

FAST FASHION: A PROPOSAL FOR COPYRIGHT PROTECTION OF 3D-PRINTED APPAREL

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INTRODUCTION

The fashion and apparel industry affects most consumers, as almost everyone must participate in it in order to purchase clothing, shoes, and accessories. In fact, the average American spent approximately \$910 clothing in 2011, buying about sixty-two garments.¹ The same year, the fashion and apparel industry

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1. *AAFA Releases ApparelStats 2012 Report*, WE WEAR NEWS (Oct. 19, 2012), <https://www.wewear.org/aafa-releases-apparelstats-2012-report/>.

generated nearly \$283.7 billion in retail sales.² Despite such large sales, for many years, the industry has struggled with a lack of intellectual property protections to restrict the unauthorized copying of apparel designs.³ As opposed to the music, film, and book industries, apparel has no copyright protection for products. Where a musician may sue an infringer for copying one or more aspects of his or her song under the Copyright Act, a fashion designer has no such legal remedy if his or her clothing designs are copied by a competitor and sold at a discounted price. This lack of protection affects small business designers more than larger fashion houses such as Chanel, as they more often can afford the costs of attaining limited trademark protections against counterfeit copies by investing large sums in developing and protecting trademarked logos and names.⁴

However, the apparel industry faces a new threat from developing technology that may increase the rate at which designs are copied and disseminated. The development of “3D printing,” or additive manufacturing, threatens to negatively impact this \$283.7 billion industry⁵ in much the same way that the development of peer-to-peer file sharing⁶ drastically altered the music industry.

While 3D printers will soon be available to the average consumer, more fashion designers and manufacturers are already beginning to experiment with 3D printing. 3D printing has increased in popularity with the public as well, as new, cheaper printer models have hit store shelves.⁷ In part due to its ever-expanding availability to the consuming public, 3D printing raises important legal issues

2. *Id.*

3. Casey E. Callahan, *Fashion Frustrated: Why the Innovative Design Protection Act Is a Necessary Step in the Right Direction, but Not Quite Enough*, 7 BROOK. J. CORP. FIN. & COM. L. 195, 197 (2012).

4. Lauren Milligan, *Who's Afraid of Chanel?*, VOGUE (Oct. 14, 2014), <http://www.vogue.co.uk/news/2014/10/14/chanel-suing-what-about-yves-ghostbusters-tshirt>.

5. See AAFA Releases *ApparelStats 2012 Report*, *supra* note 1.

6. Peer-to-peer file sharing is a method by which users may download or upload and share files across a network. WIKIPEDIA, *Peer-to-peer file sharing*, http://en.wikipedia.org/wiki/Peer-to-peer_file_sharing (as of January 23, 2015, 12:05 GMT).

7. Staples became the first major U.S. retailer to introduce 3D printers to its stores, selling the Cube 3D printer from 3D Systems. *Staples First Major U.S. Retailer to Announce Availability of 3D Printers*, STAPLES (May 3, 2013), <http://investor.staples.com/phoenix.zhtml?c=96244&p=RssLanding&cat=news&id=1814995>. A recent project on Kickstarter is raising funds to make a 3D printer for \$116. Christopher MacManus, *\$116 Laser 3D Printer Lights Up Kickstarter*, CNET (Sept. 22, 2013, 10:45 AM), [http://news.cnet.com/8301-17938_105-57604046-1/\\$116-laser-3d-printer-lights-up-kickstarter](http://news.cnet.com/8301-17938_105-57604046-1/$116-laser-3d-printer-lights-up-kickstarter).

relating intellectual property law and copyright infringement.⁸

As it develops, some have speculated 3D printing will pose significant problems for manufacturing companies, even bringing about the “demise of intellectual property,” as practicing attorney John Hornick noted at a 3D printing conference.⁹ With the use of an at-home 3D printer, consumers may make digital designs of objects they have purchased, thereby enabling them to print subsequent copies of the object.¹⁰ This might lead to customers essentially becoming manufacturers, creating copied goods at home.¹¹ These developments might create the opportunity for consumers to infringe on patented or trademarked items by printing unlicensed goods.¹² Owning one’s own 3D printer is not even necessary in some cases.¹³ In fact, consumers may use certain online services to order 3D-printed items specifically printed for them and shipped to their home.¹⁴ For services such as this, a consumer placing an order for an infringing design would still find it easy to have that design 3D-printed since many 3D printing services do not screen orders for potentially infringing content.¹⁵

Although the legal issues associated with the emerging 3D printing piracy market apply to most 3D-printable items, this note will focus on its specific impact in the fashion and apparel industry, an area of the economy that is not afforded the same legal protections as other industries. Accordingly, the purpose of this note is to propose a *sui generis* legal regime¹⁶ to address 3D printing legal concerns.

8. Colin Neagle, *3D Printing Could Trigger Intellectual Property Wars*, *Legal Expert Says*, NETWORK WORLD (July 16, 2013, 8:26 AM), <http://www.networkworld.com/news/2013/071613-3d-printing-intellectual-property-271834.html>.

9. *Id.*

10. *Id.*

11. *Id.*

12. *Id.*

13. Rose Auslander, Op-Ed, *Brands Must Offer 3D-Printable Designs or Face DIY Counterfeiters*, BUS. OF FASHION (Aug. 29, 2013), <http://www.businessoffashion.com/2013/08/3d-printing-new-york-fashion-week-asher-levine.html>.

14. *Id.*

15. *Id.*; There is likely no obligation for 3D printing service providers to police orders for infringing content. *Viacom International Inc. v. YouTube, Inc.*, 718 F. Supp. 2d 514, 520 (S.D.N.Y. 2010) (where service providers would only comply with 17 U.S.C. § 512 (2010) to avoid liability).

16. “*Sui generis*” is a legal term of art that applies to special areas of intellectual property that fall outside of the typical categories of trademark, copyright, and patent law; a *sui generis* law affords these special areas unique legal protections they would not normally have. WIKIPEDIA, *Sui generis*, http://en.wikipedia.org/wiki/Sui_generis#Intellectual_property_law (as of January 27, 2015, 21:41 GMT).

Many clothing designers have made impressive examples of 3D-printed apparel; jewelry and sunglass designers are also experimenting with this medium.¹⁷ As this new technology is more widely used in fashion, many argue that the fashion industry will face a serious legal battle by way of internet piracy and the spreading of unauthorized 3D-printed design copies, much like the music industry has faced with MP3s and file sharing.¹⁸ For instance, the music industry faces a loss of \$12.5 billion dollars each year,¹⁹ with similar consequences will soon face the apparel industry.

Although as a whole the fashion industry has flourished despite having limited copyright protections in the face of counterfeit and copied “knock-offs” cutting into profits, 3D printing poses the threat of a massive surge of unchecked online counterfeiting. Thus, the fashion industry would benefit from a specific *sui generis* legal regime in the form of proposed legislation to protect against this relatively new threat.

Though proposed design protection laws have not passed Congress previously, a *sui generis* regime specifically applied to 3D-printed items and digital designs is needed to address the concerns of a rising market. Furthermore, such laws would be narrowly tailored to one market: that of 3D-printed apparel. Where previously proposed bills were much broader in their application and protections, this *sui generis* framework would specifically address the market of 3D printing, both the printed objects and the digital design files. Such protections are needed to assist small-business designers who do not have the same resources as large design houses and are often the victims of outright copying, especially in this new medium.²⁰

This note will propose such a *sui generis* regime. Part II of this note details the rise of 3D printing technology. Part III continues with a brief overview of the fashion industry, its battle with the lack of U.S. copyright protections, and the developing market for 3D-

17. 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/>.

18. See *id.*

19. *Who Music Theft Hurts*, RECORDING INDUS. ASS'N OF AM., http://www.riaa.com/physicalpiracy.php?content_selector=piracy_details_online (last visited Feb. 12, 2015) (citing Stephen E. Siwek, *The True Cost of Sound Recording Piracy to the U.S. Economy*, INST. FOR POLICY INNOVATION (Aug. 21, 2007), available at http://www.ipi.org/ipi_issues/detail/the-true-cost-of-sound-recording-piracy-to-the-us-economy).

20. Jenna Sauers, *How Forever 21 Keeps Getting Away with Designer Knockoffs*, JEZEBEL (July 20, 2011), <http://jezebel.com/5822762/how-forever-21-keeps-getting-away-with-designer-knockoffs>.

printed apparel. Part IV analyzes the ways in which current copyright law may be applied to 3D printing. Finally, Part V presents a *sui generis* legal regime to address future concerns with infringing, printed objects in the apparel industry, but which also may be used to address similar concerns with other industries foraying into 3D printing.

I. THE DEVELOPMENT OF 3D PRINTING TECHNOLOGY

While 3D printers appear relatively new due to the recent introduction of lower priced printers to the retail market,²¹ the technology for 3D printing was first developed in 1984.²² 3D printing was primarily used in medicine to print organs in the 1990s and early 2000s.²³ In 2006, laser sintering technology was developed, which works in a similar way to 3D printers to create three-dimensional objects.²⁴ Just two years later, RepRap introduced the first self-replicating 3D printer— one that could print a copy of itself.²⁵ More recently, 3D printers have been used to manufacture robotic aircraft, prosthetics, cars, and jewelry.²⁶

Most 3D printer models work by creating three-dimensional objects layer by layer.²⁷ The printers use filaments, commonly made from plastic, which are stored on spools and placed in the printer's head.²⁸ To print an object, the printer head then liquefies the plastic filament and disperses it onto the printing platform in thin layers.²⁹ Objects are created by slowly placing one thin layer of filament on top of another.³⁰ Some printers have more complicated designs that may involve two printer heads allowing objects to be made in two different colors.³¹

New innovations in the market have expanded the type of materials from which filaments may be made, thereby expanding the type of materials that may be used in 3D printing. Indeed, filaments

21. See STAPLES, *supra* note 7.

22. A *Brief History of 3D Printing*, T. ROWE PRICE, http://individual.troweprice.com/staticFiles/Retail/Shared/PDFs/3D_Printing_Infographic_FINAL.pdf (last visited Feb. 1, 2015).

23. *Id.*

24. *Id.*

25. *Id.*

26. *Id.*

27. Signe Brewster, *How Does a 3D Printer Work? The Science and Engineering Behind This Emerging Technology*, GIGAOM (Aug. 26, 2013, 7:03 AM), <http://gigaom.com/2013/08/26/how-does-a-3d-printer-work-the-science-and-engineering-behind-this-emerging-technology/>.

28. *Id.*

29. *Id.*

30. *Id.*

31. *See id.*

may be made from metals, ceramics, cotton,³² and several different types of plastic (including a type of nylon).³³ For instance, Continuum, a California start-up fashion company offers a customizable, 3D-printed bikini created using a nylon plastic filament.³⁴ Nike has also experimented with filaments in creating its Laser Talon shoe.³⁵ Other apparel designers have also started to work with the printers as early as 2010.³⁶ For example, British designer Catherine Wales and Dutch designer Iris Van Herpen have both experimented with 3D-printed clothing, with Van Herpen's designs featured at the 2013 Fashion Week in Paris.³⁷ Designer Pia Hinze even worked with a filament made from a type of yarn in some of her designs.³⁸

Additionally, the 3D printing medium offers many benefits attractive to small apparel designers including reduced lead times—the time between developing the design and its manufacture—as well as reduced materials cost.³⁹ Design prototypes may be made much more cheaply and quickly by cutting labor time and material costs, which in turn, allows small business designers who often cannot meet the large minimum orders required by manufacturers to produce their own designs.⁴⁰ As the popularity of 3D printing grows in the apparel industry, the threat of copying designs will become larger, especially where 3D printing also poses benefits to design copyists who will have increased access to designs that are made digitally and disseminated over the Internet.⁴¹ Therefore, copyright laws must be extended in order to protect the small

32. *New Generation of Fabric: World's First 3D-printed Disposable Panties*, WWW.3DERS.ORG (Nov. 11, 2013), <http://www.3ders.org/articles/20131111-new-generation-of-fabric-world-first-3d-printed-disposable-panties.html>.

33. *Id.*; see also Nate C. Hindman, *Continuum's 3-D Printed Clothing Offers a Glimpse Into the Future of Fashion*, HUFFINGTON POST (Apr. 16, 2013, 3:15 PM) http://www.huffingtonpost.com/2013/04/16/continuum-3-d-printed-clothing_n_3093541.html.

34. Hindman, *supra* note 33.

35. Duann, *Nike Use 3D Printing to Manufacture the Vapor Laser Talon Football Shoe*, SHAPEWAYS, (Feb. 25, 2013) <http://www.shapeways.com/blog/archives/1938-nike-use-3d-printing-to-manufacture-the-vapor-laser-talon-football-shoe.html>.

36. Hennessey, *supra* note 17.

37. *Id.*

38. James Day, *Fast fashion: How 3D printers are revolutionizing the catwalk and the high street is next*, METRO (Nov. 13, 2013) <http://metro.co.uk/2013/11/13/fast-fashion-how-3d-printers-are-revolutionising-the-catwalk-4183998/>.

39. *See id.*

40. *See id.*

41. "Continuum oversees an expanding database of clothing design files that people can download to their computer, at no cost, and print out at home if they own a 3-D printer. Judging from the boom in 3-D printer sales—which grew by more than 35,000 percent between 2006 and 2011—such a scenario could become increasingly common." Hindman, *supra* note 33.

designer who seeks to use the benefits of 3D printing from the large, “fast fashion” companies that are able to quickly turn out copies of their designs.

II. A BRIEF OVERVIEW OF COPYRIGHT LAWS AND THE FASHION INDUSTRY

Congress’s power to protect intellectual property comes from Article 1, § 8 of the U.S. Constitution, which grants Congress power “[t]o promote the progress of science and the useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.”⁴² This clause gives Congress the express power to protect intellectual property, including patents and copyrights. As opposed to patent and copyright, trademark law, a third category of intellectual property, arose from the Commerce Clause of the Constitution and is protected under the Lanham Act.⁴³

Turning back to copyright, its protection is defined by the Copyright Act and protects “original works of authorship fixed in any tangible medium of expression.”⁴⁴ In order for copyright protection to attach, the work must be fixed as this clause states, but must also be original to the author,⁴⁵ and possess a “modicum of creativity.”⁴⁶ For such works, protection attaches immediately at the moment of creation.⁴⁷ However, to gain specific remedies in cases of infringement, the work itself must be registered with the Copyright Office.⁴⁸

Other rights granted to the author of a copyrighted work include the exclusive right to reproduce the work, perform it, distribute it,⁴⁹ and create derivative works of the original.⁵⁰ Yet, the right to create derivative works is limited and does not extend to any part of the material that is used unlawfully.⁵¹ For apparel specifically, copyright protection is limited further, and is mostly withheld from apparel designs due to the “useful article” doctrine.⁵² The statute defines useful articles as, “an article having an intrinsic utilitarian

42. U.S. CONST. art. I, § 8, cl. 8.

43. 15 U.S.C. § 1051 (2002).

44. 17 U.S.C. § 102 (a) (2006).

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

46. *See id.*

47. Sara R. Ellis, *Copyright Couture: An Examination of Fashion Design Protection and Why the DPPA IDPPPA are a Step Toward the Solution to Counterfeit Chic*, 78 TENN. L. REV. 163, 170 (2010).

48. *Id.*; *see also* 17 U.S.C. § 412 (2006).

49. However, this right may be limited by the First Sale Doctrine. 17 U.S.C. § 109 (2006).

50. 17 U.S.C. § 106 (2006).

51. 17 U.S.C. § 103(a) (2006).

52. *See* 17 U.S.C. § 101 (2006); *see also* Ellis, *supra* note 47, at 171.

function that is not merely to portray the appearance of the article or to convey information.”⁵³ Due to this doctrine, copyright protection is typically foreclosed for apparel, while patent and trademark law also do not provide appropriate protections because they are often too expensive for designers to attain or only apply in limited contexts.⁵⁴

A. An Historical Overview of the Fashion Industry

Since its inception, the American fashion industry has enjoyed very little in the way of copyright protections for designs.⁵⁵ As opposed to the music, film, and book industries, the apparel industry has no copyright protection for its products. While a musician may sue an infringer copying one or more aspects of his song under the Copyright Act, a fashion designer has no such legal remedy if her clothing designs are copied by a competitor and sold at a discounted price. However, this has not been entirely to the detriment of the industry.⁵⁶ In fact, American fashion design has its roots in copying European designs, sometimes with the permission of the original designers.⁵⁷ However, over time the industry began to grow in the U.S., copying became rampant, and through lost sales, the designers who created the originals were harmed.⁵⁸

The first attempt to deal with copying in the industry occurred in the 1930s with the formation of the Fashion Originator’s Guild.⁵⁹ The Guild registered American designs and instigated boycotts of any member retail store selling copies of those registered designs.⁶⁰ It even forced those who did not support the boycott to pay Guild fines.⁶¹ Though it made quite an impact on widespread copying in fashion, the Guild faced the conflicting concerns of retailers and designers.⁶² Retailers were primarily interested in selling as much apparel as they could, selling original articles as well as the cheaper,

53. 17 U.S.C. § 101.

54. See Matteo Mancinella, *Copyright Subject Matter and a “Light” for Designers’ Rights*, 29 SANTA CLARA COMPUTER & HIGH TECH. L.J. 523, 525 (2013).

55. Casey E. Callahan, *Fashion Frustrated: Why the Innovative Design Protection Act Is a Necessary Step In the Right Direction, But Not Quite Enough*, 7 BROOK. J. CORP. FIN. & COM. L. 195, 197 (2012).

56. Kal Raustiala & Christopher Sprigman, *THE KNOCKOFF ECONOMY: HOW IMITATION SPARKS INNOVATION*, 5 (Oxford Univ. Press, 2012).

57. *Id.* at 31.

58. *Id.*

59. *Id.*

60. *Id.*

61. *Id.*

62. *Id.*

copied versions.⁶³ Designers, however, were outraged to see their designs sold alongside cheaper copies.⁶⁴ As a result of this conflict, the Guild was ultimately declared illegal and dissolved in *Fashion Originator's Guild of America v. FTC*.⁶⁵

Before *Fashion Originator's Guild of America v. FTC*, a separate case was brought against the Guild by the retail store Wm. Filene's Sons Co.⁶⁶ Filene's was the subject of a Guild boycott for selling copied versions of original designs. In response to this boycott, Filene's brought an action against the Guild.⁶⁷ The Guild won the suit, with the court stating that its boycotts were legal. However, the case subsequently brought the Guild under the scrutiny of the Federal Trade Commission.⁶⁸

In *Fashion Originator's Guild*, the court stated that though piracy is a problem in the apparel industry, the Guild's practices violated the Sherman and Clayton Antitrust Acts by seeking to unfairly quash competition.⁶⁹ Accordingly, the Guild was dissolved, and fashion designers turned to Congress to address the issue of copying designs.⁷⁰ Yet, their efforts to create a body of law to protect designers were unsuccessful.⁷¹ Following this, Maurice Rentner, formerly of the Guild, lobbied Congress to adopt protections for the fashion industry.⁷² He pushed for legislation that would mimic French apparel protections,⁷³ which applies copyright law to apparel in the same way as art.⁷⁴ But Rentner was opposed by other leaders in the industry, who argued that such legislation would harm the industry.⁷⁵ Some designers argued that copying is a natural part of the fashion cycle.⁷⁶ They argued that when a design has been significantly copied, it is a signal to the original designers to develop a new design.⁷⁷ Yet other designers saw copying as a detriment to the industry, noting that the inevitable lost profits for original

63. *Id.*

64. *See id.*

65. *Id.* at 32-33; *see also* *Fashion Originators' Guild of America v. FTC*, 312 U.S. 457, 468 (1941).

66. *See* Raustiala, *supra* note 56, at 32.

67. *Id.*

68. *Id.* at 33.

69. *Fashion Originators' Guild of America*, 312 U.S. at 467.

70. Raustiala *supra* note 56, at 33.

71. *Id.*

72. *Id.*

73. *Id.*

74. Gioia Diliberto, *Fashion's Piracy Paradox*, L.A. TIMES (Oct. 10, 2007), <http://www.latimes.com/news/la-oe-dilberto10oct10,0,61980.story#axzz2sZamzuaH>.

75. *See* Raustiala, *supra* note 56, at 34.

76. *Id.*

77. *Id.*

designers would drive them under rendering them unable to afford turning out new designs at all.⁷⁸

The same arguments are made today with the rise of “fast fashion” and the expansion of global supply chains.⁷⁹ In the 20th century, the business of fast fashion took off using cheaper labor from overseas sources such as China and Bangladesh.⁸⁰ This sector of the industry grew into massive retailers including Forever 21, Zara, Topshop, and H&M.⁸¹ Fast fashion continues to compete with larger design firms as well as small designers, quickly copying their designs and selling them on a massive scale for low prices.⁸² Many designers have become victims of fast fashion copies including Anna Sui who has commented on designs stolen by Forever 21.⁸³

It is important to note that some elements of copying are an integral part of the fashion cycle.⁸⁴ The fashion design industry functions on a cycle of rising trends that dissipate and give way to new trends, “Debut, diffusion, decline, death: that is the fashion cycle in a nutshell.”⁸⁵ A design will debut or be introduced to the public, and if the design is successful and popular, it will be widely spread.⁸⁶ However, the more it is spread, the more quickly the design will decline and ultimately pass out of popularity.⁸⁷ The rapid copying of designs contributes to this cycle and the diffusion of the design.⁸⁸ Alternatively, some copies of a design only replicate certain features of the design rather than a point-by-point exact copy.⁸⁹ Where such elements are taken from one design and used in another design, this copying is merely evidence of a trend that is part of the fashion cycle.⁹⁰

Rather than outright copying, the copying of trends is generally condoned in the industry.⁹¹ Trends may be shown in certain design elements such as nautical-themed prints or exposed zippers on

78. *See id.*

79. *See id.* at 25.

80. *Id.*

81. *Id.* at 25-26.

82. *Id.* at 26-27.

83. Raustiala, *supra* note 56, at 26 (Anna Sui distributed shirts at a runway show in 2007 portraying the image of Forever 21’s owners as criminals with the statement “Thou shalt not steal”).

84. *Id.* at 43.

85. *Id.* at 42.

86. *Id.*

87. *Id.*

88. *Id.*

89. *Id.* at 37.

90. *Id.*

91. *See id.*

dresses and skirts.⁹² Thus, the distinction between copying trends, or referencing previous designs' elements and outright copies of a particular garment's overall design is important and unique to the industry.⁹³ Where trends only include small elements, outright copies are exactly identical to the original and will feature more than a simple element.⁹⁴ They will copy multiple elements of the original design including the fabric print, color blocking or borders, neckline shape, and so on.⁹⁵ The fast fashion industry of businesses like Forever 21 and H & M primarily revolves around the latter form of copying.⁹⁶ It is this form of point-by-point copying that drives fast fashion and is the greatest harm to designers.⁹⁷ Furthermore, the harm is highest when smaller designers are made victims of overall design copying such as small designer Virginia Johnson who found a knock-off copy of her \$175 skirt at Forever 21 for \$18.⁹⁸

Since the first efforts made by Rentner and the Fashion Originator's Guild, copying has grown and expanded at an alarming rate due to the rise of fast fashion, which fuels the debate surrounding design protections today.⁹⁹ Moreover, since the Guild, Congress has successfully expanded copyrights to other useful articles, giving broader protections to architecture and boat hulls, but not to the apparel industry.¹⁰⁰ Without protections against copying, the only method for designers to retain success in the industry is to stay ahead of the copies being made.¹⁰¹ However, this is increasingly harder to do in a technology-driven culture where pictures of fashion designs are spread over the Internet immediately after those designs are premiered on the catwalk.¹⁰² Designs are then copied and turned out in department stores before the original is even placed on sale.¹⁰³ From this practice, the argument affording limited protections to apparel designs has gained new fuel.¹⁰⁴

92. *See id.*

93. *Id.*

94. *See Sauers, supra* note 20.

95. *See id.*

96. *See id.*

97. *See id.*

98. Susan Berfield, *Forever 21's Fast (and Loose) Fashion Empire*, BLOOMBERG. (Jan. 20, 2011), http://www.businessweek.com/magazine/content/11_05/b4213090559511.htm#p5.

99. *See Raustiala, supra* note 56 at 35.

100. *Id.*

101. Diliberto, *supra* note 74.

102. *Id.*

103. *Id.*

104. Raustiala, *supra* note 56, at 35.

B. Copyright Protection and the Industry

Patent law may afford some protections to designers through the use of design patents, but applying for such protections requires a great deal of time and money and is not conducive to the quick turnover of the fashion trend cycle.¹⁰⁵ Trademark, similarly, is not well suited to protect apparel designs. The Lanham Act limits protection to a mark, which identifies a good or service's source or origin.¹⁰⁶ It does not extend protections to product designs such as clothing where the design itself is not inherently distinctive.¹⁰⁷ Thus, trademark protections are more appropriate to larger designers who may claim inherently distinctive trade dress, such as the distinctive pattern of Louis Vuitton.¹⁰⁸ It is not appropriate for small designers who have little money to invest in creating a large, instantly recognizable brand that requires much proactive "policing"¹⁰⁹ to protect the brand's trademark.¹¹⁰

Turning to copyright law, designers are currently afforded limited protections.¹¹¹ In the past, designers have tried to attain protections under copyright law, but have only gained protection in fabric patterns.¹¹² Apparel escapes copyright protection primarily because of the "useful article" exception in the Copyright Act where protections do not extend to useful or functional items such as clothing.¹¹³ However, courts have long recognized that copyright protection may extend to cover patterns printed on fabric, because those prints are included under the Act as an "applied design."¹¹⁴ Though apparel is considered functional under the statute, and

105. Mancinella, *supra* note 54, at 525.

106. 15 U.S.C. § 1127 (2006).

107. Wal-Mart Stores v. Samara Bros., 529 U.S. 205, 212 (2000) (stating that the design of children's clothing could not be inherently distinctive and therefore protectable as trade dress. The court further explained that inherently distinctive trade dress such as the orange color of a Tide detergent bottle may be protected).

108. See Louis Vuitton Malletier v. Haute Diggity Dog, LLC, 507 F.3d 252, 259 (4th Cir. 2007).

109. "Policing" a trademark involves measures taken on behalf of the brand to protect the strength and distinctiveness of its mark. Policing often involves costly lawsuits to stop counterfeits of the brand from being sold. Raustiala *supra* note 56, at 29.

110. See Raustiala *supra* note 56, at 29.

111. See Mancinella *supra* note 54, at 526.

112. See generally *Dolori Fabrics, Inc. v. Limited, Inc.*, 662 F. Supp. 1347 (S.D.N.Y. 1987). The definition of "useful article" under the Copyright Act expressly excludes functional designs from copyright protection, "an article having an intrinsic utilitarian function that is not merely to portray the appearance of the article or to convey information. An article that is normally a part of a useful article is considered a 'useful article.'" 17 U.S.C. §101 (2006).

113. 17 U.S.C. §113 (b) (2000).

114. *Peter Pan Fabrics, Inc. v. Brenda Fabrics, Inc.*, 169 F. Supp. 142, 143 (S.D.N.Y. 1959).

therefore not the appropriate subject matter for copyright protection,¹¹⁵ Congress has considered extending limited protections to designers in the past. However, Congress has not passed any such legislation to date.¹¹⁶

1. The Design Piracy Prohibition Act

The first more recent iteration of fashion design protections came in the form of the Design Piracy Prohibition Act (“DPPA”),¹¹⁷ a *sui generis* legal framework that would protect fashion designs for a period of three years.¹¹⁸ The DPPA was introduced by the Fashion Designers of America— a prominent group representing designers based in New York¹¹⁹— and proposed protections for apparel design similar to that afforded for designs in France.¹²⁰ The bill would have provided limited protections to designs of useful articles that were made public by the designer six months prior to registering for copyright protections under the Act with the Copyright Office.¹²¹ The DPPA was modeled after the copyright protections awarded to apparel designs in France, and many proponents of the proposed law pointed to the success of such protections abroad.¹²² However, the Act soon lost momentum, gaining little support in Congress and was not passed into law.¹²³ Opponents argued that a key fault with the bill was the lack of an adequate definition for infringing designs, merely defining them as “substantially similar” designs.¹²⁴ Furthermore, opponents noted that a law cannot adequately define the concept of trends in the fashion industry in order to afford appropriately limited protections.¹²⁵ As a result of these issues, the bill did not pass into law.¹²⁶

115. See generally *Dolori Fabrics*, 662 F. Supp. 1347 (S.D.N.Y. 1987).

116. *Id.*

117. Design Piracy Prohibition Act of 2009, H.R. 2196, 111th Cong. (2009).

118. *Id.*

119. Raustiala, *supra* note 56, at 35.

120. *Id.*

121. H.R. 2196, 111th Cong. (2009).

122. Raustiala, *supra* note 56, at 35.

123. *Id.*

124. *Design Piracy Prohibition Act: Hearing on H.R. 5055 Before the Subcomm. on Courts, the Internet and Intellectual Prop. of the H. Comm. on the Judiciary*, 109th Cong. *passim* (2006), available at <http://www.gpo.gov/fdsys/pkg/CHRG-109hhr28908/html/CHRG-109hhr28908.htm>.

125. *Id.*

126. H.R. 2196.

2. The Innovative Design Protection and Piracy Prevention Act

A second bill was introduced in 2009, the Innovative Design Protection and Piracy Prevention Act (“IDPPPA”), introduced by Representative Bill Delahunt of Massachusetts.¹²⁷ The IDPPPA progressed further than the DPPA, making it to the Senate,¹²⁸ and would have provided even further protections for unregistered designs.¹²⁹ The IDPPPA added an “originality” requirement to protected designs.¹³⁰ It would have amended the Copyright Act to include protections for fashion designs, including useful articles such as clothing, handbags, purses, wallets, tote bags, belts, and glasses frames.¹³¹ It excluded from protection those designs that were made public by the designer more than three years from the date protection of the design was claimed.¹³²

When determining whether a design should be available for protection, the bill excluded from consideration whether the design incorporated a certain color or pictorial or graphic work.¹³³ It also extended protection over original designs for a period of three years, and defined infringement of a protected design as being substantially identical in overall appearance of the design’s original elements such that it is likely to be mistaken for the original.¹³⁴ It excluded from infringement those designs that were independently created, as well as garments made as a result of home sewing that were not offered up for sale and were made for personal use.¹³⁵ Yet despite these additions, the IDPPA also did not pass into law leaving apparel designs still unprotected.¹³⁶

IV. THE INTERPLAY AMONG 3D PRINTING, COPYRIGHT LAW, AND THE FASHION INDUSTRY

As 3D printing becomes more affordable and enters the average consumer’s home, 3D design databases will grow as well. Databases like Thingiverse and Defcad provide expansive online databases for all things 3D design and 3D-printable.¹³⁷ Thingiverse, for example,

127. H.R. 2511, 112th Cong. (2011); *also* Raustiala, *supra* note 56, at 35.

128. Ellis, *supra* note 47, at 184; *see also* H.R.2511.

129. H.R. 2511; *see also* Ellis, *supra* note 47, at 191.

130. H.R. 2511; *see also* Ellis, *supra* note 47, at 197.

131. H.R. 2511.

132. *Id.*

133. *Id.*

134. *Id.*

135. *Id.*

136. *See id.*

137. *See* Pratik Kanjilal, *Diverse Dimensions of 3D Printing*, THE FINANCIAL EXPRESS

provides a platform in which users can upload or download files that they may then 3D print under a Creative Commons¹³⁸ license.¹³⁹ The original model of Thingiverse was an open source format, which gave a universal license for the free duplication and alteration of 3D print design files.¹⁴⁰ Recently, however, MakerBot has changed the terms of service on Thingiverse, granting it a license to host such uploaded files so as to protect the company from potential legal claims, altering the open source format.¹⁴¹ The change in Thingiverse is one result of the increasingly ambiguous state of intellectual property in 3D printing. The next sections of this note will explore the current application of copyright to 3D printing generally as well as apparel specifically.

A. 3D Printing and Copyright: The Current Landscape

3D printing has already begun to run up against copyright issues.¹⁴² In one example, a fan of the HBO show *Game of Thrones* created a design file to print on his 3D printer: a cell phone dock mimicking the design of the “Iron Throne” from the show.¹⁴³ He then placed his design file on an online database for 3D printing designs and distributed it amongst the public.¹⁴⁴ HBO holds the copyrights to the “Iron Throne” and its depiction, and was not pleased with the 3D-printed copy or its design file.¹⁴⁵ For such reasons as this, the Digital Millennium Copyright Act (“DMCA”) was introduced and provides remedies to copyright owners for online content infringing on their copyrights, while at the same time creating a safe harbor for online service providers, limiting their liability for infringing

(Aug. 29, 2013), <http://archive.financialexpress.com/news/diverse-dimensions-of-3d-printing/1161505>.

138. A Creative Commons license is built on copyright and merely ensures that the original author is credited for their work, while licensing the work to be freely copied and distributed to others for non-commercial uses. *About the Licenses*, CREATIVE COMMONS, <http://creativecommons.org/licenses/>.

139. MAKERBOT THINGIVERSE, <http://www.thingiverse.com/about> (last visited Apr. 22, 2015).

140. See Michael Molitch-Hou, *Repables: Thingiverse Made Open (Again)*, 3D PRINTING INDUS. (Sept. 12, 2013) <http://3dprintingindustry.com/2013/09/12/repables-thingiverse-made-open-again/>.

141. *Id.*

142. Thomas Mahlum and Melissa Goodman, *Technology: Will the Digital Millennium Copyright Act Takedown 3D Printing?*, INSIDE COUNSEL (Aug. 30, 2013), <http://www.insidecounsel.com/2013/08/30/technology-will-the-digital-millennium-copyright-a?ref=hp>.

143. Nathan Hurst, *HBO Blocks 3D Printed Game of Thrones iPhone Dock*, WIRED (Feb. 13, 2013), <http://www.wired.com/2013/02/got-hbo-cease-and-desist/>.

144. *Id.*

145. *Id.*

content.¹⁴⁶ Under this Act, copyright owners may issue a DMCA “takedown notice” asking the service provider to delete infringing content from their online services.¹⁴⁷ Using these takedown notices, a rights holder may protect its copyrights and stop the infringement while service providers may avoid litigation if they comply with the notice.¹⁴⁸ However, the application of DMCA takedown notices to 3D printing and designs is not yet certain.¹⁴⁹

B. Applying the Existing Framework to 3D Printing Generally

There are two main components of 3D printing that may be copyrightable. The first is the CAD design file that is used to design an object prior to printing it. CAD design files are copyrightable in so much as it is an original work fixed in a medium within the meaning of the Copyright Act.¹⁵⁰ However, courts may interpret CAD files not as a fixed work akin to a drawing, but rather as a computer program.¹⁵¹ Computer software is protected under the Copyright Act, but this protection is limited to two types of software: operating systems software and applications systems software.¹⁵² Operating systems software allows the computer to accomplish internal tasks and communicate with itself, while applications systems software perform tasks and allow the user to communicate with the computer.¹⁵³ Yet CAD files do not fit precisely in this category of copyright protection.¹⁵⁴ CAD files do not communicate directly with the 3D printer in order to render an output for the user as an applications program would, but rather helps the user translate a design into triangular vertices that the user then runs through Stereolithography software.¹⁵⁵ The software then communicates with the 3D printer to produce a printed object.¹⁵⁶ Thus, CAD files are not likely to be considered copyrightable software and are merely “blueprints” and not operating or applications software.¹⁵⁷

CAD files could also be considered copyrightable as a “pictorial,

146. Digital Millennium Copyright Act, 17 U.S.C. §§ 512 (2010).

147. *Id.*

148. *See id.*

149. Hurst, *supra* note 143.

150. Brian Rideout, *Printing the Impossible Triangle: The Copyright Implications of Three-Dimensional Printing*, 5 J. BUS. ENTREPRENEURSHIP & L. 161, 167 (2011).

151. *Id.*

152. *Id.*

153. *Id.*

154. Rideout, *supra* note 150, at 168.

155. *Id.*

156. *Id.* at 167-68.

157. *Id.* at 168.

graphic, or sculptural work”¹⁵⁸ under the statute.¹⁵⁹ However, to the extent that a CAD file is copyrightable, its protections do not extend to the work it depicts, “[protection] does not afford, to the owner of a copyright in a work that portrays a useful article as such, any greater or lesser rights with respect to the making, distribution, or display of the useful article so portrayed than those afforded to such works under the law.”¹⁶⁰ Consequently, copyright protection in the CAD file is limited by what it portrays,¹⁶¹ and in the case of 3D-printed apparel, protection is even more limited by the “useful articles” doctrine.

Even if CAD design files of 3D-printed apparel are protected by copyright, designers would have difficulty protecting those rights since the printed object itself is likely excluded from protection as a “useful article.” Furthermore, designers would have trouble proving that printed items are in fact printed from infringing CAD files where the infringing article is sold in a physical store rather than a file sold from an online service provider. Therefore, designers must seek protection in their 3D-printed items since infringement may come in multiple forms: from retailers and manufacturers as well as websites selling to at-home printers.

C. 3D-Printed Apparel Through the Copyright Lens

The second component of 3D printing copyright is the printed object itself. Because there is now no deciding case law on the matter, wary copyright holders must interpret their rights under the Copyright Act. Under the statute, 3D-printed items seemingly qualify as copyrightable “pictorial, graphic, and sculptural works.”¹⁶² However, the Copyright Act specifically excludes “useful articles” from this definition:

the design of a useful article...shall be considered a pictorial, graphic, or sculptural work only if, and only to the extent that, such design incorporates pictorial, graphic, or sculptural features that can be identified separately from, and are capable of existing independently of, the utilitarian aspects of the article.¹⁶³

Courts are left to interpret the application of this provision in the statute and have in the following instances.

158. 17 U.S.C. § 102(a)(5) (1990).

159. Rideout, *supra* note 150, at 168.

160. 17 U.S.C. § 113(b) (2006).

161. Rideout, *supra* note 150, at 168.

162. 17 U.S.C. § 102(a)(5) (1990).

163. *Id.*

In *Mazer v. Stein*, the United States Supreme Court determined that the meaning of “work of art” and “pictorial, graphic, and sculptural” works was not meant to be narrowly defined, and could be applied to original statuettes of human figurines on lamp bases.¹⁶⁴ The *Mazer* Court determined that though the statuettes were produced on lamp bases, this did not negate their ability to be copyrighted as original works of art.¹⁶⁵ Under *Mazer*, 3D-printed apparel may be considered a sculptural work if it includes complex designs similar to those on the lamp bases. Yet, the cases discussed below would seem to treat 3D-printed apparel differently.

In *Carol Barnhart v. Economy Cover Corp.*, the Court determined that mannequins could not be copyrightable because their aesthetic features were “intertwined with the utilitarian feature, the display of clothes.”¹⁶⁶ Under this case, 3D-printed apparel would be denied protection under existing copyright law because its utilitarian features as clothing would negate any original design elements. Yet, the *Carol Barnhart* decision is wholly different from the decision in *Kieselstein-Cord v. Accessories by Pearl, Inc.*¹⁶⁷ In this case, the Court considered the severability of design elements in two belt buckles from their utilitarian aspect as buckles.¹⁶⁸ The Court determined that the design elements were separate from the buckles’ functionality because they were used and worn on other parts of the body than the waist, which is usually their primary function.¹⁶⁹ The ornamental aspect of the buckles was “conceptually separate” from their utility,¹⁷⁰ and thus the court determined the buckles’ separate design elements may be copyrighted.¹⁷¹ Under *Kieselstein-Cord*, 3D-printed apparel may be considered ornamental, though belt buckles may be easily distinguished from 3D-printed apparel since buckles are more closely related to jewelry, a copyrightable, non-useful article.

Congress intended to amend the Copyright Act to include the notion of separating design elements from the utilitarian article.¹⁷² The intention was to draw a clearer line between a utilitarian, industrial design and the copyrightable artistic works.¹⁷³ Thus, a painting may still be copyrighted though it may be applied to a

164. *Mazer v. Stein*, 374 U.S. 201, 213 (1954).

165. *Id.* at 214.

166. *Carol Barnhart, Inc. v. Econ. Cover Corp.*, 773 F.2d 419, 418 (2d Cir. 1985).

167. *Id.*

168. *Kieselstein-Cord v. Accessories by Pearl, Inc.*, 632 F.2d 989, 990 (2d Cir. 1980).

169. *Id.* at 993.

170. *Id.*

171. *Id.* at 994.

172. H.R. Rep. No. 94-1476, at 5668 (1976).

173. *Id.*

shirt.¹⁷⁴ The key distinction is that the design element used in conjunction with the utilitarian article does not lose its ability to exist independently of the useful article as a work of art.¹⁷⁵

When considering 3D-printed items under this framework, it becomes less certain whether items may be considered proper subject matter for copyright protection. While the Game of Thrones Iron Throne figurine is much easier to define as an ornamental, decorative object under the Act, fashion designs are less certain. As the *Kieselstein-Cord*. Court noted,¹⁷⁶ jewelry has long been considered copyrightable material since it is distinctly not utilitarian. However, the issue arises when it comes to 3D-printed clothing and shoes. Both items are useful articles, but the issue becomes even more complex when designers begin experimenting with 3D printing to create aspects of a garment that are 3D-printed while the rest of the garment or shoe is made from textile materials as is the case with Nike's Vapor Laser Talon football cleat.¹⁷⁷

Currently, designers such as Janne Kyttanen¹⁷⁸ and Iris van Herpen¹⁷⁹ experiment with 3D printing, producing shoes and clothes fully printed using the technology, without incorporating more conventional apparel design materials. However, Nike is experimenting with a football cleat design that incorporates a 3D-printed cleat sole with the more traditionally fabricated shoe in its Vapor Laser Talon Football Shoe.¹⁸⁰ In this instance, the 3D-printed cleat sole is fully separate from the shoe itself, but it still would provide a key element to the shoe, thereby pushing it outside of the bounds of copyright. Another, more difficult example would involve a designer creating a shirt that involves conventional fabric for the body of the shirt, while incorporating 3D-printed sleeves. Whether or not the sleeves actually perform a function or are purely for design and aesthetic elements would pose a difficult issue that, requiring a court to decide whether a sleeve is utilitarian and necessary to serve a purpose, or whether it may be purely a design element and ornamental as the buckles' design elements in *Kieselstein-Cord*.

Such issues will likely face courts soon as 3D printing becomes

174. *Id.*

175. *Id.*

176. *Kieselstein-Cord v. Accessories by Pearl, Inc.*, 632 F.2d 989, 993 (2d Cir. 1980).

177. Duann, *supra* note 35.

178. See JANNE KYTTANEN, <http://www.jannekyttanen.com/> (last visited Apr. 22, 2015).

179. Dan Howarth, *3D Printing Will Infiltrate Fashion Through Streetwear, Not Haute Couture*, PRINT SHIFT (June 5, 2013), <http://www.dezeen.com/2013/06/05/3d-printing-fashion-print-shift/>.

180. Duann, *supra* note 35.

more common, creating increasing demand for online design markets such as Thingiverse. With Staples and Office Depot stocking 3D printers,¹⁸¹ and the Kickstarter project to make a 3D printer for \$116,¹⁸² these printers will soon be available to the average consumer. For designers and manufacturers, 3D printing provides a low cost, quicker way to streamline production. It presents designers with the ability to create easily personalized articles, the ability to produce smaller quantities of items, and reduce lead times.¹⁸³ Long lead times are a particular issue with the fashion industry— the large time gaps during production that includes the initial production, sourcing the materials, and placing the articles on the market.¹⁸⁴ These benefits are particularly attractive to small business designers who frequently have problems with the long lead times in the fashion industry and the large minimum orders required by most manufacturers.¹⁸⁵ In addition to the reduction of lead time gaps, the quick prototyping benefits of 3D printing is also a large incentive to small business designers, and even at-home designers selling their creations online, to use this technology.¹⁸⁶

V. 3D PIRACY PROTECTION: A *SUI GENERIS* LEGAL STRUCTURE FOR 3D-PRINTED APPAREL

With increasing availability, the legal issues associated with 3D printing will begin to push more into the public view. The rise in an online marketplace for 3D designs including apparel designs demands that copyright issues associated with 3D printing be addressed. Thus, it is important for both designers and consumers who will participate in the newly developing 3D printing market that legislators address these problems in their nascent stages rather than allowing them to escalate into costly court battles.

Therefore, legislators should propose a *sui generis* framework for 3D-printed objects and designs through new, proposed legislation. As with the Design Piracy Prohibition Act,¹⁸⁷ and akin to

181. Rakesh Sharma, *Staples, Office Depot and 3D Printing*, FORBES (October 4, 2013, 6:08 PM) <http://www.forbes.com/sites/rakeshsharma/2013/10/04/staples-office-depot-and-3d-printing/>.

182. MacManus, *supra* note 7.

183. Dhani Mau, *How 3D 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/>.

184. M. Lee, *The Lead Time Gap in Fashion Industries*, OPEN TO EXPORT: YOUR COMMUNITY FOR GOING GLOBAL (July 19, 2013) <http://opentoexport.com/article/the-lead-time-gap-in-fashion-industries/>.

185. *Id.*

186. *Id.*

187. H.R. 2196, 111th Cong. (2009).

the Vessel Hull Design Protection Act,¹⁸⁸ legislation protecting the 3D designs of “useful articles” would propose a similar *sui generis* legal framework, i.e., Additive Manufacturing Piracy Protection (“AMPP”). By using similar terms to the proposed text in the DPPA, the new proposed bill would restrict the copyright protections of 3D design files and 3D-printed useful articles to the fashion designs embodied in those articles that are made public by the designer no more than six months before copyright application.¹⁸⁹ The duration under the DPPA of three years of copyright protection would be appropriate for 3D digital designs and the physical 3D-printed articles from those designs providing enough time to protect an article for a period of time suited to the short fashion trend cycle. The AMPP law would differ from the DPPA and IDPPPA in one key aspect: it is limited to 3D designs and 3D prints rather than inclusive of all useful articles as in the two prior proposed Acts. In this way, the bill would protect small designers who use 3D printing to create their designs and are most at risk of harmful copying by fast fashion businesses.

The DPPA suggested a limited scope when defining infringing articles: only those that are “closely and substantially similar” in overall appearance.¹⁹⁰ The same standard should apply to 3D-printed articles in the AMPP *sui generis* framework. Only those 3D digital files and the items printed from those files that are closely and substantially similar to protected files and designs shall be considered infringing, while still allowing for the copying of larger, trending themes in designs. Similar to the Vessel Hull Design Protection Act that extended copyright protections to boat hull designs, previously considered “useful articles” and thus excluded from protections,¹⁹¹ AMPP would define all 3D prints and designs as protected by the Copyright Act, rather than excluding from protection those designs and prints that would normally fall under “useful articles,” such as apparel. Though some 3D-printed items such as the HBO Iron Throne phone dock are more likely to be considered “pictorial, graphic, or sculptural works” within the meaning of the statute and thus already within its protection, apparel designs including glasses, shoes, and clothing are expressly excluded under current law.¹⁹² Moreover, the underlying policy of the Piracy Protection law may be extended to afford more certainty to the copyright protections of 3D prints and designs of items like

188. 17 U.S.C. §§ 1301-1332 (2014). The Vessel Hull Protection Act provides limited protection to the design of boat hulls for a period of two years.

189. See H.R. 2196, 111th Cong. (2009).

190. H.R. 2196, 111th Cong. (2009).

191. 17 U.S.C. § 1301 (2014).

192. 17 U.S.C. § 101 (2006).

the Iron Throne dock as well as apparel.

The DPPA met with much criticism, and its subsequent proposal in 2009 under the name of the Innovative Design Protection and Piracy Prevention Act also failed to become law, but a new bill narrowly tailored to address only 3D-printed apparel would have more success by limiting protection to one medium of apparel rather than including textile apparel, thereby providing enough protections for small designers without stifling creativity.¹⁹³ With the advent of a new online marketplace in 3D printing, designers will see their designs widely disseminated over the internet making them more vulnerable to copies and knockoffs as the normal fashion industry supply chain is streamlined.¹⁹⁴ Beyond copyright infringement, by placing their designs online in files that could be manipulated by consumers, designers are placing their brands at risk as well.¹⁹⁵ 3D printing may become the new Canal Street— a market in New York City where street vendors are known to sell counterfeit goods of famous brands including Chanel, Louis Vuitton, and Gucci.¹⁹⁶ New legislation creating a *sui generis* framework to protect 3D-printed apparel as useful articles is needed to address this issue.

Opponents of the DPPA and IDPPPA were concerned with the degree of similarity required before finding infringement in designs.¹⁹⁷ The AMPP *sui generis* framework shall address this concern by limiting its protection to only those items that are contained in 3D printing designs, or are 3D-printable. Under the new law, rampant copying in the fashion industry will remain relegated to the usual medium of stitched fabrics and textiles. Only those apparel items that are made using 3D printing designs are protected. Thus, the very benefits of 3D printing— reduced lead times, cheaper costs, and quicker prototyping—could not be used against original designers through internet piracy and vast dissemination of the 3D printing digital files.

As an additional concern, the 3D designs themselves are liable to be “tinkered” with and modified over the Internet and offered as an illegitimate design as in the example of 3DLT, an online printing service that purported to offer 3D print design files (“CAD” files for

193. Raustiala *supra* note 56, at 35.

194. See Alice Fisher, *3D-Printed Fashion: Off the Printer Rather Than Off the Peg*, GUARDIAN (Oct. 15, 2013, 7:00 AM), <http://www.theguardian.com/technology/2013/oct/15/3d-printed-fashion-couture-catwalk>.

195. Mau, *supra* note 183.

196. Auslander, *supra* note 13.

197. See Ellis, *supra* note 47.

use in printing on a 3D printing device).¹⁹⁸ 3DLT listed unauthorized 3D jewelry designs by Nervous System, table designs by Dirk Vander Kooij, and printed shoe designs by Andreia Chaves, but changed the designs' names and charged a fee for consumers to purchase them.¹⁹⁹ 3DLT was shut down after its pirated designs were exposed,²⁰⁰ but this exemplifies the need for a new body of law extending restricted protections to 3D printing designs and subsequent printed items to protect small designers like Kooij and Chaves from having their designs widely disseminated without their permission.

Still some argue that legislation may not be needed as in the example of iTunes and Spotify, which shows that when consumers have readily accessible lawful methods of obtaining an item they are less likely to infringe on the item.²⁰¹ They argue that instead, merely by providing and marketing their 3D-printable designs themselves, designers are avoiding the possibility that consumers will copy the designs and disseminate them.²⁰² Rather, consumers are more likely to lawfully purchase the original design than obtain a widely disseminated copy.²⁰³ However, as the example of 3DTL shows,²⁰⁴ designs may be obtained without permission and disseminated over the Internet regardless of designers taking the initiative to place them online themselves. Though Chaves and Kooij made their 3D-printed designs available themselves, they were still copied by 3DLT, given new names, and placed online for purchase.²⁰⁵ Legislation is needed to protect these designers in order to protect their intellectual property from being copied and sold by others. Additionally, consumers are harmed in such a situation by an inferior product, but such protections would ensure consumers are receiving quality 3D-printing designs rather than counterfeit copies that may include glitches, producing defective printed items.

Many argue that placing copyright restrictions on 3D printing in any capacity would restrict the potential market.²⁰⁶ Similarly, law professor and co-founder of Creative Commons, Lawrence Lessig,

198. Kimber Streams, *3DLT Takes Its 3D Printing Site Down After Listing Pirated Designs*, VERGE (Feb. 7, 2013, 4:38 PM), <http://www.theverge.com/2013/2/7/3964780/3dlt-takes-its-3d-printing-site-down-in-response-to-copyright-issues>.

199. *Id.*

200. *Id.*

201. Auslander, *supra* note 13.

202. *Id.*

203. *Id.*

204. Streams, *supra* note 198.

205. *Id.*

206. See Paul Banwatt, *3D Printing and Scanning: the IP Sky Isn't Falling*, LAW IN THE MAKING (Dec. 12, 2013), <http://lawitn.com/3d-printing-and-scanning-the-ip-sky-isnt-falling/>.

argues against broad copyright protections restricting Internet content in general.²⁰⁷ Yet, copyright restrictions on 3D-printed apparel need not be so overly broad as to restrict the creative designs of others. Lessig states, “we could craft copyright law to encourage a wide range of both professional and amateur creativity, without threatening . . . profits.”²⁰⁸ Therefore, a *sui generis* framework protecting 3D-printed apparel would be narrowly tailored so as to avoid unfairly restricting the new creative designs of others. The proposed law must emphasize the distinction between infringing point-by-point copies of designs and designs that merely reference or copy the element of a design as in trends. In this way, policy may protect small designers who are too often made victims of fast fashion, while still allowing for the creativity of others to reference successful design trends and copy certain design elements.

VI. CONCLUSION

The introduction of a *sui generis* legal framework through proposed legislation protecting 3D prints and designs is needed to counteract instances of piracy like that committed by 3DLT. With any new technology, issues inevitably arise with regard to its usage. A law restricted in its application to 3D digital designs and prints would give the fashion industry the copyright protections for which it has argued over the years. Furthermore, such a legal framework would address the needs of other copyright holders whose copyrights in 3D-printed items and designs are less certain. 3D printing poses the unique situation where the law may be adequately restricted to stop the piracy that has long plagued the fashion industry, while avoiding overly broad restrictions on all apparel designs. A narrowly tailored law would allow for design element copying as in trends, but protect designs from harmful point-by-point copies that are often used by fast fashion businesses. Furthermore, it would protect designs for a limited time, allowing for those designs to be widely copied once the protection period expires.

Moreover, such a legal framework will provide the necessary platform on which to begin addressing other intellectual property concerns associated with the new 3D printing market. The Constitution charges Congress with the duty to protect the “useful arts”²⁰⁹ and promote creativity. Without a law protecting new apparel designers in the 3D printing medium, designers may not

207. Lawrence Lessig, *In Defense of Piracy*, WALL ST. J. (Oct. 11, 2008, 11:59 PM), <http://online.wsj.com/news/articles/SB122367645363324303>.

208. *Id.*

209. U.S. CONST. art. I, § 8, cl. 8.

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profit from their designs, and creativity in the 3D printing apparel market is threatened.

