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The Promised Land: Blockchain and the Fashion Industry

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The Promised Land

BLOCKCHAIN AND THE FASHION INDUSTRY

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INTRODUCTION

Despite being a highly creative industry, the fashion industry lacks effective intellectual property (IP) protection. This article proffers that blockchain technology, and smart contracts in particular, can be used to compensate for this deficiency. While some aspects of blockchain technology might make it incompatible with certain industries, the technology is uniquely suited to the character and needs of fashion design, promising enormous benefits.

Since the eighteenth and nineteenth centuries, beginning with the first and second Industrial Revolutions respectively, advancements in technology have fundamentally transformed clothing manufacturing, replacing the traditional craft-based system.[1] Innovations in harnessing water, steam,

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[1] Paola Bertola & Jose Teunissen, *Fashion 4.0. Innovating Fashion Industry Through Digital Transformation*, 22 RSCH. J. TEXTILE & APPAREL 352, 353–54 (2018) ("[F]ashion is a relevant context to analyze the implication" of the fourth Industrial Revolution because "it has been a long-lasting protagonist in industrial revolutions' cycles, the textile and garments industry being a crucial player in UK transformation since the late eighteenth century and later on in the whole European early industrialization"); *see also* Young-Suk Lee, *Why Did They Admire the Machinery? Rethinking Intellectuals' View from the Perspective of the Competition Between English Cotton Goods and Indian Handicraft Ones in the Early Industrial Revolution*, 5 E. ASIAN J. BRIT. HIST. 151, 158 (2016) ("It was from the early 1790s

and electric power as energy sources enabled the mechanization and mass production of clothing designs.[2] The third (internet) Industrial Revolution, beginning in the late-twentieth century, followed by the fourth (information technology) Industrial Revolution of the early-twenty-first century, revolutionized the way we transfer and consume information, including fashion design.[3] As the fashion industry continues to grapple with the far-reaching implications of the internet, the current fifth (advanced technology, or "3A" Era) Industrial Revolution is already driving a new wave of profound change across the global economy.[4]

The fifth Industrial Revolution is characterized by advancements in "automated, autonomous, and advanced technology."[5] As such, the term 3A Era was coined to emphasize the revolutionary features of the current time,[6] which are driven by a constellation of innovations across the physical and digital world. New computer-based applications, like artificial intelligence (AI), blockchain, virtual reality, already impact

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that spinning mules powered by steam engines began to be installed in factories. However, it should not be overlooked the fact that steam engines and coal were more important than working machines in the Industrial Revolution."); Kate Abnett, *Fashion's Fourth Industrial Revolution*, BUS. FASHION (Aug. 16, 2016, 6:55 PM), https://www.businessoffashion.com/community/voices/discussions/what-does-the-fourth-industrial-revolution-mean-for-fashion/fashions-fourth-industrial-revolution-2 [https://perma.cc/Y6US-XCUE] ("In the mid-20th century, a third industrial revolution—in information technology and data analysis—radically changed the business of fashion once again, giving rise to fast fashion giants like Inditex and forcing the industry to rethink its 'broken' system for the age of Instagram. Now, a fourth industrial revolution—powered by a constellation of new innovations across the physical, digital and biological worlds, from 3D printing and artificial intelligence to advances in biomaterials—is driving a new wave of change across the economy, with major implications for fashion.").

[2] *See* Bertola & Teunissen, *supra* note 1, at 353–54, 355; *see also* Stanley D. Chapman, *The Cost of Power in the Industrial Revolution in Britain: The Case of the Textile Industry*, MIDLAND HIST., no. 1, 1971, at 1, 4 (describing the slow but important adoption of steam power in the cotton spinning industry in Britain in the late eighteenth century).

[3] Bertola & Teunissen, *supra* note 1, at 353–54; Abnett, *supra* note 1. *See generally The Third Industrial Revolution*, ECONOMIST (Apr. 21, 2012), https://www.economist.com/leaders/2012/04/21/the-third-industrial-revolution [https://perma.cc/7ANQ-BFJ7] (outlining the implications of the digital revolution in manufacturing).

[4] *See* Shlomit Yanisky-Ravid & Sean K. Hallisey, *"Equality and Privacy by Design": A New Model of Artificial Intelligence Data Transparency via Auditing, Certification, and Safe Harbor Regimes*, 46 FORDHAM URB. L.J. 428, 431–32, 434 (2019) (noting that investments in AI is "creating the specter of a new Industrial Revolution").

[5] *See* Shlomit Yanisky-Ravid, *Generating Rembrandt: Artificial Intelligence, Copyright, and Accountability in the 3A Era—the Human-Like Authors Are Already Here—a New Model*, 2017 MICH. ST. L. REV. 659, 660 (2017).

[6] *See generally id.* (addressing questions of copyrightability, including ownership and accountability, that arise with AI systems in the new 3A era); Shlomit Yanisky-Ravid & Xiaoqiong (Jackie) Liu, *When Artificial Intelligence Systems Produce Inventions: An Alternative Model for Patent Law at the 3A Era*, 39 CARDOZO L. REV. 2215 (2018) (explaining AI systems and advocating for an alternative model in patent law for addressing AI in the 3A era).

almost all aspects of modern life.[7] The rise of these technologies brings opportunities for progress and change, but also presents many new challenges.

Of particular concern here: How will this fifth Industrial Revolution, or 3A Era, transform the fashion industry and impact not only small designers, but established heritage brands? How will these advanced technological tools affect longtime challenges within the fashion industry caused by a lack of sufficient IP protection under US law? Will these technologies lead to even more extensive misappropriation and counterfeiting? This article suggests that the fashion industry can use these advanced technologies proactively to address current concerns stemming from lack of codified IP protection and to ease issues of misappropriation and counterfeiting due to such technologies.

On one hand, new advanced technologies can lead to new challenges for IP owners. For example, it has become easier and cheaper for appropriators to copy others' designs.[8] On the other hand, these advanced technologies can also help to protect designs and the brands behind them, whether well-known or emerging, by allowing the brands to track down counterfeits and promote transparency.[9] This article will focus on one such advanced technology—the blockchain—and how it can be used to create a more sustainable and transparent fashion industry.

The fashion industry is particularly vulnerable to IP infringement such as counterfeiting because it has not been granted satisfactory legal tools to thwart such threats.[10] Remarkably, although fashion design is "a global industry that

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[7] *See* Yanisky-Ravid, *supra* note 5, at 664–66 (offering examples of AI in daily life); Yanisky-Ravid & Liu, *supra* note 5, at 2219 (providing examples of AI executing certain manual and professional work like AI lawyers handling traffic tickets); Shukla Shubhendu S. & Jaiswal Vijay, *Applicability of Artificial Intelligence in Different Fields of Life*, INT'L J. SCI. ENG'G & RSCH., Sept. 2013, at 28, 30–32 (2013) (outlining AI application in education, expert systems, neural networks, robotics, and other wide-ranging fields). *See generally* Shlomit Yanisky-Ravid & Kenneth S. Kwan, *3D Printing the Road Ahead: The Digitization of Products When Public Safety Meets Intellectual Property Rights—a New Model*, 38 CARDOZO L. REV. 921 (2017) (discussing the challenges and threats of 3D printing to society and proposing alternatives to current legal norms to address them).

[8] *See* Kau Raustiala & Christopher Sprigman, *The Piracy Paradox: Innovation and Intellectual Property in Fashion Design*, 92 VA. L. REV. 1687, 1714–15 (2006) (discussing how technology has increased the speed at which a competitor can copy designs).

[9] *See* Ruth Burstall & Birgit Clark, *Blockchain, IP, and the Fashion Industry*, 266 MANAGING INTELL. PROP. 9, 10–12 (2017); Tarun Kumar Agrawal et al., *Blockchain-Based Secured Traceability System for Textile and Clothing Supply Chain*, *in* ARTIFICIAL INTELLIGENCE FOR FASHION INDUSTRY IN THE BIG DATA ERA 197, 202–03 (Sébastien Thomassey & Xianyi Zeng eds., 2018).

[10] *See* Raustiala & Sprigman, *supra* note 8, at 1689–91 (conveying how fashion design is outside the purview of IP law). *See generally* Yanisky-Ravid & Hallisey, *supra* note 4, at 428–29 (proposing non-IP tools to fill the regulatory void associated with AI technology, such as increased data transparency).

produces a huge variety of creative goods in markets larger than those for movies, books, music, and most scientific innovations," it has managed to "do[] so without strong IP protection."[11] In other words, the industry continues to innovate and thrive despite the rampant copying allowed by insufficient IP protection, which theoretically disincentivizes[12] creation.[13] Nonetheless, as discussed in this article, the industry needs an alternative legal tool to combat the many challenges that are presented due to the industry's lack of IP protection.

While blockchain technology has been integrated into a number of industries, it has yet to become completely prevalent or widely understood. Although it is most commonly known as the technology behind cryptocurrency, blockchain is also being used in applications as diverse as completing international payments and money transfers and tracking shared personal medical records between hospitals.[14] This article explores the innovative yet mysterious technology that is blockchain and ultimately argues that its application will aid the fashion industry as a whole to overcome the challenges presented under the current state of US law. By confronting the ongoing lack of IP protection, blockchain technology can reduce the fashion industry's reliance on inefficient IP laws and other available legal tools. This article therefore proposes a new blockchain-enabled revolution in the fashion industry.

Part I addresses the current state of US IP laws as they apply to the fashion industry. Specifically, it discusses how insignificant these protections are compared to the protections afforded to other creative industries. This legal regime leads to many unique challenges for the fashion industry and its various players. Part II demystifies the technology behind blockchain. It discusses how the technology works and provides relevant examples of where the technology is already being used, showing in turn how blockchain has the potential to fundamentally shift the way many industries—and society itself—operate. Part III highlights one particular aspect of blockchain technology, the smart contract, and how it can address certain challenges faced by the fashion industry that stem from insufficient protection under IP laws—including inconsistent, unpredictable court decisions and difficulties enforcing existing rights. This Part

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[11] Raustiala & Sprigman, *supra* note 8, at 1689.

[12] *See infra* Part I.

[13] *See infra* Part I.

[14] *See The Growing List of Applications and Use Cases of Blockchain Technology in Business and Life*, BUS. INSIDER (Mar. 2, 2020, 12:24 PM), https://www.businessinsider.com/blockchain-technology-applications-use-cases [https://perma.cc/PYU9-JBN6]; *see infra* Part I.

explains how smart contracts can practically be adopted in the industry, and explores the implications and benefits of doing so, such as increased control and transparency in transactions among the industry's players. Ultimately, this Part shows how the fashion industry can take a proactive approach to address the challenges that stem from a lack of codified IP protection by adopting an endogenous quasi-IP regime through smart contracting. Finally, Part IV explores the theoretical justifications behind IP protection. It shows how the theory of law and economics supports greater IP or quasi-IP protection in the fashion industry and posits that blockchain technology is the most desirable solution for the industry's IP concerns.

I. THE FAILURE OF THE IP REGIME IN THE UNITED STATES TO PROTECT ITS ORPHAN CHILD: THE FASHION INDUSTRY

As the law stands, copyright, patent, and trademark law may protect certain elements and key assets of fashion designs. However, as shown further in this Part, these tools merely offer partial protection to fashion brands, which have negative consequences on the fashion industry and its many players.

A. Current IP Protections for Fashion Design

The US Constitution grants creators limited exclusive rights in writings and discoveries to "promote the Progress of Science and useful Arts."[15] The idea behind this regime is that if creators are granted exclusive ownership and control for a period of time, they will be incentivized to continue creating useful science and art, which benefits society as a whole.[16] Although this idea has led Congress to grant protection to many forms of artistic creation, it has not been applied fully to fashion designs. Copyright, patent, and trademark law may protect certain elements of these designs and some key assets of a fashion brand. However, as shown further in this Section, none of these tools offer more than partial protection to fashion designs.

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[15] U.S. CONST. art. I, § 8, cl. 8.

[16] Shlomit Yanisky-Ravid, *The Hidden Though Flourishing Justification of Intellectual Property Laws: Distributive Justice, National Versus International Approaches*, 21 LEWIS & CLARK L. REV. 1, 7–8 (2017) (discussing justifications of IP regime in general and more specifically in distributive justice).

1. Why Copyright Law Does Not Fully Extend to Fashion Design

Under the Copyright Act of 1976,[17] "works of authorship fixed in any tangible medium" are the subject matter of copyright.[18] These fixed works of authorship include, inter alia, literary works, musical works, and "pictorial, graphic, and sculptural works."[19] However, the general appearance and design of clothing is not afforded the same copyright protection as the categories enumerated in the statute.[20] This is because the Copyright Act and copyright jurisprudence focus on protecting the aesthetic or artistic elements of the work, rather than any functional elements.[21] This article proposes that the lack of protection for fashion design as copyrightable subject matter overlooks the US Constitution's explicit reference to "useful art," and that the Copyright Act could apply to primarily aesthetic works regardless of a marginal useful function. Because the Copyright Act was originally enacted to protect aesthetic works rather than utilitarian or "useful" works of authorship,[22] works like sculptures, books, and paintings are copyrightable[23] since they serve a primarily aesthetic or artistic purpose. On the other hand, aesthetic designs that also serve a useful function are not afforded copyright protection.[24] In addressing the categories of copyrightable material, courts have sometimes struggled over where to draw the line between functional and artistic works. For example, fabric patterns can be registered under the Copyright Act, as they are considered "works of art" protected by the statute—even though the underlying fabric itself serves a functional purpose as part of a

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[17] Copyright Act of 1976, Pub. L. No. 94-553, 90 Stat. 2541 (codified as amended at 17 U.S.C. §§ 101–810 and scattered sections of the US Code).

[18] 17 U.S.C. § 102.

[19] *Id.*

[20] *See* Kevin V. Tu, *Counterfeit Fashion: The Interplay Between Copyright and Trademark Law in Original Fashion Designs and Designer Knockoffs*, 18 TEX. INTELL. PROP. L.J. 419, 425–27 (2010); *e.g.*, Galiano v. Hurrah's Operating Co., 416 F.3d 411, 413, 416 (5th Cir. 2005) (finding uniform design, like most clothing design, does not qualify for copyright protection).

[21] *See* 1 HOWARD B. ABRAMS & TYLER T. OCHOA, THE LAW OF COPYRIGHT § 3:4 (noting that the patent system protects technological or utilitarian subject matter and has "comparatively high standards for qualification and extremely broad rights of relatively limited duration," whereas "[c]opyright has aesthetic works as its subject matter, a quite modest threshold standard, and somewhat limited rights of great duration").

[22] *Id.*

[23] 17 U.S.C. § 102.

[24] *See* H.R. REP. NO. 94-1476, at 54–55 (1976).

garment.[25] Both Congress[26] and the courts have treated articles of clothing as primarily functional creations.[27] This general distinction has stood the test of time and continues to prohibit fashion designs from receiving full copyright protection.

Historically, courts have invoked the doctrine of conceptual separability "to distinguish between the artistic elements of a new fashion design and its basic function of covering the human body" when determining what elements of a garment may be protected under copyright.[28] In *Star Athletica v. Varsity Brands*, the Supreme Court found that the designs of chevrons, lines, and curves on the plaintiff's cheerleading uniforms could be copyrighted. The Court reasoned that the graphic design elements were "separable" from the functionality of the clothing, i.e., "capable of existing independently of, the utilitarian aspects of the article."[29] Under this holding, if a pictorial, graphic, or sculptural feature can be identified separately from the utilitarian aspect of an article, that feature of the design may be afforded copyright protection.[30] Since this attempt to clarify the separability doctrine, federal courts have applied the doctrine in a variety of ways—for example, finding nonutilitarian sculptural features of a full-body banana costume to be copyrightable,[31] and finding the control panel on a washing machine to be not copyrightable. In the latter case, the district court found that, although the image of the control panel could exist separately from the machine, the control panel itself was

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[25] *See, e.g.*, Peter Pan Fabrics, Inc. v. Brenda Fabrics, Inc., 169 F. Supp. 142, 142–43 (S.D.N.Y. 1959) (finding a printed design on dress fabric was a subject of copyright because the term "works of art" in the Copyright Act includes "applied design[s]"); Eve of Milady v. Impression Bridal, Inc., 957 F. Supp. 484, 489 (S.D.N.Y. 1997) (holding lace designs, a type of fabric design, to be copyrightable because fabric designs are protected under copyright law).

[26] *See* Francesca Montalvo Witzburg, *Protecting Fashion: A Comparative Analysis of Fashion Design Protections in the United States and the European Union*, 107 TRADEMARK REP. 1131, 1135 (2017) (explaining that clothing has been considered a "'useful article' . . . because it has 'an intrinsic utilitarian function that is not merely to portray the appearance of the article or to convey information'" (quoting 17 U.S.C. § 101)).

[27] *Id.* at 1135–36 (noting that courts have construed Section 101 of the Copyright Act "as the 'physical' or 'conceptual' separability test").

[28] Susan Scafidi, *Intellectual Property and Fashion Design*, *in* 1 INTELLECTUAL PROPERTY AND INFORMATION WEALTH 115, 122–23 (Peter K. Yu ed., 2006); *see* Chosun Int'l, Inc. v. Chrisha Creation, Ltd., 413 F.3d 324, 329 (2d Cir. 2005), *abrogated by* Star Athletica, L.L.C. v. Varsity Brands, Inc., 137 S. Ct. 1002 (2017) (noting elements of a costume, like a tail or head, are at least in theory separable from the main body of the garment and thus potentially subject to copyright protection).

[29] *Star Athletica*, 137 S. Ct. at 1007, 1012 (quoting 17 U.S.C. § 101).

[30] *Id.* at 1007.

[31] Silvertop Assocs. Inc. v. Kangaroo Mfg. Inc., 931 F.3d 215, 221 (3d Cir. 2019) ("Although more difficult to imagine separately from the costume's . . . wearability . . . , one can still imagine the banana apart from the costume as an original sculpture.").

not capable of existing independently of its utilitarian aspects.[32] In general, because it is inherently difficult to isolate the artistic design of a piece of clothing from its functional aspects, courts have hesitated to grant sweeping copyright protection to fashion designs.

Although the Supreme Court held that graphic designs of chevrons, lines, and curves on a cheerleading uniform were copyrightable because the creative elements were "separable" from the utilitarian aspect of the garments,[33] the Court's simplified analysis in *Star Athletica* has not led to better or more predictable protections for garment designs.[34] Brands create designs with the *hope* that a court will find certain aspects separable and therefore worthy of copyright protection. Because court decisions often appear ambiguous and arbitrary, designers cannot create new garments with certainty that any given element will be copyrightable. With this uncertainty in what courts will find "severable," brands take risks with each creation, unsure whether they will be able to enforce any rights against a copyist. This system is challenging for all designers but is especially challenging for smaller brands working with limited resources. If these brands expel significant resources to develop new creative designs, but have no guarantee that these designs will be legally protected, their ability to capitalize on the investment may be limited; this uncertainty reduces the incentive to create. It can even act as a barrier to entry for smaller brands. The fashion industry as a whole and its many players suffer, and where there is less incentive for creativity and therefore less variety in the market, the consumer is ultimately harmed.

Due to the lack of broad copyright protection for fashion designs, industry advocates have long attempted to expand copyright law to cover useful but artistic fashion designs, dating back to 1914.[35] Designers in the industry argue that with a proper amendment, the Copyright Act could be used "as a tool that may finally level the playing field in the counterfeit goods and design

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[32] Town & Country Linen Corp. v. Ingenious Designs LLC, 436 F. Supp. 3d 653, 665 (S.D.N.Y. 2020), (finding the control panel itself was a utilitarian aspect of the machine and therefore its design was not copyrightable), *order vacated in part on reconsideration*, 18 CIV. 5075 (LGS), 2020 WL 996732 (S.D.N.Y. Mar. 2, 2020).

[33] *See Star Athletica*, 137 S. Ct. at 1012.

[34] *See infra* Part I.

[35] *See, e.g.*, Innovative Design Protection Act of 2012, S. 3523, 112th Cong. (2012) (proposing to allow for the protection of certain articles of clothing under copyright law if they met certain requirements of originality among others); *see also* Safia A. Nurbhai, Note, *Style Piracy Revisited*, 10 J.L. & POL'Y 489, 504–05 (2002) ("Swayed by legislative intent inherent in the fact that the seventy-odd design protection bills introduced in Congress since 1914 had failed to be enacted, the Register's concern that the floodgates would open, and the Register's expertise in such matters, the court decided that the registration had been properly denied."). S. 3523 derived from the Design Piracy Prohibition Act of 2007, S. 1957, 110th Cong. (2007), and the Innovative Design Protection and Piracy Prevention Act, S. 3728, 112th Cong. (2011). S. REP. NO. 112-259, at 4.

infringement cases that have been exploding in recent years due to the ease" with which designs are stolen.[36] Proponents of an amendment, most recently the Innovative Design Protection Act,[37] also argue that design piracy currently allowed under the law adversely effects all industry stakeholders, including designers, manufacturers, and consumers.[38] However, these legislative efforts have not yet succeeded. Congress has instead retained copyright law's distinction between functional works and nonfunctional artistic works, preventing fashion designs from garnering overarching protection.[39]

2. Inapplicability of Patent and Trademark Law to Fashion Design

Because copyright does not adequately protect fashion designs, the next area to explore is patent law, which does not exclude designs from protection based on their utilitarian features.[40] Two types of patents have the potential to protect the general appearance of an article of clothing: utility patents and design patents. Utility patents cover functional creations, and are currently available for articles of clothing because of their functional nature.[41] However, a garment must meet the relatively high bar for patentability which requires, inter alia, novelty, utility, and nonobviousness.[42] To satisfy these elements, articles must be dissimilar enough to those already patented or in the public domain.[43] Design patents protect ornamental or artistic, rather than functional, design elements and are thus available for the aesthetic

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[36] Kelly Grochala, *Intellectual Property Law: Failing the Fashion Industry and Why the "Innovative Design Protection Act" Should Be Passed* 4 (2014) (Seton Hall L. Sch., Law School Student Scholarship), https://scholarship.shu.edu/cgi/viewcontent.cgi?article=1135&context=student_scholarship [https://perma.cc/H64E-85PB]; *see also A Bill to Provide Protection for Fashion Design: Hearing on H.R. 5055 Before the Subcomm. on Cts., the Internet, & Intell. Prop. of the H. Comm. on the Judiciary*, 109th Cong. 10–13 (2006) [hereinafter *Hearing on H.R. 5055*, *Protection for Fashion Design*] (statements of Jeffrey Banks, Fashion Designer, Council of Fashion Designers of America). H.R. 5055 was followed by the Design Piracy Prohibition Act of 2007, H.R. 2033, 110th Cong. (2007); S. 1957; the Innovative Design Protection and Piracy Prevention Act, H.R. 2511, 112th Cong. (2011); S. 3728; and, most recently, the Innovative Design Protection Act of 2012, S. 3523, 112th Cong. (2012).

[37] S. 3523.

[38] *See id.*

[39] *See* Nurbhai, *supra* note 35, at 499–500.

[40] *See* ABRAMS & OCHOA, *supra* note 21, § 3:4.

[41] *See* 35 U.S.C. § 101.

[42] *See id.* §§ 101–103.

[43] *See id.* § 102(a); *e.g.*, U.S. Patent No. 7,146,827 (filed Sept. 10, 2001) (issued Dec. 12, 2006) (Tiffany & Co.'s utility patent on their "mixed cut gemstone"). The mixed cut gemstone is novel in that it "enables the appreciation of the desirable characteristics of a diamond in ways that prior art cuts do not allow." '827 Patent, at [57].

features of a fashion design.[44] Some brands have successfully patented elements of their designs and enforced them against alleged infringers.[45] In *Egyptian Goddess v. Swisa*,[46] the Federal Circuit articulated the following test for infringement of design patents: will "a person who buys and uses this [item], and who is familiar with this type of object, confuse the accused design with the patented design?"[47]

Although seemingly ideal for fashion, design patents share some of the same challenges as utility patents to obtain. Both types of patents require prior examination of the article to determine registration eligibility, cost a considerable amount of money to prosecute, and take far longer to obtain than is desirable for fashion, which is inherently seasonal and fast-paced in nature.[48] The patent system is much more compatible with inventions that will be in use for more than a few years and remain in high demand, like pharmaceuticals and technology.[49]

Considering the shortfalls of copyright and patent law, trademark and trade dress law have been proposed as more appropriate tools for protecting fashion designs.

> A trademark is a word, name, symbol, device, or other designation, or a combination of such designations, [which] is *distinctive* of a person's goods or services and . . . used in a manner that identifies those goods or services and distinguishes them from the goods or services of others.[50]

In other words, trademarks are source indicators. Generally, anything that can identify the source of a particular product or service can receive trademark protection.[51] Professor Susan Scafidi of the Fashion Law Institute at Fordham University School of Law has stated that trademarks are "[t]he most universally applicable and flexible mechanism for the protection of fashion design" for just this reason.[52] As such, trademarks are often incorporated into the actual design of an article or affixed as a source indicator.[53] Professor Scafidi also notes that "[t]he ease of trademark registration,

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[44] *See* 35 U.S.C. § 171; Scafidi, *supra* note 28, at 122.

[45] *See, e.g.*, Complaint, Lululemon Athletica Canada Inc. v. Calvin Klein, Inc., No. 1:12-CV-01034-UNA (D. Del. Aug. 13, 2012) (concerning Lululemon's defense of its pants design patent).

[46] Egyptian Goddess, Inc. v. Swisa, Inc., 543 F.3d 665 (Fed. Cir. 2008).

[47] Elizabeth Ferrill & Tina Tanhehco, *Protecting the Material World: The Role of Design Patents in the Fashion Industry*, 12 N.C. J.L. & TECH. 251, 290 (2011); *see Egyptian Goddess*, 543 F.3d at 678, 681.

[48] *See* Scafidi, *supra* note 28, at 122.

[49] *See* ABRAMS & OCHOA, *supra* note 21, § 3:4.

[50] RESTATEMENT (THIRD) OF UNFAIR COMPETITION § 9 (AM. L. INST. 1995) (emphasis added).

[51] *See* Scafidi, *supra* note 28, at 121–22.

[52] *Id.* at 121.

[53] *Id.*

combined with limited protection for even unregistered marks, assures that virtually all designers have access to protection for the names and logos affixed to their goods."[54] Relatedly, trade dress is a type of trademark protection that looks to an item's overall appearance.[55] The general idea behind such protection is similar; however, trade dress faces a higher bar for distinctiveness, as it requires some connection in consumers' minds between the general appearance and feel of an item and a particular brand.[56]

Although trademark and trade dress may seem like ideal tools to protect fashion designs, they too face problems related to the consistency and enforceability of rights. For a claimant to succeed in a trademark infringement case, the mark must "merit[] protection"[57] and "the defendant's use of [the claimant's] trademark '[must be] likely to cause confusion, or to cause mistake, or to deceive.'"[58] This likelihood of confusion test often leads to inconsistent, unpredictable court decisions as different federal courts apply varying and complex multi-factor tests.[59] Because courts apply varying tests and brands may be subject to litigation in many different jurisdictions, it is hard for a brand to know what test will be applied in a trademark analysis. As a result, there is little consistency among trademark decisions, and otherwise *valid rights* are often unenforceable.

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[54] *Id.*

[55] 1 J. THOMAS MCCARTHY, MCCARTHY ON TRADEMARKS AND UNFAIR COMPETITION § 8:1 (5th ed.), Westlaw (database updated Sept. 2021).

[56] *Id.* §§ 8:8, 8:8.5.0. Examples of protected trade dress are Tiffany & Co's "Tiffany Blue" and the United Parcel Service's (UPS) brown uniforms. *See* TIFFANY BLUE, Registration No. 4,804,204; The mark consists of the color chocolate brown as applied to the entire surface of vehicles and uniforms, Registration No. 2,901,090; The mark consists of the color brown, which is applied to the clothing, Registration No. 2,159,865.

[57] Borinquen Biscuit Corp. v. M.V. Trading Corp., 443 F.3d 112, 116 (1st Cir. 2006). Other circuits may use the term "protected interest" when referring to the same legal concept. *See* Levi Strauss & Co. v. Blue Bell, Inc., 778 F.2d 1354, 1354 (9th Cir. 1985).

[58] Fortune Dynamic, Inc. v. Victoria's Secret Stores Brand Mgmt., Inc., 618 F.3d 1025, 1030 (9th Cir. 2010) (quoting 15 U.S.C. § 1125(a)(1)-(a)(1)(A)); *see* 5 LOUIS ALTMAN & MALLA POLLACK, CALLMANN ON UNFAIR COMPETITION, TRADEMARKS & MONOPOLIES § 21:10 (4th ed.), Westlaw (database updated June 2021) ("[T]o sustain a claim for trademark infringement, the average or 'ordinary' relevant person . . . must be likely to be confused, mistaken, or deceived as to a product's source.").

[59] 4 J. THOMAS MCCARTHY, MCCARTHY ON TRADEMARKS AND UNFAIR COMPETITION §§ 24:28, 24:30 (5th ed.), Westlaw (database updated Sept. 2021). For an example of the multi-factor test for "likelihood of confusion," see *Polaroid Corporation v. Polarad Electronics Corporation*, 287 F.2d 492 (2d Cir. 1961), wherein the court applied the following factors, as restated in *Louis Vuitton Malletier v. Dooney & Bourke, Inc.*, 454 F.3d 108 (2d Cir. 2006):

> (1) the strength of the mark, (2) the similarity of the two marks, (3) the proximity of the products, (4) actual confusion, (5) the likelihood of plaintiff's bridging the gap, (6) defendant's good faith in adopting its mark, (7) the quality of defendant's products, and (8) the sophistication of the consumers.

Louis Vuitton, 454 F.3d at 116.

The following example illuminates just how difficult it can be to predict which elements of a particular fashion design will be granted trademark protection. In a series of court decisions, Levi Strauss & Co. succeeded in obtaining trademark protection for a pocket tab on its iconic blue jeans,[60] but failed to obtain protection for the same tab when affixed to a shirt pocket.[61] This discrepancy was due to the doctrine of "secondary meaning," which is a "mental association by a substantial segment of consumers and potential consumers between the alleged mark and a single source of a product."[62] In the *Levi* cases, the Ninth Circuit found that the red pocket tab had a "secondary meaning" in the eyes of consumers when attached to a blue jean pocket, but not when attached to a shirt pocket; therefore the mark on a jean pocket was worthy of protection, but on a shirt pocket it was not.[63] The court relied on the "protected interest" analysis, finding that the red pocket tab on the jean pocket was worthy of protection because survey evidence supported a finding that consumers associated the design with a single source of origin.[64] Conversely, the court found the evidence was not probative of the red pocket tab having a secondary meaning when used on a shirt.[65] The court's decision was necessarily based on its findings about the subjective experience and opinions of some consumers at that moment in time. It should be noted that different consumers could very well associate the red pocket tab on a shirt with Levi's.[66] This determination and uncertainty about whether a particular design element may acquire secondary meaning and therefore trademark protection—not a bug, but rather a feature of trademark law—can disincentivize brands of all sizes. If a brand as famous as Levi Strauss is not guaranteed protection through secondary meaning, what incentive would the brand have to continue to create?[67] If brands had guaranteed protection for particular designs or features, they could produce with more certainty that their work would be rewarded.

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[60] *See* Levi Strauss & Co. v. Blue Bell, Inc., 632 F.2d 817 (9th Cir. 1980).

[61] *See* Levi Strauss & Co. v. Blue Bell, Inc., 778 F.2d 1352 (9th Cir. 1985).

[62] *Id.* at 1354.

[63] *Id.* at 1354, 1356, 1359–60.

[64] *Id.* at 1354–56. Of note, the "protected interest" legal concept is also referred to as whether a mark "merits protection." *See supra* note 57.

[65] *See Levi*, 778 F.2d at 1358–59. Interestingly, the concurrence in the decision found pants and shirts to be related in the minds of consumers and that the related goods doctrine should have been applied to determine if relief was warranted. *Id.* at 1363 (Nelson, J., concurring in part and dissenting in part).

[66] *See* Tu, *supra* note 20, at 435–36.

[67] This presents an even greater challenge for smaller brands that have recently entered the market or are not well-known enough for consumers to make clear associations between the design element and a single source; it is this association that would afford the marks a secondary meaning and therefore trademark protection.

Similarly, the second prong in determining trademark and trade dress enforceability, "likelihood of confusion" between the marks,[68] involves uncertainty even for brands that already hold registered trademarks. Even "[a]ssuming proof of a strong mark or trade dress, some courts have nonetheless justified rejection of protection on the grounds that substantial confusion was unlikely because of different consumer markets or sophisticated buyers were unlikely to be fooled."[69] In fact, courts struggle with applying likelihood of confusion tests.[70] Decisions are based on public perception, which is often assessed through the parties' competing surveys.[71] Such surveys could be skewed, biased,[72] or unrepresentative of the correct consumer market.[73] Such an unreliable basis for judicial analysis unsurprisingly results in inconsistent decisions, which has negative implications on the IP regime as a whole.[74]

For example, in *Louis Vuitton Malletier v. Dooney & Bourke, Inc.*,[75] the Southern District of New York found that, despite Louis Vuitton's valid trademark in a "Monogram Multicolore" mark, Vuitton could not prevail on a trademark infringement claim against Dooney & Bourke for its monogram bag set in the same color scheme and style.[76] Importantly, the court was reluctant to rely on Louis

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[68] *See* ALTMAN & POLLACK, *supra* note 58, § 21:10.

[69] Tu, *supra* note 20, at 436.

[70] *See, e.g.*, *id.* (providing two court cases where Louis Vuitton failed to show confusion against two different proprietors using similar marks despite proof of Louis Vuitton's strong "LV" mark because of variances in consumer markets and sophistication of buyers).

[71] *See* 6 J. THOMAS MCCARTHY, MCCARTHY ON TRADEMARKS AND UNFAIR COMPETITION § 32:158 (5th ed.), Westlaw (database updated Sept. 2021).

[72] *See id.* §§ 32:171, 32:184 ("Sometimes, direct evidence of actual confusion can be 'created' though the method of experimentation by creating conditions in which ordinary people have the opportunity to shop and become the victim of real confusion or mistake over brands.").

[73] *See id.* §§ 32:162, 32:171 ("Selection of the proper universe is a crucial step, for even if the proper questions are asked in a proper manner, if the wrong persons are asked, the results are likely to be irrelevant.").

[74] See, for example, the opposing outcomes in the *Levi* cases as compared with the ruling in *Christian Louboutin S.A. v. Yves Saint Laurent America Holding, Inc.*, 696 F.3d 206 (2d Cir. 2012). In the latter case, Louboutin challenged Yves Saint Laurent's use of a red bottom sole on monochrome red shoes due to Louboutin's registration and ownership of the "Red Sole Mark" trademark. *Louboutin*, 696 F.3d at 212–13. The court found Louboutin's registered trademark was only recognizable and worthy of protection when it was contrasted with a different color outer sole. *Id.* at 225–28. As a result of the case, Louboutin's rights in its signature red sole trademark were limited to when it is used in contrast with a different color outer sole. *Id.* For an outline of several negative consequences of the lack of a uniform standard in relying on survey evidence, including lack of fairness and judicial legitimacy, see Dominic A. Azzopardi, Note, *Disarray Among the Circuits: When Are Consumer Surveys Persuasive?*, 104 IOWA L. REV. 829, 840–47 (2019).

[75] Louis Vuitton Malletier v. Dooney & Bourke, Inc., 340 F. Supp. 2d 415 (S.D.N.Y. 2004), *aff'd in part*, *vacated in part*, 454 F.3d 108 (2d Cir. 2006).

[76] *See Louis Vuitton*, 340 F. Supp. 2d at 427, 447. On appeal, the Second Circuit vacated the district court's order and remanded for the district court to revisit its analysis of the likelihood of confusion factors. *See Louis Vuitton*, 454 F.3d at 117–18.

Vuitton's surveys of actual confusion, as they were found to be flawed "both in design and execution."[77] After balancing the factors of the confusion analysis, the court found there was no likelihood of confusion between the bags.[78] Although it could be reasonable to infer that Dooney & Bourke was trying to appropriate Louis Vuitton's goodwill, because of the "obvious similarities" in both bags, the court found no likelihood of confusion after parcing out tiny differences between both bags.[79] This case exemplifies the notion that, although a designer may have a valid mark, its rights in the mark may not be enforceable, and further that it is often nearly impossible to predict whether a court will find that there is a likelihood of confusion. This uncertainty can act as an additional disincentive for designers, as there is always a risk that they will not be able to reap the full benefits of their investment.

B. The Fashion Industry's Need for an Alternative Legal Tool

The current IP regime in the United States, as shown above, offers inadequate protection to fashion designs. As examined in this article, current IP laws result in inconsistent, unpredictable court determinations and difficulties in enforcing existing rights, both of which disincentivize creation. The scarcity of applicable IP laws effectively allows for more counterfeiting, misappropriation, and design piracy.[80] These features in turn lead to several negative externalities, including exploitation of creators, the environment, and workers along the supply chain.

Fast fashion is a phenomenon in the fashion industry in which production processes are expedited to get new trends to the market as quickly and cheaply as possible.[81] In the words of Professor Scafidi, brands often "quickly reinterpret[] the innovations of the couture for the mass market."[82] Those employing the fast fashion business model incorporate aspects of designs found on the runway and certain features of luxury brands—whether protected under IP law or not—into their own products, which are

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[77] *See Louis Vuitton*, 340 F. Supp. 2d at 446, 442–47 (finding that one survey pool was overinclusive because it used the synonymous terms "purse" and "handbag," and another survey was essentially a reading test).

[78] *Id.* at 447.

[79] *See id.* at 440 (listing tiny differences in the bags, e.g., Louis Vuitton's use of a "LV" vs. Dooney & Bourke's use of a "DB").

[80] Or the "practice of enterprises that seek to profit from the invention[s] of others by producing copies of original designs under a different label." Arielle K. Cohen, *Designer Collaborations as a Solution to the Fast-Fashion Copyright Dilemma*, 11 CHI-KENT J. INTELL. PROP. 172, 172 (2012) (quoting the Council of Fashion Designers of America).

[81] Adam Hayes, *Fast Fashion*, INVESTOPEDIA (Apr. 29, 2021), https://www.investopedia.com/terms/f/fast-fashion.asp#ixzz4zVJVqg00 [https://perma.cc/8EZJ-9QUD].

[82] *See* Scafidi, *supra* note 28, at 117.

then produced in massive quantities at a much cheaper cost and sold at a discounted rate for the mass market. The profitability of this business model has led to a 60 percent increase in the fast fashion market size since 2011.[83] However, as discussed below, this model has also led to many negative externalities, including exploitation of many players within the industry—from those whose designs are being copied, to those who are involved in manufacturing.

The success of fast fashion brands is only possible because of design piracy, that is, "the increasing[ly] prevalent practice of enterprises that seek to profit from the invention[s] of others by producing copies of original designs under a different label."[84] Fast fashion does not only misappropriate from luxury brands or high fashion; it also incorporates new designs by smaller brands—designs which were created with heavy investment and creative efforts. The fast fashion copyists reap the rewards of other brands' investments and labor. This is exploitation. Smaller brands have no incentive to create if their designs will be copied and reproduced *legally* at a much larger scale, and then sold to the mass market for less money under a different name. Design piracy may be done legally because, as previously discussed, the general appearance of an article of clothing cannot be protected under current US IP laws.

The industry is inefficient when brands have no incentive to create. Brands are forced to spend large amounts of money to protect their designs and enforce their limited rights, while facing uncertainty as to what the law will even protect.[85] Moreover, if these smaller brands do not have the resources to litigate, they are left with no recourse against potential copyists. But even luxury brands with plenty of resources to litigate are often unsuccessful in enforcing rights against smaller players.[86] Constantly tracking misappropriation and suing fast fashion houses is a waste of

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[83] Ganit Singh, *Fast Fashion Has Changed the Industry and the Economy*, FOUND. FOR ECON. EDUC. (July 7, 2017), https://fee.org/articles/fast-fashion-has-changed-the-industry-and-the-economy/ [https://perma.cc/W9QK-YMNB]; *see also* Tiffany din Fagel Tse, Note, *Coco Way Before Chanel: Protecting Independent Fashion Designers' Intellectual Property Against Fast Fashion Retailers*, 24 CATH. U. J.L. & TECH 401, 403 (2016).

[84] Cohen, *supra* note 80, at 172 (quoting the Council of Fashion Designers of America). The perfect example of this phenomenon is Forever 21's business practices and relationship with many other brands in the industry. *See* Complaint, Forever 21, Inc. v. Gucci Am., Inc., No. 2:17-CV-04706 (C.D. Cal. June 26, 2017) (Forever 21 claiming their garments did not infringe on Gucci's marks, which were not distinctive).

[85] *See supra* Section I.A. Between 2003 and 2008, researchers identified fifty-three IP trademark and copyright suits against Forever 21 and two against H&M using Westlaw and the Stanford IP Litigation Clearinghouse. *See* C. Scott Hemphill & Jeannie Suk, *The Law, Culture, and Economics of Fashion*, 61 STAN. L. REV. 1147, 1173 (2009).

[86] *See, e.g.*, Louis Vuitton Malletier, S.A. v. My Other Bag, Inc., 156 F. Supp. 3d 425 (S.D.N.Y. 2016), *aff'd*, 674 F. App'x 16 (2d Cir. 2016) (finding for My Other Bag in a copyright infringement case where canvas tote bags bearing caricatures of iconic Louis Vuitton handbags on one side and the text "My Other Bag" on the other were found to be a parody).

time and money. As a result, fast fashion retailers and copyists continue to commit design piracy without serious consequences for exploiting other brands' investments and creations, and do so at a hefty profit.[87]

Fast fashion's negative externalities also include exploitation of the environment and workers along the supply chain. Notwithstanding the retail market implications of COVID-19, mass production and consumer consumption is historically at its highest. Between 2000 and 2014, overall US consumer prices rose 50 percent, while clothing prices dropped.[88] As a result, consumers bought more clothing, leading to a 60 percent increase in "the number of garments purchased each year by the average consumer."[89] Due to this increase in consumption, the world is facing excessive pollution[90] and exploitation of resources.[91] In addition, when companies produce massive quantities of inexpensive clothing, they do so primarily through cheap, unregulated labor, often in low- and middle-income countries.[92] A lack of transparency and control along these supply and manufacturing chains has led to many humanitarian and environmental crises, such as factory fires.[93]

The copying of fashion designs, or design piracy, predates the phenomenon of fast fashion, arising in Judge Learned Hand's dictum in *Cheney Brothers v. Doris Silk Corp*.[94] There, the court found that there had been no infringement due to the limited scope of copyright law, notwithstanding the fact that the defendant textile manufacturer admitted to deliberately copying another manufacturer's original design.[95] Despite a showing of

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[87] *See* Hemphill & Suk, *supra* note 85, at 1170–72.

[88] DANA THOMAS, FASHIONOPOLIS: THE PRICE OF FAST FASHION—AND THE FUTURE OF CLOTHES 35 (2019).

[89] *Id.* (quoting McKinsey & Company).

[90] *See* Elizabeth Reichart & Deborah Drew, *By the Numbers: The Impacts of "Fast Fashion*," WORLD RES. INST. (Jan. 10, 2019), https://www.wri.org/insights/numbers-economic-social-and-environmental-impacts-fast-fashion [https://perma.cc/AM3Q-YZF4] ("Making a pair of jeans produces as much greenhouse gases as driving a car more than 80 miles.").

[91] *See id.* ("It takes 2,700 liters of water to make one cotton shirt.").

[92] *See* THOMAS, *supra* note 88, at 52 ("In fiscal year 2018, 40 million workers produced more than $30 billion worth of 'ready-made garments' or RMGs, for export, ranking Bangladesh the number two apparel producer, after China/Hong Kong . . . .").

[93] *See id.* at 53–54 ("[B]etween 2006 and 2012 more than five hundred Bangladeshi garment workers died in factory fires.").

[94] *See* Cheney Bros. v. Doris Silk Corp., 35 F.2d 279, 281 (2d Cir. 1929) ("True, it would seem as though the plaintiff had suffered a grievance for which there should be a remedy, perhaps by an amendment of the Copyright Law, assuming that this does not already cover the case, which is not urged here. It seems a lame answer in such a case to turn the injured party out of court, but there are larger issues at stake than his redress. Judges have only a limited power to amend the law; when the subject has been confided to a Legislature, they must stand aside, even though there be [a] hiatus in completed justice.").

[95] *See id.* at 279, 281.

bad faith in copying, there was no recourse for the designer because copyright law did not protect the designs.[96] *Cheney Brothers* is just one example of the injustice and the free rider problem that result from copyright law's inapplicability to fashion designs.

Design piracy, misappropriation, and the phenomenon of fast fashion have only become easier in our current 3A Era, as rapidly developing technologies, such as smart phones and 3D printing, along with the ability to instantly transfer digital data, have all compounded the problems associated with copying.[97] While a design is still in process or yet to be released, factories thousands of miles away are already mass-producing cheaper copies.[98]

Put simply, the fashion industry in the United States does not enjoy the same broad IP protection as other creative or artistic industries. This limited IP regime creates challenges for designers and creators, such as inconsistent, unpredictable court decisions and difficulties in enforcing existing rights, which result in design piracy, counterfeits, and misappropriation. As noted previously, these practices lead to many negative externalities, including exploitation of designers, manufacturers, workers along the supply chain, and even the environment. The industry needs an alternative legal or quasi-legal solution to statutory IP-based protection.

II. AN INTRODUCTION TO BLOCKCHAIN TECHNOLOGY

Technological innovation provides promising solutions to the concerns facing the fashion industry that stem from a lack of sufficient IP protections. Blockchain technology may be an attractive tool for the advancement and improvement of many industries, including the fashion industry, and has the potential to fundamentally shift the way industries and societies operate.

A. Blockchain Technology: An Introduction

A blockchain is merely a database of information or a publicly displayed storage of data that is irreversible and incorruptible.[99] As further explained below, blockchain technology is

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[96] *See id.*

[97] *See* Yanisky-Ravid & Kwan, *supra* note 7, at 946–48 ("In the past, the difficulty of creating high quality counterfeits enabled the value of the licenses of intellectual property to remain relatively high, but 3D printing is now challenging this model."); Raustiala & Sprigman, *supra* note 8, at 1714–15.

[98] Yanisky-Ravid & Kwan, *supra* note 7, at 946; Cohen, *supra* note 80, at 181.

[99] Aaron Wright & Primavera De Filippi, *Decentralized Blockchain Technology and the Rise of Lex Cryptographia* 2 (Mar. 12, 2015) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2580664 [https://perma.cc/4SE9-7RUC].

revolutionary because it effectively provides a means to eliminate the middleman by allowing for enforceable peer-to-peer transactions.[100] By combining many advanced mechanisms,[101] blockchain technology allows groups of people, wherever located, to agree on any particular matter, transaction, or deal and record the details of it in a public tamperproof database. Moreover, the technology's transparency and encrypted nature allows the deal to be verified by any party to the agreement and enforced.[102]

Before blockchain technology was invented, consumer transactions always relied on third-party intermediaries, such as banks, brokers, and online payment platforms.[103] It was virtually impossible to coordinate individual, trusted peer-to-peer activities over the internet without a centralized body to ensure that data had not been tampered with and that payment was being secured.[104]

Blockchain technology overcomes this challenge through transparency and consensus mechanisms.[105] The blockchain is a means for recorded information to travel in a verifiable manner. Each transaction or new piece of data is referred to as a "block" that travels and appears over a network of computers.[106] Each transaction along the sequence of data blocks—known as the "chain"—is verifiable because all data is displayed on the open ledger and because, in order to complete new transactions, all computers involved must agree on the validity of the prior transactions.[107] The data regarding each transaction is protected

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[100] *See id.* at 2, 4.

[101] To better understand the mechanics of blockchain technology, it is necessary to note its ten most salient features: (1) the open-ledger; (2) the peer-to-peer network; (3) decentralization; (4) consensus mechanisms; (5) encryption; (6) irreversibility; (7) trust; (8) accessibility to all; (9) speed; and (10) global reach. *See* Shlomit Yanisky-Ravid & Edward Kim, *Patenting Blockchain: Mitigating the Patent Infringement War*, 83 ALB. L. REV. 603, 607–10 (2020). While a more in-depth explanation regarding the mechanics of the technology goes beyond the scope of this article, many sources supply a far more in-depth analysis. *See, e.g.*, *id.* at 607–10, 612–14 (detailing the technology behind blockchain and how it can be within the scope of patent protection).

[102] Wright & De Filippi, *supra* note 99, at 2, 5.

[103] *See id.* at 5.

[104] *See id.*

[105] "A consensus mechanism is a fault-tolerant mechanism that is used in computer and blockchain systems to achieve the necessary agreement on a single data value." Jake Frankenfield, *Consensus Mechanism (Cryptocurrency)*, INVESTOPEDIA (Aug. 4, 2021), https://www.investopedia.com/terms/c/consensus-mechanism-cryptocurrency.asp [https://perma.cc/U4A2-3CBL].

[106] Wright & De Filippi, *supra* note 99, at 6–7 ("A blockchain is simply a chronological database of transactions recorded by a network of computers. Each blockchain is encrypted and organized into smaller datasets referred to as 'blocks.' Every block contains information about a certain number of transactions, a reference to the preceding block in the blockchain, as well as an answer to a complex mathematical puzzle, which is used to validate the data associated with that block." (footnotes omitted)).

[107] *Id.* ("To ensure that only legitimate transactions are recorded into a blockchain, the network confirms that new transactions are valid and do not invalidate former

using mathematical problems; therefore, the data and information is encrypted and cannot be tampered with.[108] These "[b]lockchain protocols thus ensure that transactions on a blockchain are valid and never recorded to the shared repository more than once, enabling people to coordinate individual transactions in a decentralized manner without the need to rely on a trusted authority to verify and clear all transactions."[109]

B. Blockchain Today

Blockchain is most commonly known as the technology of cryptocurrencies, such as Bitcoin.[110] However, the technology is and can be applied to many more types of commercial transactions. Since its inception, software developers have begun to utilize the technology in many industries, such as finance, business, and government.[111] Although there are obvious benefits to blockchain technology that stem from the salient features stated above, there are some features that prevent the technology from being suitable for all cases. For example, its low rate of transactions per second (TPS) is a feature that makes blockchain unsuitable for activities that require an immediate transfer of data, such as commodity trading,[112] internet dating, airplane sensors, or capturing credit and debit card transactions and stock market data.[113] Blockchain has a low rate of TPS because writing on the block takes seconds or minutes.[114] This means that using regular databases may be more efficient for certain instantaneous activities, as such databases take only milliseconds to process data.[115]

On the other hand, blockchain's use of consensus mechanisms, along with its decentralized and trustworthy

transactions. A new block of data will be appended to the end of the blockchain only after the computers on the network reach consensus as to the validity of the transaction.").

[108] *See id.* at 6.

[109] *Id.*

[110] Although Bitcoin is arguably the most notable cryptocurrency, there are a number of virtual cryptocurrencies that employ blockchain technology. *See Cryptocurrency Prices, Charts and Market Capitalizations*, COINMARKETCAP, https://coinmarketcap.com [https://perma.cc/JW23-PJYC].

[111] *See The Growing List of Applications and Use Cases of Blockchain Technology in Business and Life*, *supra* note 14.

[112] Antti Belt & Steven Alexander Kok, *A Reality Check for Blockchain in Commodity Trading*, BOS. CONSULTING GRP. (Aug. 16, 2018), https://www.bcg.com/publications/2018/reality-check-blockchain-commodity-trading.aspx [https://perma.cc/36KS-BGRJ].

[113] Brian Wu, *Comprehensive Overview and Analysis of Blockchain Use Cases in Many Industries*, DC WEB MAKERS (Apr. 2019), https://blockchain.dcwebmakers.com/blog/comprehensive-overview-and-analysis-of-blockchain-use-cases-in-many-industries.html [https://perma.cc/TCM6-2X3P].

[114] *Id.*

[115] *Id.*

nature, makes it especially attractive for other industries,[116] including the fashion industry. As discussed above, the fashion industry suffers from a lack of sufficient IP protection, faces hurdles in proof of originality and proof of copying, experiences rampant counterfeiting, and relies on third parties, such as distributors, who take high cuts of sales which cause brands to have trouble collecting fees.[117] Blockchain technology has the potential to support a stronger, more effective IP regime by effectuating a trusted, encrypted, unchangeable registration system or proof of originality platform.[118] Moreover, such technology can serve as a means of facilitating trade involving IP[119] and is a patentable platform.[120]

The Department of Commerce's Internet Policy Task Force's (IPTF) efforts toward creating a comprehensive network of ownership rights in creative works exemplifies the potential use of blockchain technology to support the copyright regime.[121] Nathan

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[116] *See, e.g.*, Steve Banker, *Blockchain Gains Traction in the Food Supply Chain*, FORBES (July 25, 2018, 8:15 AM), https://www.forbes.com/sites/stevebanker/2018/07/25/blockchain-gains-traction-in-the-food-supply-chain/?sh=16b8395b1cf9 [https://perma.cc/HV6Y-QL3D] (discussing "IBM Food Trust," which uses blockchain technology to improve traceability in the food supply chain); Anna Baydakova, *A Top-5 US Hospital Is Exploring Blockchain for Patient Data*, COINDESK (Dec. 6, 2018, 1:18 PM), https://www.coindesk.com/markets/2018/12/05/a-top-5-us-hospital-is-exploring-blockchain-for-patient-data/ [https://perma.cc/2WL5-R5XH] (discussing how a hospital is collaborating with third parties to develop "a distributed ledger for storing and sharing medical data" that allows conversion of existing data to a new standardized format using blockchain technology); Elizabeth Durant & Alison Trachy, *Digital Diploma Debuts at MIT*, MIT NEWS (Oct. 17, 2017), https://news.mit.edu/2017/mit-debuts-secure-digital-diploma-using-bitcoin-blockchain-technology-1017 [https://perma.cc/8V8F-DCLR] ("Blockcerts Wallet . . . enables students to quickly and easily get a verifiable, tamper-proof version of their diploma that they can share with employers, schools, family, and friends. To ensure the security of the diploma, the pilot utilizes the same blockchain technology that powers the digital currency Bitcoin. It also integrates with MIT's identity provider, Touchstone."); Bernard Marr, *30+ Real Examples of Blockchain Technology in Practice*, Forbes (May 14, 2018, 1:38 AM), https://www.forbes.com/sites/bernardmarr/2018/05/14/30-real-examples-of-blockchain-technology-in-practice/?sh=26920c8e740d [https://perma.cc/XM6X-LC8N] (discussing applications of blockchain technology in the medical field, e.g., MedicalChain, MedRec, Nano Vision, Gem, etc.).

[117] Shlomit Yanisky-Ravid, *Blockchain and Copyright Industry: The Promised Land or the Dark Side of the Moon?* (unpublished manuscript) (on file with author); *John Zarocostas*, *The Role of IP Rights in the Fashion Business: A US Perspective*, WIPO MAG. (Aug. 2018), https://www.wipo.int/wipo_magazine/en/2018/04/article_0006.html [https://perma.cc/BM9X-Z7S5].

[118] *See* Alan Cohn et al., *Smart After All: Blockchain, Smart Contracts, Parametric Insurance, and Smart Energy Grids*, 1 GEO. L. TECH. REV. 273, 275–76, 278 (2017); Ioannis Karamitsos et al., *Design of the Blockchain Smart Contract: A Use Case for Real Estate*. 9 J. INFO. SEC. 177, 178 (2018); John Ream et al., *Upgrading Blockchains: Smart Contract Use Cases in Industry*, DELOITTE INSIGHTS (June 8, 2016), https://www2.deloitte.com/us/en/insights/focus/signals-for-strategists/using-blockchain-for-smart-contracts.html [https://perma.cc/7CWA-L5HD].

[119] Yanisky-Ravid, *supra* note 117. *See generally Zarocostas*, *supra* note 117 (discussing the idea of recording and managing IP rights).

[120] Yanisky-Ravid & Kim, *supra* note 101, at 604.

[121] *See* Sarah Anderson, Note, *The Missing Link Between Blockchain and Copyright: How Companies Are Using New Technology to Misinform Creators and Violate Federal Law*, 19 N.C. J.L. & TECH. ONLINE 1, 9–10 (2017).

Lands of Binded and Trent McConaghy of Ascribe are participating in the IPTF to help establish a comprehensive network of protected works to thwart copyright infringement.[122] They plan to use blockchain technology to create a public searchable and verifiable catalogue of copyrighted works.[123] Binded and Ascribe are just two of several companies that are working toward creating "decentralized public ledger[s] . . . for cataloging and storing copyrighted materials."[124] Supporters of the idea claim the technology is compatible with copyright because it can combat fraud in the industry, which suffers from piracy and an artist's lack of control of their work.[125] For example, if all transactions were on a verifiable blockchain, all players would know whether a work is authentic and who is the rightful owner. Ultimately, these companies advertise their service as an alternative means for copyright protection to registering with the US Copyright Office.[126] As Lands explains, "[w]e're just building a platform that's . . . like a one-stop-shop for copyright."[127]

The rise of nonfungible tokens (NFTs) is an example of how blockchain technology is used to facilitate the trade of IP. NFTs are digital assets, such as graphic art, video clips, and songs, that are traded using blockchain technology.[128] NFTs contain data that differentiates it from any other NFT, and such data cannot be reproduced.[129] Therefore, the value of each NFT is based on the idea of scarcity and exclusivity, and the act of replicating is fruitless because each NFT can be traced back to the original works using the blockchain. NFTs are quickly being adopted across many industries, but the most high-profile adoption is taking place in the entertainment industry. From sports leagues like the NBA,[130] to auction houses

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[122] *Id.* at 12.

[123] *See id.*

[124] *Id.* For example, Ascribe puts work onto the blockchain by generating a cryptographic ID of the work, which is a "composite of the digital artwork and the artist's identity." *Ascribe*, WE USE COINS, https://www.weusecoins.com/ascribe/ [https://perma.cc/BWH4-7XCM].

[125] *See* Anderson, *supra* note 121, at 12.

[126] *Id.* at 12–13.

[127] *Id.* at 13 (quoting DEP'T OF COMM., INTERNET POL'Y TASK FORCE, PUBLIC MEETING ON DEVELOPING THE DIGITAL MARKETPLACE FOR COPYRIGHTED WORKS 79 (2016), https://www.uspto.gov/sites/default/files/documents/61209pto_REV_officaltranscript_v2.pdf [https://perma.cc/9UQP-PX3J] (transcript of public meeting held on December 9, 2016)).

[128] Robyn Conti, *What You Need to Know About Non-Fungible Tokens (NFTs)*, FORBES (May 24, 2021, 12:17 PM), https://www.forbes.com/advisor/investing/nft-non-fungible-token/ [https://perma.cc/QM8W-8HRW].

[129] *Id.*

[130] *See* Jarbari Young, *People Have Spent More than $230 Million Buying and Trading Digital Collectibles of NBA Highlights*, CNBC (Feb. 28, 2021, 11:21 AM),

like Christie's,[131] many traditional institutions are utilizing blockchain technology to transfer digital goods through the sale of NFTs. The rise of NFTs demonstrates the value of utilizing blockchain technology to transfer IP and other digital assets.

Interestingly, in 2009, blockchain technology was created, or better yet, "freely donated to society" by the still undisclosed person or entity, named "Satoshi Nakamoto."[132] Despite the common assumption that blockchain is in the public domain like the internet, blockchain technology is actually patentable.[133] In fact, many of the new blockchain platforms are receiving patent protection from the US Patent and Trademark Office.[134] The patentability of the technology provides an important incentive for developers to invest in industry specific blockchains, such as a fashion blockchain.

Continued development and more widespread use of blockchain technology amongst all industries and fields "[will] impact traditional business and financing organizations as well as governments." Mr. Wright and Ms. De Filippi note the application of blockchain technology will "fundamentally [alter] how core aspects of our society function."[135] There is no doubt that this phenomenon will raise "a number of legal and ethical challenges that must be considered."[136] However, once these concerns are addressed, many industries can greatly benefit from blockchain technology, possibly outweighing any potential drawbacks. The fashion industry is one of the creative fields that can benefit tremendously from blockchain platforms due to the inherent lack of IP protections available to fashion designers.

III. SMART CONTRACTS: NEW KID IN THE FASHION INDUSTRY PLAYGROUND

Blockchain platforms, specifically smart contracts, can address many of the current challenges faced by the fashion

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https://www.cnbc.com/2021/02/28/230-million-dollars-spent-on-nba-top-shot.html [https://perma.cc/8SZT-RPAY]. NBA, in collaboration with blockchain-based company Dapper Labs, launched NBA Top Shot—an NFT marketplace for NBA highlight reels—in 2019. *Id.* NBA Top Shot allows individuals to buy and sell NBA highlight reels, otherwise known as moments. *Id.* Since its inception, Top Shot has generated more than $230 million in sales, with an individual video clip of a LeBron James dunk selling for over $200,000. *Id.*

131 *See Christie's Encrypted, Digital Art: NFTs at Christie's*, CHRISTIE'S, https://www.christies.com/auctions/christies-encrypted [https://perma.cc/YRA3-BKDT] (noting that in March 2021, "Christie's sold the first non-fungible token based purely on a digital work of art . . . offered by a major auction house for [$69 million]").

132 Yanisky-Ravid & Kim, *supra* note 101, at 604.

133 *Id.*

134 *Id.*

135 Wright & De Filippi, *supra* note 99, at 17.

136 *Id.*; *see infra* Section III.D.

industry as a result of the current IP regime—which only provides inconsistent and often unenforceable rights—due to the smart contract's self-executing nature. In other words, smart contracts can protect designs in the fashion industry where IP laws have failed.

A. Trusted Transactions

The contract is one of the most important tools that upholds society and its moral promises and enables parties to trade.[137] Contracts enable parties to agree to preferred terms and conditions and provide a means through which each party's mutual commitments are agreed upon and documented, increasing the likelihood that such commitments will be fulfilled.[138] However, in order for parties to enforce a contract or be held accountable, they must be able to rely on an authoritative third party.[139] When contracting in business or trade, parties rely on the state to enforce the terms and conditions in the case of breach.[140] Specifically, the state incentivizes contract performance by providing avenues for enforcement and consequences for nonperformance.[141]

Relying on the state for the legal enforcement of contracts is an inherent inefficiency of traditional contracting.[142] This is because the enforceability of particular terms and conditions of a contract are determined by a third-party judge or jury. If the judge interprets the contract differently than what a party intended, that party is at a loss. In addition, the court's interpretation could have been unforeseen by either party, and the determination could result in a ruling neither party anticipated ex ante. Of course, contract law purports to be equitable; however, human beings by nature are not capable of ever being completely unbiased or just. This lack of control and

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[137] Kevin Werbach & Nicolas Cornell, *Contracts Ex Machina*, 67 DUKE L.J. 313, 354 (2017).

[138] *See* Alexander Savelyev, *Contract Law 2.0: "Smart" Contracts as the Beginning of the End of Classic Contract Law* 17 (Higher Sch. of Econ., Working Paper No. WP BRP 71/LAW/2016, 2016) (stating the existence of a classical contract consisting of mutual obligation).

[139] *See* Werbach & Cornell, *supra* note 137, at 315, 318, 357; Savelyev, *supra* note 138, at 9.

[140] *See* Werbach & Cornell, *supra* note 137, at 321, 339; Savelyev, *supra* note 138, at 9, 15.

[141] *See* Werbach & Cornell, *supra* note 137, at 354–55; A. Mitchell Polinsky & Steven Shavell, *Economic Analysis of Law* 14–15 (Harv. L. Sch. John M. Olin Ctr. for L., Econ., & Bus., Discussion Paper No. 536, 2005).

[142] *See* Werbach & Cornell, *supra* note 137, at 330; Polinsky & Shavell, *supra* note 141, at 34.

inability to predict the outcome of contract determinations is a key limitation of traditional contract law.

Contract law's reliance on the state to codify laws to protect IP, and to then enforce those laws, also places too much control in the hands of the state, as the state alone determines what is protected under the law. The state's determination of what is protectable has resulted in limited IP laws that apply to fashion design and in inconsistent and unpredictable determinations.[143] As previously discussed, courts use arguably subjective measures, such as surveys of public opinion, when determining the availability of trademark protection.[144] This regime renders otherwise valid trademarks essentially useless, as there is no benefit to owning a mark when the owner is unable to limit competitors' usage. Such a regime also causes obvious concerns for brands trying to protect their marks and goodwill. Therefore, moving away from a traditional and centralized IP regime would be beneficial, as decentralized digital contracts can be used to solve problems that the conventional centralized system cannot.

Blockchain technology, and smart contracts in particular, can be used to create trusted transactions among industry players due to their decentralized, encrypted nature.[145] Smart contracts are "agreements existing in the form of software code implemented on the Blockchain platform, which ensures autonomy and self-executive of [s]mart contract terms based on [a] predetermined set of factors."[146] Smart contracts can be perceived as a fusion of cryptography and electronic contracting.[147] Therefore, blockchain technology and smart contracting represent the next steps in the evolution of electronic agreements.[148] Due to their self-executing nature, smart contracts have many implications in terms of what role the law and regulatory bodies play.[149] Moreover, they have the

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[143] *See supra* Part I.A.

[144] *See supra* Part I.A.

[145] *See* Cohn et al., *supra* note 118, at 277–83; Karamitsos, *supra* note 118, at 177–78; Ream et al., *supra* note 118; *see supra* Part II.

[146] Savelyev, *supra* note 138, at 2.

[147] Werbach & Cornell, *supra* note 137, at 320.

[148] *See generally* Werbach & Cornell, *supra* note 137 (recognizing that enthusiasts believe smart contracts offer the potential to displace the legal system's core function of enforcing agreements while arguing that smart contracts will not displace contract law but instead illuminate its essential role as a remedial institution).

[149] *See id.* at 372–74, 377–81; *see also* Carla L. Reyes, *Moving Beyond the Bitcoin to An Endogenous Theory of Decentralized Ledger Technology Regulation: An Initial Proposal*, 61 VILL. L. REV. 191, 228 (2016) ("[P]ropos[ing] that regulators undertake the dual task of enacting a law or regulation via statute, and then implementing that statute through code, so that it is endogenously incorporated into the decentralized ledger technology or applications running on top of the technology.").

potential to fundamentally shift the dynamic between regulatory bodies and corporations. Since there is a minimum level of judicial involvement, entities can come to internal agreements without regard to enforceability.[150]

B. An Endogenous Quasi-Legal Regime: The Fashion Blockchain

The fashion industry can use smart contracts endogenously, or internally, to work around codified or nonexistent law. For economists, "[t]he theory of endogenous policy describes how self-interested agents influence the choices made regarding government policies."[151] Applying this concept to the fashion industry, industry members can use blockchain technology, particularly smart contracting, to create an endogenous "crypto-legal structure"—that is, a "semi-autonomous cryptographic computer code" that will allow them to protect their most valuable assets without relying on the state's inconsistent enforcement of laws or the lack of codified IP laws.[152] The industry can use such technology to automate contractual limitations, which will bypass the unpredictable enforcement of contract law and offer greater protection than what IP laws currently offer.

In a practical sense, players within the fashion industry should transact among each other to create a fashion blockchain. The blockchain would function as a transparent record of internal self-executing industry agreements. As an industry-wide blockchain, brands could use the technology primarily as a database of their fashion designs, along with their current copyright, trademark, and patent registrations. The blockchain's transparent record of ownership would ensure that brands cannot misappropriate each other's IP, as only verified transactions would be able to take place on the blocks. The database would also make it easier to track the transfer of IP ownership or license agreements, and to protect designs that are otherwise

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[150] *See* Savelyev, *supra* note 138, at 15; Wright & De Filippi, *supra* note 99, at 25–26. Enforceability means whether courts can enforce an agreement on the basis of public policy. *See* RESTATEMENT (SECOND) OF CONTRACTS § 178 (AM. L. INST. 1981).

[151] ISIDORO ADOLFO MAZZA, *An Endogenous Policy Model of Hierarchical Government*, *in* ESSAYS ON ENDOGENOUS ECONOMIC POLICY 11, 11 (2009).

[152] Carla L. Reyes, *Conceptualizing Cryptolaw*, 96 NEB. L. REV. 384, 387 (2017). *See generally* Wright & De Filippi, *supra* note 99 (arguing that the rise of the decentralized technology will result in the expansion of a new subset of laws administered through self-executing smart contracts); Nathan Fulmer, Comment, *Exploring the Legal Issues of Blockchain Applications*, 52 AKRON L. REV. 161 (2019) (discussing legal ramifications of blockchain applications).

nonprotectable under current copyright law. The peer-to-peer record of ownership and license transactions would allow for enforceable and self-executing deals. Such deals would have predictable and consistent outcomes because parties would not be relying on middlemen, courts, or statutes. Brands in the industry would obtain quasi-IP protection without relying on the state, thereby creating a crypto-legal structure known as *cryptolaw*.[153] This regime can combat brands' concerns regarding unenforceability of otherwise valid marks and the uncertainty of what is regarded as protectable subject matter.

Smart contracts for copyright ownership and royalties are already being tested in the music recording industry through IBM's open-source blockchain.[154] In April 2017, three of the largest member-owned collection societies in the world—the American Society for Composers, Authors and Publishers (ASCAP); the Society of Authors, Composers and Publishers of Music (SACEM); and PRS for Music—announced they would be partnering to "prototype a new shared system of managing . . . music copyright information using blockchain technology."[155] Their goal is to prototype a "decentralized database of musical work metadata with real-time update and tracking capabilities."[156] Industry stakeholders will have a clear understanding of copyright ownership under this structure, as it involves a shared database in which the musical artists (i.e., the copyright owners) are members.

Smart contracts can be used among every player and in every aspect of the fashion industry. For brands, contracts can be made horizontally among competitor brands, but also vertically among players in the supply chain (for example, among retailers, suppliers, and manufacturers). The idea behind this technology is that the more designers, brands, and players on the blockchain, the more effective and efficient it becomes. Brands and players have incentives to join because they could benefit from the system's efficiency and from otherwise inaccessible benefits like the peer-to-peer aspect of the blockchain.

Moreover, smaller brands could use smart contracting as a form of licensing to protect their assets. Consider a licensing

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[153] *See* Reyes, *supra* note 152, at 399 ("[C]onceptualiz[ing] cryptolaw as the new jurisprudence that will emerge as a result of implementing and delivering the law of any subject matter through smart-contracting, semi-autonomous, intelligently developing cryptographic computer code.").

[154] *ASCAP, SACEM, and PRS for Music Initiate Joint Blockchain Project to Improve Data Accuracy for Rightsholders*, ASCAP (Apr. 7, 2017) [hereinafter *ASCAP*], https://www.ascap.com/press/2017/04-07-ascap-sacem-prs-blockchain [https://perma.cc/NWP6-WENS].

[155] *Id.*

[156] *Id.*

agreement under which a small designer licenses her designs to H&M in return for recurring payments. The designer's clothing design is not otherwise protectable under current copyright law. In the traditional contract system, the parties would send each other written documents and then sign a mutual intent to be followed by a formal signature on the final agreement. Once one side infringes the agreement (e.g., fails to pay), the other party would be able to sue for breach.

In this hypothetical, to implement a smart contract with the same terms as a traditional contract, the parties would have to transfer the spoken language into computer language. This would require that the parties specify all terms of performance, such as the production of an agreed upon number of garments of an agreed upon standard and design. They would then digitally sign the smart contract using their private cryptographic key and press the "enter" button.[157] Once sent, the smart contract would be processed as a transaction onto a blockchain, where it is validated through the consensus process and recorded on the distributed ledger. The agreed upon payments would automatically be deducted as a lump sum or in installments each month and credited to the designer's account. Meanwhile, the smart contract, via the software, can monitor garment production each day and store a record as needed on the blockchain. If the garment production does not meet the agreed upon design standards or if a copyist attempts to transfer the licensed design to an authorized third party, their receiver (i.e., H&M) would no longer have access to the digital data that stores the designs, and on the other side, funds would no longer be transferred to the designer. The smart contract would then terminate. This implementation of smart contracting gives brands, especially those operated by smaller designers, the opportunity to control their designs and protect otherwise unprotectable designs. The system will effectuate whatever is contained in the computer code. With this automatic enforcement, the fashion industry can reduce any uncertainty, subjectivity, or inconsistency involved under the traditional IP regime.

Of course, individually contracting with the industry's numerous players is not as attractive for everyone. For example, larger luxury brands may not have as much of an incentive to use vertical smart contracting with smaller, lesser-known brands to create license and other agreements. The larger luxury designer

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[157] This form of a smart contract functions similarly to a clickwrap license—a license agreement that consumers or users are required to agree to in order to access digital data or products. *See* 15B AM. JUR. 2D *Computers and the Internet* § 101, Westlaw (database updated Sept. 2021).

could simply pirate smaller, perhaps unknown, designs. However, every player in the industry has an incentive to join because of the long-term, large picture benefits of utilizing a technology-based peer-to-peer system. Long-term use of an industry-wide fashion blockchain would allow for efficiency on every level and traceability among every player and deal. Moreover, luxury brands should want to join a universal database or blockchain depository of fashion designs for all designers in order to benefit from the protections of such a system.

C. Other Benefits of Blockchain for the Industry

There are many other potential benefits to using blockchain technology in the fashion industry besides the creation of an endogenous and extended quasi-IP regime. Such benefits include verification of goods and increased transparency along the supply chain. These benefits would combat other challenges or externalities caused by the fashion industry's lack of IP protection, including the industry's effect on the environment and other sustainability concerns.[158]

As stated above, blockchain technology can be used to verify goods along the supply chain. Blockchain is already being used in the diamond industry—an industry known to be plagued with ethical concerns—for this purpose.[159] The application of such technology to the diamond industry serves as an example of how blockchain can benefit the fashion design industry. Because many diamonds are naturally found in some war zones, and because of diamonds' high value and ability to be concealed and smuggled, they are often used to finance illegal activity.[160] To combat such concerns, there have been international efforts to create a diamond certification scheme—most notably the Kimberley Process Certification Scheme (the Kimberley Process).[161] However, the Kimberley Process has proven to be ineffective as many of its requirements are unenforceable and its certifications can

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[158] *See* Reichart & Drew, *supra* note 90.

[159] Rosie Burbidge, *The Blockchain Is in Fashion*, 107 TRADEMARK REP. 1262, 1264 (2017). *See generally id.* (explaining how blockchain can be used in fashion to combat some of the industry's concerns, exploring such ideas as the existing use of blockchain in the diamond industry, and presenting arguments as to why the application of blockchain is desirable).

[160] This is why many diamonds are often termed conflict or blood diamonds. *See* Gian Volpicelli, *How the Blockchain Is Helping Stop the Spread of Conflict Diamonds*, WIRED UK (Feb. 15, 2017, 5:00 PM), http://www.wired.co.uk/article/blockchain-conflict-diamonds-everledger [https://perma.cc/HZ9N-J92P]; Burbidge, *supra* note 159, at 1264.

[161] Burbidge, *supra* note 159, at 1264; *About*, THE KIMBERLEY PROCESS, https://www.kimberleyprocess.com/en/about [https://perma.cc/TJW2-XUDJ].

be easily tampered.[162] To combat the ethical concerns left untouched by the Kimberley Process, Leanne Kemp founded the company Everledger.[163] Everledger is essentially a "global digital registry for diamonds."[164] As part of Everledger's registration process, each diamond is assigned an electronic identity or serial number, which is a digitized description of the diamond's characteristics and features, like color, clarity, and carat.[165] The number is then laser inscribed onto the stone, which is added to the Everledger blockchain.[166] By adding each diamond to the block, individuals can trace the diamonds' travel, transaction histories, and origins, and compare all features, including financing, insurance policies, and ownership changes, against the ledger.[167] Importantly, the ledger is available to all parties, including governments, consumer markets, border control, and law enforcement, which provides a means for authenticating and enforcing standards.[168] Diamonds' high value and demand, in addition to their dark history, make the diamond industry a prime candidate for utilizing blockchain technology.[169] Following this logic, it would make sense to invest in and utilize such technology in other industries that suffer from similar concerns. The high-end luxury brands of the fashion industry suffer from ethical concerns and lack of control, enforcement, and authentication mechanisms to protect their brands.[170] Further, the fashion industry generally suffers those same concerns and can benefit from the adoption of blockchain technology.[171] Although the application of blockchain to the fashion industry may seem daunting and out of reach, small and large brands will be able to record all aspects of their products over time and with economies of scale.[172]

Blockchain's ability to verify goods is particularly beneficial to luxury brands, whose items are often highly sought after or counterfeited. For luxury designers and those purchasing frequently counterfeited items, the blockchain would allow them to determine with almost 100 percent accuracy

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[162] *See* Michelle M. Murdock, Note, *Polishing Up the Diamond Trade: How to Revitalize the Kimberley Process*, 46 J. CORP. L. 463, 471–72 (2021); *see also* Volpicelli, *supra* note 160 (noting that "forged paper certificates make provenance hard to verify").

[163] *See* Volpicelli, *supra* note 160.

[164] *Id.*

[165] *See* Burbidge, *supra* note 159, at 1265; Volpicelli, *supra* note 160 ("Everledger uses more than 40 features, including colour and clarity, to create a diamond's ID. Enshrined in the blockchain, this information becomes a certificate chronicling the jewel's ownership, from mine to ring.").

[166] Burbidge, *supra* note 159, at 1265.

[167] *Id.*

[168] *Id.*

[169] *Id.*

[170] *Id.* at 1266; *see supra* Section I.B.

[171] Burbidge, *supra* note 159, at 1266; *see supra* Section I.B.

[172] Burbidge, *supra* note 159, at 1265–66.

whether an item is authentic. Whether the item was purchased at a brand storefront or at a secondhand store, both the purchaser and seller would be able to verify the authenticity of the good by its digital passport or inscription.[173] The counterfeit industry would be disrupted, as questions about authenticity disappear. Luxury brands would be able to capitalize on more sales, rather than losing out to counterfeiting manufacturers.[174] Nonetheless, there will always be a demand for counterfeit items, as some consumers do not care about the authenticity of luxury goods.[175] These consumers perpetuate the problems of design piracy and fakes, and benefit from the misappropriation of brand image rather than paying the pure cost of authentic goods. Although blockchain cannot completely eliminate others' ability to produce and purchase counterfeit goods, it is an efficient and accurate way to determine real luxury goods from fakes and to deter the underground counterfeit market.

Blockchain's (and, in particular, smart contracts') ability to verify goods or transactions along the supply chain can also increase transparency in areas of the fashion industry that are ripe with ethical concerns, particularly the counterfeit and fast fashion markets—just as they do in the diamond industry. As previously stated, there are many negative externalities associated with certain aspects of the fashion industry.[176] For brands whose business model is to produce massive amounts of clothing to cater to the mass market, they resort to finding cheap, unregulated labor in low- and middle-income countries.[177] This business model leads to unethically low wages and poor working conditions, as well as pollution emission in these countries due to the mass production of garments.[178] There are little to no regulations over working conditions and pollution in these countries, and even for companies in the United States that care to institute standards overseas, it is

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[173] *See id.* at 1266.

[174] *See* U.S. DEP'T OF HOMELAND SEC., OFF. OF STRATEGY, POL'Y & PLANS, COMBATING TRAFFICKING IN COUNTERFEIT AND PIRATED GOODS 19 (2020). The US Department of Homeland Security has linked counterfeit and pirated goods back to organized crime, including the Mafia and the Japanese Yakuza. *Id.* Monies from these transactions have sometimes been found to benefit terrorist activity and dictatorships around the world. *Id.*

[175] "[T]he estimated value of international and domestic trade in counterfeit and pirated goods is expected to reach between $1.9 trillion and $2.8 trillion in 2022, an increase of between $710 billion and $917 billion since 2013." Maysa Razavi, *Fighting the Supply of and Demand for Counterfeit Goods*, WORLD TRADEMARK REV. (Apr. 23, 2020), https://www.worldtrademarkreview.com/anti-counterfeiting/fighting-the-supply-of-and-demand-counterfeit-goods [https://perma.cc/WG3M-2TPV].

[176] *See supra* Section I.B.

[177] *See supra* notes 92–93 and accompanying text.

[178] Reichart & Drew, *supra* note 90.

hard to enforce those standards due to lack of oversight.[179] Yet, with blockchain, brands can enjoy transparency and control along the supply chain.[180] In an environment where policies or terms and conditions are automatically effectuated, fashion brands in the United States would have more control over manufacturing that takes place overseas.[181] Manufacturing companies would be forced to comply with the standards, as there would be full transparency along the supply chain.

The decentralized nature of blockchain will allow it to support and provide opportunities to smaller brands with fewer resources. This results from the efficiency that is created in a peer-to-peer economy through the elimination of third-party intermediaries. With smart contracts, the designers and brands can transact among each other to make license deals, marketing or advertising arrangements, and trade IP. By transacting in a peer-to-peer economy, the brands can save money that would otherwise go to third parties, such as litigation attorneys who sometimes earn much more than the designers.[182] In addition, smart contracts would eliminate the need for platforms that are used for advertising and marketing, such as traditional media outlets and social media spaces.[183] With blockchain, brands can contract and communicate with each other and with the consumer directly and therefore, would not need to spend money to advertise on these platforms. In addition, brands would have far more control over what is spread along the peer-to-peer economy because they would not have to comply with third party requirements. The peer-to-peer market is also efficient because it eliminates the need for funds to compensate for the lack of trust in a traditional transaction. With blockchain technology, parties can ensure payment and avoid spending funds on externalized costs associated with lack of trust, like funds traditionally allocated toward legal enforcement of IP rights.[184] Saving money on the middleman is beneficial for all

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[179] THOMAS, *supra* note 88, at 47, 54.

[180] Burbidge, *supra* note 159, at 1255–66.

[181] *See* THOMAS, *supra* note 88, at 120. In addition, there is an argument that technology, including blockchain, can "finally transform textile and apparel manufacturing to something more personal and ethical," as the processing can be brought closer to home and products produced "in vertically integrated communities, on clean, quiet factory floors controlled by tech-trained assistants." *Id.* at 118.

[182] Lloyd Marino, *Blockchain—the End of the Middleman*, MEDIUM (June 13, 2016), https://medium.com/@LloydMarino/blockchain-the-end-of-the-middleman-37d97a67d7f [https://perma.cc/A9PJ-H999] (outlining the ways in which blockchain eliminates the need for intermediaries).

[183] With no need for an intermediary or platform like Facebook or Instagram to provide content, if consumers purchase on a fashion blockchain, the brands can communicate with them directly. *See id.*

[184] *See id.*

brands, but especially smaller brands with fewer resources. Smaller brands can use those saved funds to create more designs and further invest in strengthening their brand. Moreover, many of the challenges and externalities associated with the fashion industry's lack of IP laws are exacerbated in the 3A Era. As such, we should look to blockchain technology to solve these concerns.

D. Critiques of Using Blockchain in the Fashion Industry

While the fashion industry would benefit from using blockchain technology by gaining stronger protections for fashion designs, there are some arguably negative implications that come with the adoption of a blockchain-based, endogenous quasi-legal system.

One such critique concerns the tendency of blockchain technology to cut out middlemen and decrease reliance on state or other regulatory actors.[185] In a traditional legal regime, regulators address externalities caused by the drive to maximize private interests by creating incentives to coax desired behavior out of market actors.[186] However, given that blockchain may not require reliance on a regulatory enterprise and the minimizing importance of such a regulatory scheme, many critics are concerned that increased use of blockchain technology will result in negative externalities, as blockchain can be used to effectuate transactions "that are illegal, unconscionable, or otherwise legally unenforceable."[187] Without the need for judicial enforcement of agreements, parties can use blockchain technology to create illegal markets, and there may be no recourse for the victims or the wronged.[188]

An example of blockchain and smart contracts being used to facilitate allegedly illegal activities in the fashion space is through the unauthorized use of IP in the sale of NFTs. In the latter half of 2021, a proprietor released a collection of one hundred NFTs, which were infringing depictions of the famed Hermès Birkin bag, with the first one selling for $42,000 on the NFT platform, OpenSea.[189] Because the transaction took place

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[185] Werbach & Cornell, *supra* note 137, at 352.

[186] *See id.* at 330.

[187] *Id.* at 347.

[188] *See* Lawrence Trautman, *Virtual Currencies; Bitcoin & What Now After Liberty Reserve, Silk Road, and Mt. Gox?*, 20 RICH. J.L. & TECH. 13, 6–19 (2014) (outlining the numerous types of crimes to which blockchain technology and virtual currencies have been linked).

[189] *Hermès Names MetaBirkins NFT Creator in Trademark Infringement, Dilution Lawsuit*, TFL (Jan. 16, 2022), https://www.thefashionlaw.com/hermes-names-metabirkins-creator-in-trademark-lawsuit/ [https://perma.cc/5APZ-B8HN].

on a blockchain, it is unclear whether traditional IP laws could be easily enforced, and thus whether IP laws could be effective in remedying the alleged infringement. The parties may be able to come to a business agreement in the "real world," but no matter the outcome of the case, the unauthorized NFT perpetually exists on the immutable blockchain.[190]

Another critique of blockchain technology is that decreased reliance on regulatory actors and judicial enforcement could lead to an imbalance of power.[191] The US legal system purports to balance equity and to represent the underrepresented; the checks and balances of the system aim to distribute power back to those who may otherwise not have a say. There is a risk of inequitable distribution when using blockchain technology. As Professor James Grimmelmann observes, "[u]nlike the rule of law, the rule of software is simple and brutal: whoever controls the software makes the rules. And if power corrupts, then automatic power corrupts automatically."[192] Therefore, if a few in power control the software, there is a risk that minority interests will not be represented, causing resultant transactions to lack any equitable considerations.

In the fashion industry, this could mean that self-executing deals would give too much control to big players in the industry that already have too much control. These big brands would control the code and software for their designs, and therefore "make[] the rules," as Professor Grimmelmann argues.[193] They could then monopolize all designs in the blockchain, and the technology would then serve as an even greater barrier to entry for smaller players. Moreover, strict enforcement of self-executing contracts would remove alleged copiers' defenses to infringement, as such a regime would not allow for equitable analysis of the context of the copying, but rather, give those who own the code more control and stronger rights.[194] Ultimately, this regime could further the interests of big players to the detriment of smaller firms.

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[190] *What Do Brands Stand to Gain in Fights over Their Marks in the Metaverse?*, TFL (Jan. 20, 2022), https://www.thefashionlaw.com/what-do-brands-stand-to-gain-in-lawsuits-over-their-marks-in-the-metaverse/ [https://perma.cc/VRG2-AB36].

[191] *See, e.g.*, Savelyev, *supra* note 138, at 16–17 (noting that the technology underlying smart contracts "is indifferent to the fundamental legal principles, such as lawfulness, fairness, protection of weak party").

[192] James Grimmelmann, *Anarchy, Status Updates, and Utopia*, 34 PACE L. REV. 135, 135 (2014).

[193] *Id.*

[194] According to one view, contract law intends to remedy grievances by assessing the facts and determining an equitable resolution; smart contracting on the other hand "functions to ensure action." Werbach & Cornell, *supra* note 137, at 363.

Finally, some critics contend that blockchain technology cannot practically replicate the functions of copyright law and that third parties cannot offer copyright protection through blockchain technology without the explicit consent of the legislature.[195] On a related note, some argue that self-regulation by an industry—in this case creation of an IP regime through the use of blockchain—will cause market failures and elicit illegal uses of the decentralized technology.[196] One commentator, Professor Carla L. Reyes, calls for a blending of the traditional statutory legal regime with blockchain technology. Professor Reyes argues that an endogenous system of regulating blockchain technology is ideal because regulators can enact regulation via statute then implement such laws through computer code so that it is endogenously incorporated into the technology.[197] Through this approach, the legislature would authorize copyright protection through blockchain technology by first creating statutes to permit protection by such technologies. However, because the legislature has failed to offer copyright protection to fashion designs generally,[198] there is arguably little hope that it would enact a statute to authorize the use of blockchain technology for an IP regime.

IV. JUSTIFICATIONS OF APPLYING BLOCKCHAIN TO THE FASHION INDUSTRY

Multiple theories are used to justify different IP regimes. The dominant theory underlying IP laws in the United States, the theory of law and economics, supports greater IP protection in the fashion industry. Blockchain technology is the most desirable solution for the issues discussed and faced by the fashion industry, and implementation of such technology is supported by the theory of law and economics.

A. Theoretical Justifications

The concept of owning property and rights in one's fixed expressions is central to modern life and many legal systems.

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[195] *See* Anderson, *supra* note 121, at 26–27. However, as Sarah Anderson explains, entities that "do not claim to be registration services" and instead use blockchain technology "to create an increased level of transparency [around] ownership of [a] work" are appropriate under the current legal framework. *Id.* at 30.

[196] No regulation of markets means room for anticompetitive practices and the possibility for use of illegal tactics, especially when a decentralized technology is involved. *See* Reyes, *supra* note 149, at 194.

[197] *Id.* at 195.

[198] *See supra* Part I.

Traditionally, three theoretical justifications have been used in the development, interpretation, and application of IP jurisprudence: (1) the law and economics theory, (2) the personality theory, and (3) the Lockean labor theory.[199] US IP regimes primarily reflect the law and economics theory.[200] On the other hand, European countries like France and the United Kingdom have IP laws derived from the personality and labor theories.[201] It is necessary to explore each theory to understand why and how current laws differ, specifically in relation to IP ownership in fashion designs.

1. Law and Economics and the US IP Regime

US IP law largely derives from the utilitarian-economic-efficiency justification for law and economics, whereby IP laws are purported to "promote the Progress of Science and useful Arts."[202] "This approach focuses on promoting the production (and distribution) of scientific and cultural goods via [useful] laws designed to promote economic efficiency."[203] The exclusive ownership laws are aimed at continuously incentivizing the creation of new works for society as a whole, which contributes to the total welfare.[204] Under this theory, more choices means more benefit to the consumer. Applying this framework to fashion design, IP laws should maximize efficiency by incentivizing designers to continue creating and manufacturing new designs for the benefit of the consumer and society.[205]

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[199] Yanisky-Ravid, *supra* note 16, at 3–4 ("The discourse concerning the theoretical justifications of intellectual property tends to focus on three main substantive theories: the law and economics theory, which examines intellectual property rules according to their cumulative efficiency and ability to promote total welfare, personality theory, which focuses on the personality of the creators and inventors, and Lockean labor theory, which justifies the property interest as the fruits of the creator's labor.").

[200] *Id.*

[201] Justin Hughes, *The Philosophy of Intellectual Property*, 77 GEO. L.J. 287, 330 (1988) (discussing the theoretical justifications for intellectual property laws).

[202] Yanisky-Ravid, *supra* note 16, at 4; U.S. CONST. art. I, § 8, cl. 8; *see also* William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325, 326 (1989) (analyzing the law and economics approach to intellectual property).

[203] Yanisky-Ravid, *supra* note 16, at 6.

[204] *Id.* at 3–4, 6–7.

[205] *See* Amy L. Landers, *The Anti-Economy of Fashion; An Openwork Approach to Intellectual Property Protection*, 24 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 427, 467–69, 472 (2014) ("Exclusive rights for fashion design can be said to operate in the same way as any other creative enterprise. That is, the research and development that a fashion designer puts into a line is lost when a copyist sells a duplicate for less. As one designer described, 'designing a fashion collection is no different from the intellectual process involved in creating a painting or a song except perhaps its lengthy process' because development begins ten months before launch.'" (quoting *Innovative Design Protection and Piracy Prevention Act: Hearing on H.R. 2511 Before the U.S. Subcomm. on Intellectual*

This incentivize-through-reward approach also acknowledges the problem of free riding and seeks to remedy it.[206] A free rider is someone who enjoys a benefit without paying, getting permission, or otherwise contributing, essentially free riding on the creator's hard work and investment.[207] Therefore, a free rider benefits from an invention at no cost, and the creator, author, or inventor is not rewarded. Under this paradigm, there is no incentive for creators, authors, or inventors to make or share their creations. Since copying by free riders may cost them less than the investment necessary to create and develop products, the absence of protection against this practice threatens to limit the incentives for creators, authors, and inventors to enrich our world by transforming their creative visions into tangible works, such as fashion designs. Free riding also hinders economic efficiency because, if free riders just copy rather than create their own inventions, fewer new products are introduced to the market. Rather, consumers are inundated with copies of a few original creations.

2. Personality, Labor, and the European IP Regimes

Many European legal systems have recognized the personality theory as the basis for personal property rights.[208] The personality approach justifies allocating private property rights based on the idea that personal autonomy or liberty is actualized in the personal ownership of property.[209] Professor Shlomit Yanisky-Ravid has argued this point in a previous publication, and further specifies that one can create an external personal stamp on the world through acquiring tangible property or creating IP and therefore gaining IP ownership, which is "fundamental[] to the development and flourishing of individual personhood."[210] Individual personhood, freedom, and liberty are therefore expressed by creating and owning assets.[211] In turn, inventors and creators possess a natural right to own and control physical assets and IP because such ownership and

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Property, Competition, & the Internet, 112th Cong. 8 (2011) (statement of Lazaro Hernandez, Designer and Cofounder, Proenza Schouler))).

206 *See* Landes & Posner, *supra* note 202, at 328–29.

207 Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX L. REV. 1031, 1040 (2005) ("[T]hose who 'free ride'—obtain a benefit from someone else's investment—are undermining the goals of the property system.").

208 Hughes, *supra* note 201, at 330.

209 Yanisky-Ravid, *supra* note 16, at 8–9.

210 *Id.*

211 *Id.*

control "fosters both intellectual and emotional components of the human personality."[212]

The labor theory, or John Locke's property theory, justifies IP ownership by arguing that one deserves to reap the rewards of one's labor and efforts.[213] Under the Lockean theory, Professor Yanisky-Ravid argues an "author or inventor, as a persona, maintains ownership of one's body and soul, including one's intellect and personhood, from which flows the right to the fruits of one's labor."[214] Fixed creations and inventions are the effort and personality of their creator realized.[215] One's efforts into their work and creations are thus a resource they own, and are therefore actual possessions.[216] Professor Yanisky-Ravid argues that this idea assumes "that labor is not only physical but also intellectual" and "a person's intellect is his or her own as much as is his or her body, and thus, rightly the fruits of the soul become that person's possession."[217]

Because the European view emphasizes personhood and ownership of assets and IP rights as a necessary step for self-actualization, while the US perspective emphasizes economic efficiency, European states offer vastly different IP protections to fashion designs. With the European Union Designs Protection Directive (98/71/EC) (the "EU Directive"),[218] the European Union, comprising twenty-eight Member States, put in place a standardized approach to design rights protection.[219] The EU Directive effectively created a harmonized regime for design protection across the European Union.[220] Additionally, the French Intellectual Property Code (IPC) protects "original works of the mind,"[221] including copyright protection for both textile and clothing designs,[222] despite

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[212] *Id.* at 9. The personality theory is based on Hegel's philosophy on the concepts of human will, personality, and freedom. *Id.* at 8; *see* GEORG WILHELM FRIEDRICH HEGEL, HEGEL'S PHILOSOPHY OF RIGHT 40–45 (T.M. Knox trans., Oxford Univ. Press 1967) (1821).

[213] Hughes, *supra* note 201, at 296, 330.

[214] Yanisky-Ravid, *supra* note 16, at 9.

[215] *See id.*

[216] *See id.*

[217] *Id.* at 9–10.

[218] Council Directive 98/71, 1998 O.J. (L 289) (EC).

[219] Witzburg, *supra* note 26, at 1142.

[220] *Id.*

[221] *Id.* at 1145; Code de la propriété intellectuelle [INTELLECTUAL PROPERTY CODE] art. L112-2 (Fr.).

[222] INTELLECTUAL PROPERTY CODE art. L112-2 ("[C]reations of the seasonal industries of dress and articles of fashion. Industries which, by reason of the demands of fashion, frequently renew the form of their products, particularly the making of dresses, furs, underwear, embroidery, fashion, shoes, gloves, leather goods, the manufacture of fabrics of striking novelty or of special use in high fashion dressmaking, the products of manufacturers of articles of fashion and of footwear and the manufacture of fabrics for upholstery shall be deemed to be seasonal industries.").

their useful function.[223] Under the UK Copyright, Designs, and Patents Act of 1988, textiles and artistic works also qualify for copyright protection, while clothing designs may qualify for a more limited term of protection as either an unregistered design (valid up to fifteen years) or a registered design (valid up to twenty-five years).[224]

Under European law, there is no distinction between utilitarian and artistic works that serves as a basis for affording copyright protection.[225] The ultimate inquiry is not based on economic efficiency, but on human fulfillment and the right of ownership of creations as an extension of oneself. Additionally, because European jurisdictions value the creator's persona, they recognize moral rights in the form of more extensive IP protection. This moral right is seen in the European nations' recognition of *droit moral* and *droit de suite*.[226] IP owners are given vastly more rights to collect royalties and retain control over their work under European law, even when an item is under new ownership. Conversely, US copyright law expressly takes a different approach, which disfavors moral rights.[227] Once again, this is due to the US rationale for IP protection, which is grounded in economic efficiency and considers any restraint on the trading or treatment of protected creations to be inefficient.

B. An Argument for Greater Protection of Fashion Designs

Congress has failed to protect fashion designs for reasons ostensibly related to law and economics principles. However, the law and economics analysis does in fact support

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[223] Articles of fashion may also qualify for protection as registered industrial designs, for a more limited term of up to twenty-five years. *See* INTELLECTUAL PROPERTY CODE arts. L511-1, L513-1.

[224] *See* Copyright, Designs and Patents Act 1988, c. 48, §§ 3, 4, 12, 33, 51, 213, 216, 269 (U.K.).

[225] This is unlike the United States where copyright jurisprudence focuses on protecting the aesthetic or artistic elements of work rather than functional ones. *See supra* Section I.A.1.

[226] Berne Convention for the Protection of Literary and Artistic Works, art. 6bis, Sept. 9, 1886, S. Treaty Doc. No. 99-27, 828 U.N.T.S. 221 (amended Sept. 28, 1979) ("Independently of the author's economic rights, and even after the transfer of said rights, the author shall have the right to claim authorship of the work and to object to any distortion, mutilation or other modification of, or other derogatory action in relation to, the said work, which would be prejudicial to his honor or reputation.").

[227] James M. Treece, *American Law Analogues of the Author's 'Moral Right*,' 16 AM. J. COMP. L. 487, 502, 505 (1968) (concluding that, although doctrine of common-law copyright offers American creators protection equal to that of their French counterparts during the period of creation, the American analogues offer less protection after a work is made public and that the 1976 Act has substantially preempted state common-law copyright protection for works fixed in a tangible medium).

fashion design protection. Further, in the absence of such legal protection, the law and economics analysis supports the application of blockchain technology to the fashion industry to address its current concerns.

1. Law and Economics Supports Greater Protection

As previously stated, the current US IP regime purports to provide the necessary incentive to creators and inventors in the form of an exclusive limited right in their creations.[228] This right allows them to exclude others from distributing or producing their creations without their permission or without paying for such creations.[229] The current copyright, trademark, and patent laws are designed to incentivize authors and inventors to create and develop for the betterment of society as a whole. Once the period of exclusivity expires, the works and inventions become part of the public domain and society can then benefit from those goods to a greater extent.[230]

In drafting the IP laws, Congress created a distinction between protectable nonfunctional artistic works and useful inventions.[231] While copyright law is purported to protect more aesthetic "useful arts," Congress has repeatedly found that granting broad copyright protection for clothing design is not necessary.[232] Opponents to greater protection argue that the fashion industry has continued to thrive despite the lack of comprehensive copyright protection because the industry is a "well balanced system which succeeds by smoothly, quickly and profitably integrating a complicated blend of original ideas, individual creativity and copying."[233] Further, opponents of broad protection argue that the fashion industry is at its most efficient without copyright protection because it would be virtually impossible to enforce the laws due to lack of creativity or originality in these designs, and additionally, that broad

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[228] *See supra* Section IV.A.1.

[229] 17 U.S.C. §§ 101, 102(a)(5), 106(4).

[230] "The imposition of greater costs on the public for access to copyrighted works is accepted and understood as the expected and necessary incentive for authors and publishers." ABRAMS & OCHOA, *supra* note 21, § 1:4.

[231] As previously stated, copyright law does not apply to any works deemed to be useful, i.e., fashion designs, all useful articles and designs can only be protected under patent law. 17 U.S.C. § 102; *see supra* Section I.A.2.

[232] *See supra* Section I.A.1.

[233] *Hearing on H.R. 5055*, *Protection for Fashion Design*, *supra* note 36, at 16 (statement of David Wolfe, Creative Director, The Doneger Group).

protection would effectively serve as a monopoly[234] on utilitarian goods that should be accessible to all. These critics allege that such protection would result in increased costs for designers and retailers and decreased choices for consumers[235]—the antithesis of the US IP regime.

The argument that copyright protection is not warranted for fashion design due to its lack of creativity or originality is flawed. It is hard to draw a clear distinction between an artistic work that is granted copyright protection, like a drawing, and an artistic work in the form of a clothing design that is not granted protection. If a drawing can be original, so can a garment design. Of course, there are some clothing designs that are so generic that they are in the public domain and incapable of gaining copyright protection, such as a basic button-up shirt—but similar arguments can be made against the protection of drawings and paintings. Some drawings and paintings can lack sufficient creativity and originality to deserve copyright protection.[236] Further, enforcing copyright law in those mediums could also be challenging and thus not promote economic efficiency due to lack of creativity and ability to differentiate works. However, the law still purports to protect rights in creations that are in those mediums. Ultimately, the blanket exclusion of fashion designs from copyright protection based on lack of creativity and opportunity for inefficiency in the enforcement is flawed because those same arguments against the inclusion of fashion designs can be made for other mediums.

Furthermore, although clothing does serve a useful function and the concept of covering one's body with various articles has been around since before we can remember, that does not make individual articles of clothing *unoriginal*. In other words, although we have always been wearing clothing for a functional purpose, the *design itself* can be creative and thus "original." This is because fashion serves an alternative function besides utility—clothing is often a means for self-expression and status.[237] We often choose specific pieces of clothing based on certain aesthetic features and characteristics that align with the

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[234] *See id.* at 18, 20; ABRAMS & OCHOA, *supra* note 21, § 1:4 ("The monopolistic protection needed to encourage production of intellectual works, however, can inhibit the public's access to and use of these works, and can also restrain the production of new works.").

[235] When one creator has a monopoly on an invention, public access is limited, barriers to enter are high, and prices go up. *See Hearing on H.R. 5055*, *Protection for Fashion Design*, *supra* note 36, at 16 (statement of David Wolfe, Creative Director, The Doneger Group); ABRAMS & OCHOA, *supra* note 21, § 1:4.

[236] *See supra* Part I.

[237] *See* ABRAMS & OCHOA, *supra* note 21, § 3:4 (the subject matter of copyright is works of authorship, and only requires a "modest threshold standard of originality").

way we want to be perceived by the world. Some people choose specific articles or pieces of clothing to act as status symbols, whereas others choose clothing that is more modest, which exemplifies their nonmaterialistic values.

Self-expression through clothing is essential to the law and economics theory as part of the related concepts of freedom of speech and freedom of expression.[238] The law and economics theory supports the freedom to innovate and create. Thus, if individuals were not able to choose the clothing they desire, it would not matter if there were any differentiation, innovation, or creation, and we would likely all be wearing the same thing. If fashion is a means of self-expression and a means of showing status or values, the law and economics theory supports protecting fashion design. If fashion design is protected, and thus innovation and differentiation are encouraged, people can decide to purchase more exclusive designs. Conversely, if all clothing were in the public domain, there would likely be no differentiation in dress from person to person because clothing would be a nonprotected utilitarian good. Therefore, while clothing serves a useful function, it still retains other essential purposes.

Ultimately, affording copyright protection to fashion designs can be justified under the law and economics theory. "This approach focuses on promoting the production (and distribution) of scientific and cultural goods via [useful] laws designed to promote economic efficiency."[239] Granting exclusive rights in one's creative fashion designs would promote economic efficiency, just as granting exclusive copyrights in other creative mediums promotes efficiency. As stated above, clothing designs can be creative and original in the same way that creations in other mediums are, defeating the argument that enforcing copyright law in the fashion industry would be inefficient. In addition, clothing designs can serve a nonutilitarian function—the function of self-expression. By offering exclusive rights in fashion designs, designers have an incentive to create, and society as a whole will benefit from greater choice and economic efficiency. As such, law and economics principles support taking steps toward protecting fashion designs.

2. Blockchain is Justified Under Law and Economics

Despite the challenges and concerns involved with blockchain technology, it remains the most desirable solution to the

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[238] U.S. CONST. amend. I ("Congress shall make no law . . . abridging the freedom of speech, or of the press.").

[239] Yanisky-Ravid, *supra* note 16, at 7.

fashion industry's crisis because it is a self-executing solution based both on contract and property law, and it is justified from a law and economics perspective. Using blockchain technology to protect designs would cause the quasi-IP regime to shift from a property paradigm to one based on contract law. This is because the regime would no longer purport to give rights in one's property or creations, but would rather be based on upholding the terms and conditions of an agreement through smart contracts. If parties mutually agree that the computer code related to a design will only be used for a particular purpose or that a design is wholly owned by one party, the blockchain would represent that.

The implementation of such an endogenous system is justified under the economic analysis of contract law. Under such an analysis, maximizing welfare, efficiency, and reliable enforcement are of the utmost importance.[240] The IP rights afforded by blockchain technology can maximize welfare. The technology will permit parties to come to agreements for their mutual benefit regarding design ownership. In turn, it will incentivize designers to continue investing in their creations, which will further benefit society as a whole. The use of self-executing smart contracts promotes efficiency, as there is no need for reliance on judicial enforcement. Consistent enforcement and predictable remedies are part of blockchain technology and self-executing contracts, because the parties' expectations are clearly and objectively laid out from the onset of the agreement. Ultimately, the economic analysis of contract law can justify the drawbacks of implementing this endogenous system of self-executing smart contracts to provide IP protection to fashion designers.

As discussed above, not only does the theory of law and economics justify more protection for fashion designs,[241] but it also justifies their protection through the adoption of blockchain technology. The law and economics perspective purportedly incentivizes creation by affording exclusive ownership of designs.[242] An endogenous system for ensuring IP protection in the fashion industry would provide incentives for new designers, in line with the law and economics perspective. By rewarding exclusive ownership in one's creations, the creator has an incentive to continue inventing useful creations, which ultimately benefits society by providing the consumer with more choice.[243] In addition, the law and economics perspective supports economic efficiency. An endogenous legal regime existing through self-executing smart contracts is the

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[240] *See* Polinsky & Shavell, *supra* note 141, at 13–21 (describing the analytical foundation of contract law from an economic perspective).

[241] *See supra* Section IV.A.1.

[242] *See supra* Section IV.A.1.

[243] *See* Polinsky & Shavell, *supra* note 141, at 7.

epitome of efficiency. There would be no need for middlemen or state involvement in the enforcement of contracts, thereby expediting the implementation of terms and allowing for predictability and consistency in determining party rights.

Although there is potential for underground markets to flourish with blockchain technology, the technology's application to the fashion industry would create more benefits related to ethical and humanitarian concerns. Applying such technology to transactions between those in the fashion industry would increase transparency among all parties. Many humanitarian crises can be overcome with increased transparency and verification of goods. For example, the diamond blockchain, Everledger, can reduce the circulation of blood diamonds by verifying the source of a diamond. Similarly, the ability to verify goods such as designer purses would hinder the counterfeit market and prevent the associated negative consequences of such market in the fashion industry.

Next, since US law is not dependent upon the personality theory of IP rights, the inability of smart contracts to recognize moral rights is of lesser concern than it would be in other jurisdictions, including many in Europe. Accordingly, arguments against blockchain based upon its inability to enforce moral rights are not salient because, as discussed, the fashion blockchain would effectuate economic efficiency and create incentives for designers, furthering the goals of the dominant theoretical justification for IP protection in the United States.

Lastly, using blockchain in the fashion industry would not be the same as traditional self-regulation, because Congress has consistently preferred *no* regulation on the issue of greater IP protection of fashion designs.[244] Therefore, if Congress wanted to prevent monopolies and other effects of a laissez-faire environment caused by use of blockchain technology, it could always provide greater statutory protection for fashion designs or enact legislation that could then be implemented through computer code, endogenously incorporating the statute into the technology.[245]

Although the application of blockchain to the fashion industry presents concerns, this article purports that it is the best solution to the industry's current crisis.

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[244] *See supra* Part I.

[245] If the government wanted to regulate the industry's use of blockchain technology, it could adopt the proposal laid out by Carla L. Reyes, whereby regulators enact "regulation via statute" then "implemen[t] that statute through code, so that it is endogenously incorporated into the . . . technology." *See* Reyes, *supra* note 148, at 227–28; *see also supra* text accompanying notes 196–198.

3. Blockchain is More Desirable than Other Quasi-Legal or Self-Help Solutions

Blockchain is a desirable solution to the fashion industry's current concerns that stem from the lack of sufficient IP protection. The technology can cure the pressing challenges discussed above by creating an endogenous quasi-legal regime that will, in effect, reduce ethical and sustainability externalities through the technology's ability to verify goods along the supply chain and increase transparency of the industry.

The available means for protecting designs or brand image are (1) traditional IP laws, (2) contracting, and (3) self-help measures. IP laws purportedly encourage innovation by offering limited exclusive rights in one's personal creations. The desire to own and have rights in one's property or creations is the fundamental idea behind traditional IP laws. However, there is a legal lacuna in protecting fashion designs,[246] as such protection is consistently found unwarranted.[247] Nonetheless, designers in the industry have argued that, if amended, the law could be used "as a tool that may finally level the playing field in the counterfeit goods and design infringement cases that have been exploding in recent years due to the ease" with which designs are copied.[248]

Alternatively, contract law allows parties to agree to particular terms and conditions in a transaction in order to effectuate business and even protect creative assets.[249] An example of contract law being used to protect IP assets is the trade secret, whereby parties can agree not to divulge proprietary information without relying on traditional statutory IP protection. However, as previously discussed, there are inherent constraints on contracting, namely the parties' lack of control in enforcing a contract's terms and the difficulty in predicting judicial contract determinations.[250] In addition, with trade secrets, as with any form of contract breach, the wronged party

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[246] *See, e.g.*, Innovative Design Protection Act, S. 3523, 112th Cong. (2012) (proposed bill that would have allowed for the protection of certain articles of clothing under copyright law if they met certain requirements of originality among others); *see also* Nurbhai, *supra* note 35, at 504–05 ("Swayed by legislative intent inherent in the fact that the seventy-odd design protection bills introduced in Congress since 1914 had failed to be enacted, the Register's concern that the floodgates would open, and the Register's expertise in such matters, the court decided that the registration had been properly denied.").

[247] *See* Nurbhai, *supra* note 35, at 502–03.

[248] Witzburg, *supra* note 26, at 1140.

[249] *See supra* Section III.A.

[250] With the use of smart contracting, the lack of control and need to rely on a third-party actor are diminished. *See supra* Section III.A.

must resort to judicial recourse after the wrong has occurred, and the party has no way of ensuring ex ante that the proprietary information will not be disclosed.[251] Contracting and trade secret law provide parties with some measure of recourse once harm is done, but do not prevent the harm from actually occurring.

Self-help is another way to protect designs or brand image. Self-help measures are ways for companies to protect their assets and interests without resorting to the law; for example, calling out copyists through media platforms or openly advocating against copying.[252] However, these self-help measures can only go so far to provide protection, as they do not offer any statutory or concrete recourse.[253] In an effort to limit copying, the World Intellectual Property Organization (WIPO) has launched the WIPO PROOF project to provide works with proof of originality.[254] Ultimately, the digital time stamping measures used by WIPO can only help reduce design piracy to some degree, and advocacy and education about the injustices of design piracy and counterfeit products can only go so far to protect fashion-related businesses.

Because of the apparent need for an alternative solution to statutory, contract, and self-help IP protections, the fashion industry should take a proactive approach through the creation and application of a fashion blockchain. This article argues that all players should take proactive steps to further their common interests in enhanced IP protection by advocating for the use of blockchain technology. Since Congress has consistently opted against regulation, the industry must create its own method to protect its assets. As previously discussed, neither traditional contracts nor self-help measures will be completely effective in doing so.

Blockchain technology, on the other hand, would serve as a means to automate contractual limitations and would supplement

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[251] *See supra* Section III.A.

[252] *See* Soeun Grace Ahn, *How to Protect Yourself as a Young Designer Starting Out in the Fashion Industry*, VICE: i-D (July 6, 2017, 6:39 PM), https://i-d.vice.com/amp/en_us/article/kzw8ez/how-to-protect-yourself-as-a-young-designer-starting-out-in-the-fashion-industry [https://perma.cc/MX9A-T3M6].

[253] *See id.*

[254] *WIPO PROOF—Trusted Digital Evidence*, WIPO, https://www.wipo.int/wipoproof/en/ [https://perma.cc/E2QK-VL99] ("WIPO PROOF is a new digital business service that provides a date- and time-stamped digital fingerprint of any file, proving its existence at a specific point in time. This new service complements WIPO's existing [IP] systems. It is specifically designed for our increasingly digital world where innovation and creativity are enabled by technology, big data and global collaboration."); Shlomit Yanisky-Ravid, *International Intellectual Property and Distributive Justice in the Digital Era*, *in* INTELLECTUAL PROPERTY, INNOVATION, AND GLOBAL INEQUALITY (Francis Gurry et al., eds.) (forthcoming 2021) (on file with author).

areas that current IP protections do not cover. Because of the technology's self-executing nature, it will be capable of effectively and predictably furthering the parties' interests. It would cure the challenges inherent in contract law and also serve a reliable evidentiary function by increasing transparency among different entities in the industry, including designers, retailers, manufacturers, and suppliers.

CONCLUSION

Blockchain is viewed as the next disruptive technology with the potential to transform a vast range of industries, including fashion design.[255] This technology provides a tool that allows entities to conduct secure, permanent, and trusted transactions without a central authority controlling, approving, or otherwise scrutinizing such transactions.[256] In other words, blockchain platforms enable global and secure transactions via smart contracts.[257] This article asserts that smart contracts, and blockchain technology generally, have tremendous potential to cure the major "illness" of the fashion design industry: namely, the lack of sufficient IP protection.[258] Therefore, while the idea of using blockchain technology in the fashion industry is not so widespread, first movers should explore this concept. Using such technology would allow new designers or smaller brands that lack the resources to defend their IP, to continue to prosper, and more importantly, would address many of the challenges presented by the current IP regime. Smart contracts can effectively replace IP

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[255] *See* Marr, *supra* note 116.

[256] *See* Alan McQuinn & Daniel Castro, *A Policymaker's Guide to Blockchain*, ITIF (Apr. 30, 2019), https://itif.org/publications/2019/04/30/policymakers-guide-blockchain [https://perma.cc/N6ZA-MD94].

[257] Accenture creates blockchain solutions for its insurance clients that are designed to translate insurance industry processes into "blockchain-ready procedures that embed trust into the system." *See* Marr, *supra* note 116. Nationwide Insurance began testing "RiskBlock" as a blockchain solution for providing proof-of-insurance information. *Id.* Axa provides first flight delay insurance using smart contracts. *See What Are Smart Contracts Examples and Use Cases*, EXISTEK BLOG (May 23, 2018), https://existek.com/blog/what-are-smart-contracts-examples-and-use-cases/ [https://perma.cc/G4Q7-52S8]. Ascribe uses smart contracts for IP management, allowing direct interaction with entities that want to use the IP and customization of conditions and terms for the use of one's work. *See id.* A consortium comprised of Walmart, IBM, and Tsinghua University is developing smart contract blockchain technology for supply chain management that tracks orders from the suppliers to the customers. *Id.* Ethereum provides a "decentralized platform that runs smart contracts" as well as management of its own cryptocurrency called Ether. *Smart Contract Platforms [A Deep Dive Investigation]*, BLOCKGEEKS (Apr. 24, 2020), https://blockgeeks.com/guides/different-smart-contract-platforms/ [https://perma.cc/YF3J-885G]; *see also What Is Ethereum?*, ETHEREUM (Aug. 10, 2021), https://ethereum.org/en/what-is-ethereum/ [https://perma.cc/J25T-PKLV].

[258] *See supra* note 116 and accompanying text for examples of blockchain's application in various industries.

law and offer vital protections for the creators of fashion designs. These technologies allow companies to protect their brands, as well as their investment in design creation and in useful products. Most importantly, smart contracts may incentivize designers to continue creating, therefore promoting economic growth.

In light of the ease of copying, the effortless transfer of information, and shift to a digital world in the 3A Era, brands are encouraged to take proactive steps toward protecting their creations by using smart contracts on blockchain platforms. Blockchain technology can be used to create an endogenous crypto-legal structure and will allow brands to reach agreements about the protection of their fashion designs without involving the regulatory state. This feature is essential in light of Congress's continued refusal to provide copyright protection to fashion designs. This article does not encourage self-regulation by the major players in the industry, a fear commonly cited by opponents to blockchain technology. Rather, it argues for the players to take proactive and necessary steps in furthering their interests in greater IP protection through the use of blockchain technology in light of the 3A Era. This is justified partly because Congress has consistently opted for no regulation on the issue of greater IP protection of fashion designs.[259] Lastly, such technology will give greater control back to design creators and incentivize them to continue contributing useful creations, which promotes efficiency and the wellbeing of society as a whole. Providing incentives and increasing efficiency are the goals of the law from a law and economics perspective.[260] With this proposed application of blockchain technology and smart contracts, the fashion industry can achieve greater economic efficiency.

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[259] *See supra* Part I.
[260] *See supra* Part IV.