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Note

Haute off the Press: Refashioning Copyright Law To Protect American Fashion Designs from the Economic Threat of 3D Printing

*Anna M. Luczkow**

In fall 2014, model Iekeliene Stange emerged on the runway at Paris Fashion Week in a delicate, icicle-like mini dress—an otherworldly, futuristic masterpiece described as “pure haute couture.”¹ Designer Iris van Herpen created the look as part of her Spring 2015 collection using a three-dimensional (3D) printing technique known as “stereolithography.”² Iris van Herpen is not the only designer to experiment with 3D-printed fashion; retailers already create accessories using the technology and only expect its capabilities to grow.³ Apart from design potential, many predict 3D printing will revolutionize the fashion industry’s production techniques and environmental sustainability efforts.⁴ Up until now, 3D printing’s influence on the fashion world has been only positive. However, once the technology falls into the hands of mass con-

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1. Dhani Mau, *How Iris van Herpen’s Ice-Like 3-D Printed Dress Was Created*, FASHIONISTA (Oct. 3, 2014), <http://fashionista.com/2014/10/iris-van-herpen-3-d-printing>.

2. *Id.*

3. See Rachel Hennessey, *3D Printing Hits the Fashion World*, FORBES (Aug. 7, 2013), <http://www.forbes.com/sites/rachelhennessey/2013/08/07/3-d-printed-clothes-could-be-the-next-big-thing-to-hit-fashion>.

4. See Dhani Mau, *How 3-D Printing Could Change the Fashion Industry for Better and for Worse*, FASHIONISTA (July 19, 2013), <http://fashionista.com/2013/07/how-3-d-printing-could-change-the-fashion-industry-for-better-and-for-worse>.

sumers this is all likely to change.

United States copyright law does not recognize clothing as protected subject matter.⁵ Opponents to coverage believe sparse protection is ideal for the fashion industry.⁶ They argue that cyclical trends proliferated through knock-offs and pirated copies allow designers to thrive both economically and creatively.⁷ This rationale fails to account for evolving consumer behaviors and technological advancements,⁸ and overlooks the possibility for fast-fashion⁹ houses to create rivalrous goods. 3D printing brings to life the possibility of exact replications,¹⁰ and, thus, direct market competition, posing a unique threat to the traditional rationales for excluding fashion designs from the Copyright Act's domain.

3D-printing technology "allow[s] *anyone* to capture the contours of an object and turn them into a [computer-aided design file (CAD)]."¹¹ With the expected infiltration of personal 3D printers,¹² virtually any consumer will be able to create, download, or distribute a CAD file to print an object of her choice.¹³

5. See *A Bill To Provide Protection for Fashion Design: Hearing Before the Subcomm. on the Courts, the Internet, and Intellectual Prop. of the H. Comm. on the Judiciary*, 109th Cong. 79 (2006) [hereinafter *2006 Hearings*] (statement of Susan Scafidi, Visiting Professor, Fordham Law School, Associate Professor, Southern Methodist University).

6. See Katelyn N. Andrews, *The Most Fascinating Kind of Art: Fashion Design Protection As a Moral Right*, 2 N.Y.U. J. INTEL. PROP. & ENT. L. 188, 205 (2012) (attributing the success of the American fashion industry to limited copyright regulations).

7. See Kal Raustiala & Christopher Sprigman, *Piracy Fuels the Fashion Industry*, N.Y. TIMES (Sept. 8, 2014, 12:04 PM), <http://www.nytimes.com/roomfordebate/2014/09/07/who-owns-fashion/piracy-fuels-the-fashion-industry>; see also Andrews, *supra* note 6, at 194 (arguing that the American fashion industry is thriving economically under sparse copyright laws).

8. See Lauren Howard, *An Uningenius Paradox: Intellectual Property Protections for Fashion Designs*, 32 COLUM. J.L. & ARTS 333, 338 (2009).

9. "The phrase 'fast fashion' refers to low-cost clothing collections that mimic current luxury fashion trends." Annamma Joy et al., *Fast Fashion, Sustainability, and the Ethical Appeal of Luxury Brands*, 16 FASHION THEORY 273, 273 (2012), <https://www3.nd.edu/~jsherry/pdf/2012/FastFashionSustainability.pdf>.

10. See Kyle Dolinsky, Note, *CAD's Cradle: Untangling Copyrightability, Derivative Works, and Fair Use in 3D Printing*, 71 WASH. & LEE L. REV. 591, 645 (2014).

11. Deven R. Desai & Gerard N. Magliocca, *Patents, Meet Napster: 3D Printing and the Digitization of Things*, 102 GEO. L.J. 1691, 1696 (2014) (emphasis added).

12. See Peter High, *Gartner: Top 10 Strategic IT Trends for 2015*, FORBES (Oct. 7, 2014, 4:41 PM), <http://www.forbes.com/sites/peterhigh/2014/10/07/gartner-top-10-strategic-it-trends-for-2015>.

13. See Daniel Harris Brean, *Asserting Patents To Combat Infringement*

Though 3D printing currently plays a minimal role in producing truly wearable clothing,¹⁴ we are not far off from a time when consumers will be able to print their own clothes at home.¹⁵ Conflicts between 3D-printing technology and intellectual property (IP) law are already stimulating abstract discussions about creatorship rights,¹⁶ but copyright holders remain equipped under current doctrine to enforce their rights against 3D-printing copyists.¹⁷ However, with no such uniform protection available, the fashion industry exists at the mercy of the imminent 3D-printing market. Though the legal community certainly is not starved for scholarship recommending ideal protection standards for fashion designs,¹⁸ Congress's failure to implement legislation¹⁹ signals to designers the time is ripe to explore more creative solutions for overcoming protection barriers.

This Note addresses the unparalleled disruption 3D printing will bring to the fashion industry and why the rise of this technology warrants a reconsideration of treatment under IP law. Part I describes the doctrinal and theoretical bases for exempting fashion apparel from IP protection, how these rationales weathered technological changes that transformed the fashion industry, and the intricacies of 3D-printing technology

via *3D Printing: It's No "Use,"* 23 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 771, 781 (2013).

14. See Margaret Rhodes, *This 3-D Printer Will Make Clothes You'd Actually Wear*, FAST CO. (Jan. 16, 2014, 9:50 AM), <http://www.fastcodesign.com/3024883/forget-sewing-machines-you-want-this-3-d-printer-to-make-clothes>.

15. See Hannah Marriott, *Are We Ready To 3D Print Our Own Clothes?*, GUARDIAN (July 28, 2015, 11:00 AM), <http://www.theguardian.com/fashion/2015/jul/28/are-we-ready-to-print-our-own-3d-clothes> (discussing the use of 3D printers by fashion designers and students).

16. Compare Haritha Dasari, Note, *Assessing Copyright Protection and Infringement Issues Involved with 3D Printing and Scanning*, 41 AIPLA Q.J. 279, 289–306 (2013) (arguing that 3D printing replications constitute copyright infringement of original designs), with Dolinsky, *supra* note 10, at 675–81 (proposing a technological fair use doctrine to immunize CAD-file creators from infringement suits).

17. See Rose Auslander, *Time for Fashion Designers To Buckle up for 3-D Printing*, LAW360 (Oct. 17, 2013, 4:01 PM), <http://www.law360.com/articles/478826/time-for-fashion-designers-to-buckle-up-for-3-d-printing>.

18. See, e.g., Andrews, *supra* note 6, at 221–25 (arguing for a “moral rights” based approach to protecting fashion design); Howard, *supra* note 8, at 360–62 (suggesting adjustments to proposed legislation for protecting fashion design).

19. See Tedmond Wong, Comment, *To Copy or Not To Copy, That Is the Question: The Game Theory Approach To Protecting Fashion Designs*, 160 U. PA. L. REV. 1139, 1147 (2012) (noting that from 1980 to 2006, ten bills were introduced to Congress regarding design protection).

that position it as a unique threat to the high fashion industry. Part II further explores the threat of 3D printing, analyzing the likely treatment of CAD files and 3D-printed objects under IP law, ways in which the technology weakens the traditional rationales, and how the potential impact of consumer 3D printing on an unprotected fashion industry undermines Congress's intent in excluding fashion design from the Copyright Act. In Part III, this Note offers potential solutions for how fashion designers can protect their work and proposes a theoretical framework for such protection that better reflects the American fashion industry's role in contemporary society. This Note concludes that fashion designers should use 3D printing to their advantage by obtaining copyright protection in CAD files depicting their work.

I. PRINCIPLES FOR EXCLUDING FASHION DESIGN FROM INTELLECTUAL PROPERTY PROTECTION AND THE TECHNOLOGIES THAT CHALLENGE THEM

While existing IP regimes have expanded over the past 100 years to incorporate originally unprotected industries, the fashion industry exists largely in the same unprotected state.²⁰ Not only stagnant laws contribute to this phenomenon, but also a continued reliance on arguments rooted in pre-technological-age conceptions of fashion design, its consumers, and the copyists who plague the industry.²¹ This Part discusses the doctrinal limitations preventing fashion designs from obtaining protection and the rationales permitting these arguments to subsist throughout changing technological times. Section A explores the minimal protection granted to fashion designers under copyright, trademark, and patent laws, and how these doctrinal schemes inhibit designers' access to comprehensive protection. Section B further explores theoretical limitations of the copyright doctrine²² by outlining the rationales underlying the leading "piracy paradox" argument in favor of excluding fashion design from copyright protection. Finally, Section C identifies recent technological advancements that weaken the aforementioned theoretical rationales, including evolving 3D-printing

20. See Loni Schutte, *Copyright for Couture*, 11 DUKE L. & TECH. REV., no. 011, 2011, ¶ 14 (2011).

21. See Howard, *supra* note 8, at 338–49 (noting that these arguments rely on the old assumption that knockoffs pale considerably in comparison to designer originals).

22. This Note focuses on the Copyright Act as the most appropriate source of protection for fashion designs.

technology.

A. DOCTRINAL LIMITATIONS TO PROTECTION

Though scholars of all types describe and portray fashion designs as members of the same family as other IP-protected arts,²³ fashion continues to occupy copyright law's "negative space"²⁴ because of the failure to qualify under a single IP scheme. Over the years, designers have gained protection for certain elements of their designs that individually satisfy the requirements of copyright, trademark, and patent laws. This Section explores designers' achievement of sparse protection under these doctrines, and the challenges each law presents to securing holistic coverage.

1. Copyright Law

The Copyright Act's constitutional purpose is to provide individuals with an economic incentive to pursue creative endeavors²⁵ by granting temporary monopolies over intellectual investments.²⁶ In order to qualify for protection, a creation must be an "original work[] of authorship fixed in any tangible medium of expression,"²⁷ meaning the work must be an "independent creation" reflecting "a modicum of creativity."²⁸ Furthermore, the idea embodied in the expression must be separate from the expression itself. If there are only a limited number of

23. See, e.g., Libby Banks, *In Paris Fusing Art and Fashion*, N.Y. TIMES (Dec. 1, 2014), <http://www.nytimes.com/2014/12/02/fashion/in-paris-each-x-other-fuses-art-and-fashion.html> ("Fashion weeks and art fairs, boutiques and galleries feel all but interchangeable these days"); Kathleen Beckett, *Fashion's Bridge to the Art World*, N.Y. TIMES (Dec. 2, 2014), <http://www.nytimes.com/2014/12/02/fashion/advisers-can-be-fashion-bridge-to-the-art-world.html> ("Fashion and art have long had a love affair, from Salvador Dali's shoe hat created with Elsa Schiaparelli, to Jeff Koons's balloon dog image plastered on H&M handbags."); Christie Chu, *François-Henri Pinault Says Fashion Should Not Exploit Art for "So-Called Respectability"*, ARTNET (Dec. 2, 2014), <http://news.artnet.com/art-world/francois-henri-pinault-says-fashion-should-not-exploit-art-for-so-called-respectability-186970> ("[A]rt and fashion now occupy the same physical space in society." (quoting François-Henri Pinault)).

24. Kal Raustiala & Christopher Sprigman, *The Piracy Paradox: Innovation and Intellectual Property in Fashion Design*, 92 VA. L. REV. 1687, 1762 (2006).

25. See U.S. CONST. art. 1, § 8 (granting Congress the power "[t]o promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries").

26. See *2006 Hearings*, *supra* note 5, at 77.

27. 17 U.S.C. § 102(a) (2012).

28. *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 346 (1991).

ways of expressing that idea, such that monopolizing it would defeat the purpose of the Act, the idea and expression merge and the work is unprotected.²⁹

Protected subject matter under the Copyright Act includes pictorial, graphic, and sculptural works³⁰—“two-dimensional and three-dimensional works of fine, graphic, and applied art.”³¹ While it seems fashion design should qualify under this category, garments are precluded by the “useful article” doctrine, which denies protection to articles based on their utilitarian function.³² Garments are utilitarian because, the law finds, functional considerations regarding wearability often influence, and inextricably link to, creative aspects of design, and cannot be physically or conceptually isolated for protection.³³

Over the years, designers witnessed several small victories in testing the limits of this doctrine,³⁴ yielding copyright protection for decorative textile patterns³⁵ and certain aesthetic embellishments.³⁶ For example, in *Peter Pan Fabrics, Inc. v. Martin Weiner Corp.*, the Second Circuit Court of Appeals accepted a copyright claim in an ornate “Byzantine” pattern printed on cloth for making women’s dresses.³⁷ Likewise, in *Knitwaves*,

29. See *Morrissey v. Procter & Gamble Co.*, 379 F.2d 675, 678–79 (1st Cir. 1967) (arguing that the Act does not apply if copyrighting a few forms would exhaust all use).

30. See 17 U.S.C. § 102(a)(5).

31. *Id.* § 101.

32. See *Fashion Originators Guild of Am. v. FTC*, 114 F.2d 80, 84 (2d Cir. 1940), *aff'd*, 312 U.S. 457 (1941). The Copyright Act excludes “useful articles” because these fall under patent law’s domain. M.C. Miller, Note, *Copyrighting the “Useful Art” of Couture: Expanding Intellectual Property Protection for Fashion Designs*, 55 WM. & MARY L. REV. 1617, 1630 (2014).

33. Fashion designs fail the “separability test”: the creative aspects of an article cannot be physically or conceptually isolated from its utilitarian functionality. LOIS F. HERZECA & HOWARD S. HOGAN, *FASHION LAW AND BUSINESS: BRANDS & RETAILERS* 267 (Practising Law Institute ed., 2013). Copyright protection, however, may be granted to clothing that “incorporates pictorial, graphic, or sculptural features that can be identified separately from, and are capable of existing independently of, the utilitarian aspects of the article.” ROBERT P. MERGES ET AL., *INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE* 491–92 (Wolters Kluwer Law & Business ed., 6th ed. 2012).

34. See HERZECA & HOGAN, *supra* note 33.

35. See *Peter Pan Fabrics, Inc. v. Martin Weiner Corp.*, 274 F.2d 487, 488–90 (2d Cir. 1960).

36. See, e.g., *Knitwaves, Inc. v. Lollytogs Ltd.*, 71 F.3d 996, 1002 (2d Cir. 1995) (extending copyright protection to “squirrel” and “leaf” appliques on children’s sweaters); *Kieselstein-Cord v. Accessories by Pearl, Inc.*, 632 F.2d 989, 993 (2d Cir. 1980) (citing a belt buckle’s “primary ornamental aspect” as sufficient demonstration of conceptual separability).

37. 274 F.2d at 488–90. Such protection, however, does not extend to the

Inc. v. Lytogs Ltd., the Second Circuit extended copyright protection to decorative appliques on children's sweaters, but not to the sweaters themselves.³⁸ By no small stretch of the imagination can one see the disparate implications of the expanded doctrine, whereby a simplistic adornment is eligible for greater protection than a more elaborate, but conceptually inseparable, design.³⁹

Failure to achieve full protection under copyright law exposes designers to unactionable infringement and denies them rights afforded to more traditional artists. Creators whose works receive protection under the Copyright Act retain exclusive rights to reproduce and distribute copies of their original creation.⁴⁰ Fashion designers, by contrast, only acquire such rights in qualifying separable elements of their designs, rendering designers virtually powerless against the mounting number of knockoffs threatening the industry.⁴¹ In fact, almost all infringement actions regarding counterfeit or knockoff designs are won on the basis of trademark law.⁴²

Furthermore, denial of copyright protection deprives fashion designers of rights in derivative works.⁴³ An artist whose work is copyrightable enjoys ownership over the aspects of a work created by another but based on the artist's original.⁴⁴ Rights in derivative works are only exercisable if the underlying work is copyrighted.⁴⁵ Without such rights available, fashion designers have no legal ground to assert actions against fast-fashion houses that, through cheap fabric and shoddy stitching, render interpretations of the original designs.

2. Trademark Law

Fashion designers enjoy greater rights under trademark law.⁴⁶ The Lanham Act, the governing statute for trademark

cut or shape of the garment formed by the fabric. Brandon Scruggs, Comment, *Should Fashion Design Be Copyrightable?*, 6 NW. J. TECH. & INTELL. PROP. 122, ¶ 29 (2007).

38. *Knitwaves*, 71 F.3d at 1002.

39. See 2006 *Hearings*, *supra* note 5.

40. 17 U.S.C. § 106(1), (3) (2012).

41. See Wong, *supra* note 19, at 1153.

42. *Id.* at 1152–53.

43. See 17 U.S.C. § 106(2) (giving the individual the right to “prepare derivative works based on copyrighted work”).

44. *Id.*; see *id.* § 103(b) (limiting a secondary creator's rights in a derivative work to new expression, excluding preexisting material included in the derivative work).

45. H.R. REP. NO. 94-1476, at 57 (1976).

46. *Cf.* Wong, *supra* note 19, at 1143 (“[T]he more easily visible the logo is,

law, provides one with exclusive rights to distinguish her goods from those of competitors through an identifying mark.⁴⁷ While designers receive protection for label names, logos, and symbols defining their brand,⁴⁸ they also may obtain protection for “quasi-designs”—“patterns or shapes that walk the line between logos and designs”⁴⁹—such as jean pocket stitching,⁵⁰ use of color,⁵¹ and use of colored logos.⁵² Additionally, if designers demonstrate that a certain article retains an inherent distinctiveness or secondary meaning—by showing that consumers identify a particular good with the designer source it represents—they may obtain protection for an article’s “trade dress” (its overall design and appearance).⁵³

Because the Lanham Act’s purpose is to guard a user’s mark as a source-identifying symbol,⁵⁴ trademark law protects a product’s image, but not the good itself.⁵⁵ Designers, thus, have no infringement action against a copyist who duplicates the design without the trademark.⁵⁶ Under trademark law, designers also face constraints that disincentivize creativity.⁵⁷ Since protection is based on source-identifying marks, designers are better off crafting logo-laden handbags than ones lacking visual brand identifiers.⁵⁸ Employing a “logo-centric ap-

the more protection there will be afforded for a design.” (internal quotation marks omitted)).

47. See Lanham Act, 15 U.S.C. § 1127 (2012).

48. See *id.*

49. Note, *The Devil Wears Trademark: How the Fashion Industry Has Expanded Trademark Doctrine to Its Detriment*, 127 HARV. L. REV. 995, 995 (2014) [hereinafter *Devil Wears Trademark*].

50. See generally *Levi Strauss & Co. v. Abercrombie & Fitch Trading Co.*, 633 F.3d 1158 (9th Cir. 2011).

51. See *Christian Louboutin S.A. v. Yves Saint Laurent Am. Holdings, Inc.*, 696 F.3d 206, 224–26 (2d Cir. 2012) (finding that use of color in fashion is capable of achieving trademark status).

52. See *Devil Wears Trademark*, *supra* note 49, at 1003–05 (arguing that the court’s tacit agreement in *Louis Vuitton Malletier v. Dooney & Bourke, Inc.* over the validity of Vuitton’s Multicolore mark suggests that trademark protection may extend to a designer’s colored display of an already protected trademark); see also *Louis Vuitton Malletier v. Dooney & Bourke, Inc.*, 454 F.3d 108, 116 (2d Cir. 2006) (finding the multi-colored Vuitton logo to be “inherently distinctive” and therefore protectable).

53. See Wong, *supra* note 19, at 1142–43.

54. See Lanham Act, 15 U.S.C. § 1127 (2012); see also Scruggs, *supra* note 37, ¶ 41 (stating that trademark law allows designers to protect a mark used as a source-identifier).

55. See Scruggs, *supra* note 37, ¶ 43.

56. See *id.*

57. See *Devil Wears Trademark*, *supra* note 49, at 1011–12.

58. See C. Scott Hemphill & Jeannie Suk, *The Law, Culture, and Econom-*

proach” can backfire, however, as it potentially exposes a brand’s mark to more replication.⁵⁹ This approach also may repel loyal customers, who grow to associate a brand’s logo with the knockoffs bearing it.⁶⁰ In fact, Louis Vuitton, widely recognized for the “LV” monogram adorning its famed canvas handbags and totes, “reduce[d] the visibility of its monogrammed products” after a slowdown in sales.⁶¹ Trademark law also presents significant barriers to new and break-through designers, who, without an established brand and recognizable design style, cannot prove the requisite inherent distinctiveness or secondary meaning to achieve full protection.⁶² In summary, trademark law is not a sustainable source of protection for fashion designs because it does not safeguard aesthetic creations *as designs*.⁶³

3. Patent Law

Though theoretically available to designers, design patents provide inadequate protection. Designs that are “new, original, and ornamental . . . for an article of manufacture” are eligible for design patents.⁶⁴ While certain handbags and shoes⁶⁵ meet the Patent Act’s statutory requirements for inventions—novel, useful, and nonobvious⁶⁶—garments typically cannot.⁶⁷ The stringent requirements of patent law push fashion design into IP’s “negative space” because, while fashion designs qualify as utilitarian, they fail to meet the element of “nonobviousness.”⁶⁸

ics of Fashion, 61 STAN. L. REV. 1147, 1177 (2009) (“[I]f Gucci can prohibit copies of designs that employ its trademark interlocked ‘G’s,’ but not a similar work that lacks the logos, it has an incentive to employ the logo.”).

59. *Devil Wears Trademark*, *supra* note 49, at 1012.

60. *See id.* (“Status-crazed people . . . have begun using logos in the most unlikely places, including in tattoos, and on garbage bags, assault rifles, and toilet seats.”).

61. Suleman Anaya, *Has Logo Fatigue Reached a Tipping Point?*, BUS. FASHION (Mar. 11, 2013, 9:54 PM), <http://www.businessoffashion.com/2013/03/has-logo-fatigue-reached-a-tipping-point.html>.

62. *See 2006 Hearings*, *supra* note 5.

63. The primary purpose of trademark law is to allow a person “to identify and distinguish his or her goods . . . and to indicate the source of the goods.” Lanham Act, 15 U.S.C. § 1127 (2012).

64. 35 U.S.C. § 171 (2012).

65. *See* Silvia Beltrametti, *Evaluation of the Design Piracy Prohibition Act: Is the Cure Worse than the Disease? An Analogy with Counterfeiting and a Comparison with the Protection Available in the European Community*, 8 NW. J. TECH. & INTEL. PROP. 147, ¶ 23 (2010).

66. 35 U.S.C. §§ 101–103.

67. *See* Scruggs, *supra* note 37, ¶ 44.

68. Miller, *supra* note 32, at 1627.

To prove nonobviousness, a designer must claim an improvement on clothing that “is more than the predictable use of prior art elements according to their established functions.”⁶⁹ In the case of fashion design, this means creating a completely new genre of garment wear.⁷⁰

Even if a clothing designer surpasses this threshold, she faces constraints similar to those under copyright law. Just as copyright protection vests only in elements of a design separable and distinct from the article’s functionality, only ornamental elements of a functional design receive design patents.⁷¹ For this reason, shoes, purses, and belts are eligible,⁷² but clothing is not, making patents an inappropriate doctrine for fashion design protection generally. Furthermore, the uncertainty, expense, and cumbersome process is a turn-off for fashion designers, both new and established,⁷³ who produce multiple unique styles seasonally.⁷⁴

B. THEORETICAL LIMITATIONS TO PROTECTION

Although fashion designers enjoy minor protection under trademark and patent laws, this Note focuses on the Copyright Act as the appropriate doctrine for fashion protection.⁷⁵ As Fordham Law School professor Susan Scafidi stated to Congress in 2006,

Fashion . . . is not just about covering the body—it is about creative expression, which is exactly what copyright is supposed to protect. . . . “Clothing” is a general term for “articles of dress that cover the body,” while “fashion” is a form of creative expression. In other words, a garment may be just another item of clothing—like [a] plain T-shirt—or it may be the tangible expression of a new idea, the core subject matter of copyright.⁷⁶

Opponents to copyright coverage, however, fixate not on fashion as qualifying subject matter, but on the fashion indus-

69. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 401 (2007).

70. *See Miller*, *supra* note 32, at 1627.

71. *See Power Controls Corp. v. Hybrinetics, Inc.* 806 F.2d 234, 238 (Fed. Cir. 1986) (“If the patented design is primarily functional rather than ornamental, the [design] patent is invalid.”).

72. *See Miller*, *supra* note 32, at 1628.

73. *See Beltrametti*, *supra* note 65, ¶ 5 (discussing how cumbersome the intellectual property options are for designers).

74. *See Wong*, *supra* note 19, at 1145.

75. The specific merits of this discussion are beyond the scope of this Note.

76. *2006 Hearings*, *supra* note 5 (statement of Susan Scafidi, Visiting Professor, Fordham Law School, Associate Professor, Southern Methodist University).

try's prosperity as evidence of why copyright protection is unwarranted.

Such rationales underlie one of the most prominent legal theories supporting America's system of maintaining unprotected fashion designs—"the piracy paradox."⁷⁷ Professors Kal Raustiala and Christopher Sprigman advance this argument, asserting that "piracy is paradoxically beneficial for the fashion industry."⁷⁸ This Section explores each rationale underlying the piracy paradox—that piracy drives the industry's economic success, is compatible with consumer behavior that sustains the industry, and enhances the value of high-end consumer goods.

1. The "Trends Sell" Rationale

The piracy paradox asserts that piracy sustains the fashion industry's health by enabling luxury designers to disseminate trends that fuel their financial success.⁷⁹ At the heart of this analysis lies the assumption that the goods the industry produces are primarily "positional," or "status-conferring," meaning their value derives from the public's perception that they are valued.⁸⁰ When fast-fashion houses copy and rapidly distribute inferior replicas, a good's status dissolves in the hands of mass consumers, incentivizing designers to start anew each season with a collection of positional goods that will propel the cycle.⁸¹ Raustiala and Sprigman also contend that designers introduce coherent trends to the general public by constantly copying, referencing, and borrowing from each other to converge on a small number of thematic, identifiable styles.⁸² In short, the professors argue that creating a trend through copying accelerates that trend's demise, which, in turn, sells fashion.⁸³

2. The Consumer-Behavioral Rationale

Secondly, proponents of the piracy paradox argue that consumers value goods for the status they communicate to the world.⁸⁴ This argument grows out of a twentieth-century observance of fashion in which the upper class disseminates looks

77. Howard, *supra* note 8, at 334.

78. Raustiala & Sprigman, *supra* note 24, at 1727.

79. *See id.*

80. *Id.* at 1718.

81. *See id.* at 1722–23.

82. *Id.* at 1728–32.

83. *Id.* at 1733.

84. *See* Hemphill & Suk, *supra* note 58, at 1179.

to the lower classes “to maintain the demarcation between themselves and others.”⁸⁵ Harvey Leibenstein further explored this theory in his 1950 article *Bandwagon, Snob and Veblen Effects in the Theory of Consumers’ Demand*, where he developed a class-based system as an explanation for cyclical trends. Under this theory, “snobs,” who adopt fashions they believe signal wealth and exclusivity, abandon looks once bandwagon consumers adopt them.⁸⁶ The upper class adopt certain styles to differentiate themselves from “ordinary consumers,” who “flock” to such designs because of the enhanced appeal affluent wearers provide.⁸⁷ This argument presumes that consumers base fashion-purchasing decisions on status appeal alone.

3. The Imperfect-Replica Rationale

A third justification, and most important for this Note, finds that fast-fashion firms produce inherently inferior “quick copies” that do not displace originals in the marketplace.⁸⁸ Under this rationale, quick copies, despite the fact that they are not always visibly inferior,⁸⁹ will not diminish the economic success of the original, which continues being sold to consumers who value quality.⁹⁰ Proponents of this argument believe inferior copies are beneficial to designers because they “signal the desirability of the original, thus enhancing its value.”⁹¹ Additionally, a widely adopted trend based on a luxury item eventually weakens that item’s appeal, once again stimulating the trend cycle that sustains the piracy paradox.⁹²

C. DISRUPTIVE TECHNOLOGIES TO THE FASHION INDUSTRY

Many arguments in favor of maintaining minimal protection for the fashion industry presuppose a low-IP regime is the driving force behind the industry’s vitality and financial stabil-

85. Howard, *supra* note 8, at 344–45.

86. *Id.* at 345; H. Leibenstein, *Bandwagon, Snob, and Veblen Effects in the Theory of Consumers’ Demand*, 64 Q.J. ECON. 183, 205 (1950).

87. See Kal Raustiala & Christopher Sprigman, *The Piracy Paradox Revisited*, 61 STAN. L. REV. 1201, 1211–12 (2009) (“The market for new designs is driven by the high D/F ratio consumers, who tend to discard their old clothes and buy new designs when too many ordinary consumers buy the copies, thereby impairing the originality and status of the previously new design.”).

88. See Andrews, *supra* note 6, at 202 (“[I]n the world of quick copies, the quality of copies may be so low that they do not serve as an adequate market alternative for originals.”).

89. See Raustiala & Sprigman, *supra* note 24, at 1723.

90. See Andrews, *supra* note 6, at 198.

91. Raustiala & Sprigman, *supra* note 24, at 1720.

92. See *id.*

ity—that American designers, despite not enjoying comprehensive protection, continue to prosper creatively, reputationally, and financially.⁹³ In the earliest days of fashion design, sketch artists posed the greatest threat to designers.⁹⁴ As cameras and publication technologies advanced, fashion magazines shared new designs with the rest of the world.⁹⁵ The emergence of the fax machine in the 1980s allowed users to disseminate designs within hours of their seasonal debut.⁹⁶ Designers now face copyists who capitalize on new technologies and the rise of globalization to facilitate speedier and more accurate duplications.⁹⁷ This Section explores technology’s disruptive effect on the industry as made possible by the Internet, globalization, and manufacturing innovations, and foreshadows how 3D printing will be even more problematic.

1. Digital Photography

Digital photography drastically altered the “piracy game,” allowing runway show spectators to circulate instant, high-resolution snapshots⁹⁸ before the show has even concluded.⁹⁹ This phenomenon, coupled with advancements in production and manufacturing technologies, allows knockoffs to hit stores long before originals.¹⁰⁰ The rise in digital photography influenced the popularity of fashion blogs and websites.¹⁰¹ Digital photography also makes possible the “large-scale, low-cost” model of fast-fashion houses, in which designers overseas receive images from fashion shows, enabling them to produce copies quickly and cheaply, often before the designers have received orders for the original work’s design.¹⁰²

The use of a technology like digital photography is not unique to the fashion industry: the music, movie, and publishing industries fought for years against Internet dissemination of copies through services like Napster, YouTube, and Google

93. See Raustiala & Sprigman, *supra* note 87, at 1208.

94. See Andrews, *supra* note 6, at 201.

95. See *id.* at 200–01.

96. See *id.* at 202.

97. Cf. Raustiala & Sprigman, *supra* note 7 (noting that the fashion industry has predicted that technological developments might destroy the industry by making copying easier).

98. Andrews, *supra* note 6, at 199.

99. See *2006 Hearings*, *supra* note 5, at 82.

100. See *id.*

101. See Andrews, *supra* note 6, at 201.

102. Wong, *supra* note 19, at 1153–54.

Books respectively.¹⁰³ Today, Napster is arguably defunct,¹⁰⁴ YouTube “has gotten progressively better in weeding out copyrighted” full-length movies,¹⁰⁵ and one can only read out-of-copyright books on Google Books.¹⁰⁶ The reason that the fashion industry’s plight with digital photography does not parallel that of other industries is because photographs themselves do not supply the physical duplication; there remains the crucial step of creating the article depicted.¹⁰⁷ Such replications, therefore, cannot supply perfect substitutes like Napster, YouTube, and Google Books do.¹⁰⁸

2. E-Commerce

E-commerce altered the consumer shopping experience in a variety of ways, making fake and counterfeit goods more deceptive and widely available. Even sophisticated, fashionably informed shoppers may fall prey to an authentic-looking Yves Saint Laurent handbag sold on eBay.¹⁰⁹ Counterfeit fashion evolved from cheap knockoffs sold on street corners in Chinatown to high-quality goods with stamps bearing accurate manufacturing dates and locations.¹¹⁰ The rise in second-hand online marketplaces allows vendors to market fakes at rising prices as used, authentic goods.¹¹¹ Vendors also purchase keyword advertisements on search engines and set up websites, where they imitate the product descriptions, marketing images, and logos from websites selling authentic goods.¹¹²

103. See Andrews, *supra* note 6, at 200.

104. See Alex Suskind, *15 Years After Napster: How the Music Service Changed the Industry*, DAILY BEAST (June 6, 2014), <http://www.thedailybeast.com/articles/2014/06/06/15-years-after-napster-how-the-music-service-changed-the-industry.html>.

105. Mark Hachman, *Even After Settlement, YouTube Remains a Pirate’s Paradise*, TECHHIVE (Mar. 21, 2014, 4:30 AM), <http://www.techhive.com/article/2109954/even-after-settlement-youtube-remains-a-pirates-paradise.html>.

106. See Marziah Karch, *How To Read Free Ebooks on Google Books*, ABOUT.COM, <http://google.about.com/od/socialtoolsfromgoogle/ss/How-To-Read-Free-Ebooks-On-Google-Books.htm> (last visited Nov. 30, 2015).

107. See Andrews, *supra* note 6, at 200.

108. See *id.*

109. See Elizabeth Holmes, *The Finer Art of Faking It: Counterfeits Are Better Crafted, Duping Even Sophisticated Shoppers*, WALL ST. J. (June 30, 2011), <http://www.wsj.com/articles/SB10001424052702304791204576401534146929212>.

110. See *id.*

111. See *id.*

112. See *id.*

3. 3D Printing

Though invented in the early 1980s, 3D printing recently became a topic of discussion when advancements in the field revealed the technology's ability to transform industries and revolutionize consumer capabilities.¹¹³ 3D printing's greatest threat to the fashion industry is that it does what other semi-disruptive technologies up to this point fail to do—make perfect replicas a reality. Scholarship on the likely treatment of 3D printing under the law makes clear that the technology's legal status will boil down to, and ultimately will vary amongst, production at each level of its components.¹¹⁴ The Subsections below briefly outline those components representing two main areas of concern: digital models and printed objects.

a. *Digital Models*

3D printers present users with two primary options for creating a desired object: manually construct a blueprint of the object or obtain a pre-made CAD file embodying the blueprint.¹¹⁵ CAD files are available for purchase, download, or request from sites like Sculpteo, Thingiverse, and Shapeways.¹¹⁶ Artistically inclined users can create virtual blueprints using CAD or animation-modeling software,¹¹⁷ while others may convert a preexisting image into a computer-generated object using a 3D scanner.¹¹⁸ Scanners use cameras and lasers to collect visual data, producing point clouds, or voxel data, which translate an object into a computerized image.¹¹⁹ Users can achieve this same result by uploading photographs of an object from varying angles.¹²⁰ Once a CAD file captures the contours of an object, it

113. See Matt Petronzio, *How 3D Printing Actually Works*, MASHABLE (Mar. 28, 2013), <http://mashable.com/2013/03/28/3d-printing-explained>.

114. See, e.g., Brean, *supra* note 13, at 783–813 (analyzing the possible treatment of 3D printing under intellectual property law); Desai & Magliocca, *supra* note 11, at 1705–13 (same); Dasari, *supra* note 16, at 288–315 (same); Dolinsky, *supra* note 10, at 626–70 (same).

115. See Desai & Magliocca, *supra* note 11; Petronzio, *supra* note 113.

116. Petronzio, *supra* note 113.

117. *Id.*

118. See Bryan J. Vogel, *3D Printing: Potential Patent Law Problems, Other IP Law Protections*, ROBINS KAPLAN L.L.P. (Oct. 8, 2014), <http://www.robinskaplan.com/resources/articles/3d-printing-potential-patent-law-problems-other-ip-law-protections>.

119. See Desai & Magliocca, *supra* note 11; Vogel, *supra* note 118.

120. See Desai & Magliocca, *supra* note 11.

may be altered, refined, and tailored.¹²¹

b. Printed Objects

Once a file is ready to print, CAD software deconstructs the image into digital slices and sends descriptions of these to the printer.¹²² Raw material—the “ink”—deposits into a series of “razor-thin” layers,¹²³ which the machine heats and compresses to form the object.¹²⁴ This procedure, known as “additive manufacturing,” makes 3D printing advantageous over traditional “subtractive manufacturing.”¹²⁵ The layering process “enables 3D printers to construct highly intricate forms that would not be possible by simply using cutting or shaping tools on solid blocks of material.”¹²⁶

II. 3D PRINTING AS AN UNPARALLELED THREAT TO THE FASHION INDUSTRY

The anticipated demand for personal 3D printers parallels a shift in consumer demand from mass-produced products to customized goods and “do-it-yourself” (DIY) projects.¹²⁷ This cultural evolution, when coupled with a self-empowering technology like 3D printing, may significantly damage established creative industries. Though 3D printing is currently limited in its ability to produce complicated shapes and employ organic materials like cotton and fur, the technology is rapidly expanding production capabilities in these areas.¹²⁸ Furthermore, 3D printing’s increasing sophistication, popularity, and affordability¹²⁹ means that consumer-printed clothing is not a far-off reality.¹³⁰ While legal scholars converge on the topic of protecting

121. See Brean, *supra* note 13, at 773.

122. *The Printed World: Three-Dimensional Printing from Digital Designs Will Transform Manufacturing and Allow More People To Start Making Things*, ECONOMIST (Feb. 10, 2011), <http://www.economist.com/node/18114221>.

123. See Bob Tita, *How 3D Printing Works*, WALL ST. J. (June 10, 2013), <http://www.wsj.com/news/articles/SB10001424127887323716304578483062211388072>.

124. See Brean, *supra* note 13, at 774.

125. See Jiahe Gu, *Q&A: How Does 3D Printing Work?*, YALE SCI. (July 1, 2014), <http://www.yalescientific.org/2014/07/qa-how-does-3d-printing-work>.

126. Brean, *supra* note 13, at 774.

127. See Desai & Magliocca, *supra* note 11, at 1695.

128. See Rhodes, *supra* note 14.

129. See Erica Fink & Laurie Segall, *Home 3-D Printing Is Getting Affordable*, CNN MONEY (Oct. 8, 2012, 1:41 PM), <http://money.cnn.com/2012/10/04/technology/innovation/3d-printer-formlabs-makerbot>.

130. See Marriott, *supra* note 15; see also Fira Rietveld, *3D Printing: The*

the market for IP-protected goods from 3D printing,¹³¹ the fashion industry faces an unparalleled threat to its wellbeing.

This Part predicts the likely effect of 3D printing on the fashion industry. Section A explores divergent approaches available in categorizing 3D printing's components, both virtual and physical, under existing IP law. Section B analyzes how 3D printing's capabilities undermine the traditionally relied-upon theories for maintaining fashion design's existence in the negative space of IP law. Finally, Section C explores why the potential impact of personal 3D printers on the fashion industry defeats Congress's original intent in defining the Copyright Act's subject matter to exclude fashion design.

A. LIKELY TREATMENT OF 3D PRINTING UNDER INTELLECTUAL PROPERTY LAW

Because of its diverse mechanics, 3D printing presents numerous legal challenges. This Note finds that the technology's produced components—CAD files, 3D models, 3D scans, and printed objects—are most akin to pictorial, graphic, and sculptural works,¹³² and, therefore, analyzes them under copyright law. This Section explores whether these components satisfy the requirements of original work of authorship and fixed medium by exploring the law's potential treatment of 3D printing. Because this Note focuses on unprotected fashion design, discussion is limited to 3D printing's impact on unprotected works.

1. User-Developed CAD Files

A written CAD file, as opposed to one obtained from a scan or uploaded photograph, contains a user-created blueprint for an object, either through CAD or animation modeling software.¹³³ The CAD file supplies two components that will influence its treatment under the law: the computer file itself and the virtual model contained therein.¹³⁴

Face of Future Fashion?, TEDX AMSTERDAM, <http://tedx.amsterdam/2013/07/3d-printing-the-face-of-future-fashion> (last visited Nov. 30, 2015) (discussing a designer's use of 3D printing to create dresses).

131. See *supra* note 16 and accompanying text.

132. See 17 U.S.C. § 102(a)(5) (2012).

133. See Petronzio, *supra* note 113.

134. See Dolinsky, *supra* note 10, at 627.

a. *Computer File*

Though courts struggle with analyzing computer programs under copyright law due to their functional nature, the literal elements of a program—its source code and object code—are literary works subject to copyright protection.¹³⁵ Courts apply the “abstraction-filtration-comparison” test, sifting out non-protectable material to determine the protectable aspects of the code.¹³⁶ This test does not logically apply to CAD files because the author’s creative choices in rendering the design dictate the code used in CAD files, and is not written by the author herself, as are traditional computer programs.¹³⁷ It will prove difficult to ascertain the authorship of the written code independent of the authorship of the 3D object. The copyrightability of the virtual-rendered model, thus, will determine the copyrightability of the code.

b. *3D Model*

Computer-generated 3D models are most akin to blueprints or technical drawings under copyright law. 3D models are undeniably fixed expressions.¹³⁸ The difficulty lies in determining whether there exists creativity sufficient for an original work of authorship.¹³⁹ The Copyright Act protects architectural blueprints to the extent they embody a future architectural work (which is copyright eligible).¹⁴⁰ In the case of 3D models, however, the creator models a 3D object after a preexisting object and does not intend it to wholly embody a new structure, as is with architectural blueprints. Furthermore, Congress, in granting copyright authorship in blueprints, intended to pro-

135. See *Comput. Assocs. Int’l, Inc. v. Altai, Inc.*, 982 F.2d 693, 702 (2d Cir. 1992).

136. *Id.* at 706–12. Elements include those dictated by efficiency, and external design standards and demands. *Id.*

137. Dolinsky, *supra* note 10, at 638–39; see *id.* at 641 (“A CAD designer . . . ‘creates’ the code necessary to print a 3D object only by creating the design. In some programs, at least, he cannot even see the code that corresponds to his design much less write the literary work.”).

138. CAD files meet the statutory definition of “fixed in any tangible medium of expression” since they are capable of being “digitally stored, reproduced, and communicated via computer software.” Brean, *supra* note 13, at 807 (quoting 17 U.S.C. § 102 (2012)).

139. See *Feist Publ’ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 346 (1991).

140. See Dolinsky, *supra* note 10, at 629. Copyright protection of architectural works extends only to “overall form” and “arrangement and composition of spaces and elements,” and not to “individual standard features.” 17 U.S.C. § 101.

tect the author during the time period between when the building plan was drawn and when construction was completed.¹⁴¹ With 3D objects, there is no such issue because the model object precedes the virtual blueprint. This key difference suggests the law's treatment of architectural blueprints provides insufficient guidance for 3D objects.

Copyright law's treatment of technical drawings presents a more helpful analogy. Technical drawings "convey information necessary to enable the reader to build the depicted object."¹⁴² Even if a drawing depicts a functional or uncopyrighted work, it is eligible for protection because the act of transposing a 3D work onto a two-dimensional surface supplies the requisite degree of creativity.¹⁴³ Protection, nonetheless, does not vest in the object depicted.¹⁴⁴ Though technical drawings, like blueprints, depict an object to be built, they imitate preexisting objects, similar to how 3D objects function within CAD files. 3D objects are not drawn per se: the user forms them by piecing together pre-rendered shapes and altering their dimensions.¹⁴⁵ Thus the merger doctrine may apply if there are a limited number of ways to express the object through pre-rendered shapes, such that the idea merges with the computerized expression.¹⁴⁶ Even if the merger doctrine does not apply, the digitized object may be ineligible for copyright protection if it depicts an underlying protected work, since a work that "present[s] in substantial and sufficient degree' a copyrighted work" may not meet the originality requirement.¹⁴⁷ If this is not the case, the 3D object likely will be found copyright-eligible for the same reasons as technical drawings.

Whether the creator of the 3D model is the author for copyright purposes will depend on the user's creative contribution.¹⁴⁸ For instance, if the copyist creates a model from preexisting "downloadable and adjustable designs and shapes," like those available in template files,¹⁴⁹ the model is not an original work

141. Dolinsky, *supra* note 10, at 630.

142. *Id.* at 633.

143. *See id.* at 631–33.

144. *See id.* at 632.

145. *See id.* at 639.

146. *See Morrissey v. Procter & Gamble Co.*, 379 F.2d 675, 678–79 (1st Cir. 1967).

147. Dolinsky, *supra* note 10, at 645–46 (alteration in original) (quoting *Addison-Wesley Publ'g Co. v. Brown*, 223 F. Supp. 219, 224 (E.D.N.Y. 1963)).

148. *See Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 346–47 (1991).

149. Dasari, *supra* note 16, at 294.

of authorship since external forces dictate the copyist's selection¹⁵⁰—namely, the desired printed object's shape and features. If the copyist forms the 3D model from scratch, independent judgment sufficient to satisfy the independent work of authorship requirement may be present.¹⁵¹ Furthermore, even if a copyist uses a template, if she makes “non-trivial and original” changes sufficient to qualify for copyright protection, she may receive copyright in the work, even if the underlying work itself is unprotected.¹⁵²

2. 3D Scans and 3D Photographs

While there is an overlap in analysis between 3D objects and 3D scans and photographs, each is worth examining in its own right. As noted above, 3D scanners capture visual data of an object, communicating it to a computer to transpose into a printable 3D model.¹⁵³ The law likely will treat digital models like photocopies and, thus, will not award them copyright protection.¹⁵⁴

As with manually configured 3D models, whether the model qualifies for protection depends on the copyists' contribution. Instead of focusing on the similarities between the scanned object and 3D model, courts will look to the “quality of the artistic contributions of the author” and whether the author made non-trivial changes “guided by . . . artistic impression.”¹⁵⁵ Thus, the copyist's status as the author of the scanned 3D model depends on whether the user exercised creative judgment. While it seems counterintuitive for creativity to exist at the scanning stage,¹⁵⁶ courts might consider whether the user altered the 3D model so that it is no longer the original 3D scan but a model *based upon* that original scan.

Photographs supplying 3D models require slightly different considerations. Unlike scans, a 3D model rendered from a photograph is not based upon the original object itself, but a photograph taken by the user. The legal status of the underlying

150. See *Feist*, 499 U.S. at 363.

151. See Dasari, *supra* note 16, at 294.

152. See Desai & Magliocca, *supra* note 11, at 1707; Dasari, *supra* note 16, at 295. Copyright, however, will be limited to only those contributions. *Id.*

153. See Vogel, *supra* note 118.

154. See *Folio Impressions, Inc. v. Byer Cal.*, 937 F.2d 759, 764 (2d Cir. 1991).

155. Dasari, *supra* note 16, at 297 (internal quotation marks omitted).

156. *Contra* Dasari, *supra* note 16, at 298–99 (discussing the “unique mechanical and creative decisions involved in using a 3D scanner,” like positioning the object and adjusting the scanner).

subject matter does not determine photographers' rights in their underlying photographs; rather, the creativity employed in taking the photograph does. For example, an individual who makes decisions regarding the lighting, camera angle, and positioning of an object may be declared the author of that photograph, whether or not the underlying subject matter is a functional object.¹⁵⁷ The degree of creativity employed in taking the photograph will influence the status of the resulting digital model. If the photograph lacks the requisite creativity, the resulting digital model may be treated as similar to a scanned model. Depending on the creativity required in fashioning the pictures, the digital model either will be considered a copy of the author's photograph or a derivative work of the original photograph. Either way, the copyist likely has rights in the digital model.

3. Printed Objects

Whether a printed object is copyrightable depends on the legal status of the CAD file.¹⁵⁸ As explored above, a 3D model's copyrightability does not depend so much on the method used as it does on whether the user employs enough independent creativity. While a 3D object cannot obtain copyrightability independently,¹⁵⁹ it is protectable as a derivative work if the 3D object is copyrighted.¹⁶⁰ This, of course, does not help fashion designers, whose unprotected works are at stake.

The Tenth Circuit case of *Meshwerks, Inc. v. Toyota Motor Sales U.S.A. Inc.* is instructive on this point. In *Meshwerks*, subcontractors converted Toyota's vehicles, which are unprotected, functional objects, into two-dimensional drawings for advertisements.¹⁶¹ In much the same way a 3D scanner converts an object, "the vehicles' data points (measurements) were mapped onto a computerized grid and the modeling software connected the dots to create a 'wire frame' of each vehicle."¹⁶² The court found that the resulting models failed the originality requirement for copyright protection because they merely de-

157. *See id.* at 297–98.

158. *See Dolinsky, supra* note 10, at 661.

159. *See id.* at 663 (finding 3D objects based on virtual drawings not copyrightable on their own because they "constitute 'no distinguishable variation from preexisting works'" (quoting *Durham Indus., Inc. v. Tomy Corp.*, 630 F.2d 905, 910 (2d Cir. 1980))).

160. *See id.* at 661.

161. 528 F.3d 1258, 1260–61 (10th Cir. 2008).

162. *Id.* at 1260.

picted “the car *as* [the] car.”¹⁶³ In arriving at its conclusion, the court emphasized the purpose in building the models—to create replications—rather than the effort or process employed.¹⁶⁴ Applying the court’s reasoning to objects rendered through 3D scanning, copyright protection should not be extended to “a three-dimensional object that renders, or intends to render, the object as is.”¹⁶⁵ In other words, a printed object identical to the underlying work by virtue of its unaltered digital model, regardless of the method used, receives no protection.

To summarize, creators of unprotected works likely will not achieve protection in 3D-printed duplications of their designs, but may achieve protection in a virtually rendered model of their design if they exercise independent creativity in forming that model. In order for the virtual model to qualify for copyright protection, a designer may form the 3D model from scratch or make original alterations to an already existing template. If a designer chooses to take a photograph of their design, employing a sufficient level of creativity in taking the photograph, the law may recognize the digital model resulting from the scanned photograph as a copy of the author’s photograph or a derivative work of the original photograph. The copyrightability of the virtually rendered model will then determine the copyrightability of the code containing the model.

B. HOW 3D PRINTING DESTROYS TRADITIONAL RATIONALES FOR EXCLUDING FASHION DESIGN FROM COPYRIGHT LAW

Over the past century, Congress considered over seventy legislative bills advocating for IP protection of fashion design.¹⁶⁶ While scholars speculate as to the cause of the bills’ failure,¹⁶⁷ a probable underlying reason is that opponents to protection rely on the same traditional justifications without reconsidering how those rationales have changed in light of cultural and technological advancements. Susan Scafidi alluded to these when she spoke to Congress in 2006, citing the Internet era and overseas manufacturing as reasons why strategies for protecting creativity should be revisited.¹⁶⁸ In order for the legal com-

163. *Id.* at 1265 (alteration in original).

164. Dasari, *supra* note 16, at 303–04.

165. Desai & Magliocca, *supra* note 11, at 1707.

166. *See* Beltrametti, *supra* note 65, ¶ 3.

167. *See, e.g., id.* (citing “lethargy and lack of coordination of a united voice within the fashion community” as reason for legislations’ failure).

168. 2006 *Hearings*, *supra* note 5, at 81–82 (statement of Susan Scafidi, Visiting Professor, Fordham Law School, Associate Professor, Southern Methodist University).

munity to embrace new strategies, it must recognize how the current system undermines Congress's original intent in drafting the Copyright Act. This Section revisits the rationales for excluding fashion design and shows how they no longer are effective or ideal in light of 3D printing.

1. Trends No Longer Abide by a "Trickle-Down" Theory

Despite the piracy paradox's prominence in fashion law scholarship, the fashion community finds it inherently flawed and outdated because it is based on a pre-Internet age conception of the industry.¹⁶⁹ Prior to the Internet, designers typically enjoyed a six to twelve month monopoly on designs.¹⁷⁰ Most high-end designers take several months to make a collection available to consumers.¹⁷¹ Because of increased access to images of designs and advances in production speed, fast-fashion copies may now appear in stores within six weeks of the original's runway appearance.¹⁷² Trends, in essence, no longer abide by a trickle-down methodology, but rather emerge through simultaneous integration. The piracy paradox assumes a significant enough delay exists between a collection's introduction and its emergence as a trend such that designers have some clout in initiating the unique style they created.¹⁷³ Thus, reliance on this antiquated view of the industry permits the piracy paradox to discount technological changes that drastically alter the high-end market.¹⁷⁴

3D printing dismantles the concept of the cyclical trend, further narrowing the gap between runway debuts and trend adoption by cutting out the fast-fashion intermediary. Fast-fashion houses play an integral part in deciphering for the mass public what styles are "in" for the season and encouraging their consumption.¹⁷⁵

Because 3D printing puts the creation of items in consumers' hands, it necessarily places the trend initiation within their power. This will result in a divergent, non-cohesive adoption of runway styles at the consumer level—a far cry from the the-

169. See Howard, *supra* note 8, at 338–39.

170. *Id.* at 340.

171. See Booth Moore, *The Fashion Industry's Old Business Model Is out of Style*, L.A. TIMES (Sept. 13, 2009), <http://www.latimes.com/la-et-future-fashion13-2009sep13-story.html>.

172. Howard, *supra* note 8, at 343.

173. See *id.* at 344.

174. See *id.* at 341.

175. See Raustiala & Sprigman, *supra* note 24, at 1729.

matic, predictable cyclical trends envisioned by the piracy paradox.

2. Consumer Behavior Is Shifting

The “consumer-behavior” rationale relies on an outmoded view of consumer behavior. Critics point to contemporary sociological views of fashion that recognize a wide range of consumer motivators in choosing to embrace certain fashions, including identity expression¹⁷⁶ and “uniqueness-seeking.”¹⁷⁷ Some argue that the fashion industry’s low-IP regime pushes designers to cater to the interests of luxury and affluence since logoed designs, which are affiliated with status, receive the most protection under trademark law.¹⁷⁸ This phenomenon permits the existence of unprotected fashion designs despite technological changes, by creating the very status-centric system it presupposes underlies consumer behavior.

A slowdown in sales of “big-label and big-logo brands”¹⁷⁹ suggests this behavior is weakening. Consumers are gravitating toward more inconspicuous designs,¹⁸⁰ indicating a preference for “less apparent marks of connoisseurship: handwork and craft.”¹⁸¹ Moreover, many fashion enthusiasts are joining in on the DIY movement, “eschewing readymade looks re-created from magazine pages in favor of a more frugal but also more creative and personalized approach.”¹⁸² Because of these shifting attitudes, trends no longer originate solely with high-end designers or the affluent public who wear them.

Recognizing this shift in consumer attitude, high-end designers increasingly collaborate with fast-fashion retailers. For instance, fashion houses Versace and Missoni sold their designs to the masses through collections available exclusively at H&M

176. See Hemphill & Suk, *supra* note 58, at 1179; Howard, *supra* note 8, at 345–46.

177. See Howard, *supra* note 8, at 347.

178. See Hemphill & Suk, *supra* note 58, at 1179.

179. Laura Chesters, *Logo Fatigue Hits Prada as Sales Slowdown to Three-Year Low*, INDEPENDENT (U.K.) (Aug. 6, 2014, 15:14 BST), <http://www.independent.co.uk/news/business/news/logo-fatigue-hits-prada-as-sales-slowdown-to-threeyear-low-9651993.html>.

180. See Anaya, *supra* note 61.

181. *Logo Fatigue Drives Luxury Brands to Charity*, FIN. REV. (Austl.) (Oct. 9, 2014, 10:26 AM), <http://www.afr.com/business/media-and-marketing/advertising/logo-fatigue-drives-luxury-brands-to-charity-20141006-jlyve>.

182. J.W.T., WORK IN PROGRESS: THE RISE IN DIY 10 (2009), <https://www.warc.com/Content/ContentViewer.aspx?MasterContentRef=4e53d5c3-f6a4-4a5d-8edd-3d7b9fbcc3ee&CID=A89789&PUB=JWT>.

and Target, respectively.¹⁸³ This sort of collaboration breaks down traditional barriers so that “it is no longer necessary for the general public to turn to knockoffs in order to purchase fashionable apparel.”¹⁸⁴ It also signals that consumers no longer base purchasing decisions primarily on labels borne by clothes¹⁸⁵ but out of consideration for “creativity, quality, and personalization.”¹⁸⁶ There is nothing to suggest consumers will not use 3D printing to produce the same.

3. Perfect Replicas Will Be Achievable

Critics of the imperfect-replica rationale point to the reality that fast-fashion houses often target burgeoning or mid-range designers¹⁸⁷ rather than well-established ones valued for their brand name and most likely protected by trademark. Furthermore, the presence of mass copyists pushes designers away from innovating and toward creating goods that are legally and physically more difficult to copy,¹⁸⁸ thus abating creativity in the industry. Critics also argue that globalization and technology allow fast-fashion retailers to quickly copy with more precision.¹⁸⁹ Contrastingly, the basis for excluding fashion designs from copyright protection under the imperfect-replicas rationale assumes knockoffs represent “drastically lower quality than the . . . original” and, therefore, fast-fashion will not be in a position to attract high-end customers who value quality over price.¹⁹⁰ With 3D printing, fast-fashion houses and individuals

183. See Mark Holgate, *Next from Target? A Fall Collaboration with Missoni*, VOGUE (Mar. 4, 2011, 8:00 AM), <http://www.vogue.com/869988/next-up-from-target-come-september-a-collaboration-with-missoni>; Lauren Milligan, *H&M's Designer Collaborations*, VOGUE (U.K.) (Jan. 23, 2012), <http://www.vogue.co.uk/news/2011/06/21/versace-collaborates-with-handm>.

184. *2006 Hearings*, *supra* note 5, at 77 (statement of Susan Scafidi, Visiting Professor, Fordham Law School, Associate Professor, Southern Methodist University).

185. Collections for these designs bearing labels like “Versace for H&M” or “Missoni for Target” are often sold out, indicating their fast-fashion affiliate is not a deterrent to their popularity. See Eric Wilson, *A Marriage of Economic Convenience*, N.Y. TIMES (Nov. 16, 2011), <http://www.nytimes.com/2011/11/17/fashion/designer-retailer-union-remains-lucrative.html>.

186. J.W.T., *supra* note 182.

187. See Wong, *supra* note 19, at 1154–55; see also Howard, *supra* note 8, at 351 (“A young designer’s ability to create such a brand is significantly hindered to the extent she is competing with low-priced knockoffs.”).

188. See Wong, *supra* note 19, at 1159–60.

189. See Howard, *supra* note 8, at 341.

190. See Andrews, *supra* note 6, at 203 (“[E]ven if Forever 21 can produce and sell an exact look-alike Chanel jacket as quickly as Chanel can, Chanel probably loses very few customers . . .”).

will soon be able to craft replicas using the same luxury fabrics and materials that perhaps were once too costly or cumbersome to work with by hand or manufacturing.¹⁹¹

3D printing not only allows for perfect replicas but also meets consumer demand for customization. Sodastream, a machine allowing users to craft sodas as alternatives to mass-produced soda brands, presents an analogous example.¹⁹² In the same way that Coca-Cola cannot meet the flavor, fizz, and environmental demands of soda drinkers as does Sodastream,¹⁹³ the fashion industry cannot meet the size, color, and price demands of consumers to the same extent as 3D printing. 3D printing, in essence, will change the meaning of haute couture from something once inaccessible to the masses to something that is not only obtainable but also customizable.¹⁹⁴

4. Fashion Is Art

The assumption that fashion is undeserving of copyright protection because it is not art lies at the core of the piracy paradox. The originality requirement of copyright law requires a low bar because courts are not at liberty to judge a work's artistic merit.¹⁹⁵ But by exempting an entire category of creative work, Congress essentially does just that. This "reductionistic view of fashion as solely utilitarian"¹⁹⁶ reflects an elementary understanding of fashion's evolution over the years. Historically, the design and manufacture of clothing was a household

191. *But see* Rhodes, *supra* note 14 (noting the challenges posed by certain fabrics to the 3D printing process); *supra* note 128 and accompanying text.

192. *Why Sodastream*, SODASTREAM, <http://www.sodastreamusa.com/WhySodaStream.aspx> (last visited Nov. 30, 2015) ("[Y]ou have the flexibility to create your own sparkling drinks.").

193. *See* Desai & Magliocca, *supra* note 11, at 1693, 1698.

194. *See* Madeline Stone, *3D Printed Dresses Are Radically Changing the Meaning of Haute Couture*, BUS. INSIDER (Sept. 2, 2014), <http://www.businessinsider.com/3d-printed-fashion-2014-8>. Though an affordable, sophisticated consumer 3D printer is still years away, *see* Lyndsey Gilpin, *3D Printing: 10 Factors Still Holding It Back*, TECHREPUBLIC (Feb. 19, 2014, 11:33 AM), <http://www.techrepublic.com/article/3d-printing-10-factors-still-holding-it-back>, researchers expect it will be the financial investment, and not the price, that will drive consumers to purchase models, *see* Heather Kelly, *Study: At-Home 3-D Printing Could Save Consumers "Thousands,"* CNN (July 31, 2013, 12:06 PM), <http://www.cnn.com/2013/07/31/tech/study-at-home-3-d-printing-could-save-consumers-thousands/index.html>.

195. *See* MERGES ET AL., *supra* note 33, at 439.

196. *2006 Hearings*, *supra* note 5 (statement of Susan Scafidi, Visiting Professor, Fordham Law School, Associate Professor, Southern Methodist University).

task.¹⁹⁷ In the second half of the twentieth century, fashion designers received creative status in America, recognized for the first time as designers rather than “anonymous craftsmen who used their sartorial skills to copy Parisian designs for the American consumer.”¹⁹⁸ Today that status is on par with traditional artists.

Society now views fashion designers as cultural keynotes, much like it has treated painters and novelists for centuries.¹⁹⁹ Fashion designers occupy the Louvre and the Metropolitan Museum of Art,²⁰⁰ and the Arts section of the *New York Times*.²⁰¹ As François-Henri Pinault, CEO of Kering (parent company of Gucci, Balenciaga, and Alexander McQueen) explained, “[t]he conversation between fine art and luxury is not new, but there is one thing that is blurring the lines more: it is the fact that art and fashion now occupy the same physical space in society. . . . [A]rt has moved out of museums . . . and fashion has moved in.”²⁰²

Given the rapid cycle of fashion seasons, designers’ success relies upon the ability “to introduce aesthetic difference that attracts acclaim, excitement, and continued cultural relevance.”²⁰³ Designers like the late Alexander McQueen reject “the dominant marketplace aesthetic of th[e] time” to “develop[] a reputation for originality.”²⁰⁴ In 2011, the Metropolitan Museum of Art hosted “Alexander McQueen: Savage Beauty” to commemorate the designer’s life and celebrate his impact on fashion.²⁰⁵ The show featured “a blouse threaded with worms, a coat sprouting horns,” and a dress of torn floral-patterned lace.²⁰⁶ Though not all designers take it to quite the same extreme as Alexander McQueen, his work demonstrates the wide, diverse spectrum fashion occupies. Society values many styles, though

197. *See id.* at 81.

198. Andrews, *supra* note 6, at 209.

199. Chu, *supra* note 23.

200. *See* Andrews, *supra* note 6, at 214.

201. *See, e.g.*, Holland Cotter, *Designer As Dramatist, and the Tales He Left Behind*, N.Y. TIMES (May 4, 2011), <http://www.nytimes.com/2011/05/07/arts/design/alexander-mcqueen-show-at-the-met-review.html> (profiling “Alexander McQueen: Savage Beauty,” a showcase of the designers work exhibited in the Metropolitan Museum of Art).

202. Chu, *supra* note 23.

203. Amy L. Landers, *The Anti-Economy of Fashion; An Openwork Approach to Intellectual Property Protection*, 24 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 427, 446 (2013).

204. *Id.* at 447.

205. Cotter, *supra* note 201.

206. *Id.*

perhaps “utilitarian” or “functional” at their core, primarily for their artistic significance and, as such, does not view all fashions equally.

C. CONGRESS’S PURPOSE IN EXEMPTING FASHION DESIGNS FROM COPYRIGHT LAW DOES NOT SUPPORT THE NEW ECONOMIC LANDSCAPE CREATED BY THE 3D-PRINTING INDUSTRY

Advocates for protection often cite the gap in legal coverage for fashion design between the United States and foreign countries as one of the reasons why protection is imperative.²⁰⁷ Congress, however, continuously rejects bills proposing even less stringent standards than those under copyright law. The latest attempt, the Innovative Design Protection Act (IDPA) Act of 2012, proposed a special subsection of copyright protection in the U.S. Code for fashion designs.²⁰⁸ Despite this, and over seventy other proposals,²⁰⁹ no bill has passed. Though rationales for rejecting legislation have withstood other technological changes, they will not be able to survive 3D printing. This Section analyzes how 3D printing exacerbates problems with the current low-IP regime, and how its potential use runs afoul of constitutional intent.

1. Designers Still Need Economic Incentive To Create

One of the reasons critics cite for why legislation is not necessary echoes that of the piracy paradox: designers do not want copyright protection.²¹⁰ Cries for protection extend to the earlier part of the twentieth century, before the evolution of technology.²¹¹ The fact that fashion designers continue to create despite non-protection is not evidence they do not need, or

207. See Wong, *supra* note 19, at 1149. See generally Dianna Michelle Martínez, *Fashionably Late: Why the United States Should Copy France and Italy To Reduce Counterfeiting*, 32 B.U. INT’L L.J. 509 (2014) (advocating for the United States to adopt the anti-counterfeiting efforts and consumer penalties of Italy and France).

208. Innovative Design Protection Act (IDPA) of 2012, S. 3523, 112th Cong. (2012). The House of Representatives received the same proposal in 2011. See Innovative Design Protection and Piracy Prevention Act (IDPPA), H.R. 2511, 112th Cong. (2011).

209. See Beltrametti, *supra* note 65, ¶ 3.

210. *A Lost Story of Fashion Week*, COLUM. L. SCH. (Aug. 26, 2013), http://www.law.columbia.edu/media_inquiries/news_events/2013/august2013/hemphill-foga.

211. See *2006 Hearings*, *supra* note 5, at 81; see, e.g., *id.* at 77 (discussing Parisian designer Coco Chanel’s lawsuit against copyists in the 1930s); *A Lost Story of Fashion Week*, *supra* note 210 (discussing the plight of the Fashion Originator’s Guild of America to defeat piracy in 1932).

could not benefit from, protection; it is human nature to create, regardless of the law.²¹² Yet, a technology like 3D printing makes it even more difficult for new designers to break into an already notoriously difficult industry.²¹³ Without a law in place to protect designers' creations from rapid and accurate copying by 3D printers, fewer and fewer are likely to enter the industry.

2. Copyists Will Use 3D Printing To Replicate Fashion Designs Furthest from Qualifying as "Useful Articles"

Though the law considers all fashion garments utilitarian—save the appliques, fabrics, and embellishments that qualify for individual protection—certain pieces are undeniably more functional than others.²¹⁴ For instance, there is a perceivable distinction between cargo pants with pockets to store items, a plain wool sweater that keeps one warm in the winter and basic rain boots that keep one's feet dry, and a ball gown with a sweeping train appropriate at a handful of elite occasions, namely, awards shows or charity galas. Until 3D printers fall into mainstream use, it is difficult to anticipate which items users will target. Looking to the changes in consumer behavior regarding fashion and analogous examples of how consumers use in-home services to create replications of consumer goods, consumers likely will use 3D printers to create what they cannot readily obtain or afford in stores. Returning to the Sodastream example, consumers do not use the machine to produce the same basic Coca-Cola or Pepsi-type drink they can purchase at any convenient store. Instead, they concoct elegant sodas and cocktails with herbs, real fruit, and fresh ingredients.²¹⁵ Likewise, it is unlikely consumers will recreate a pair of five-pocket blue jeans or plain white sneakers available from any retail outlet. They are more likely to imitate items they cannot readily and financially attain without 3D printing.

3. 3D Printing Will Disproportionately Target Blossoming Designers

The American fashion industry lags behind other foreign industries in producing prominent, lasting fashion houses.²¹⁶

212. 2006 Hearings, *supra* note 5, at 77.

213. *See id.* at 77, 80.

214. *See supra* note 76 and accompanying text; *see also supra* Part I.A.1.

215. *See* Julia Moskin, *Home, Where the Fizz Is*, N.Y. TIMES (Feb. 26, 2012), <http://www.nytimes.com/2013/02/27/dining/hacking-home-soda-making-machines.html>.

216. *See* 2006 Hearings, *supra* note 5, at 83.

Many believe this is because America is a “safe haven” for piracy and designers lack tools to enforce the integrity of their designs.²¹⁷ The “widening gulf between high- and low-end designers”²¹⁸ is evidence of this. The low-IP regime creates considerable barriers for young and new designers, and 3D printing will only exacerbate those. Copyists are more likely to victimize young designers, who have not yet acquired the leverage or identifiable image to defend their brand, or the capital and customer base to compensate for lost sales.²¹⁹ In her 2006 statement to Congress, Susan Scafidi told a story about a burgeoning handbag designer whose business suffered from lower-quality, line-for-line copies of her designs.²²⁰ Buyers canceled orders because of the cheaper identical replicas available.²²¹ For the same reason pirates target new designs, 3D-printing copyists are likely to also. This is adverse not only to the purpose of the Copyright Act but also, as fashion designer and Proenza Schouler co-founder Lazar Hernandez puts it, “[to] the American Dream.”²²²

III. REFASHIONING DESIGNERS’ RIGHTS: CREATING A THEORETICAL FRAMEWORK THAT WILL MINIMIZE 3D PRINTING’S DISRUPTION OF THE FASHION INDUSTRY

Congress frequently expands or limits established copyright protection in light of new, potentially disruptive technologies.²²³ The Supreme Court used this very logic to arrive at its recent decision in *American Broadcasting Cos. v. Aereo, Inc.*, finding a video-streaming service to infringe on copyright own-

217. *Innovative Design Protection and Piracy Prevention Act: Hearing on H.R. 2511 Before the Subcomm. on Intellectual Prop., Competition, & the Internet of the H. Comm. on the Judiciary*, 112th Cong. 4, 7 (2011) [hereinafter *2011 Hearings*] (statement of Lazaro Hernandez, Fashion Designer & Co-Founder, Proenza Shouler).

218. Wong, *supra* note 19, at 1157; *see id.* at 1156–57 (discussing how the growth rate of dresses in the industry indicates that mid-range designers were forced out of the market).

219. *See 2011 Hearings, supra* note 217, at 4–5.

220. *2006 Hearings, supra* note 5, at 83 (statement of Susan Scafidi, Visiting Professor, Fordham Law School, Associate Professor, Southern Methodist University).

221. *Id.*

222. *2011 Hearings, supra* note 217, at 5 (statement of Lazaro Hernandez, Fashion Designer & Co-Founder, Proenza Shouler).

223. *See, e.g., MERGES ET AL., supra* note 33, at 504 (discussing the extension of copyright law in the 1970s to provide *sui generis* protection to semiconductor chip designs).

ers' exclusive right to publicly perform television broadcasts.²²⁴ As part of the basis for its reasoning, the Court considered not only the written language of the Copyright Act but also "activities that Congress intended this language to cover."²²⁵ This statement suggests a groundbreaking technology, which creates particular hardships for an industry that run afoul of the spirit of the Copyright Act, can inspire a decision to fragment a broader protected category (like broadcasted programming) into infringing and non-infringing components (like non-infringing DVR broadcasts and infringing transmissions like Aereo's).²²⁶ This Note seeks to do the same, beginning instead with the foundation of an unprotected category and carving out a framework for courts to use in determining which parts qualify for protection.

While there is much scholarship detailing an ideal fashion-protection bill or analyzing the most appropriate IP category for fashion design,²²⁷ as history tells us, before the law can change, the rationale for the existing law must change.²²⁸ This Note does not suggest what a new bill should look like, or weigh the pros and cons of past ones. In fact, this Note supports the IDPPA and IDPA provisions calling for three-year protection of fashion designs that "are the result of a designer's own creative endeavor" and "provide a unique, distinguishable, non-trivial and non-utilitarian variation over prior designs for similar types of articles."²²⁹ Instead, this Note addresses the root cause of fashion design's exemption—the underlying theoretical rationales that help form the conception of fashion—by pointing out how technology, aided by cultural and historical chang-

224. 134 S. Ct. 2498 (2014); see Howard Hogan, *New Supreme Court Copyright Decision Has Lessons for Fashion/Retail Companies*, FASHION L. & BUS. REP. (June 26, 2014), <http://www.fashionlawandbusiness.com/Lists/Posts/Post.aspx?ID=252>.

225. Hogan, *supra* note 224 (quoting *Aereo*, 134 S. Ct. at 2506).

226. *But see Aereo*, 134 S. Ct. at 2511 (holding the relationship between DVRs and the Copyright Act awaits a case squarely presenting that issue).

227. This Note refrains from discussing in detail the solutions offered by such scholars, as this Note does not seek to outline ideal legislation or a new IP framework for fashion design coverage. Instead, this Note seeks to influence the rationale underlying efforts for more concrete solutions, and offer a recommendation unique to the 3D printing sphere. For more general solutions on obtaining protection for fashion designs, however, see *supra* note 18.

228. This is premised on the fact that out of seventy bills presented in Congress over the past ninety years none have passed. See Beltrametti, *supra* note 65, ¶ 3.

229. Innovative Design Protection Act of 2012, S. 3523, 112th Cong. § 2(a)(2)(B) (2012); Innovative Design Protection and Piracy Prevention Act, H.R. 2511, 112th Cong. § 2(a)(2)(B) (2011).

es, creates the need for change.

This Part identifies ways in which the rationale must change to better protect designers and what designers can do in the meantime to protect themselves, including how they can use 3D printing to their advantage. Section A argues that 3D printers, though facing challenges, will eventually disrupt the fashion industry, and their practice in this context undermines current IP doctrines. Given this disruption, Section B provides the ideal rationale and offers guidelines of what courts should consider in determining whether fashion qualifies as art requiring an economic incentive to create. Finally, Section C offers a concrete recommendation for actions designers can take to protect designs now, including embracing 3D printing in their art forms.

A. TECHNOLOGICAL BARRIERS TO 3D-PRINTED FASHION

While the piracy paradox is typically cited as the rationale for why IP protection of fashion designs is unnecessary,²³⁰ there are also several potential criticisms for why 3D printing does not warrant any more need for fashion design protection than other technologies. The first of these is that it is unfeasible for 3D printing to become mainstream because of the cost barrier and inherent limitations of consumer models. While the cost of at-home 3D printers is becoming increasingly affordable,²³¹ the best consumer 3D printers on the market still cost several thousand dollars.²³² There is also a hefty price tag on 3D-printing “ink.”²³³ While consumers are able to obtain 3D printers in the low range of \$300 to \$400, those, and even the more expensive ones, are not capable of sophisticated creations.²³⁴ There is a “usefulness gap” between consumer expectations and what consumer 3D printers can actually produce—for example, plastic toys and cell-phone cases.²³⁵ While it is true that utilizing a 3D-printer may save consumers money in the long run,²³⁶ that is only so if the consumer plans on printing a plethora of trivial household items, like showerheads, garlic presses, or

230. See generally *supra* Part I.B.

231. See Fink & Segall, *supra* note 129.

232. See Tony Hoffman, *The 10 Best 3D Printers of 2015*, PC MAG. (Sept. 22, 2015), <http://www.pcmag.com/article2/0,2817,2470038,00.asp>.

233. Adrian Covert, *3-D Printing “Ink” Is Way Too Expensive*, CNN MONEY (Feb. 20, 2014, 6:44 AM), <http://money.cnn.com/2014/02/20/technology/innovation/3d-printer-filament>.

234. See Gilpin, *supra* note 194.

235. *Id.*

236. See Kelly, *supra* note 194.

Pierogi molds.²³⁷ Given the inherent limitations of consumer 3D printers, it may be unrealistic to think that 3D-printed goods will displace mass-produced ones.

Specific to fashion, there is a noticeable difference between 3D-printed clothing and manufactured or manually designed clothing. Thus far, fashions designed using 3D printing are composed of thousands of small, interlocked geometric panels.²³⁸ The result is a web-like textile that moves like fabric yet does not carry the appearance of a typical garment.²³⁹ Furthermore, the process for compiling a garment once it is printed is painstaking: assembling the thousands of panels that make up the piece takes many, many hours.²⁴⁰ Because this is currently a manual process,²⁴¹ it is also a barrier to 3D-printed clothes becoming mainstream. In its current state, the technology does not allow consumers, let alone fashion designers, to assemble pieces that mimic those created through more traditional techniques.

While the above arguments may not be entirely rebuttable, as society witnessed with the capabilities of computers and mobile devices, technology can advance very rapidly. 3D printers already are printing human tissue and cells; it is not unrealistic to think that the capability exists or will be developed to print natural fibers traditionally used to make clothing, such as silk and cotton.²⁴² Furthermore, we no longer live in an age when consumers must wait for existing technologies to catch up with their needs and wants. For instance, consumers are now able to “jailbreak” their phones, meaning “they can run software [and] do things that are normally not allowed” within the confines of their phone’s operating system.²⁴³ The average consumer is becoming increasingly technology savvy and is now more than ever able to develop and customize technology independently. This phenomenon lends to the rapid, unpredictable

237. See Jessica Leber, *Print These 20 Things You Don't Really Need and Your 3-D Printer Pays for Itself*, FAST CO. (Aug. 8, 2013, 9:30 AM), <http://www.fastcoexist.com/1682798/print-these-20-things-you-dont-really-need-and-your-3-d-printer-pays-for-itself>.

238. See Adario Strange, *Inside the 3D-Printed Dress that May Be the Future of Fashion*, MASHABLE (Dec. 15, 2014), <http://mashable.com/2014/12/15/kinematics-3d-printed-dress>.

239. See *id.*

240. See *id.*

241. See *id.*

242. See Rietveld, *supra* note 130.

243. See Dylan Love, *10 Reasons Why You Should Jailbreak Your iPhone*, BUS. INSIDER (Feb. 4, 2013), <http://www.businessinsider.com/should-you-jailbreak-your-phone-2013-2>.

growth of technology. The current legal practice is to wait for the technology to develop and adapt the law after. But as technology is no longer developing in the same linear fashion it once was, this practice no longer makes sense. Here is an area where the law can anticipate forthcoming changes and take preventative measures to protect fashion designers. While proponents have advanced this argument since the early twentieth century,²⁴⁴ 3D-printing technology is simply the tipping point necessary to make a change to the law that is long overdue.

B. COURT ACTION UNDER A NEW FASHION IP RATIONALE

A new rationale should recognize certain forms of fashion as distinct from one another. The IDPA and IDPPA sought to do this by requiring a high level of creativity and originality for “fashion designs.”²⁴⁵ In order for fashion to overcome barriers to protection, its identity as “artistic” must outweigh its perception as functional. The distinction between functional garments and fashion designs lies along a spectrum. Articles, therefore, should not be categorically separated but assessed on an individual basis when challenged in court. Section 1 provides an appropriate rationale that reflects the broad spectrum fashion designs occupy. Section 2 then explains why and how courts should implement this rationale in order to meet congressional intent in IP laws.

1. The New Rationale: Not All Fashion Is Created Equal

Because there is such a vast gray area between purely functional and primarily artistic designs, narrowing fashion designs into defined, protectable categories is problematic.²⁴⁶ For instance, while it is true that a style like avant-garde “invests in being dysfunctional,”²⁴⁷ categorizing designs according to the characteristics of the fashion genre they belong to, rather than on a piece-by-piece basis, will result in discriminatory treatment. Copyright law requires a low bar to originality so as to avoid courts judging works on their artistic merit.²⁴⁸ By evaluating clothes not according to their aesthetic, but in more ob-

244. See Beltrametti, *supra* note 65, ¶ 3.

245. Landers, *supra* note 203, at 483; see Innovative Design Protection Act of 2012, S. 3523, 112th Cong. § 2(a)(2)(B) (2012); Innovative Design Protection and Piracy Prevention Act, H.R. 2511, 112th Cong. § 2(a)(2)(B) (2011).

246. *But see* Landers, *supra* note 203, at 448 (advocating for coverage of avant-garde works only).

247. *Id.* at 487 (emphasis omitted).

248. See MERGES ET AL., *supra* note 33, at 439.

jectively measurable terms, courts can more fairly ascertain their originality.

By excluding categories of fashion from protection before considering such factors, courts risk disqualifying from protection those items that will benefit from it the most. Indeed, while avant-garde sits very high on the fashion spectrum, an Alexander McQueen “coat sprouting horns”²⁴⁹ is less likely to be replicated through 3D printing than, perhaps, a Michael Kors a-line skirt.²⁵⁰ Fashions that fall in the middle of the spectrum need, arguably, more protection, since designers create these pieces primarily to be worn, rather than paraded on runways and featured in *Vogue*. Furthermore, a system of categorical exclusion overlooks the art that exists in simplicity and versatility. Designers like Calvin Klein, Ralph Lauren, and Michael Kors, credited with pioneering American fashion, are known for their sleek and elegant ensembles.²⁵¹ Categorizing fashion by equating an elaborate aesthetic with art and economic incentive thus threatens to shut out the types of designs more likely to be replicated.

2. Factors Courts Should Consider

Not only genres within fashion design are diverse; so are garment categories and the pieces themselves. This being the case, each piece must be evaluated on an individual basis. Once a bill is adopted that reflects the aforementioned theoretical rationale, courts should employ a rebuttable presumption that copyright law protects all fashion design.²⁵² The accused copyist will have the burden of proving that the fashion design at issue does not warrant copyright protection. To determine if protection is available, a court should then evaluate those claims in light of the following factors (with no one being decisive): (1) the utilitarian or creative purpose of the clothing piece; (2) the article’s cultural significance and meaning within the fashion community; and (3) the aggregate economic impact on the fashion industry of denying protection to the article.

Looking first to the purpose of the clothing article, courts

249. Cotter, *supra* note 201.

250. See Erin Cunningham, *Michael Kors, Ralph Lauren, & Calvin Klein New York Fashion Week*, DAILY BEAST (Feb. 14, 2014), <http://www.thedailybeast.com/articles/2014/02/14/michael-kors-ralph-lauren-calvin-klein-new-york-fashion-week.html>.

251. See *id.*

252. This is not unlike the current practice for protected subject matter under copyright law, whereby copyright protection attaches upon creation. MERGES ET AL., *supra* note 33, at 434.

will be able to weed out clothing designed primarily for utilitarian purposes from that motivated by more creative concerns. Courts should consider the clothing type, quality of material used, and the price of the item. Courts also should consider whether the design is minimal enough to achieve the article's function. Stripping down the item to its most basic form, courts can determine whether the designer's creative choices transformed the article into a conceptually different piece, or whether the designer made creative choices primarily to achieve the form's basic function.

Courts should next consider the piece's cultural significance and meaning within the fashion community. Appropriate considerations for this analysis include the fashion house's qualification (luxury or fast-fashion); whether the article is seasonal or non-seasonal (an item whose relevancy does not depend on the season in which it is introduced, e.g., a pair of jeans); the length of time since the article's debut; whether it is a break-through design or a derivative of a previous piece; and the designer's cited inspiration for the piece. These factors will help a court determine whether the article is a creative, unique, and distinguishable piece.²⁵³

Finally, courts should determine the aggregate economic impact on the fashion industry of denying protection to the article. This warrants a consideration of the designer's status (new or established), the longevity of the item, the level of copies or close replicas of the article available on the market, the popularity of the item, and how it has been discussed, if at all, in fashion blogs, and newspaper and magazine features. These factors will aid in determining if protection of this item aligns with the spirit of the Copyright Act—in other words, whether a temporary monopoly over the work is necessary to stimulate and secure the creative development of the fashion industry.

One potential challenge to this approach is that courts are ill equipped to evaluate clothing on a case-by-case basis and, therefore, a categorical rule will work better. The problem with a categorical rule, however, is that fashion designs cannot be sorted neatly into black and white categories.²⁵⁴ Any sort of convenience provided by this approach would be to the detriment of fashion designers. Furthermore, any court that is capable of evaluating the merits of a creation challenged under

253. See Innovative Design Protection Act of 2012, S. 3523, 112th Cong. § 2(a)(2)(B) (2012); Innovative Design Protection and Piracy Prevention Act, H.R. 2511, 112th Cong. § 2(a)(2)(B) (2011).

254. See generally *supra* Part III.B.1.

copyright law will be able to evaluate a fashion design using the aforementioned factor approach.

Another potential challenge is that the cost and difficulty associated with case-by-case litigation will actually insulate many copyists from lawsuits, particularly since copyists are more inclined to target newer, less-established designers. While this is certainly of concern, the alternative lack of protection and remedy is much more dismal. Furthermore, the same concern applies to, but does not weaken, the protection struggling artists of other genres receive. Since copyright protection attaches upon creation for protected categories of work,²⁵⁵ these infringement claims must also be addressed on a case-by-case basis. If systematically enforced, the threat of litigation is much more likely to act as a deterrent to potential copyists.

C. ITUNES FOR FASHION: THE TEMPORARY SOLUTION TO DESIGNERS' WOES

Currently, designers have little choice but to establish their designs under existing branches of copyright, trademark, and patent law, and to hold their breath when new bills proposing protection are introduced into Congress. 3D printing, surprisingly, opens up a wider range of opportunities for designers. Earlier, this Note compared fashion's plight with 3D printing to the music industry's battle against Napster.²⁵⁶ Though consumers still find ways to illegally download copyrighted songs, many law-abiding consumers now enjoy use of paid counterparts replacing this earlier service, like iTunes and Spotify. This Note concludes that the fashion world should adopt similar platforms as mechanisms for discouraging consumers' use of rogue CAD files.

As discussed in Part II.A, fashion designers have several avenues through which to achieve protection for the CAD files depicting their designs so long as they exercise sufficient creativity in rendering the 3D models embodied in those files.²⁵⁷ Fashion designers should consider coming together to create a platform that makes these protectable CAD files of select fashion designs available for use and personal 3D printing. One approach is to employ a subscription service like Spotify, which may be free (with advertisements and limited use) or charge a monthly fee for unlimited downloading of available CAD files.²⁵⁸

255. See MERGES ET AL., *supra* note 33, at 434.

256. See *supra* notes 103, 108 and accompanying text.

257. See generally *supra* Part II.A.

258. See Steve Knopper, *The New Economics of the Music Industry*, ROLL-

Designers and CAD creators could license files to a licensee in exchange for upfront royalty payments.²⁵⁹ CAD files would be available through the platform but not for personal download, allowing for better control over how the files are used and disseminated.

A second approach, more similar to iTunes, is for designers to upload files to a platform on their own and charge consumers per design or per collection of designs.²⁶⁰ Designers and CAD creators would receive a percentage of revenue from each sale.²⁶¹ These CAD files would be available for personal download, meaning users could save, duplicate, and share the files outside of the platform.

The benefits of this type of solution are twofold. First, it ensures that others cannot unfairly prosper from the CAD files depicting designers' work, while maintaining the creativity and innovation at the heart of the maker's market. Though such a service will not provide a large revenue stream for designers,²⁶² it will allow them to exercise more control over the distribution of CAD files of their designs. Second, and most importantly, this type of solution grants designers more protection in their designs than under the current IP regime. Designers, by rendering the CAD files and embodied digital models that depict their designs, may have rights in those files that are actionable if the file is subsequently copied and sold. Furthermore, the law might consider any alteration to the file (and, thus, to the 3D printed object) a derivative work of that file. Even if the alterations add new expression sufficient enough to gain protection on their own,²⁶³ that object faces the same constrictions to protection faced by designers in terms of separability. While of course there will still exist those who create CAD files on their own rather than purchase them, for those without the requisite skill to do so, this platform promises to curtail rogue use while simultaneously upholding the fashion industry's integrity.

ING STONE (Oct. 25, 2011), <http://www.rollingstone.com/music/news/the-new-economics-of-the-music-industry-20111025>.

259. *See id.* For a more in-depth discussion of what a fashion industry copyright licensing scheme might look like, see Aya Eguchi, *Curtailling Copyright Couture: The Merits of the Innovative Design Protection and Piracy Prevention Act and a Licensing Scheme for the Fashion Industry*, 97 CORNELL L. REV. 131, 151–57 (2011).

260. *See* Knopper, *supra* note 258.

261. *See id.*

262. *See id.*

263. *See* 17 U.S.C. § 103(b) (2012).

CONCLUSION

Though the fashion industry is not alone in fearing the arrival of personal 3D printers, it is one of the few without enforceable rights. Society is not far off from a time when consumers will be able to select a runway look from Style.com, scan the image onto their computer, and print off the design to wear the following day. Though it is unclear at this point what rights 3D printing's components will vest in users, one thing appears clear: consumers will be free to do with these components as they please, regardless of the fashion designs they imitate.

This rapid advancement in technology, coupled with cultural changes and shifting attitudes about fashion, signals to the legal community that the time is ripe to reconsider the underlying rationale for unprotected fashion design. Though proponents of bills to grant protection to fashion designs offer similar reasoning, these rationales are not comprehensive enough to guide future courts in making the distinction between protectable and unprotectable subject matter. This Note seeks to do just that, relying on 3D printing's potential effect on the fashion industry as a guide for what types of fashion design the law should protect. Unless and until a bill has passed, however, fashion designers should take advantage of 3D printing while it is still in its infancy to establish themselves as purveyors of the technology, rather than doomed observers.