and Atoms*, 51 SAN DIEGO L. REV. 553, 559-60 (2014). For a more in-depth description of 3D printing, see id at 558-62.

15. See, e.g., Press Release, *Gartner Says Uses of 3D Printing Will Ignite Major Debate on Ethics and Regulation*, GARTNER (Jan. 29, 2014), <http://www.gartner.com/newsroom/id/2658315> (“The rapid emergence of this technology will also create major challenges in relation to intellectual property (IP) theft. Gartner predicts that by 2018, 3D printing will result in the loss of at least \$100 billion per year in IP globally.”).

16. See Harry Surden, *Technological Cost as Law in Intellectual Property*, 27 HARV. J. L. & TECH. 135 (2013) (describing how changes in technology releases implicit constraints on IP law and

potential favors trademark laws that support free competition and technologically-enabled growth.

3D printing technology divides the processes of design and manufacturing. In doing so, it demystifies trademarks,<sup>17</sup> especially as symbols of source. Manufacturing, which can be accomplished by anyone with access to the appropriate 3D printer, is commoditized and democratized. Product design is also democratized—it can be meaningfully accomplished by individuals using widely available software. Incentivizing quality manufacturing by brand owners becomes less important where manufacturing is in the hands of consumers.<sup>18</sup> Further, where brand owners are merely designers and not manufacturers, other IP regimes, including design patents, utility patents, and copyrights, exert primacy.<sup>19</sup> Finally, for individuals who have wide access to files and manufacturing capability, trademarks increasingly connote the personal expression of the user more so than manufacturing source or affiliation.<sup>20</sup>

At a more granular level, how people exchange 3D printing files introduces fundamental questions about the source and affiliation indications of trademarks. Given the context in which purchasers encounter 3D printable files, including website addresses, usernames associated with file creators, and even disclaimers, they are unlikely to understand trademarks appearing in the digital file as source, sponsorship, or affiliation designations.<sup>21</sup> Instead, these marks provide an understood level of digital verisimilitude.

Further, because the file sold is not used by the purchaser in public, post-sale confusion is generally inapplicable to the file. Commentators thus far have been unaware of this significant doctrinal challenge posed by 3D printing technology.<sup>22</sup> The purchaser may print and then use the printed (physical) item in public, but that use cannot constitute post-sale confusion because the physical item is distinct from the file sold. The seller of the file is only liable, if at all, under an indirect infringement theory.<sup>23</sup>

On the other hand, given the ease with which people can create and exchange design files, trademark law simultaneously becomes more

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can catalyze doctrinal changes to the law).

17. Throughout this Article I will generally refer to trademarks as including trade dress.

18. See *infra* Section III.B.

19. *Id.*

20. See *infra* Section III.C.

21. See *infra* Section III.A.

22. See *id.*

23. *Id.*

important in a digital world. There will be contexts in which the selling of digital files should result in trademark infringement. The flood of design files increases the need for symbols to reduce search costs. But the symbols should be those source indicators that are actually material to consumers, such as the user name of the file creator or the website on which the file is available, rather than symbols appearing “inside” the digital file.

Following this introduction, Part II situates current trademark doctrine in terms of its dramatic growth over the twentieth century and the Supreme Court’s quick succession of cases from 2000 to 2003 that pared back some of that growth. The analysis demonstrates the Court’s intense concern for proper boundaries in trademark and other IP law and for the maintenance of zones of competition uninhibited by IP claims.

Part III harnesses the holdings and themes of those Supreme Court cases to dissect how trademark law doctrine and policy apply to 3D printing files. As previewed above, the analysis provides surprising results and demonstrates how 3D printing and other digital technology raise fundamental policy questions concerning the meaning and scope of source, sponsorship, and affiliation indication and, more broadly, trademark law’s role in a digital environment. In some ways trademark law may be more important, but in other ways less so. The analysis has implications not only for 3D printing files, but also for digital files generally.

## II. TRADEMARK BOUNDARIES AND BENEFICIAL COPYING

For centuries merchants applied marks to physical goods to indicate a source of manufacturing.<sup>24</sup> Over time, the law has come to recognize that trademark law serves two primary and interrelated functions.<sup>25</sup> First, it protects manufacturers’ incentives to invest in quality goods by preventing an imitator from adopting the same mark and thus diverting sales from the first manufacturer.<sup>26</sup> Second, trademark law protects

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24. Sidney A. Diamond, *The Historical Development of Trademarks*, 65 TRADEMARK REP. 265, 273-80 (1975); Mark P. McKenna, *The Normative Foundations of Trademark Law*, 82 NOTRE DAME L. REV. 1839, 1849-50 (2013) [hereinafter McKenna, *Normative Foundations*]. People have used marks for thousands of years to indicate ownership, such as branding cattle. See, e.g., Diamond, *supra* note 24, at 265-72.

25. J. THOMAS MCCARTHY, MCCARTHY ON TRADEMARKS AND UNFAIR COMPETITION § 2:2 (4th ed. 2013) (discussing the dual goals of trademark law to “protect both consumers from deception and confusion over trade symbols *and* to protect the plaintiff’s infringed trademark as property”).

26. *Park ‘N Fly, Inc. v. Dollar Park & Fly, Inc.*, 469 U.S. 189, 198 (1985) (“[T]rademarks foster . . . the maintenance of quality by securing to the producer the benefits of good reputation.”);

consumers from deception by allowing a trademark to connote a specific (if anonymous) source, thus enhancing information quality on which consumers rely.<sup>27</sup> In simple trademark infringement cases, the law simultaneously protects both the manufacturers' and the consumers' interests. For example, suppose I buy shoes bearing an Adidas logo because I believe the company that owns that trademark makes the shoes, and I have come over time to equate those shoes with good quality. If in fact the shoes I purchased are cheap counterfeits and I did not know it, I have been deceived into buying a cheap product. Further, I lose the ability to rely on the Adidas mark as a shortcut for preference. Finally, the true company that stands behind Adidas shoes is harmed because it lost a sale.

To understand the doctrinal challenges of 3D printable files and trademark law, it is necessary to understand the recent expansions and contractions in trademark law. Situating 3D printable files within this narrative illuminates the modern understanding of trademark law's normative goals and how digital files interact with them.

The story of modern trademark law has mostly been one of expansion.<sup>28</sup> Because this expansion is well-covered, I outline briefly only the expansions most relevant to 3D printing technology. A century ago, trademark infringement only occurred where goods competed directly with each other.<sup>29</sup> As commerce grew more complex and brand owners licensed others to manufacture goods on their behalf, courts allowed trademark law to expand. By the early twentieth century, a few courts expanded trademark rights into related, but not directly competing goods.<sup>30</sup>

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see also McKenna, *Normative Foundations*, *supra* note 24, at 1850-63 (discussing the historical trade-diversion focus of English and American trademark law).

27. See, e.g., WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW* 166-68 (2003); Glynn S. Lunney, Jr., *Trademark Monopolies*, 48 EMORY L.J. 367, 417 (1999).

28. See, e.g., Deborah R. Gerhardt, *Consumer Investment in Trademark*, 88 N.C. L. REV. 427, 437-42 (2010); McKenna, *Normative Foundations*, *supra* note 24, at 1896 ("Courts, with some help from Congress, significantly broadened trademark law during the twentieth century."); Mark A. Lemley, *The Modern Lanham Act and the Death of Common Sense*, 108 YALE L.J. 1687, 1706-07 (1999); Lunney, *supra* note 27.

29. See JAMES LOVE HOPKINS, *THE LAW OF TRADEMARKS, TRADENAMES, AND UNFAIR COMPETITION* § 4, at 15 (3d ed. 1917) (quoting DUNCAN M. KERLY, *THE LAW OF TRADE-MARKS, TRADE-NAME, AND MERCHANDISE MARKS* 475 (2d ed. 1901)) ("The qualified right in the tradename [or a trademark], a right to prevent a defendant from passing off his goods as those of the plaintiff by the use of it—exists only with regard to goods of the kind for which the plaintiff uses it, and to which the connection with his business suggested by the use of the name extends.").

30. See, e.g., Mark A. Lemley & Mark P. McKenna, *Owning Mark(et)s*, 109 MICH. L. REV. 137, 146-47 (2010) [hereinafter Lemley & McKenna, *Owning Mark(et)s*].

In the latter part of the twentieth century, courts expanded the law further and protected mark owners from uses of their marks on unrelated goods if the use would cause consumer confusion as to affiliation or sponsorship.<sup>31</sup> Thus, for example, if I make baseball hats with my university's trademarked logo, I can be guilty of trademark infringement regardless whether the university sells hats with its logo; merely the chance of "sponsorship confusion" prevents such uses. As has been observed, affiliation and sponsorship confusion have a circular component to them: one is more likely confused as to sponsorship or affiliation if the law protects such rights and conditions the public to expect them.<sup>32</sup> Thus, sponsorship and affiliation confusion have the innate ability to self-perpetuate and metastasize.

As a final example of trademark law expansion (to say nothing of dilution<sup>33</sup>), courts have found trademark infringement in cases where the purchaser *knew* the goods were fake at the time of purchase. These cases presented a conceptual problem because the law originally protected against only confusion at the point of sale.<sup>34</sup> To circumvent this problem, courts adopted the doctrine of post-sale confusion, reasoning that third parties might be confused as to the authenticity of the item when they see a non-deceived purchaser wearing or using it.<sup>35</sup> Courts apply this doctrine without requiring proof that the allegedly confused third parties would have ever bought the trademarked goods.<sup>36</sup>

These various expansions can work together to expand the law even further. For instance, a trademark owner can combine affiliation

31. See generally, Stacey L. Dogan & Mark A. Lemley, *The Merchandising Right: Fragile Theory or Fait Accompli?*, 54 EMORY L.J. 461 (2005) (discussing the recent vintage of merchandising claims). Congress amended the Lanham Act to acquiesce to sponsorship and affiliation confusion. Trademark Law Revision Act of 1988, Pub. L. No. 100-667, tit. I, sec. 132, § 43(a), 102 Stat. 3935, 3946 (1989).

32. Lunney, *supra* note 27.

33. See 15 U.S.C. § 1125(c) (2012).

34. See, e.g., Lunney, *supra* note 27, at 469-75 (1999); Mark P. McKenna, *Trademark Use and the Problem of Source*, 2009 U. ILL. L. REV. 773, 798-99.

35. The earliest such U.S. case is *Mastercrafters Clock & Radio Co. v. Vacheron & Constantin-Le Coultre Watches, Inc.*, 221 F.2d 464 (2d Cir. 1955). The *Mastercrafters* court also was concerned that non-confused purchasers of the imitation clock would "acquir[e] the prestige [of appearing to own] a prestigious article." *Id.* at 466. Prototypical cases involve shoppers at flea markets or other venues notorious for selling counterfeit goods. See, e.g., *Omega SA v. 375 Canal, LLC*, No. 12 Civ. 6979(PAC), 2013 WL 2156043 (S.D.N.Y. May 20, 2013) (involving counterfeit sales); Colleen Jordan Orscheln, *Bad News Birkins: Counterfeit in Luxury Brands*, 14 J. MARSHALL REV. INTELL. PROP. L. 249, 250-51 (2015) (discussing counterfeit sales). The purchasers know the goods are counterfeit, and thus are not confused. But when the purchaser later wears the goods in public, others may see. If, as is often the case, the goods are of inferior quality to the genuine goods, viewers may blame the poor quality on the owner of the brand displayed.

36. Lemley & McKenna, *Owning Mark(et)s*, *supra* note 30, at 152-53.



confusion with post-sale confusion to stop a person from selling a non-competing good to a customer who is not confused as to affiliation or sponsorship.<sup>37</sup>

After virtually unabated expansion throughout the twentieth century,<sup>38</sup> early in the twenty-first century the Supreme Court decided three cases that dramatically pruned certain aspects of trademark law.<sup>39</sup> Although none of these decisions concerned printable files, each impacts them—at a minimum by signaling the Court’s interest in channeling claims to proper areas of IP law and invigorating a sphere of unencumbered competition with beneficial copying.

First, in *Wal-Mart Stores, Inc. v. Samara Bros., Inc.*,<sup>40</sup> the Court wrestled with the law of trade dress protection. Spurred on in part by the Court’s own decisions, particularly its decision in *Two Pesos* that held trade dress can be inherently distinctive,<sup>41</sup> trade dress protection strengthened dramatically in the 1990s.<sup>42</sup> *Wal-Mart* represents a step to weaken trade dress protection in the troublesome area of product design.<sup>43</sup> Samara sold a line of children’s clothing decorated with fruit

37. See *Au-Tomotive Gold Inc. v. Volkswagen of America, Inc.*, 603 F.3d 1133, 1138 (9th Cir. 2010); see also Lemley & McKenna, *Owning Mark(et)s*, *supra* note 30, at 152-53 (discussing the case).

38. The Court itself contributed to the expansion at times. See *Qualitex Co. v. Jacobson Prods. Co.*, 514 U.S. 159, 162 (1995) (interpreting the Lanham Act to allow color alone to serve as a trademark/trade dress); *Two Pesos, Inc. v. Taco Cabana, Inc.*, 505 U.S. 763, 776 (1992) (holding that trade dress can be inherently distinctive, and if so, does not require proof of secondary meaning); *Park ‘N Fly, Inc. v. Dollar Park & Fly, Inc.*, 469 U.S. 189, 205 (1985) (interpreting the Lanham Act to mean that an infringement action based on an incontestable mark may not be defended on the grounds that the mark is merely descriptive).

39. The Court also decided *Moseley v. V Secret Catalogue, Inc.*, 537 U.S. 418 (2003), which held that plaintiffs must show actual dilution, as opposed to a likelihood of dilution, in dilution claims. Congress overruled the Moseley decision in the Trademark Dilution Revision Act of 2006. Trademark Dilution Revision Act, Pub. L. No. 109-312, 120 Stat. 1730 (2006).

40. 529 U.S. 205 (2000).

41. *Two Pesos*, 505 U.S. at 776.

42. Dana Beldiman, *Protecting the Form but Not the Function: Is U.S. Law Ready for a New Model High Tech?*, 20 SANTA CLARA HIGH TECH. L.J. 529, 529 (2003) (“Pressured by systemic demands for stronger protection mechanisms, judicial decisions have dramatically broadened the scope of protection, in particular in the area of trade dress law.”); Gary Myers, *Statutory Interpretation, Property Rights, and Boundaries: The Nature and Limits of Protection in Trademark Dilution, Trade Dress, and Product Configuration Cases*, 23 COLUM.-VLA J.L. & ARTS 241, 243 (2000) (providing a table to show the expansion of trade dress litigation in the 1980s and 1990s and stating that, “[l]itigation concerning the subject matter and extent of protection available for . . . trade dress has increased considerably in recent years, particularly as trademark owners have become aware . . . of the generous protections that the Supreme Court accorded to trade dress in *Two Pesos*.”).

43. Beldiman, *supra* note 42, at 563 (“The *Wal-Mart* ruling was prompted by the Court’s desire to stem the doctrinal expansion of the trade dress doctrine.”).

shapes. Believing that it had (unregistered) trade dress protection in the clothes' designs, it sued Wal-Mart for selling "knockoffs" of the clothes. The specific issue on appeal was whether trade dress infringement could be found in the absence of proof of acquired distinctiveness (secondary meaning).

To uphold its *Two Pesos* decision, the *Wal-Mart* Court distinguished between product packaging, which it said can be inherently distinctive, and product design, which it said cannot be.<sup>44</sup> The Court offered no empirical evidence to justify its rule and instead nakedly asserted that with "product design, as in the case of color, we think consumer predisposition to equate the feature with the source does not exist."<sup>45</sup>

While others have rightly criticized the Court's armchair consumer psychology, the error is largely harmless in that it simply involves defensible and familiar tradeoffs between a rule versus a standard. The overall thrust of the Court's opinion was to choose the efficiency of a clear rule over the costs of a more searching standard to preserve a sphere of competition by imitation. The Court was rather transparent about this, stating that, "[c]ompetition is deterred, however, not merely by successful suit but by the plausible threat of successful suit, and given the *unlikelihood* of inherently source-identifying design, the game of allowing suit based upon alleged inherent distinctiveness seems to us not worth the candle."<sup>46</sup> The Court felt that the harm to competition in the form of litigation costs (or threat of litigation costs) overwhelmed the relatively small gains to be had.

*Wal-Mart* is important when thinking about printable files because it shows the Court's attentiveness to litigation realities and willingness to make bright-line rules to achieve a healthy, competitive market.<sup>47</sup> Of course any bright-line rule leaves a few individual cases outside of what might be considered traditional trademark protection, but the clarity and

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44. The Court also troublingly punted on the tough boundary between product packaging and design. It asserted that the issue in *Two Pesos*, restaurant décor, was "either product packaging . . . or else some *tertium quid* that is akin to product packaging and has no bearing on the present case." *Wal-Mart*, 529 U.S. at 215.

45. *Id.* at 213.

46. *Id.* at 214 (emphasis added to show the Court did not assert that source-identifying product design was impossible).

47. *See id.* at 213 ("Consumers should not be deprived of the benefits of competition with regard to the utilitarian and esthetic purposes that product design ordinarily serves by a rule of law that facilitates plausible threats of suit against new entrants based upon alleged inherent distinctiveness. How easy it is to mount a plausible suit depends, of course, upon the clarity of the test for inherent distinctiveness, and where product design is concerned we have little confidence that a reasonably clear test can be devised.").

efficiency can greatly outweigh the costs.<sup>48</sup> The decision is also important for its discussion of channeling claims to the various branches of IP law. The Court noted that its bright-line rule should not cause significant harm to the product producer, “since the producer can ordinarily obtain protection for a design that is inherently source identifying (if any such exists), but that does not yet have secondary meaning, by securing a design patent or a copyright for the design . . . .”<sup>49</sup>

The Court’s reference to design patent law highlights the IP regime responsible for encouraging ornamental design.<sup>50</sup> Congress carefully balanced the tradeoffs of design protection against free competition with the design patent regime, and allowing trademark law (in the form of trade dress protection) to further incentivize ornamental design would upset the delicate balance. It would also ask something new of trademark law, which traditionally was not used to incentivize creative designs. Although the Court allowed trade dress protection even if the product enjoyed design patent protection, it did so only where the secondary meaning in the product’s shape clearly triggered trademark law’s overarching consumer confusion principle.<sup>51</sup> Because secondary meaning is difficult to prove,<sup>52</sup> the Court left open only a very narrow door.<sup>53</sup>

A second Supreme Court decision, issued just one year after *Wal-Mart*, further weakened trademark law (particularly trade dress law) and brightened the line between the branches of IP law. In *Traffix Devices, Inc. v. Mktg. Displays, Inc.*,<sup>54</sup> the Court reviewed a claim of trade dress protection in a dual spring design for roadside signs. The dual spring at the base of the signs had been the subject of a utility patent (since

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48. See, e.g., Lucas S. Osborn, *Instrumentalism at the Federal Circuit*, 56 ST. LOUIS U. L.J. 419, 421 (2011) (discussing the costs and benefits of rules versus standards).

49. *Wal-Mart*, 529 U.S. at 214.

50. *Id.*

51. *Id.* at 215.

52. See, e.g., Loren Lunsford, *Trade Dress in Product Design*, MARTENSEN WRIGHT PC, <http://martenswright.com/da/trade-dress-product-design/> (last visited Feb. 7, 2017) (“Secondary meaning in a product design is difficult to achieve.”); Vincenti & Vincenti, *Wal-Mart and the Supreme Court’s Diminishment of Inherent Distinctiveness* (Sep. 21, 2013), <http://vincenti.com/wal-mart-and-the-supreme-courts-diminishment-of-inherent-distinctiveness/> (noting the “difficult burden of establishing secondary meaning”).

53. The Court further narrowed the opening by stating that when a court is unsure whether a feature is product design or product packaging, “courts should err on the side of caution and classify ambiguous trade dress as product design, thereby requiring secondary meaning.” *Wal-Mart*, 529 U.S. at 215.

54. 532 U.S. 23, 25 (2001).

expired), and the accused infringer argued that the dual spring design could not constitute trade dress because it was functional.<sup>55</sup>

The expired utility patent was of vital importance because utility patent law is the branch of IP responsible for incentivizing utilitarian inventions.<sup>56</sup> The patent system represents a “carefully crafted bargain” between incentivizing new and non-obvious invention through patents, which limit competition through their exclusive rights, and allowing competition through copying, which dampens inventive endeavors.<sup>57</sup> As part of that bargain, patents currently enjoy a term of twenty years from the date of filing.<sup>58</sup> A longer patent term would increase the costs to society of monopoly pricing and impedance to follow-on technology.<sup>59</sup>

The Court was intensely aware that patent holders may attempt to effectively extend protection past the twenty-year patent term by arguing that the utilitarian features enjoy trade dress protection.<sup>60</sup> To prevent this usurpation of the congressional balance, the Court demarcated an expanse between utility patents and trade dress. Specifically, the Court held that a prior patent claiming a feature that is later asserted as trade dress constitutes strong evidence that the feature is functional and not protectable by trade dress.<sup>61</sup>

*TrafFix* differs from *Wal-Mart* in an important way. Whereas *Wal-Mart* envisioned trade dress protection might subsist after a design patent expired if the owner could demonstrate secondary meaning,<sup>62</sup> *TrafFix* reiterated that functional features can never enjoy trade dress protection, regardless of the existence of secondary meaning.<sup>63</sup> In this instance at least, patent law trumps trademark law because the Court believed the harms to innovation outweigh any consumer confusion and loss to the would-be trade dress owner.

At the same time, the Court seemingly refused to rule that utility patent protection for an object necessarily rendered the product

55. *Id.* at 25.

56. Lucas S. Osborn, Joshua M. Pearce & Amberlee Haselhuhn, *A Case for Weakening Patent Rights*, 89 ST. JOHN'S L. REV. 1185, 1185-86 (2015).

57. *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U. S. 141, 150-51 (1989); Osborn, Pearce & Haselhuhn, *supra* note 56, at 1186-88.

58. 35 U.S.C. § 154(a)(2) (2015).

59. Osborn, Pearce & Haselhuhn, *supra* note 56, at 1186-88.

60. *TrafFix*, 532 U.S. at 28.

61. *Id.* at 29-30.

62. The Court stated, “We hold that, in an action for infringement of unregistered trade dress under § 43(a) of the Lanham Act, a product’s design is distinctive, and therefore protectible, only upon a showing of secondary meaning.” *Wal-Mart Stores, Inc. v. Samara Bros., Inc.*, 529 U.S. 205, 216 (2000).

63. *TrafFix*, 532 U.S. at 35.

functional and thus ineligible for trade dress protection. Instead, the Court adopted a strong presumption that a feature claimed in a utility patent is functional.<sup>64</sup> The lack of clarity from this presumption has engendered some criticism,<sup>65</sup> but clearly the decision expanded the divide between utility patent and trade dress in two ways, one less significant and one more so. First, somewhat less significantly, it emphasized that the presumption was a “strong” one.<sup>66</sup> While a strong presumption is not a precise rule, it sends a clear signal to lower courts that the divide between the two areas of IP law is important. Second, and more significantly, the opinion broadened the test for what counts as functional matter by clarifying (or reinterpreting) its earlier decisions to state that the primary test for utilitarian functionality is “when [the feature] is essential to the use or purpose of the device or when it affects the cost or quality of the device.”<sup>67</sup> This test is easier to meet than the alternate test, which asks whether the particular feature leads to a “significant non-reputation-related disadvantage.”<sup>68</sup>

The Court’s significant expansion of the test for utilitarian functionality and its strong presumption regarding previously patented features effectively erected a bar to trade dress protection for previously patented features. It is difficult to imagine a feature that was claimed in a patent ever escaping the presumption of functionality. Patent claims are highly technical, and every word in a claim limits the scope of the patent and reduces the scope of the patentee’s right to exclude others. Only a poor patent drafter would include a superfluous, non-utilitarian feature in a patent claim.

In addition, the *TrafFix* Court built on *Wal-Mart* and amplified its attention to the desirability of competitive copying. Rather than viewing copying pejoratively as undesirable free-riding or theft, the Court emphasized that “unless an intellectual property right such as a patent or copyright protects an item, it will be subject to copying” and noted that “copying is not always discouraged or disfavored by the laws which

64. *Id.* at 29-30 (“A prior patent, we conclude, has vital significance in resolving the trade dress claim. A utility patent is strong evidence that the features therein claimed are functional. If trade dress protection is sought for those features the strong evidence of functionality based on the previous patent adds great weight to the statutory presumption that features are deemed functional until proved otherwise by the party seeking trade dress protection.”).

65. *See, e.g.,* Sheldon W. Halpern, *A High Likelihood of Confusion: Wal-Mart, TrafFix, Moseley, and Dastar—The Supreme Court’s New Trademark Jurisprudence*, 61 N.Y.U. ANN. SURV. AM. L. 237, 257 (2005) (“In short, without a categorical preclusion rule, it seems that the Court effectively elided answering the question before it . . .”).

66. *TrafFix*, 532 U.S. at 29-30.

67. *Id.* at 33.

68. *Id.*

preserve our competitive economy. Allowing competitors to copy will have salutary effects in many instances.”<sup>69</sup>

In the end, the *Traffix* Court emphasized and sharpened the core dividing principle between trademark law and patent law: if a feature is functional, it cannot enjoy trade dress protection, regardless of whether it designates source.<sup>70</sup> In short, although confusion is the touchstone of trademark law, sometimes the law will permit confusion to avoid conflicting with other areas of IP law.

Finally, a third case, *Dastar Corp. v. Twentieth Century Fox Film Corp.*,<sup>71</sup> set further boundaries for trademark law. Dastar copied footage from Fox’s *Crusade in Europe* television series and reused portions of that footage in its own videos, crediting itself as the producer and distributor and providing no attribution to Fox.<sup>72</sup> Fox alleged Dastar committed reverse passing off in violation of § 43(a) of the Lanham Act by representing Fox’s content as its own.<sup>73</sup> (Fox could not bring a copyright claim based on the *Crusade* series, because the copyright had lapsed.<sup>74</sup>) The Supreme Court rejected Fox’s claim, holding that “origin of goods” refers only to the “producer of the tangible goods that are offered for sale, and not to the author of any idea, concept, or communication embodied in those goods.”<sup>75</sup> In creating a distinction between tangible goods and the author of ideas, concepts, or communications, the Court was concerned that allowing claims for reverse passing off in the context of copyrightable works “would create a species of mutant copyright law” that would conflict with the Federal copyright regime.<sup>76</sup> Moreover, the decision was not limited to concerns about overlap with copyright law; the justices also worried that § 43(a) might be used to “create[] a species of perpetual patent . . . .”<sup>77</sup>

Others have written extensively about *Dastar*’s potentially dramatic scope.<sup>78</sup> The decision is not limited to public domain works.<sup>79</sup> Further,

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69. *Id.* at 29 (citation omitted).

70. *Id.* at 29-30.

71. 539 U.S. 23 (2003).

72. *Id.* at 26-27.

73. *Id.* at 28.

74. *Id.* at 37.

75. *Id.* at 37.

76. *Id.* at 34 (“[A]llowing a cause of action under § 43(a) for [a representation that Dastar originated the creative work in the videos] would create a species of mutant copyright law that limits the public’s ‘federal right to ‘copy and to use’’ expired copyrights.”) (quoting *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U. S. 141, 165 (1989)).

77. *Dastar*, 539 U.S. at 37.

78. See generally Mark P. McKenna, *Dastar’s Next Stand*, 19 J. INTELL. PROP.L. 357 (2012) [hereinafter McKenna, *Next Stand*].

though courts offer mixed results, the decision should not be limited to reverse passing off cases.<sup>80</sup> Instead of narrowly and formalistically limiting *Dastar* to claims of “origin,” courts should also apply it to assertions that consumers will be confused by intangible content as to whether the plaintiff was the “source,” provided “sponsorship,” or was “affiliated” with the defendants goods.<sup>81</sup> Otherwise, *Dastar*’s scope would be trifling, because plaintiffs would simply recast their claims from “origin” to “affiliation” or the like.<sup>82</sup>

*Dastar* includes several interrelated facets relevant to trademark rights in 3D printable digital files. First, the decision stands for the idea that intellectual origins of goods are irrelevant to trademark law and that such concerns should be channeled to copyright law or patent law, if anywhere.<sup>83</sup> The Court stated,

In sum, reading the phrase “origin of goods” in the Lanham Act in accordance with the Act’s common-law foundations (which were *not* designed to protect originality or creativity), and in light of the copyright and patent laws (which *were*), we conclude that the phrase refers to the producer of the tangible goods that are offered for sale, and not to the author of any idea, concept, or communication embodied in those goods.<sup>84</sup>

The Court did not rule out that some consumers might care about a product’s intellectual origins (i.e., its authorship), but, like in *Wal-Mart*, the Court made a simplifying rule because it considered those concerns comparatively unimportant for trademark law.<sup>85</sup>

Second, the Court segregated intangible content from tangible goods, stating that trademark law is concerned only with “the producer of the tangible goods that are offered for sale.”<sup>86</sup> As discussed below, this aspect of the decision can hold profound consequences for digital content such as 3D printing files.<sup>87</sup>

Finally, the decision highlighted trademark law’s limited

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79. *Id.* at 373-75 (discussing cases); Mark P. McKenna & Lucas S. Osborn, *Trademarks and Digital Goods*, 92 NOTRE DAME L. REV. 1425 (2017) (discussing cases).

80. McKenna, *Next Stand*, *supra* note 78, at 376-80.

81. *Id.* at 376.

82. *Id.* at 377.

83. *Dastar Corp. v. Twentieth Century Fox Film Corp.*, 539 U.S. 23, 37 (2003) (emphasis in original).

84. *Id.*

85. McKenna, *Next Stand*, *supra* note 78, at 372.

86. *Dastar*, 539 U.S. at 37. Of course, trademark law broadly includes service marks, which involve intangible services. But *Dastar* did not concern service marks.

87. *See infra* Section III.

boundaries and reiterated its holdings in *Wal-Mart* and *TrafFix*, including their solicitous view of copying. The Court emphasized that *Wal-Mart*'s "carefully considered limitation" (i.e., that product design cannot be inherently distinctive) "would be entirely pointless if the 'original' producer could turn around and pursue a reverse-passing-off claim under exactly the same provision of the Lanham Act."<sup>88</sup> The Court recognized that a broad reading of "origin" would support the plaintiff's suit rejected in *TrafFix*, stating that the "plaintiff, whose patents on flexible road signs had expired, and who could not prevail on a trade-dress claim under § 43(a) because the features of the signs were functional, would have had a reverse-passing-off claim for unattributed copying of his design."<sup>89</sup>

Indeed, *TrafFix* contained hints of a constitutional dimension to the functionality doctrine by invoking *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*<sup>90</sup> and emphasizing the role of a broad public domain when patent or copyright law does not apply or has expired.<sup>91</sup> The Court refused to tackle that question, but left the possibility open to consider it in the future.<sup>92</sup> At a minimum, *TrafFix* demonstrates the Court's willingness to transpose a policy concern for a robust public domain in federal preemption cases into cases solely concerning federal law. Some even argue that *TrafFix* "suggests a limit on Congress's power to rely on other constitutional powers, such as the Commerce Clause, to remove product features from the public domain."<sup>93</sup>

*Dastar* greatly amplified *TrafFix*'s policy predilections by invoking *Bonito Boats* and related cases. In explaining why the Lanham Act

88. *Dastar*, 539 U.S. at 36-37.

89. *Id.* at 37.

90. 489 U.S. 141 (1989). *Bonito Boats* was largely about federal preemption based on intellectual property laws, but it used strong language in favor of a robust public domain that scholars understand to articulate a Constitutional dimension to the argument that unpatentable utilitarian product features should be in the public domain. See Margreth Barrett, *Consolidating the Diffuse Paths to Trade Dress Functionality: Encountering TrafFix on the Way to Sears*, 61 WASH. & LEE L. REV. 79, 141 (2004).

91. See *TrafFix Devices, Inc. v. Marketing Displays, Inc.*, 532 U.S. 23, 29 (2001); see also Barrett, *supra* note 90, at 137-46 (2004) (discussing this distinction and citing relevant case law). Cf. Theodore H. Davis, Jr., *Copying in the Shadow of the Constitution: The Rational Limits of Trade Dress Protection*, 80 MINN. L. REV. 595, 618-27 (1996).

92. *TrafFix*, 532 U.S. at 35 ("TrafFix and some of its amici argue that the Patent Clause of the Constitution, Art. I, § 8, cl. 8, of its own force, prohibits the holder of an expired utility patent from claiming trade dress protection. We need not resolve this question. If, despite the rule that functional features may not be the subject of trade dress protection, a case arises in which trade dress becomes the practical equivalent of an expired utility patent, that will be time enough to consider the matter.") (citations omitted).

93. Barrett, *supra* note 90, at 141.



should not conflict with copyright and patent law, the Court recalled several of its cases, all of which favor a robust public domain.<sup>94</sup> As a result, scholars and courts have largely understood the *Dastar* Court's broad purpose in fashioning the boundaries between trademark law and other IP.<sup>95</sup>

Collectively, *Wal-Mart*, *TrafFix*, and *Dastar* stand for the clear proposition that "trademark law will be applied sparingly, if at all, and only in the context of strong inhibitory presumptions, to create exclusive rights in matter that the public has a right to copy."<sup>96</sup> The decisions approvingly bless many forms of copying as normal and advantageous. Moreover, the decisions represent trademark law's turn away from a proprietary rights paradigm and toward a consumer protection rationale.<sup>97</sup>

### III. TRADEMARK BOUNDARIES AND 3D PRINTING

Keeping the Supreme Court's emphasis on beneficial copying and strong boundaries between branches of IP law in mind, this Article now turns to the application of trademark law to 3D printing technology.

At the outset, this Article must address the rather prosaic application of trade dress law to 3D printed goods. Surprisingly, scholars have intimated that 3D printing's most profound impacts will be directed toward trade dress, as opposed to trademarks. For instance, Professors Desai and Magliocca state that, other than patents and copyright, the "final type of intellectual property that is ripe for disruption by 3D

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94. The Court stated:

The problem with this argument according special treatment to communicative products is that it causes the Lanham Act to conflict with the law of copyright, which addresses that subject specifically. The right to copy, and to copy without attribution, once a copyright has expired, like "the right to make [an article whose patent has expired] including the right to make it in precisely the shape it carried when patented-passes to the public." *Sears, Roebuck & Co. v. Stiffel Co.*, 376 U. S. 225, 230 (1964); *see also Kellogg Co. v. National Biscuit Co.*, 305 U. S. 111, 121-122 (1938). "In general, unless an intellectual property right such as a patent or copyright protects an item, it will be subject to copying." *TrafFix Devices, Inc. v. Marketing Displays, Inc.*, 532 U. S. 23, 29 (2001). The rights of a patentee or copyright holder are part of a "carefully crafted bargain," *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U. S. 141, 150-151 (1989), under which, once the patent or copyright monopoly has expired, the public may use the invention or work at will and without attribution.

*Dastar Corp. v. Twentieth Century Fox Film Corp.*, 539 U.S. 23, 33-34 (2003).

95. *See McKenna, Next Stand*, *supra* note 78, at 377-81 (interpreting *Dastar* and citing cases).

96. Halpern, *supra* note 65, at 270.

97. *Id.* at 271.

printing is *trade dress*.”<sup>98</sup> It is true that 3D printing will facilitate the manufacturing of uniquely shaped objects and the copying of those objects. But I consider these phenomena comparatively less interesting because they do not challenge trademark doctrine in any unique way. That is, the law will apply to the 3D printed shape the same way it applies to the injection-molded or hand-crafted shape. 3D printing may increase the frequency of trade dress issues, but the issues will not differ in kind in any way unique to trade dress.

3D printing’s more profound effects on trademark law, including but not limited to trade dress law, result from consumers’ disassociation of product design from product manufacturing (a phenomenon that recalls *Wal-Mart*’s discussion of product design) and their ability to create, copy, and exchange digital files that embody product design.<sup>99</sup> Trademark law’s origins lie almost exclusively in concerns related to manufacturing and ownership of physical goods.<sup>100</sup> The manufacturer affixed the trademark to the manufactured good (or allowed a merchant to do the same) to indicate responsibility for manufacturing quality, and consumers relied on it for the same purpose.<sup>101</sup>

A world of 3D printing commoditizes manufacturing: it can occur either in the individual home or at a 3D printing shop selected by the end-user.<sup>102</sup> Consumers no longer expect a physical object to emanate from an anonymous source; the consumer can control the manufacturing source. In this way, 3D printing demystifies trademarks, and perhaps brands more generally, as consumers no longer associate trademarks with manufacturing prowess.<sup>103</sup> The ramifications of this shift are

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98. Deven R. Desai & Gerard N. Magliocca, *Patents, Meet Napster: 3D Printing and the Digitization of Things*, 102 GEO. L.J. 1691, 1709 (2014) (emphasis added); see also Amanda Scardamaglia, *Flashpoints in 3D Printing and Trade Mark Law*, 23 J. L. INFO. & SCI. 30 (2015) (leading the substantive legal discussion with a focus on trade dress protection).

99. *Wal-Mart Stores, Inc. v. Samara Bros., Inc.*, 529 U.S. 205, 215 (2000).

100. See, e.g., FRANK I. SCHECHTER, *THE HISTORICAL FOUNDATIONS OF THE LAW RELATING TO TRADE-MARKS* 20-63 (1925); FRANCIS H. UPTON, *A TREATISE ON THE LAW OF TRADE MARKS* 22 (1860) (stating that the fundamental policy of trademark law was “to protect the manufacturer, who by his skill and industry, has produced an article of merchandise, that has found favor with the public, and which he has designated by a particular name or mark.”). Cf. *Dastar*, 539 U.S. at 37 (holding that “origin of goods” refers only to the “producer of the tangible goods that are offered for sale, and not to the author of any idea, concept, or communication embodied in those goods”).

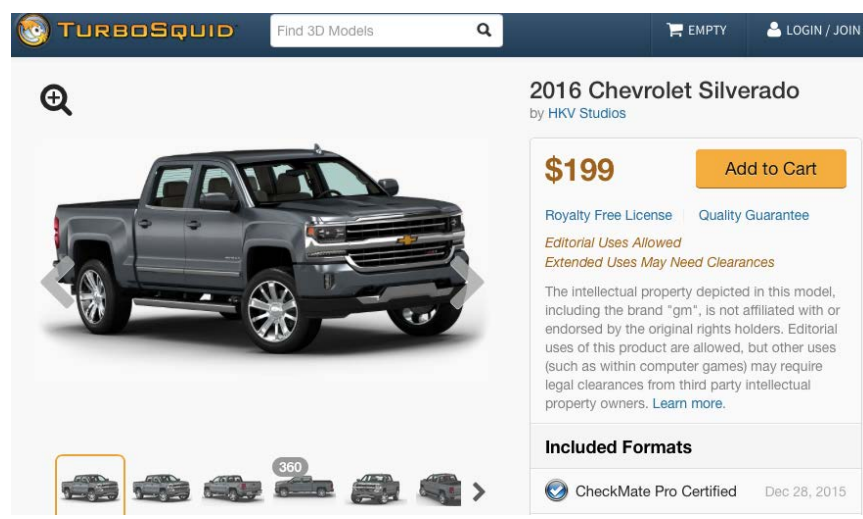
101. UPTON, *supra* note 100, at 22.

102. See, e.g., THINGIVERSE, thingiverse.com (last visited Feb. 7, 2017) which will print objects for users if the user provides the digital file.

103. That is not to say some trademark owners will not seek to manufacture their own goods. Rather, the mere presence of multiple manufacturing options severs the historical assumed connection between trademarks and manufacturing source. There exists a rough analogy to the merchandizing cases in which logos of sports teams or universities adorn all sorts of clothing and

profound, and point to an environment where trademark law has decreased salience for the content of digital files.

Consider the 3D printable files available on numerous websites, such as the files on Turbosquid's website that will print all sorts of branded content.<sup>104</sup> When a user goes to Turbosquid's website, she is greeted with thousands of files, many containing trademarks in their content. One such file is of a model of a Chevrolet truck, complete with internal trademarks appearing on the (digital) car just as on a "real" Chevy truck. The website will usually have an indication that the file was created by a particular entity, such as "HKV Studios." In the image below of a Chevrolet truck, the creator's name is listed near the top-right corner, below the item description.<sup>105</sup>



accessories, which were relatively easy to manufacture. People often bought the clothes not understanding the logo to indicate source, but merely desiring to express loyalty to the team or school. Trademark law grew to police much of this activity through the unwieldy concepts of sponsorship or affiliation confusion, but not without growing pains and continuing dissent. *See, e.g.,* Dogan & Lemley, *supra* note 31; Mark A. Lemley & Mark McKenna, *Irrelevant Confusion*, 62 STAN. L. REV. 413, 448-49 (2010) [hereinafter Lemley & McKenna, *Irrelevant Confusion*]. 3D printing technology decentralizes and commoditizes manufacturing to a much greater extent than t-shirt and baseball hats, and thus sponsorship or affiliation doctrines should not be blithely applied without scrutiny.

104. Recall that BMW sued Turbosquid for hosting and selling digital models of BMW cars (though these were not 3D printable. Josh Mings, *BMW Group Sues Turbosquid for Selling 3D Models of Their Car Designs*, SOLIDSMACK (Aug. 4, 2016), <http://www.solidsmack.com/cad-design-news/bmw-group-sues-turbosquid-for-selling-3d-models-of-their-car-designs/>).

105. Image captured from *2016 Chevrolet Silverado*, TURBOSQUID, <http://www.turbosquid.com/3d-models/3d-2016-chevrolet-silverado-model/984941> on November 25, 2016 (last visited Feb. 7, 2017). This particular file is not 3D printable, but numerous files are. Because, as explained below, the 3D printable Ford model truck did not include an artist's name, I did not use the image here.

When a shopper on Turbosquid's website encounters the Chevy mark in the file, what does it signify: the origin of the *content* of the digital file (i.e., the idea of a Chevy truck) or the origin or sponsorship of the *file* itself? Given the website's context, the Chevy mark on the truck does not suggest the origin of the actual file, but only the origin of the content or idea embodied in the file. The website environment as a whole tells a reasonable user that Turbosquid either creates the files or hosts others' creations. Indeed, Turbosquid's website, by stating that the file is created "by HKV Studios," unmistakably tells the consumer that HKV Studios is the origin of the file.<sup>106</sup> With this information in hand, a reasonable user would understand the file's title, "2016 Chevrolet Silverado," to be nominative fair use as to what type of automobile the model is based on.<sup>107</sup> How else could a user seeking a model of a 2017 Chevrolet Silverado easily find one? In the vast majority of other digital files, the context will likewise show that the files originate from someone other than the owner of the trademarks appearing within the file. In fact, some websites, like thepiratesbay.org, convey rebellion against brand owners.

A similar understanding as to source, sponsorship, and affiliation indication drove the *Dastar* decision. The logic was so compelling that *Dastar* created a bright-line rule, holding that "origin" for purposes of the Lanham Act refers only to the origin of *tangible* goods.<sup>108</sup> Fox wanted the intangible content (the movie footage) to signify the physical tapes' origins, but the Court refused. The Court decided that trademark law's purposes were ill-served when applied to intangible content.<sup>109</sup> In the context of 3D printable files, *Dastar* bars a Lanham Act claim to the extent an internal trademark merely refers to the origin of the intangible

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106. *Id.* The text on the right-hand side of the image shows that Turbosquid included a disclaimer that GM did not authorize the use of the Chevy logo. This disclaimer further dispels any possible confusion at the point of sale, but should not be necessary as discussed herein. Similarly, purchasers of files likely do not view the marks appearing in the file as indicating sponsorship or affiliation, but rather as a necessary incident to verisimilitude. See *infra* note 120 and accompanying text.

107. Nominative fair use arises when a third party uses another's trademark out of necessity to describe the third party's own product or service. See, e.g., *Cairns v. Franklin Mint Co.*, 292 F.3d 1139, 1155 (9th Cir. 2002) (holding that the sale of collectibles bearing the name and likeness of Princess Diana was a nominative fair use); *Century 21 Real Estate Corp. v. Lendingtree, Inc.*, 425 F.3d 211, 218-21 (3d Cir. 2005) (establishing nominative fair use as an affirmative defense).

108. *Dastar Corp. v. Twentieth Century Fox Film Corp.*, 539 U.S. 23, 60 (2003). Recall the Court also adopted a bright-line rule in *Wal-Mart* based on the belief that any exception to the rule was not significant enough to warrant a doctrinal trademark response. See *Wal-Mart Stores, Inc. v. Samara Bros., Inc.*, 529 U.S. 205, 214 (2000).

109. *Dastar*, 539 U.S. at 37.

content of a file, as opposed to the origin of the file itself.

This result may sound shocking to those accustomed to a permission culture in which any use of a mark other than the most obvious nominative use seemingly requires the trademark owner's authorization. But the result follows naturally from the overarching channeling principles of *Wal-Mart*, *TrafFix*, and *Dastar*. Those decisions emphasize that there are certain uses of a trademark—sometimes even source-identifying uses—that are simply not the concern of trademark law. Where a mark conveys primarily intellectual origin as opposed to origin, affiliation, or sponsorship of the file itself, trademark law should not forbid the use.

*Dastar* represents the most directly applicable case to printable files because, although the *Dastar* films were tangible, the allegedly source-identifying content was not. Likewise, 3D printable files (as stored on a memory medium) can be considered tangible, but their content, even the trademarks appearing within the file, are not. It is of course possible for courts to interpret *Dastar* narrowly to apply only to creative intangible content, such as a movie, as distinct from an actual trademark appearing in intangible content. But that is not what *Dastar* said, and it is not the best reading of *Dastar*. Such a reading of *Dastar* would forbid one from publicly showing a full-length movie that has entered the public domain merely because a movie studio's trademark appears at the movie's beginning and ending.

None of this is to say that digital files are per se immune from trademark infringement analysis. Some consumers will care about the source of the digital file they purchase.<sup>110</sup> They may want to ensure that the file will actually print a quality version of the object,<sup>111</sup> or they may want the prestige or the peace of mind from having the “original” or “authorized” version.<sup>112</sup> Trademark policy applies most forcefully where consumers are confused into buying an item, even a file, wrongfully believing it to have originated from a particular source. This again raises

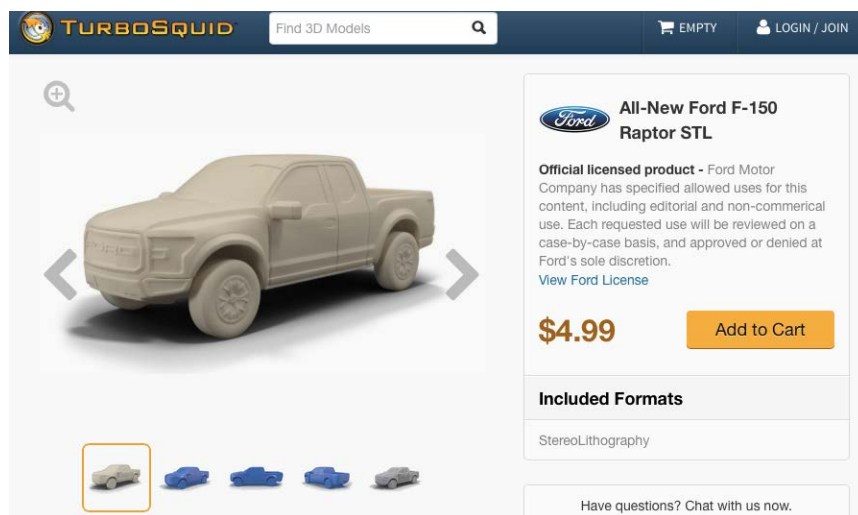
110. See, e.g., Desai & Magliocca, *supra* note 98, at 1713 (“Many people will want to buy from a brand that . . . guarantees safe files.”).

111. If a file contains certain errors, those errors will manifest in the printed version of the object. Errors can include fundamental design errors (such as locating a car's fuel tank too close to an area that would suffer damage in a car crash, thus risking fire) and essentially typographical errors (such as accidentally drawing a piece the wrong shape).

112. Consider the continued popularity of “real” diamonds, even though virtually indistinguishable human-made diamonds have existed for years. See, e.g., Sri Jegarajah, *Would You Buy a 'Man-Made' Diamond?*, CNBC (Apr. 16, 2013, 8:50 PM), <http://www.cnbc.com/id/100647697> (quoting a De Beers employee as stating, “The majority of consumers have told us during extensive independent research that they want the real thing and aren't prepared to settle for anything less.”).

the question of how consumers obtain information about source with 3D printable files and requires careful distinction between the source of *the file itself* and the source of the intellectual creation depicted in the file.

With digital files, source or affiliation indication occurs primarily from sources external to the file. Where file creation is easy and widespread, external source indication will play an important role, a role consonant with trademark law policies. If a digital file provider created a website that looked as if it was owned or endorsed by General Motors, consumers would likely be confused as to the source or affiliation of the files for sale thereon. Also, if Turbosquid were to state that the digital file of the Chevy truck depicted above was “created by General Motors,” when in fact it was not, trademark infringement clearly would exist.<sup>113</sup> For an example of potentially actionable trademark infringement, look closely at the text on the image below of a 3D printable Ford truck model on Turbosquid’s website.<sup>114</sup>



Notice that, unlike the Chevy truck example, there is no indication in the top-right corner of who created the file. Moreover, the assertion that the file represented an “officially licensed product” of Ford constitutes trademark use external to the file that is likely to cause consumer

113. A more nuanced situation involves the labeling of the file a “2016 Chevrolet Silverado”, but this is nominative use given the surrounding context.

114. Image captured from *All-New Ford F-150 Raptor STL*, TURBOSQUID, <http://www.turbosquid.com/3d-models/3ds-all-new-f-150-raptor-stl/933073> (last visited Feb. 7, 2017).

confusion if the statement is not true.

Although Turbosquid found it advantageous to enter into a licensing agreement with Ford when offering these files, that does not mean trademark law would require a license.<sup>115</sup> Indeed, the trio of *Dastar*, *Wal-Mart*, and *Traffix* suggest that the internal content of a 3D printable file is unlikely to cause confusion as to source or affiliation. *Dastar* in particular speaks with force against presuming consumer associations derived from the internal content of a file. *Dastar* does not represent a physicalist view of trademark law, that is, a view that property rights can only exist in relation to a physical object.<sup>116</sup> Rather, it demonstrates the Court's belief that a bright-line between the origins of tangible goods and intangible content best establishes, or at least best approximates, the proper role of trademark law.

The following subsections offer an apology for channeling the internal content of 3D printable files away from trademark infringement. In the process, I analyze how and when 3D printing technology challenges assumptions about trademark law's normative objectives. The analysis provides a foundation for analyzing not just 3D printable files, but all digital files.

#### A. *Consumer Protection Rationale*

*Dastar*'s focus on tangible goods to the exclusion of a digital file's content accords with the consumer protection rationale of trademark law. This rationale posits that trademark law exists to improve the quality of information in the marketplace, thereby protecting consumers from being deceived into buying products they did not mean to and generally reducing consumer search costs.<sup>117</sup> In the context of physical goods, I buy a good bearing a trademark I know and like because I believe it has been manufactured by or on behalf of the same source and will be of the same quality as other goods bearing a similar mark.

But as already described, this rationale breaks down in the context of printable files. Where the website's context suggests that "HKV Studios" created the digital file, a consumer is not confused as to whether GM created the file. Of course the consumer recognizes the Chevy mark, but mere recognition of a mark does not prove

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115. I do not analyze dilution in this Article.

116. Cf. Kenneth J. Vandeveld, *The New Property of the Nineteenth Century: The Development of the Modern Concept of Property*, 29 BUFF. L. REV. 325, 331-32 (1980) (characterizing Blackstone's view of property as physicalist).

117. See, e.g., Lunney, *supra* note 27, at 417.

confusion.<sup>118</sup> The mark is present to make the model look like a “real” Chevy truck, but that does not mean that GM created the model.<sup>119</sup>

Nor does the logo signify meaningful sponsorship or affiliation, except perhaps under circular reasoning or a broad definition of those terms.<sup>120</sup> Where numerous artists compete to make quality digital versions of real-world objects, logos “inside” the digital file become a necessary ingredient to verisimilitude. Consumers do not buy the file because they think GM sponsored it; they buy it because they want something that *looks like* a GM car. As long as the external context does not claim sponsorship or affiliation in a manner material to consumers,<sup>121</sup> the verisimilitude exists for reasons related to healthy

118. Some cases are to the contrary. *See* Boston Professional Hockey Ass’n v. Dallas Cap & Emblem Manufacturing, Inc., 510 F.2d 1004, 1012 (5th Cir. 1975), *cert. denied*, 423 U.S. 868 (1975) (“The certain knowledge of the buyer that the source and origin of the trademark symbols were in plaintiffs satisfies the [confusion] requirement of the [Lanham Act]. The argument that confusion must be as to the source of the manufacture of the emblem itself is unpersuasive, where the trademark, originated by the team, is the triggering mechanism for the sale of the emblem.”). *But see* Univ. of Pittsburgh v. Champion Prods., Inc., 566 F. Supp. 711, 721 (W.D. Pa. 1983) (“There is no evidence that the consumer cares who has made the soft goods or whether they were made under license.”). Regarding digital files, a rough parallel can be drawn to cases where marks are used in art, because contextually consumers and viewers of the artwork do not normally assume the trademarks indicate source or affiliation. *See, e.g.*, University of Alabama Bd. of Trustees v. New Life Art, Inc., 683 F.3d 1266 (11th Cir. 2012) (relying on a balancing of First Amendment and trademark concerns to find no trademark infringement in painting); ETW Corp. v. Jireh Publ’g, Inc., 332 F.3d 915, 928-29 (6th Cir. 2003) (same); Cairns v. Franklin Mint Co., 107 F. Supp. 2d 1212, 1216 (C.D. Cal. 2000) (noting in dicta that because artist Andy Warhol’s painting of common goods “does not use the trademarked names or product designs to identify the source of the painting, his use does not imply endorsement of the artwork by either Campbell’s or Coca-Cola”).

119. 3D printing files have been analogized to blueprints. If I buy a blueprint for making a particular branded good from you, the presence of the trademark in the blueprint doesn’t tell me the source of the blueprint. Further, if the blueprint bears the legend, “created by [you],” I know you are the origin.

120. Regarding a broad reading of sponsorship or affiliation, the broadest definitions would swallow dilution. Regarding circular reasoning, the law can be a significant factor to shape consumer expectations such that, in circular fashion, if the law repeatedly gives trademark holders remedies on an assumption of consumer expectations, the expectations will eventually come into being. *See, e.g.*, Lunney, *supra* note 27, at 396-97; William McGeeveran & Mark P. McKenna, *Confusion Isn’t Everything*, 89 NOTRE DAME L. REV. 253, 315-16 (2013); Lemley & McKenna, *Irrelevant Confusion*, *supra* note 103, at 438-42; James Gibson, *Risk Aversion and Rights Accretion in Intellectual Property Law*, 116 YALE L.J. 882, 912 (2007). *Cf.* Felix Cohen, *Transcendental Nonsense and the Functional Approach*, 35 COLUM. L. REV. 809, 815 (1935) (speaking to property-like protections for trademarks more generally and stating “The vicious circle inherent in this reasoning is plain. It purports to base legal protection upon economic value, when, as a matter of actual fact, the economic value of a sales device depends upon the extent to which it will be legally protected”); Rochelle Cooper Dreyfuss, *Expressive Genericity: Trademarks as Language in the Pepsi Generation*, 65 NOTRE DAME L. REV. 397, 405 (1990).

121. Lemley & McKenna, *Irrelevant Confusion*, *supra* note 103, at 448-49 (arguing that confusion as to sponsorship or affiliation should only be relevant where they are material to consumers’ decisions). Marketing literature suggests that even if consumers were to have a bad



competition. Inside the digital file, trademarks are the coin of competition, not tools for deception.

Even in jurisdictions that might presume, contrary to reality for most digital files, that a trademark in the digital file indicates sponsorship or affiliation, a website operator can devise the appropriate disclaimer. Indeed, the Turbosquid example of the Chevy truck included a disclaimer. It is true that not all disclaimers, particularly inconspicuous ones, are effective.<sup>122</sup> But no court has infantilized consumers so much as to hold that no disclaimers are effective.<sup>123</sup> Nevertheless, under current law, courts doubt the efficacy of disclaimers and often put the burden of proving their efficacy on the defendant.<sup>124</sup> Where material confusion is already unlikely without disclaimers, the law's dubiousness towards them tends to suppress competition.

Disclaimers should generally not be required because 3D printing technology decouples trademarks as indicators of manufacturing source by severing the historical connection between design and manufacturing. In this environment, the consumer protection rationale suggests turning the focus away from the appearance of the object, including any trademarks thereon, and toward the external indicia of the file's source.<sup>125</sup> As discussed, even if a 3D printable file of a widget includes a (digital) trademark in its content, that does not by itself lead to consumer confusion about who created or endorsed the file. Without confusion at the point of sale, trademark law's fundamental policy concern is generally not triggered.<sup>126</sup>

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experience with a digital file they believe is sponsored or affiliated with a trademark owner, they would not impute that disappointment to the core (physical) product. *See id.* at 430-35.

122. *See, e.g.,* Weight Watchers Int'l, Inc. v. Stouffer Corp., 744 F. Supp. 1259 (S.D.N.Y. 1990) (holding that a disclaimer in "minuscule print" did "not effectively eliminate the misleading impression conveyed in the ad's large headline"); Shell Co. (Puerto Rico) Ltd. v. Los Frailes Service Station, Inc., 605 F.3d 10, 17 (1st Cir. 2010) (stating that gas station's disclaimer signs "were not prominently displayed").

123. *See, e.g.,* HBO, Inc. v. Showtime/Movie Channel, Inc., 832 F.2d 1311, 1315 (2d Cir. 1987) ("In many circumstances a disclaimer can avoid the problem of objectionable infringement by significantly reducing or eliminating consumer confusion by making clear the source of a product.").

124. *See id.* at 1316.

125. *See supra* notes 104-14 and accompanying text (discussing external indicia of a file's source).

126. *See, e.g.,* Groeneveld Transp. Efficiency, Inc. v. Lubecore Int'l, Inc., 730 F.3d 494, 513 (6th Cir. 2013) ("No harm is done to this incentive structure, however, by the copying of a product design that does not confuse consumers as to the product's source. . . . [T]rademark law, like the law of unfair competition of which it is a part, focuses not on copying per se, but on confusion."); Crescent Tool Co. v. Kilborn & Bishop Co., 247 F. 299, 301 (2d Cir.1917) ("The plaintiff has the right not to lose his customers through false representations that those are his wares which in fact are not, but he may not monopolize any design or pattern, however trifling. The defendant, on the

On the other hand, given the ease with which people can create design files, trademark law in some ways becomes more important in a digital world. As design files proliferate, the search cost reductions that trademarks bring become proportionally more important. But courts must be careful to apply trademark law to source indicators that are actually material to consumers.<sup>127</sup> Consumers will sometimes care who created the digital file and should be able to rely on a source indicator (such as the user name of the person or company who created the file or the name of the web host) for that information. An entity's reputation for creating or hosting quality files will be important to consumers sifting through a sea of files. But consumers will look for these important indicia outside of the file's content.

Even assuming no point of sale confusion, however, trademark law has extended consumer protection to confusion arising after the sale. In a typical scenario, buyers of tangible items knowingly buy knockoff goods at a flea market or a "Canal street" and there is no confusion at the point of sale.<sup>128</sup> Courts have dealt with the lack of confusion in flea market sales and the like by creating the doctrine of post-sale confusion.<sup>129</sup> The doctrine typically posits that although the initial purchaser is not confused, third party bystanders will see the purchaser wearing/using the fake good and will be confused about its source.<sup>130</sup> The Supreme Court has never endorsed the doctrine, and it is often criticized.<sup>131</sup>

Even accepting the post-sale confusion doctrine with physical

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other hand, may copy plaintiff's goods slavishly down to the minutest detail: but he may not represent himself as the plaintiff in their sale.").

127. See, e.g., Lunney, *supra* note 27, at 483 ("[C]ourts should focus the confusion analysis on material information, defined as information about a product that will influence consumer buying.").

128. See generally Jonathan M. Barnett, *Shopping for Gucci on Canal Street: Reflections on Status Consumption, Intellectual Property, and the Incentive Thesis*, 91 VA. L. REV. 1381 (2005).

129. See Lemley & McKenna, *Owning Mark(et)s*, *supra* note 30, at 152-53. Some courts think Congress intended to endorse post-sale confusion when it amended the Lanham Act in 1962 to remove reference to deceiving "purchasers," thus prohibiting any use "likely to cause confusion, or to cause mistake, or to deceive." Act of Oct. 9, 1962, Pub. L. No. 87-772, § 17, 76 Stat. 769, 773 (1962) (codified at 15 U.S.C. § 1114(1)(a) (2000)); see, e.g., Checkpoint Sys., Inc. v. Check Point Software Techs., Inc., 269 F.3d 270, 295 (3d Cir. 2001); *Esercizio v. Roberts*, 944 F.2d 1235, 1245 (6th Cir. 1991). Courts are reading too much into the 1962 amendment, as its purpose was to ensure that the Lanham Act provision "relates to potential purchasers as well as to actual purchasers." H.R. REP. NO. 87-1108, at 4, 8 (1961); See Lunney, *supra* note 27, at 469-75.

130. See Jeremy N. Sheff, *Veblen Brands*, 96 MINN. L. REV. 769, 778-94 (2012) (discussing three strands of post-sale confusion jurisprudence).

131. See, e.g., *id.* at 776 (proposing that "post-sale confusion doctrine should be discarded entirely"). Some courts have applied the doctrine with an apparent lack of enthusiasm. See *Gibson Guitar Corp. v. Paul Reed Smith Guitars, LP*, 423 F.3d 539, 549, 552-53 (6th Cir. 2005) (rejecting plaintiff's post-sale confusion argument because the accused guitars were not "clearly inferior" to the plaintiff's).

goods, it is inapposite to 3D printable files. In many instances, the purchaser or transferee of the file will 3D print it and perhaps use the printed item in public. The bystanders who are the allegedly confused party in post-sale confusion, however, are not seeing the thing (the file) that the purchaser bought. Instead, they are seeing something very different: the physical object made from a combination of the file, a 3D printer, and the material used in printing. Even if the bystanders are confused, they are not confused by the thing (the file) the seller transferred to the buyer. It is analogous to a seller who sells a blueprint or raw materials to a second party who then creates the infringing goods. In each situation, post-sale confusion is not applicable.<sup>132</sup>

The distinction between a 3D printed object and its corresponding digital file, and that distinction's effect on a post-sale confusion analysis, represents one of the most provocative challenges 3D printing technology poses to trademark policy. But it has gone completely unnoticed in the literature.<sup>133</sup> Brand owners will need to rely on indirect infringement, with its limitations, to attempt to stop the seller of the file.<sup>134</sup>

Printed instantiations of the files should not factor into a post-sale confusion analysis for a second fundamental reason. Specifically, when 3D printing technology is mature and ubiquitous, the relationship between design and manufacturing is severed such that the appearance of a physical good will not generally speak to a single design-and-manufacturing source.<sup>135</sup> The quality of a physical good will speak as much to the wearer's choice of 3D printer as to the CAD file that contained the printing instructions. Moreover, the facility with which users can alter CAD files further disassociates physical goods from their design source.<sup>136</sup>

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132. *But see* General Motors Co. v. Urban Gorilla, LLC, No. 2:06-CV-00133 BJS, 2010 WL 5395065 (D. Utah Dec. 27, 2010) (finding body kits that the user bought and attached to a truck to make it look like a Hummer gave rise to post-sale confusion). *Cf.* Ferrari S.P.A. Esercizio Fabrice Automobili E Corse v. Roberts, 739 F. Supp. 1138 (E.D. Tenn. 1990) (finding a kit-car for a Ferrari lookalike infringed, but not mentioning post-sale confusion). The kit car cases, even if properly decided, can be distinguished because the seller sold a physical item used directly by the buyer.

133. Scholars have, however, noted how 3D printing changes consumer perception of source and the corresponding effects on post-sale confusion, which is discussed in the following paragraph. *See* Desai & Magliocca, *supra* note 98, at 1710-11; James Grace, Note, *The End of Post-Sale Confusion: How Consumer 3D Printing Will Diminish the Function of Trademarks*, 28 HARV. J. L. & TECH. 263, 275-80 (2014).

134. *See infra* Section III.D for a discussion of indirect infringement.

135. *See* Desai & Magliocca, *supra* note 98, at 1711; Grace, *supra* note 133, at 278.

136. A proponent of strong trademark protection could argue for the opposite. If 3D printing makes the public less sure about the manufacturing origins of a good, then trademark law should

In other instances, a purchaser or transferee of a file may not 3D print a physical version. Instead, the buyer may offer the *file* for sale (or for free) to others. In that case, too, post-sale confusion does not apply. The *original seller* will not be guilty of direct infringement<sup>137</sup> based on a post-sale confusion analysis because the purchaser/reseller is not selling the exact file that the original seller transferred to her. Rather, the purchaser/reseller is selling a *copy* of the file. The original seller is analogous to someone who sells a knock-off baseball hat at a swap meet. If the buyer uses that hat as the basis to make ten more identical hats, the original seller cannot be liable as a direct infringer for the ten hats the buyer subsequently created. In short, post-sale confusion only applies to the item sold or transferred, not to copies of it.

Some might argue that *downstream copies* of digital files should count as post-sale confusion because intermediate purchasers can easily copy the digital files. But this would usurp the doctrine of indirect infringement. Further, in the patent context the Supreme Court has strictly distinguished between copies of files versus original files. In *Microsoft Corp. v. AT&T Corp.*,<sup>138</sup> the Supreme Court analyzed § 271(f) of the Patent Act, which basically renders anyone an infringer who exports either the unassembled components of a claimed invention or those components that have no substantial non-infringing uses.<sup>139</sup> AT&T claimed that the master software disks Microsoft sent overseas infringed its patent claim that required the combination of a physical computer and the software.<sup>140</sup> Because the software only represented a component of the claimed combination, AT&T sought relief under § 271(f).<sup>141</sup> There was one problem: Microsoft did not load the exported master disks directly onto computers; instead, it made copies of the master disks and combined the *copy* with a computer.<sup>142</sup>

The Court thought it vitally important that the software Microsoft exported was not loaded onto the computers, and thus the Court found Microsoft did not infringe.<sup>143</sup> Instead, only a copy had been combined

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police printed goods assiduously so as to preserve the information transmission policy for finished goods. From a practical standpoint, stopping all or most individualized 3D printed products is probably impossible. From a theoretical perspective, the argument raises normative issues regarding trademark-as-property arguments, some of which are discussed in the following subsection.

137. As discussed *infra*, the seller may be liable for indirect infringement.

138. 550 U.S. 437 (2007).

139. 35 U.S.C. § 271(f)(1)-(2) (2012).

140. *Microsoft*, 550 U.S. at 442, 446.

141. *Id.* at 442.

142. *Id.*

143. *Id.* at 453-54. The Court's decision was influenced in part by the presumption against extraterritorial application of U.S. laws.

with the computer to form the patented invention.<sup>144</sup> AT&T argued that distinguishing between the original and the copy created a “loophole” for software makers because copying software is effortless, but the Court rejected this argument, reasoning that any loophole “is properly left for Congress to consider, and to close if it finds such action warranted.”<sup>145</sup> Analogously, in the trademark context, copies of files (and prints of digital files) should not factor in to any post-sale confusion analysis because they are distinct entities from the thing originally sold.

In sum, *Dastar*’s instruction to shift focus away from files’ digital content is consonant with trademark law’s consumer protection rationale. Properly understood and applied, the ruling preserves the integrity of the marketplace while fostering creativity and competition. In addition, as the next subsection discusses, the holding maintains calibrated incentives for producers to invest in making quality goods.

### B. *Producer Incentive Rationale*

The second primary trademark law pillar—the producer incentive rationale—can likewise justify channeling the internal content of 3D printable files away from trademark law. Or, at least a version of the rationale can. Generally, the producer incentive rationale posits that trademark law incentivizes companies to invest in manufacturing high-quality goods by allowing the trademark holder to control use of the mark in certain circumstances, thereby protecting consumers’ associations between the high-quality goods and the producer.<sup>146</sup> This view is associated with a property-centric view of trademark law. But the doctrinal contours of a property-centric view of trademark law depend greatly on one’s conception of property as applied to trademarks.<sup>147</sup>

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144. *Id.*

145. *Id.* at 457.

146. See *Qualitex Co. v. Jacobson Prods. Co.*, 514 U.S. 159, 164 (1995) (stating that trademark law lowers consumer search costs because it “quickly and easily assures a potential customer that *this* item—the item with this mark—is *made* by the same *producer* as other similarly marked items that he or she liked (or disliked) in the past. At the same time, the law helps assure a *producer* that it (and not an imitating competitor) will reap the financial, reputation-related rewards associated with a desirable product. The law thereby ‘encourage[s] the *production* of quality products’ . . . .”) (quoting MCCARTHY, *supra* note 25, § 2.01[2]) (emphasis added except as to the word “this”); *Groeneveld Transp. Efficiency, Inc. v. Lubecore Int’l, Inc.*, 730 F.3d 494, 512 (6th Cir. 2013) (stating that trademark law “incentivizes manufacturers to create robust brand recognition by consistently offering good products and good services, which results in more consumer satisfaction”); WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW* 179 (2003); Osborn, *supra* note 14, at 582.

147. See McKenna, *Normative Foundations*, *supra* note 24, at 1896.

Specifically, traditional trademark law viewed the property right as a right to customer patronage, or put differently, the right derived from the use of a trademark in connection with a business, and the property was the goodwill.<sup>148</sup> Under this view of trademark law, digital file creators and hosts do not trade on the goodwill associated with trademarked tangible goods. Trading on this sort of goodwill would require meaningful confusion. Consumers do not associate Ford's goodwill from its car business with the digital file because consumers are not confused that they are buying a Ford car when they purchase a digital model of the car. Even where the 3D printable file will print the exact good sold (rather than a model), as long as consumers are not confused as to the source of the file, customer patronage is not coopted.

In addition, the relevant incentive was to produce—that is, to manufacture—high-quality goods.<sup>149</sup> Under this version of the producer incentive theory, “3D printing will explode the dividing line between the consumer protection and producer incentive rationales by giving individuals the ability to print a remarkable range of fake trademarked goods in the privacy of their own homes.”<sup>150</sup> In other words, where *production* is decentralized and commoditized, consumers no longer equate the quality of production with a trademark owner, unless the consumer has special reason to believe that the mark owner actually produced the particular item.<sup>151</sup> Thus, any sales of *digital* files will not harm the mark owner's incentive to manufacture quality *tangible* goods.<sup>152</sup>

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148. *Id.* at 1884-86.

149. As to the emphasis on incentivizing quality production, see sources cited in note 146, *supra*. See also *Park N' Fly Inc. v. Dollar Park & Fly, Inc.*, 469 U.S. 189, 206 (1985) (Stevens, J., dissenting) (“A mark must perform the function of distinguishing the *producer . . . of a good . . .* in order to have any legitimate claim to protection.”) (emphasis added).

150. Osborn, *supra* note 14, at 583.

151. There is room under this theory to argue that trademark owners need incentive to produce high-quality digital files. But courts should be careful to distinguish between the quality of files versus the quality of the designs embodied in the files. The former might speak to whether the object's lines are drawn well and whether the 3D mesh is “water tight.” See, e.g., Jeff LaMarche, *Preparing Blender Files for 3D Printing*, SHAPEWAYS, [http://www.shapeways.com/tutorials/prepping\\_blender\\_files\\_for\\_3d\\_printing](http://www.shapeways.com/tutorials/prepping_blender_files_for_3d_printing) (last visited Feb. 7, 2017). The latter speaks to things outside of trademark law, as the next paragraph in the text demonstrates. Even where there is need for good file quality, the trademark owner is only likely harmed by third parties' poor quality files if consumers believe the mark owner created or controls the quality of the files. See Lemley & McKenna, *Owning Mark(et)s*, *supra* note 30, at 174. But the website's context will usually make clear that another entity made the file. Mere sponsorship or affiliation confusion, even if it exists, does not lead consumers to view the brand owner negatively. Lemley & McKenna, *Irrelevant Confusion*, *supra* note 103, at 436-39.

152. It might be argued that a trademark owner could lose incentive to produce quality goods if it could not control 3D printable files that will print physical objects similar or identical to the

Trademark law's policy of incentivizing quality manufacturing will look increasingly antiquated when manufacturing is largely not in the hands of the trademark owner. The purchaser of the file controls the manufacturing decision: she may print it at home or select any commercial printing services provider. There may be a continued need to incentivize quality *design*, which can be captured in a 3D printable file, but utility patents, design patents, and to a lesser extent, copyrights exist for just that purpose.<sup>153</sup> Applying trademark law to incentivize product design generally, as opposed to protecting secondary meaning in trade dress, would represent a wholesale policy change for trademark law. Such a change would appear unnecessary in light of other IP protection that is already available.<sup>154</sup> Moreover, the Constitution might forbid such a focus, since the IP clause specifies that patents and copyrights should incentivize utilitarian and creative design.<sup>155</sup>

On the other hand, some modern courts and commentators argue for a much different producer incentive focus, one that protects not simply existing business, but brands in the abstract.<sup>156</sup> Under this view, brand owners have a right to control virtually all uses of their trademarks, seemingly regardless of meaningful confusion. This view of producer protection yields a different doctrinal landscape, one that vastly

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trademark owner's where those printed objects are deceptively sold to the public. In this circumstance, the doctrine of indirect trademark infringement offers the trademark owner protection. *See infra* Section III.D.

153. Trade dress law can have an incidental effect on encouraging creative design because trade dress law can exist for an item that is or was covered by a design patent. *See Wal-Mart Stores, Inc. v. Samara Bros., Inc.*, 529 U.S. 205 (2000). But trade dress protection exists primarily to prevent consumer confusion.

154. *See Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 157 (1989) ("The law of unfair competition has its roots in the common-law tort of deceit: its general concern is with protecting consumers from confusion as to source. While that concern may result in the creation of 'quasi-property rights' in communicative symbols, the focus is on the protection of consumers, *not the protection of producers as an incentive to product innovation.*") (emphasis added). There are some quality design decisions that patent and copyright law will not protect, such as an incremental but obvious utilitarian design improvement. But these exist in the realm of free competition and may be freely copied, a decision the patent system makes intentionally. *KSR Int'l v. Teleflex, Inc.*, 550 U.S. 398, 427 (2007) ("And as progress beginning from higher levels of achievement is expected in the normal course, the results of ordinary innovation are not the subject of exclusive rights under the patent laws. Were it otherwise patents might stifle, rather than promote, the progress of useful arts.")

155. *See supra* notes 90-91, 93, and accompanying text (discussing the constitutional dimensions of *TrafFix*).

156. *See McKenna, Normative Foundations, supra* note 24, at 1896 ("Modern trademark law, by contrast, seeks to protect brands, construed broadly."). Ironically, this expanded focus on brands in the abstract began not by shifting to a property-centric view of trademark law, but shifting from a natural rights property-centric view of trademark law and to a confusion emphasis unconstrained from natural rights principles. *Id.*

expands trademark rights.

### C. *Socially Beneficial Activity*

As one moves away from trademark law's core prohibition against deceitful copying, disagreement increases about the limits of the incentive and confusion rationales. Many commentators have argued that an incentive rationale does not support giving trademark owners the maximum incentive to invest in quality goods (or a quality brand), but only a socially optimal incentive.<sup>157</sup> And some expansions of trademark law involve significant costs to society—including deadweight losses and restriction on free expression—in exchange for likely minor extra incentives to producers.<sup>158</sup> The Supreme Court's trio of *Dastar*, *TraFFix*, and *Wal-Mart* highlighted the social desirability of many forms of copying, thus signaling a brake on trademark protection's growth and highlighting the distinction between imitation that deceives—which trademark law is designed to prevent—and socially beneficial imitation.

Where neither consumers nor the public have generalized expectations that manufactured products emanate from a specific source, rather than from a 3D printer, denying non-confused consumers the opportunity to obtain printable files and use them to manufacture their own goods—even with another's trademark included—creates deadweight losses.<sup>159</sup> The non-confusing competition from 3D printable files would lower prices for the “original” product, allowing more consumers access to it.<sup>160</sup> This is even true for rote copying of products

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157. See, e.g., Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1046-69 (2005).

158. See, e.g., *id.* at 1059-69 (listing costs of IP rights, including deadweight losses, legislative rent-seeking, enforcement costs, and diversion from other forms of production); Robert G. Bone, *Hunting Goodwill: A History of the Concept of Goodwill in Trademark Law*, 86 B.U. L. REV. 547, 619 (2006) (noting costs of broad trademark rights, including deadweight loss, rent seeking costs, and burdens on First Amendment values); Lunney, *supra* note 27, at 479-84 (discussing costs of strong trademark protection and benefits of some forms of copying).

159. Cf. Ralph S. Brown, Jr., *Advertising and the Public Interest: Legal Protection of Trade Symbols*, 57 YALE L.J. 1165, 1170-73 (1948) (criticizing advertisements that create deadweight loss based on irrational consumer attachment). These mid-twentieth century critiques fell out of favor with the rise of law-and-economics responses questioning a hostile view of advertising. See, e.g., William M. Landes & Richard A. Posner, *Trademark Law: An Economic Perspective*, 30 J.L. & ECON. 265, 268-75 (1987) (contending that “the hostile view of brand advertising has been largely and we think correctly rejected by economists”). But current views continue to recognize the deadweight losses resulting from certain trademark protection. Lunney, *supra* note 27, at 479-81 (arguing against the myth that trademark protection cannot engender anticompetitive losses); Dogan & Lemley, *supra* note 31, at 481-82 (arguing that a broad merchandising right increases costs without a justifiable benefit).

160. If the original's prices did not budge, that would suggest the “competition” is not



down to the finest detail (including marks), which is sometimes frowned upon as “free-riding.” But absent meaningful confusion, it is difficult to condemn the copying as anything but healthy competition.<sup>161</sup>

In many ways, 3D printing highlights refined versions of important questions trademark law wrestled with in the first half of the twentieth century:

[Broad trademark protection] enables one to acquire a vested interest in a demand “spuriously” stimulated through “the art of advertising” by “the power of reiterated suggestion” which creates stubborn habits. This poses an important policy question: Should the courts actively lend their aid to the making of profits derived from the building of such habits, if and whenever those stubborn habits so dominate buyers that they pay more for a product than for an equally good competing product?<sup>162</sup>

Though views toward advertising have softened since the mid-twentieth century,<sup>163</sup> a similar question must be asked: Whether the law should protect branded goods against competition from digital files where consumers are generally not confused by the internal indicia of the file?

Beyond rote copying of a trademark owner’s products, 3D printing will engender significant free expression, which trademark law might stifle. Mature 3D printing technology will one day “allow a torrent of creativity as users create 3D customizations, mash-ups, and parodies of trademarked goods.”<sup>164</sup> For example, users can design and print a handbag that is half Luis Vuitton and half Gucci or can create a personalized version of a good bearing another’s trademark. Simple examples of creative uses include the following “pumpkin” and “pineapple” iPhone cases.<sup>165</sup>

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affecting the trademark owner.

161. See, e.g., *Triangle Publ’ns, Inc.*, 167 F.2d 969, 978 (2d Cir. 1948) (Frank, J., dissenting) (“[A] ‘free ride,’ without more, is in line with the theory of competition.”); *Norwich Pharmacal Co. v. Sterling Drug, Inc.*, 271 F.2d 569, 572 (2d Cir. 1959) (“Absent confusion, imitation of certain successful features in another’s product is not unlawful and to that extent a ‘free ride’ is permitted.”); Lunney, *supra* note 27, at 482-83.

162. *Groeneveld Transp. Efficiency, Inc. v. Lubecore Int’l, Inc.*, 730 F.3d 494, 512 (6th Cir. 2013) (“No harm is done to this incentive structure, however, by the copying of a product design that does not confuse consumers as to the product’s source. . . . [T]rademark law, like the law of unfair competition of which it is a part, focuses not on copying per se, but on confusion.”); *Triangle Publ’ns, Inc.*, 167 F.2d 969, 980 n.13 (2d Cir. 1948) (Frank, J., dissenting) (quoting *Shredded Wheat Co. v. Humphrey Cornell Co.*, 250 F. 960 (2d Cir. 1918)).

163. See, e.g., Bone, *supra* note 158, at 602-03.

164. Osborn, *supra* note 14, at 585.

165. The pumpkin case was found at *Case for iPhone 4 (Pumpkin)*, TURBOSQUID, <http://www.turbosquid.com/3d-models/3d-model-of-iphone-4-case/916181> (last visited Nov. 30,



Using another's trademark in an expressive work often pits First Amendment values against the trademark owner's private potential harm to its mark or brand and the public's interest in information transmission.<sup>166</sup> Thus far, courts have engaged in balancing tests to decipher whether a particular trademark use in an expressive work is allowable.<sup>167</sup> The most popular test suggests, in a deceptively simple fashion, that the Lanham Act "should be construed to apply to artistic works only where the public interest in avoiding consumer confusion outweighs the public interest in free expression."<sup>168</sup> Applying the test is easier said than done. But where the use of a symbol does not cause significant confusion, as with many instances of 3D printing as described above, the balance begins to tip in favor of protecting expressive uses of marks, perhaps so much so that a bright-line rule is justified.

Returning again to "rote" copying of another's trademark-bearing good, the issue of protected personal expression is further complicated by the increasing recognition that consumers use brands to shape their identity and express themselves.<sup>169</sup> A litany of commentators describe

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2016), and the pineapple case was found at *Case for iPhone 4 (Pumpkin)*, TURBOSQUID, <http://www.turbosquid.com/3d-models/3d-iphone-4-case/917065> (last visited Nov. 30, 2016).

166. See generally Pratheepan Gulasekaram, *Policing the Border between Trademarks and Free Speech: Protecting Unauthorized Trademark Use in Expressive Works*, 80 WASH. L. REV. 887 (2005).

167. See, e.g., *Rogers v. Grimaldi*, 875 F.2d 994, 999 (2d Cir. 1989); Regarding the difficulties courts have with applying *Rogers*, see William K. Ford, *Restoring Rogers: Video Games, False Association Claims, and the "Explicitly Misleading" Use of Trademarks*, 16 J. MARSHALL REV. INTELL. PROP. L. 306 (2017).

168. *Id.*

169. E.g., Katya Assaf, *Brand Fetishism*, 43 CONN. L. REV. 83, 95 (2010) ("Several studies confirm that consumers incorporate brands into their lives as tools for shaping and expressing their own identities, and for perceiving the identities of others. Some brands even serve as objects of cults

how, one way or another, strong trademark protections for certain goods inhibit the free expression of individuals who would like to associate with particular, usually expensive, brands.<sup>170</sup> Because status signaling is an expressive act, it gives rise to First Amendment concerns.<sup>171</sup> Although an analysis of the First Amendment implications of self-expressive trademark uses are beyond the scope of this Article,<sup>172</sup> it is uncontroversial to suggest the analysis is highly complex.

The upshot is that 3D printable files will often include creative and expressive conduct that provides societal benefits and gives rise to First Amendment issues. The current First Amendment framework involves complex and indeterminate balancing tests that can cripple unsophisticated individuals or startups. The costs of uncertainty recall the *Wal-Mart* Court's sensitivity to litigation costs as a deterrent to beneficial activity, when it observed that "[c]ompetition is deterred, however, not merely by successful suit but by the plausible threat of successful suit, and given the unlikelihood of inherently source-identifying design, the game of allowing suit based upon alleged inherent distinctiveness seems to us not worth the candle."<sup>173</sup>

By analogy, given the unlikelihood that a 3D printable file's

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and rituals . . .") (citations omitted); Barnett, *supra* note 128, at 1381-86; C. Scott Hemphill & Jeannie Suk, *The Law, Culture, and Economics of Fashion*, 61 STAN. L. REV. 1147, 1176 (2009) (noting a "snob effect" whereby "the prevalence of cheaper copies also may reduce demand for the original design" because of "a consumer's desire for distinction from lower-status consumers or from other consumers more generally"); Jeffrey L. Harrison, *Trademark Law and Status Signaling: Tattoos for the Privileged*, 59 FLA. L. REV. 195 (2007); Richard S. Higgins & Paul H. Rubin, *Counterfeit Goods*, 29 J.L. & ECON. 211, 211 (1986) ("Many persons purchase branded goods for the purpose of demonstrating to others that they are consumers of the particular good."); H. Leibenstein, *Bandwagon, Snob, and Veblen Effects in the Theory of Consumers' Demand*, 64 Q.J. ECON. 183, 189 (1950).

170. See, e.g., Assaf, *supra* note 169, at 122; Ann Bartow, *Counterfeits, Copying and Class*, 48 HOUS. L. REV. 707, 741-42 (2012) (arguing that trademark law is "contemptuous" of low income consumers "who would like to purchase what appear to be authentic goods at deeply discounted prices" even where there is no confusion as to authenticity, and, by so doing, "trademark law tries to ensure that no one can legally possess the status of a brand they cannot afford"); Barton Beebe, *Intellectual Property Law and the Sumpuary Code*, 123 HARV. L. REV. 809 (2010); Michael Grynberg, *Trademark Litigation as Consumer Conflict*, 83 N.Y.U. L. REV. 60, 87-94 (2008); Sheff, *supra* note 130, at 803; Hemphill and Suk counter that there is "much more to fashion than status" and that the lack of protections for fashion designers (other than copyright, design patent, and trademark law) "push[es] creators toward the high-end realm of status and luxury, and away from devoting creative resources to design innovation." Hemphill & Suk, *supra* note 169, at 1179-80.

171. Sheff, *supra* note 130, at 804.

172. Others have provided such analysis. See Sheff, *supra* note 130, at 804-28; see also Robert C. Denicola, *Trademarks as Speech: Constitutional Implications of the Emerging Rationales for the Protection of Trade Symbols*, 1982 WIS. L. REV. 158 (1982); Lisa P. Ramsey, *Increasing First Amendment Scrutiny of Trademark Law*, 61 SMU L. REV. 381 (2008).

173. *Wal-Mart Stores, Inc. v. Samara Bros., Inc.*, 529 U.S. 205, 214 (2000).

internal content suggests any meaningful source indication, a bright-line rule can circumvent the current costly balancing tests. *Dastar* supplies the bright-line rule for 3D printable files if we interpret its holding to preclude analysis of a file's internal content.<sup>174</sup> The resulting certainty encourages more of what the Court deems socially beneficial activity. While bright-line rules are less flexible than balancing tests,<sup>175</sup> the certainty of a rule can outweigh the desirability of a more flexible analysis.<sup>176</sup> Such a rule is likewise consonant with the *TrafFix* decision, which was concerned that the harms to the patent law system from overprotecting utilitarian design outweighed any benefit from rare instances of consumer confusion.<sup>177</sup>

It is important to recognize that a rule like *Dastar*'s does not leave rights holders helpless with respect to printable files. First, trademark owners have a clear trademark injury where a consumer is confused by external indicia as to the source of the file, such as where a consumer is deceived into believing she is downloading a file from the trademark owner's website. Second, any imprecision in the rule, and the resulting possible injustice at the margins, is ameliorated by the potential availability of other IP protection for some digital files. Just as the *Wal-Mart* Court justified its bright-line rule—that product design cannot be inherently distinctive—with reference to the producer's ability to “secur[e] a design patent or a copyright for the design,”<sup>178</sup> *Dastar*'s rule is justified in part by the protections producers can receive for creative works through copyright and design patents and for utilitarian works through utility patents.

Finally, mark owners retain the ability to sue digital file creators and distributors on the basis of indirect infringement. The next subsection considers this doctrine and its application to printable files.

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174. *Dastar Corp. v. Twentieth Century Fox Film Corp* 539 U.S. 23, 37 (2003).

175. *See, e.g., Osborn, supra* note 48, at 421 (discussing the costs and benefits of rules and standards).

176. Though the Court was not explicit in its calculus in *Dastar*, *Wal-Mart* demonstrates the Court's awareness that threats of litigation (and the costs thereof) can stifle creativity. *See Wal-Mart*, 529 U.S. at 214; *see also* James Gibson, *supra* note 120, at 907-15. Recall that the Court adopted a bright-line rule in *Wal-Mart*, deciding that product design cannot be inherently distinctive. *Wal-Mart*, 529 U.S. at 214.

177. *TrafFix Devices, Inc. v. Marketing Displays, Inc.*, 532 U. S. 23, 29-30 (2001). Although the issues with digital files are not as stark as in *TrafFix*, which dealt with the usurpation of explicit patent policy. The concerns with digital files discussed herein would not lead to an extension of a patent monopoly, because the seller of the file could simply remove the offending logo. Nevertheless, the preservation of a robust domain of unfettered competition remains an important concern.

178. *Wal-Mart*, 529 U.S. at 214.

#### D. Indirect Infringement

If digital files do not directly infringe a trademark, trademark owners can turn to the doctrine of indirect infringement to protect certain rights. Under this doctrine, if a party “intentionally induces another to infringe a trademark, or if it continues to supply its product to one whom it knows or has reason to know is engaging in trademark infringement, the manufacturer or distributor is contributorily responsible for any harm done as a result of the deceit.”<sup>179</sup>

A key requirement of indirect infringement is that there must be an underlying act of direct infringement.<sup>180</sup> Of course, a non-confused purchaser of a file would commit direct trademark infringement if she printed copies of the tangible good bearing another’s trademark and sold those goods while representing that they are from the trademark owner. And if the seller of the file knew the buyer would engage in this activity, trademark law’s core policy concerns are triggered and infringement should be found.

But direct infringement will be lacking with many downstream uses. If a non-confused transferee of a file merely keeps the file on his home computer, there is no actionable confusion. Even where the transferee uses the file to print a tangible good for purely personal use, trademark law does not reach such personal uses because they are not interstate in nature and are not trademark uses “in commerce.”<sup>181</sup>

Indirect infringement also requires the distributor to have knowledge that the downstream entity will engage in trademark infringement. Sometimes that knowledge will be easy to prove, as where a syndicate conspires to flood the market with counterfeit 3D printed

179. *Inwood Labs. v. Ives Labs.*, 456 U.S. 844, 854 (1982).

180. *Id.*

181. *Hunn v. Dan Wilson Homes, Inc.*, 789 F.3d 573, 588 (5th Cir. 2015), *cert. denied*, 136 S. Ct. 592 (2015) (holding there can be no false designation of origin claim where plaintiff’s actions (submitting allegedly misleading architectural plans to city) were entirely local and thus did not meet the requirement “that the allegedly false designation enter into and/or have an effect on interstate commerce”); *Obolensky v. G.P. Putnam’s Sons*, 628 F. Supp. 1552, 1556 (S.D.N.Y. 1986), *aff’d*, 795 F.2d 1005 (2d Cir. 1986) (even assuming defendant publisher’s book catalogs falsely indicated that plaintiff’s book had been published by defendant, there could be no liability under § 43(a) where defendant did not publish or ship the book because the goods did not enter into commerce); *Cognotec Services, Ltd. v. Morgan Guar. Trust Co. of New York*, 862 F. Supp. 45 (S.D.N.Y. 1994) (“Cognotec has failed to allege that any of the infringing materials were disseminated ‘in commerce.’ Indeed, the amended complaint makes clear that Morgan developed a program to use internally for its currency customers. In other words, Morgan’s program is not disseminated ‘in commerce’ as is required by a § 43(a) claim.”) (citation omitted); *Osborn*, *supra* note 14, at 583, n.190.

goods. But as in the patent context,<sup>182</sup> many file distributors, including websites who host third-party content, will have little knowledge of what the downstream users will do with the files and may lack expertise to understand whether certain uses are infringing.

An important question—especially in the digital files context—is whether the Supreme Court’s *Inwood* test applies to an intermediary who merely facilitates other parties’ exchanges. The Supreme Court articulated its *Inwood* test in a scenario where the defendant either manufactured or distributed the goods directly.<sup>183</sup> In *Tiffany (NJ) Inc. v. eBay, Inc.*,<sup>184</sup> the Court of Appeals for the Second Circuit decided the test applied to intermediaries where an intermediary has “more than a general knowledge or reason to know that its service is being used to sell counterfeit goods” and instead has “contemporary knowledge of” specific acts that “are infringing or will infringe in the future.”<sup>185</sup> The Court held that a defendant would satisfy the knowledge requirement if it remained willfully blind to the infringement.<sup>186</sup>

The *Tiffany* case holds important safeguards for many intermediaries of digital files. It offers a safe harbor for intermediaries who remove items that infringe or will infringe in the future. If a trademark holder notifies the intermediary of an infringing item on its website, the intermediary can avoid liability by removing the item. Similarly, the intermediary can monitor its site to search for and remove infringing items. In some cases, technology can assist in this process. Yet, the *Tiffany* case has unclear boundaries and it may be difficult for many intermediaries to bring themselves comfortably within the safe harbor. For instance, the defendant in *Tiffany*, eBay, had immense resources and devoted millions of dollars, sophisticated technology, and considerable employee effort to policing infringement on its site.<sup>187</sup>

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182. Timothy R. Holbrook & Lucas S. Osborn, *Digital Patent Infringement in an Era of 3D Printing*, 48 U.C. DAVIS L. REV. 1319, 1333-44 (2015) (outlining difficulties in successfully capturing infringers based on an inducement theory).

183. *Inwood Labs, Inc. v. Ives Labs., Inc.*, 456 U.S. 844 (1982).

184. 600 F.3d 93 (2d Cir. 2010).

185. *Id.* at 107. The defendant in eBay knew in general that some of its online listings were counterfeit, but it removed any specific listings it knew were infringing. Because it never knowingly allowed specific infringing acts to take place, it was not liable as a contributory infringer. Several courts have followed this analysis. *See, e.g., Spy Phone Labs LLC v. Google Inc.*, No. 15-cv-3756, 2016 WL 6025469 (N.D. Cal. Oct. 14, 2016); *Rosetta Stone Ltd. v. Google Inc.*, 730 F. Supp. 2d 531 (E.D. Va. 2010).

186. *Tiffany*, 600 F.3d at 109-10.

187. *Id.* at 97-100 (detailing, inter alia, eBay’s \$20 million per year and 4,000 employees devoted to promote trust and safety on its website, including 200 employees devoted exclusively on combating infringement).

Smaller intermediaries could not hope to match eBay's efforts and sophistication, and it is not clear whether courts will use a sliding scale based on an intermediary's resources.

Indirect infringement will be an important tool to stop those who intentionally facilitate confusion using 3D printing technology. At the same time, courts should not apply it with too heavy a hand when a web intermediary is acting in good faith, but lacks resources for a sophisticated policing paradigm. Otherwise, intermediaries will opt to shut down or severely curtail their operations rather than face liability for unintentional missteps. In that case, society loses the benefit of all the non-infringing activity the intermediary forebears because of liability fears.

#### IV. CONCLUSION

The digital world does not require a wholesale makeover of our IP laws. But it does require careful attention to legal policy as applied to technological change. 3D printing separates design from manufacturing. The technology drastically reconfigures how people interact with brands and how they understand design and manufacturing. The contours of a world with mature 3D printing are uncertain, and trademark law should not be used to stifle the technological possibilities.<sup>188</sup> Rather than stretching already tenuous doctrines to smother a nascent technology, courts should apply trademark law to situations where consumers are meaningfully confused and brand owners' incentives to invest in quality goods are materially dampened.

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188. Osborn, *supra* note 14, at 556-57.