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# Wearables and Where They Stick: Finding A Place for Tech Tattoos in the IP Framework

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## WEARABLES AND WHERE THEY STICK: FINDING A PLACE FOR TECH TATTOOS IN THE IP FRAMEWORK

*Emily A. McCutcheon\**

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## I. INTRODUCTION

Slide to unlock—Apple’s iconic iOS access feature. When Apple introduced the first iPhone in 2007, the slide-to-unlock feature changed the way millions of users accessed their phones.<sup>1</sup> Entering unique passcodes and access patterns soon followed, and the days of flipping open a phone were over.

When Apple introduced iOS 10, the company replaced “slide to unlock” with “press home to open.” To gain access to the home screen, the new system simply requires a user to place their thumb on the round button on the iPhone’s front screen. However, users were not as enthralled with the technology as the feature’s predecessor a decade ago. Many users complained about the frustrating switch and were dismayed that a “fundamental” iPhone feature had seemingly disappeared.<sup>2</sup> Before long, hundreds of articles instructing users on how to disable the new feature appeared.<sup>3</sup>

How would smartphone users react to a “tap your wrist to unlock” feature, or a “swipe the butterfly on your forearm” to control your favorite music app? Pretty positively, if you ask MIT’s Media Lab and Microsoft Research, the developers of the temporary “smart tattoo”, Tattio, and the accompanying fabrication process, DuoSkin.<sup>4</sup> Building on earlier “wearable” ideas, these developers have combined fashion and function to create a range of stunning, customizable temporary tattoos that allow users to control various features and applications on their smartphones, “unlocking a much wider canvas for

<sup>1</sup> In fact, it was so revolutionary that Apple patented the “performing gestures” system in 2011, and later attempted to sue Samsung over their use of a similar sliding feature, a pattern-based unlocking system. See Zach Epstein, *These Are the 5 iOS Features Apple Claims Samsung Stole*, BGR (Apr. 1, 2014), <http://bgr.com/2014/04/01/apple-vs-samsung-lawsuit-patents-2014/>.

In February 2016, the U.S. Court of Appeals for the Federal Circuit ruled in favor of Samsung, chastising Apple for the “obvious” nature of their 2011 patents. The Court determined that the auto-correct and slide-to-unlock patents were “invalid.” See Don Reisinger, *Samsung Wins Appeal in \$120M Patent Fight With Apple*, FORTUNE, Feb. 26, 2016, <http://fortune.com/2016/02/26/apple-samsung-patent-appeal/>; see also *Apple Inc. v. Samsung Elecs. Co.*, 816 F.3d 788 (Fed. Cir. 2016).

<sup>2</sup> See Chris Smith, *Apple Has Replaced ‘Slide to Unlock’ with Something Really Dumb*, BGR (June 14, 2016), <http://bgr.com/2016/06/14/ios-10-swipe-unlock-press-home/>; see also Paul Horowitz, *iOS 10: Where’s Slide to Unlock? How to Disable ‘Press Home to Unlock’ in iOS 10*, OSXDAILY (Sept. 15, 2016), <http://osxdaily.com/2016/09/15/disable-press-home-to-unlock-ios/>.

<sup>3</sup> A simple Google search of “how to disable press home to unlock” retrieves over three million results.

<sup>4</sup> Carmen Drahl, *The Surprisingly Simple Chemistry In DuoSkin, Temporary Tattoos That Control Your Phone*, FORBES, Aug. 16, 2016, <https://www.forbes.com/sites/carmendrahl/2016/08/16/the-surprisingly-simple-chemistry-in-duoskin-temporary-tattoos-that-control-your-phone/>; Sophie Charara, *DuoSkin is MIT & Microsoft Research’s Temp Tattoo for Controlling Gadgets*, WAREABLE (Aug. 16, 2016), <https://www.wearable.com/wearable-tech/duoskin-mit-microsoft-temp-tattoo-interface-888>.

electronics.”<sup>5</sup> By utilizing inexpensive, widely available gold leaf, the Tattio-DuoSkin developers further distinguished themselves from their predecessors’ expensive on-skin interface devices, which used thick copper or silicone based materials.<sup>6</sup>

“Smart tattoos” are not themselves new. Last year, mobile app developer, Chaotic Moon, debuted “Tech Tats,” a wearable fitness tracker that connected via Bluetooth to user’s smartphones.<sup>7</sup> CEO Ben Lamm predicted that “[t]he future of wearables is biowearables.”<sup>8</sup>

Lamm was not wrong—in the past year alone, at least five other wearable skin interface devices have made headlines. Ranging from alcohol monitoring sensors to facial expression readers, the “tech tattoo” revolution is just beginning.<sup>9</sup> “This [past] year has seen a raft of sensors and devices take the form of stick-on plasters,” and the stick-on trend is becoming even more popular.<sup>10</sup>

At the forefront of the trend is L’Oréal, which became the first beauty company to join the wearable movement with the debut of the “first stretchable electronic for mainstream consumers” in January 2016.<sup>11</sup> Half the thickness of a hair strand, the super thin, heart-shaped sensor, “My UV Patch,” monitors the wearer’s sun exposure.<sup>12</sup> Users take a picture of their patch and upload it to the corresponding mobile app, which analyzes the patch’s shades of blue to determine the UV exposure.<sup>13</sup>

The cosmetic giant partnered with MC10, a Massachusetts based wearable company that develops thin, flexible stretchable biometric devices.<sup>14</sup> MC10 is the

<sup>5</sup> Cindy Kao et al., *DuoSkin: Rapidly Prototyping On-Skin User Interfaces Using Skin-Friendly Materials*, [http://duoskin.media.mit.edu/duoskin\\_iswc16.pdf](http://duoskin.media.mit.edu/duoskin_iswc16.pdf).

<sup>6</sup> *Id.*

<sup>7</sup> James Stables, *Chaotic Moon Shows Off Wearable Tech Tattoo Concept*, WAREABLE (Nov. 25, 2015), <https://www.wearable.com/wearable-tech/chaotic-moon-shows-off-wearable-tech-tattoo-concept-1987>.

<sup>8</sup> Sarah Buhr, *Chaotic Moon Explores Biometric Tattoos For Medicine And The Military*, TECHCRUNCH (Nov. 23, 2015), <https://techcrunch.com/2015/11/23/chaotic-moon-explores-biometric-tattoos-for-medicine-and-the-military/>.

<sup>9</sup> Sophie Charara, *Temp Tech Tattoos Will Get Us to invisibles*, WAREABLE (July 29, 2016), <https://www.wearable.com/wearable-tech/tech-temporary-tattoo-2017>.

<sup>10</sup> James Stables, *#Trending: Stick-on Wearables*, WAREABLE (July 21, 2016), <https://www.wearable.com/trending/trending-stick-on-wearables>.

<sup>11</sup> Kim Lightbody, *Meet The New Wave Of Wearables: Stretchable Electronics*, FASTCOMPANY (June 20, 2016), <https://www.fastcompany.com/3060274/meet-the-new-wave-of-wearables-stretchable-electronics>.

<sup>12</sup> *L’Oréal Debuts First-Ever Stretchable Electronic UV Monitor At The 2016 Consumer Electronics Show*, L’ORÉAL (June 1, 2016), <http://www.loreal.com/media/press-releases/2016/jan/loreal-debuts-first-ever-stretchable-electronic-uv-monitor/>.

<sup>13</sup> *Id.*

<sup>14</sup> *Id.* MC10’s primary product is the BioStamp Sensor, a soft, flexible wearable that bills itself as the “simplest way to gather complex physiological data” and boasts an online interface that

brainchild of John Rogers, the innovator behind the first attachable, stretchable electronic circuit that launched the fury of biosensor research and development.<sup>15</sup> MC10's current CEO, Scott Pomerantz, hinted that tech tattoos have the "boundless potential of connected devices,"<sup>16</sup> echoing Rogers' own prediction that they are "where wearables are likely to go next."<sup>17</sup> With everyone from multibillion dollar companies to college student-run startups jumping on the trend, it seems like wearables will become a standard option for consumers who are looking for a way to monitor various aspects of their health while displaying their personal style.<sup>18</sup>

If these tech tattoos are the future, what does this mean for the traditional categorical systems of intellectual property? In Part I, this Note discusses the unique challenges these "tech tattoos" present to the traditional copyright and patent schemes. Do the functional, technological aspects of these devices subject them to patent protections, in that they are a "new and useful process [or] machine"?<sup>19</sup> The obvious answer seems to be an emphatic yes, but this response ignores one of the most important—and attractive—elements of these tech tattoos: the colors, patterns and overall designs that attract consumers. Tattio-DuoSkin's golden butterflies and alternating gold and silver lattice designs correspond to access capabilities, but that is just the "tech" side of "tech tattoo." What about the "tattoo" aspect of these wearables? Despite resistance from industry artists, tattoos may fit directly in the realm of copyright.<sup>20</sup> Should we then consider tech tattoos "pictorial works," in the same sense that ink-and-pen tattoos are?<sup>21</sup> Or are these designs a "process [or] system" that is best left to patent regulations?<sup>22</sup>

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allows users to monitor health data. *BioStamp RC*, MC10, <https://www.mc10inc.com/our-products> (last visited Mar. 9, 2017).

<sup>15</sup> Lightbody, *supra* note 11.

<sup>16</sup> L'Oréal Debuts First-Ever Stretchable Electronic UV Monitor at the 2016 Consumer Electronics Show, *supra* note 12.

<sup>17</sup> Lightbody, *supra* note 11. L'Oréal has since revealed plans for at least ten additional wearable devices. Michael Sawh, *L'Oréal My UV Patch to Keep You Safe in the Sun is Now Available*, WAREABLE (Aug. 5, 2016), <http://www.wearable.com/health-and-wellbeing/loreal-my-uv-patch-will-keep-you-safe-in-the-sun-2141>.

<sup>18</sup> James Stables, *GraphWear SweatSmart Uses Graphene to Work Out How You Sweat*, WAREABLE (July 15, 2016), <http://www.wearable.com/wearable-tech/graphwear-sweatsmart-uses-graphene-to-work-out-how-you-sweat-2975>.

<sup>19</sup> 35 U.S.C. § 101 (2012).

<sup>20</sup> Aaron Perzanowski, *Tattoos & IP Norms*, 98 MINN. L. REV. 511, 513 (2013).

<sup>21</sup> 17 U.S.C. § 102(a)(5) (2012).

<sup>22</sup> *Id.* § 102(b).

Critics fault the United States for adopting a “first to file” system, but should the critique end there?<sup>23</sup> With technology changing so rapidly, do the traditional patent and copyright norms no longer fit with the creations that startups churn out? While Part I will attempt to determine the appropriate intellectual property category for tech tattoos, this Note will conclude by delving into whether these protections are even worth the trouble they cause.

## II. BACKGROUND

Separating the “tech” from “tattoo” and focusing specifically on the tattoo aspect of these products does not simplify the task of determining whether copyright or patent protections best serve developers and creators.<sup>24</sup> Almost exclusively regulated by state and local health codes, the tattoo industry has remained largely outside the realm of copyright and patent protection.<sup>25</sup> Because “there have been few interactions between tattooing and intellectual property law,” tattoo artists working with the typical mediums of ink and skin are unlikely to expect many formal protections or even know those avenues may exist.<sup>26</sup> How then can a developer who works with surface-applied or semi-embedded materials to create similar artistic expressions determine whether their tech-infused designs are worthy of formal protection?

## III. IP PROTECTIONS FOR WEARABLES

Copyright protects “original works of authorship, including pictorial works that are fixed in a tangible medium of expression.”<sup>27</sup> On their face, tattoos seem to fit these criteria.<sup>28</sup> However, developers seeking protection might face dilemmas in the three traditional pillars of copyright law: fixation, originality, and separability. The added “tech” element of these tattooed wearables seem to limit the applicability of copyright protections, either indicating developers should seek

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<sup>23</sup> Bernard Klosowski, *Will the New Patent Law Kill the Garage Inventor and Startup?*, ENTREPRENEUR, Nov. 13, 2013, <https://www.entrepreneur.com/article/230034>.

<sup>24</sup> Additionally, considering that a product may be dually protected by copyright and patent laws, a developer may seek to obtain both protections for their tattoos. Gregory R. Mules, *Dual Copyright and Design Patent Protection: Works of Art and Ornamental Designs*, 49 ST. JOHN'S L. REV. 543, 546 (2012).

<sup>25</sup> Matthew Beasley, *Who Owns Your Skin: Intellectual Property Law and Norms Among Tattoo Artists*, 85 S. CAL. L. REV. 1137, 1141, 1146 (2012).

<sup>26</sup> *Id.* at 1147.

<sup>27</sup> Thomas F. Cotter & Angela M. Mirabole, *Written on the Body: Intellectual Property Rights in Tattoos, Makeup, and Other Body Art*, 10 UCLA ENT. L. REV. 97, 103 (2003); see Yolanda M. King, *The Challenges “Facing” Copyright Protections for Tattoos*, 92 OR. L. REV. 129 (2013).

<sup>28</sup> King, *supra* note 27, at 132, n.11.

patent protection or that there is a greater issue—traditional intellectual property protections might not serve the best interests of the evolving technological world.

#### A. COPYRIGHT PROTECTIONS FOR WEARABLES

1. *Fixation.* A work is “fixed” if it is “sufficiently permanent or stable . . . for a period of more than transitory duration.”<sup>29</sup> Therefore, the fixation requirement of copyright law poses little to no problem to traditional tattoo artists. Tattoos are relatively permanent.<sup>30</sup> In contrast, part of the allure of “smart” tattoos is their temporary nature. Of all the tech tattoos currently or soon to be available to consumers, all prominently advertise the temporary adhesion features.<sup>31</sup>

Courts have yet to determine whether tattoos are sufficiently “fixed” to meet the statute’s protections. Since the majority of tattoo copyright cases have settled and tattoo artists largely avoid filing copyrights, the closest comparison would be “tattoo flash sheets,” paper reproductions of original tattoo designs.<sup>32</sup> While these designs are not actually “fixed” to the body, they are “fixed” to printed paper. There is at least one case where an artist copyrighted his “tattoo flash sheets” and successfully sued a company that reproduced unauthorized copies for airbrush body art stencils.<sup>33</sup> Temporary tech tattoos still fall somewhere in the middle—they have the same creative design aspects that copyright protects for flash tattoos, but are not quite as firmly fixed.

However, courts have discussed the threshold level of “fixation” required to protect a work that is more fluid than permanently fixed.<sup>34</sup> In terms of living organisms, the *Kelley* court determined that a garden could not be “fixed,” despite being an original work in terms of structure and arrangement.<sup>35</sup> Although the maturation of seeds and placed plants were tangible and could last longer than a

<sup>29</sup> 17 U.S.C. § 101 (2012).

<sup>30</sup> See also *Tattoos & Permanent Makeup: Fact Sheet*, U.S. FOOD AND DRUG ADMINISTRATION, <https://www.fda.gov/Cosmetics/ProductsIngredients/Products/ucm108530.htm> (last visited Aug. 31, 2015) (“Despite advances in laser technology, . . . [c]omplete removal without scarring may be impossible.”).

<sup>31</sup> Stables, *supra* note 10; Lightbody, *supra* note 11.

<sup>32</sup> There is at least one tattoo design that has received copyright protection. See Timothy C. Bradley, *The Copyright Implications of Tattoos: Why Getting Inked Can Get You into Court*, 29 ENT. & SPORTS LAW. 27 n.10 (2011).

<sup>33</sup> *Tattoo Art, Inc. v. Tat Int’l, LLC*, Civil Action No. 2:10cv323, 2012 U.S. Dist. LEXIS 127775, (E.D. Va. Sept. 7, 2012).

<sup>34</sup> See 17 U.S.C. § 101 (2012); *Balt. Orioles, Inc. v. Major League Baseball Players Ass’n*, 805 F.2d 663, 668 (7th Cir. 1986) (“[17 U.S.C. §] 101 expressly provides that ‘[a] work consisting of sounds, images, or both, that are being transmitted, is ‘fixed’ . . . if a fixation of the work is being made simultaneously with its transmission.’ Since the telecasts of the games are videotaped at the same time that they are broadcast, the telecasts are fixed in tangible form.”).

<sup>35</sup> *Kelley v. Chi. Park District*, 635 F.3d 290, 303 (7th Cir. 2011).

transitory duration, it was not “stable or permanent enough to be called ‘fixed.’”<sup>36</sup> A garden’s “appearance is too inherently variable to supply a baseline for determining questions of copyright creation and infringement.”<sup>37</sup> Comparing gardens, which are purely living things, to tech tattoos, which are nonliving things attached to a living thing, would be fruitless—they are distinctively different. However, the *Kelley* court made an important point: “artists who incorporate natural or living elements in their work can never claim copyright” was not the overall holding.<sup>38</sup> Instead, the use of living elements in a work does not exclude the creator from obtaining copyright protection.<sup>39</sup>

While a tech tattoo may not last as long as a flash tattoo on paper can, it certainly does not transform with the weather and seasons like a garden. While a tech tattoo can remain fixed for longer than a “transitory duration,” depending on the durability of the device and the user’s preferences, critics are not as convinced that the body can serve as a tangible medium of expression to which works can be fixed. In one of the more famous tattoo copyright infringement cases involving the reproduction of Mike Tyson’s tattoo in *The Hangover II*, Warner Brothers attempted to argue that the human body was a “useful article,” which would exempt the tattoo from copyright protection.<sup>40</sup> At the preliminary injunction hearing, Warner Brothers provided an affidavit from David Nimmer, arguing that the human body would not be a medium of expression for fixation purposes.<sup>41</sup> Nimmer dismissed his previous musings about the possibility that the human body could serve as a tangible medium for fixation purposes as incorrect.<sup>42</sup> Instead, Nimmer relied on a ‘slippery slope’ argument—allowing the human body to serve as medium for fixation, therefore allowing tattoos to be copyrightable, would open the door to despot tattoo artists suing clients who tried to remove their tattoos or demanding royalties from clients who made public appearances.<sup>43</sup> However, the district court did not have an opportunity to address the merits of Nimmer’s argument.<sup>44</sup> Much like many other tattoo

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<sup>36</sup> *Id.* at 305.

<sup>37</sup> *Id.*

<sup>38</sup> *Id.*

<sup>39</sup> *Id.*

<sup>40</sup> Bradley, *supra* note 32, at 27.

<sup>41</sup> Nimmer Decl., May 20, 2011, ECF No. 29-6, accessible at: Jeremy Byellin, *Tattoo Artist Sues Over “The Hangover Part II”* (May 26, 2011), <http://blog.legalsolutions.thomsonreuters.com/top-legal-news/tattoo-artist-sues-over-the-hangover-part-ii/>

<sup>42</sup> *Id.* at 5–6.

<sup>43</sup> *Id.* at 6–8.

<sup>44</sup> The district court was unconvinced by Warner Brothers’ argument, but it is unclear whether they found fault with Nimmer’s argument or Warner Brothers’ alternative theory of fair use. See Bradley, *supra* note 32.

copyright cases, the case settled shortly after the injunction decision.<sup>45</sup> Other courts have not picked up where the Whitmill-Warner Brothers' case left off—in fact, no decisions have been rendered that determine the fixation parameters regarding human body and tattoos.<sup>46</sup>

2. *Originality.* In the statute, “original works of authorship” is “purposely left undefined, [and] is intended to incorporate . . . the standard of originality established by the courts.”<sup>47</sup> The Supreme Court did precisely that in *Feist Publications*.<sup>48</sup> The court opined that “[t]he vast majority of works make the grade quite easily, as they possess some creative spark, ‘no matter how crude, humble or obvious’ it might be.”<sup>49</sup> “[A] work may be original even though it closely resembles other works so long as the similarity is fortuitous, not the result of copying.”<sup>50</sup> Therefore, the threshold a creator must meet to establish originality is quite low. Generally speaking, a standard tattoo artist can easily meet this burden with any work that has “at least some minimal degree of creativity.”<sup>51</sup> The fusion of unique designs, particular colors and an artist’s vision would seem to be more than enough to meet the threshold.

However, tech tattoo artists may face a more difficult challenge than their traditional counterparts. Take for example, BioCom Technologies’ FitPal Patch, a stick-on wearable that promises near medical grade cardiovascular result computation.<sup>52</sup> The FitPal Patch is an oblong, black and blue device, with “fitpal” printed across the front in blue, generic font.<sup>53</sup> While this combination of shapes and colors would be “at least some minimal degree of creativity,” it seems contrary to the purpose of copyright protection to allow such a common shape and color combination to be protected.<sup>54</sup> Compared to the FitPal’s seemingly unimaginative design, Tattio-DuoSkin’s stunning butterfly and flame designs seem to better fit the intentions of the originality requirement. But, with such a low threshold, where exactly should the line be drawn between protectable shape and color designs?

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<sup>45</sup> Matthew Beloni, “Hangover” Tattoo Lawsuit Settled, REUTERS (June 20, 2011), <http://www.reuters.com/article/us-hangover-idUSTRE75K0DF20110621>.

<sup>46</sup> Nimmer Decl., supra note 41.

<sup>47</sup> H.R. REP. NO. 94-1476, at 551 (1976).

<sup>48</sup> *Feist Publ’ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340 (1991).

<sup>49</sup> *Id.* at 345.

<sup>50</sup> *Id.*

<sup>51</sup> *Id.*

<sup>52</sup> Lulu Chang, *The FitPal Promises to be the Most Comprehensive Heart Rate Wearable Yet*, DIGITAL TRENDS (Feb. 21, 2016), <http://www.digitaltrends.com/wearables/fitpal/>.

<sup>53</sup> *FitPal—The Most Complete 24/7 Heart Rate Wearable*, KICKSTARTER, [https://www.kickstarter.com/projects/coreywilliams/fitpal-the-most-complete-24-7-heart-rate-wearable?ref\\_nav\\_search](https://www.kickstarter.com/projects/coreywilliams/fitpal-the-most-complete-24-7-heart-rate-wearable?ref_nav_search).

<sup>54</sup> *Feist Publ’ns, Inc.*, 499 U.S. at 345.

Some courts have attempted to answer this question, providing some insight to developers about whether copyright is a realistic avenue of protection. In *Hoberman Designs*, a California district court addressed the interplay between shapes in and arrangements of shapes.<sup>55</sup> The defendants challenged the legitimacy of the copyright protections afforded to the plaintiff's geometric toys.<sup>56</sup> The court determined that, while a geometric shape itself is not protectable, “[t]he use of combined geometric shapes does not preclude copyright protection.”<sup>57</sup> Other courts are in agreement. In *Atari*, the court noted that “simple shapes, when selected or combined in a distinctive manner indicating some ingenuity, have been accorded copyright protection both by the Register and in court.”<sup>58</sup> In contrast, “familiar symbols or designs” have not.<sup>59</sup> While FitPal's simple oval shape may not be protectable, certainly the unique crossover lattice patterns of Tattio-DuoSkin's should be sufficient. However, many of the more “functional” tech tattoos fit directly within the “familiar symbols” exclusion, and it would be difficult for even the most industrious developers to argue their square shaped patches fall outside the exclusion.

3. *Separability*. Developers seeking copyright protection may be able to avoid fixation and originality arguments, but the biggest hurdle for tech tattoos is the separability requirement. Section 101 further explains:

Such works shall include works of artistic craftsmanship insofar as their form but *not their mechanical or utilitarian aspects* are concerned; the design of a useful article . . . shall be considered a pictorial, graphic, or sculptural work only if, and only to the extent that, such design incorporates pictorial, graphic, or sculptural features *that can be identified separately from, and are capable of existing independently of,* the utilitarian aspects of the article.<sup>60</sup>

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<sup>55</sup> *Hoberman Designs, Inc. v. Gloworks Imps., Inc.*, 2015 U.S. Dist. LEXIS 176117 (C.D. Cal. Nov. 3, 2015).

<sup>56</sup> One of the copyright applications for the toys' designs was originally rejected, but was later granted for particular points of the design and “to the extent that the functional or mechanical designs . . . do not predetermine their resulting three-dimensional form.” These functionality limitations are of particular importance to tech tattoo developers. Further discussion of the attractiveness of separability was also discussed. *Hoberman*, 2015 U.S. Dist. LEXIS 176117, at \*1, \*5–6.

<sup>57</sup> *Id.* at \*15.

<sup>58</sup> *Atari Games Corp. v. Oman*, 888 F.2d 878, 883–84 (D.C. Civ. App. 1989) (the Second and Fifth Circuits and other district courts all agree).

<sup>59</sup> 37 C.F.R. § 202.1(a) (1990).

<sup>60</sup> 17 U.S.C. § 101 (2005) (emphasis added).

Are the golden butterflies or blue heart designs of these tech tattoos “capable of existing independently” and “can be identified separately from” the underlying wearables technology?

Some courts say no: “No matter how attractively shaped, works with an intrinsic utilitarian function cannot be copyrighted.”<sup>61</sup> “[A]ny artistic aspects . . . will also not receive copyright protection unless they can be identified separately from . . . the utilitarian purpose” of the creation, and “no element of the [creation] can . . . exist independently of their utilitarian ‘words aspects.’”<sup>62</sup> Tech tattoo developers would need to establish that the tattoo’s functions are wholly separate and unrelated to the colors and designs, which would not only be difficult but also certainly not worth their time. The appeal of tech tattoos is their unique designs and how that corresponds to their function. Tattio DuoSkin’s lattice design is attractive because not only does it look interesting, the look also creates the function. By arguing that the designs and functions of their tattoos are separate, developers would deny the most marketable feature of their tattoos.

The degree of separation and nature-function independence dichotomy that would exclude certain products from copyright protection is not necessarily the biggest concern. The House determined that “the test of separability and independence . . . does not depend upon the nature of the design.”<sup>63</sup> Furthermore, “even if the appearance of an article is determined by aesthetic (as opposed to functional) considerations, only elements, if any, which can be identified separately from the useful article as such are copyrightable.”<sup>64</sup> Tech tattoo developers may find that their whole design is not copyright protectable, but perhaps the designs and colors themselves may be.

4. *What Copyright Can Do for Wearables.* Assuming copyright protections could apply to tech tattoos, developers would not go through the process of attempting to copyright their designs unless the possible benefits outweighed the drawbacks of the registration process. While the ideas themselves may not be protected, the “expression” will be protected for the remainder of the creator’s lifetime, plus seventy years.<sup>65</sup> This longevity would allow developers like Tattio-DuoSkin to

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<sup>61</sup> *Hoberman*, 2015 U.S. Dist. LEXIS 176117, at \*16.

<sup>62</sup> *Entm’t Research Grp., Inc. v. Genesis Creative Grp., Inc.*, 122 F.3d 1211, 1221 (9th Cir. 1997); *Fabrica Inc. v. El Dorado Corp.*, 697 F.2d 890, 893 (9th Cir. 1983).

<sup>63</sup> H.R. REP. NO. 94-1476, at 55 (1967).

<sup>64</sup> *Id.*

<sup>65</sup> United States Copyright Office, *How Long Does Copyright Protection Last?*, <http://www.copyright.gov/help/faq/faq-duration.html> (last visited Mar. 28, 2017); *see also Hoberman*, 2015 U.S. Dist. LEXIS 176117, at \*10.

protect their unique designs, while perhaps allowing other developers to build upon the underlying software.<sup>66</sup>

The first potential issue for tech tattoo developers is one echoed in the traditional tattoo industry. Tattoo artists agree that enforcing copyright privileges is largely impossible—most of the original designs are copied by local artists throughout the country and world.<sup>67</sup> They use low quality copies of designs that they have downloaded online and reproduce them for clients that are similarly difficult to hold accountable.<sup>68</sup> Tattoo artists report that they would only seek copyright protection and enforcement if the design thief and their client received recognition—and profit—from the exploitation.<sup>69</sup> Tech tattoo developers should have similar concerns. The underlying technology may be difficult to reproduce, but the designs of these wearables are not. Developers seeking copyright protection for its relative ease and low cost may find their enforcement abilities are limited, calling into question whether the protection itself is worth the effort to obtain.

Furthermore, developers seeking copyright protection may not realize possession of a valid copyright is not as unassailable as it seems. Relative to patent claims, copyright claims can be obtained more quickly and inexpensively. However, “unlike a patent claim, a claim to copyright is not examined for basic validity before a certificate is issued.”<sup>70</sup> Assuming developers can acquire copyright protection for their wearables, the lack of initial review does not guarantee that the work is validly copyrightable. Should litigation arise, developers may find that the reviewing court determines their copyright was never valid.<sup>71</sup>

Developers who are granted a valid copyright may face additional legal battles nonetheless. According to 17 U.S.C.S. 410, certificates of registration that are made before or within five years of the work’s first publication constitute *prima*

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<sup>66</sup> See 37 C.F.R. § 202.10(a) (“The availability of protection or grant of protection under the law for a utility or design patent will not affect the registrability of a claim in an original work of pictorial, graphic, or sculptural authorship.”). Assuming tech tattoo developers were able to secure both copyright and patent protections, other developers could utilize the patented technology of the tattoo after the patent expired, while the design aspect would remain protected.

<sup>67</sup> Perzanowski, *supra* note 20, at 550.

<sup>68</sup> *Id.* at 549–50.

<sup>69</sup> *Id.* at 555.

<sup>70</sup> H.R. REP. NO. 94-1476, at 157 (1976).

<sup>71</sup> A reviewing court may determine that the copyright was never valid, because either the owner never met the requisite levels for legal protection or the owner did not properly assert the right at the appropriate time. See Christine Mai-Due, *All the ‘Happy Birthday’ Song Copyright Claims are Invalid, Federal Judge Rules*, L.A. TIMES (Sept. 22, 2015), <http://www.latimes.com/local/lanow/la-me-ln-happy-birthday-song-lawsuit-decision-20150922-story.html>; David Kluff, *7th Cir. Weighs In On Copyright Invalidation Procedure*, LAW360 (Nov. 14, 2013, 6:30 PM), <https://www.law360.com/articles/484971/7th-circ-weighs-in-on-copyright-invalidation-procedure>.

*facie* evidence of the copyright's validity. Outside of those bounds, the evidentiary weight of the certificate is determined by the court involved in the dispute.<sup>72</sup> “[C]ertificate(s) of registration [do] not create an irrebuttable presumption of validity.”<sup>73</sup> Defendants may bear the burden of proof in showing the facially valid copyright is, in fact, not, but the legal battle itself does not disappear. Even if developers are successful, litigation costs may be more than they are willing to pay (or can pay). Again, enforcement issues make it difficult to imagine why developers would find these protections beneficial at all.

#### B. PATENT PROTECTION FOR WEARABLES

Tech tattoo developers may already be familiar with patents, but may fail to understand the costs and benefits that the patent route can afford. Copyright laws may be able to cover only a portion of the design, while patent protections can either cover the remaining portion or all of the device.

The yin to copyright's yang, patent law protects not only *different* types of works, but does so from a different theoretical origin. Unlike copyright protections, which prioritizes individual protection over public innovation, patents symbolize the inverse, “[f]rom their inception, the federal patent laws have embodied a careful balance between the need to promote innovation” and the understanding that improvement upon these innovations is the “very lifeblood of a competitive economy.”<sup>74</sup> Patent laws exist with “the ultimate goal . . . to bring new designs and technologies into the public domain through disclosure.”<sup>75</sup> Instead, “free exploitation of ideas will be the rule, to which the protection of a federal patent is the exception.”<sup>76</sup>

Developers seeking patent protections must satisfy three conditions to qualify: their product must be a discovery or invention that is novel and non-obvious.<sup>77</sup>

1. *Claimed Invention.* Developers need to first establish what type of protected invention tech tattoos would fall under. Generally, Section 101 sets out four categories of patentable subjects: a (1) process, (2) machine, (3) manufacture, and (4) composition of matter.<sup>78</sup>

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<sup>72</sup> 17 U.S.C. § 410(c) (2005).

<sup>73</sup> *Bird Brain, Inc. v. Menard, Inc.*, 2000 U.S. Dist. LEXIS 11668, at \*17 (W.D. Mich. Aug. 4, 2000).

<sup>74</sup> *Bonito Boats v. Thunder Craft Boats*, 489 U.S. 141, 146 (1998).

<sup>75</sup> *Id.* at 151.

<sup>76</sup> *Id.*

<sup>77</sup> 35 U.S.C. §§ 101–103 (2014).

<sup>78</sup> 35 U.S.C. § 101 (2014).

Developers may find protection under two of the four: processes and machines. The distinction between processes and machines seems biological:

The term “machine” includes every mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result. But where the result or effect is produced by chemical action, by the operation or application of some element or power of nature, or of one substance to another, such modes, methods, or operations are called “processes.”<sup>79</sup>

Tech tattoos straddle the definitional divide. Wearables are clearly mechanical devices that produce a certain result, but they use the “power of nature” to do so—wearables function through “chemical action” by interacting with or monitoring the skin, combining the “process” and “machine” categories into one.

*In re* Bilski conclusively dictated the standard for process analysis. A claimed invention is a process if “(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.”<sup>80</sup> Developers can take comfort in the fact that, even if their tech tattoos do not squarely fit in either statutory definition, they can still receive protection from this process-attachment standard. Either tech tattoos are a purely “mechanical device” or they are a chemical “process” that is tied to a “particular machine”—either abstraction adequately meets the patent eligibility threshold.

2. *Novel.* Section 102(a) requires a claimed invention meet the “novelty” standard. An invention lacks novelty when the purported invention “has been anticipated by a . . . domestic patent[,] printed publication[,] domestic knowledge or use prior to the inventor’s date of invention.”<sup>81</sup> Additionally, patent protection requires inventions to possess a “high degree of uniqueness, ingenuity and inventiveness.”<sup>82</sup>

Tech tattoo developers likely need not worry about meeting the novelty requirement. Not only is wearable technology itself relatively new, most of the semi-embedded and stick-on tattoos available utilize different algorithms, materials and processes. Popular methods of skin-to-device communication include “bio-acoustic, capacitive, and magnetic signals,” as well as touch electrode signals.<sup>83</sup> These developers also use a myriad of materials to facilitate this communication, ranging from Tattio-DuoSkin’s revolutionary use of gold leaf to

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<sup>79</sup> *Risdon Iron & Locomotive Works v. Medart*, 158 U.S. 68, 78 (1895).

<sup>80</sup> *In re* Bilski, 545 F.3d 943, 954 (Fed. Cir. 2008).

<sup>81</sup> *Popeil Bros. v. Schick Elec., Inc.*, 494 F.2d 162, 164 (7th Cir. 1974).

<sup>82</sup> *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*, 191 F.2d 99, 100 (2d. Cir. 1951).

<sup>83</sup> Kao et al., *supra* note 5.

medical grade silicone or copper tape.<sup>84</sup> Furthermore, tech tattoos generally have different functions. Some measure athletic performance, while others access smart phones and other technology.<sup>85</sup> Developers should easily be able to show that their devices do not contain the same elements, do not operate in the same fashion, and do not perform an identical function.

3. *Non-obvious.* Section 103 prohibits a claimed invention from receiving patent protection “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention.”<sup>86</sup> Whom the device must be “obvious” is further limiting—“a person having ordinary skill in the art to which the claimed invention pertains.”<sup>87</sup> However, courts have not interpreted this to mean an actual innovator or creator in the industry.<sup>88</sup> Instead, “one who thinks along the line of conventional wisdom in the art and is not one who undertakes to innovate” meets the person of ordinary skill requirement.<sup>89</sup>

Developers may fail to see the problem—their tech tattoo is distinctly unique compared to others, and their variation of the underlying concept would not be obvious to someone within the field. This has some logic: how can Tattio DuoSkin’s flame mood monitor be a variation of L’Oreal’s “My UV Patch” and its sunlight detection technology?<sup>90</sup> What about VivaLn’s “tap to unlock” gold sphere or the alcohol monitory biosensor that looks like the inner workings of an old desktop computer?<sup>91</sup> None of these tech tattoos seem to have much in common.

However, the Supreme Court has addressed concerns about obviousness in a modern context that should prompt attention. “When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it,” and these variations can often be predicted and implemented by the hypothetical “person of ordinary skill.”<sup>92</sup> A truly complex issue develops when “the claimed subject matter may involve more than the simple substitution of one known element for another or the mere application of a known technique

<sup>84</sup> *Id.*

<sup>85</sup> *Id.*

<sup>86</sup> 35 U.S.C. § 103 (2012).

<sup>87</sup> *Id.*

<sup>88</sup> *Standard Oil Co. v. Am. Cyanamid Co.*, 774 F.2d 448, 454 (Fed. Cir. 1985).

<sup>89</sup> *Id.*

<sup>90</sup> L’ORÉAL, *supra* note 12.

<sup>91</sup> Amit Chowdhry, *VivaLnk’s Digital Tattoos Can Be Used To Unlock the Moto X*, FORBES (July 23, 2014), <https://www.forbes.com/sites/amitchowdhry/2014/07/23/digital-tattoos-can-be-used-to-unlock-the-moto-x/#7bad35106599>; Jayoung Kim et al., *Noninvasive Alcohol Monitoring Using a Wearable Tattoo-Based Iontophoretic-Biosensing System*, <http://pubs.acs.org/doi/abs/10.1021/acssens.6b00356>.

<sup>92</sup> *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007).

to a piece of prior art ready for the improvement.”<sup>93</sup> The question can then turn on the analysis of the “interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art.”<sup>94</sup>

These are questions worthy of developers’ concern. Depending on how connected—and market-driven—the wearables community is, the “obviousness” of a tech tattoo may be exactly that. How unique are Tattio-DuoSkin’s golden butterflies in the context of “substitution of one known element for another”? Is the tech tattoo community sufficiently specific that the team behind Tattio DuoSkin would possess the background knowledge to make their “variation” obvious?

4. *What Patents Can Do for Wearables.* The statutory obstacles related to copyright protections seem to be more difficult to rectify than those developers could face in meeting patent requirements. Developers may find that they face additional complications in the patent application process that copyright protections do not.

Most importantly, especially to those start-up or smaller tech tattoo companies, the patent application costs almost thirty times more than a simple copyright application.<sup>95</sup> The quality of patent application can also affect the marketability of the invention.<sup>96</sup> Developers that cut corners seeking to reduce costs may find that not only are their inventions shoddily protected—if at all—but that they also wasted what money they spent.<sup>97</sup>

Additionally, assuming that an invention is sufficiently unique to receive patent protection, developers may find the process too lengthy to matter. Current turnaround time for a standard patent application is more than two years.<sup>98</sup>

Tech tattoo developers may prefer patents to copyrights, because patents provide a more complete form of protection. While copyrights may only cover

<sup>93</sup> *Id.*

<sup>94</sup> *Id.* at 418.

<sup>95</sup> Compare Gene Quinn, *The Cost of Obtaining a Patent in the US*, IPWATCHDOG (Apr. 4, 2015), <http://www.ipwatchdog.com/2015/04/04/the-cost-of-obtaining-a-patent-in-the-us/id=56485/> (average cost of a moderately complex invention, including attorney fees, is \$11,000), and Nicholas Wells, *How Much Does a U.S. Copyright Registration Cost?*, WELLSIPLAW, <https://www.wellsiplaw.com/how-much-does-a-u-s-copyright-registration-cost/> (last visited Mar. 14, 2017) (average cost of copyright application, including attorney fees, is \$375).

<sup>96</sup> Quinn, *supra* note 95.

<sup>97</sup> *Id.*

<sup>98</sup> See *October 2016 Patents Data, at a Glance*, United States Patent and Trademark Office, <https://www.uspto.gov/dashboards/patents/main.dashxml> (last visited Mar. 14, 2017); *Pendency*, United States Patent and Trademark Office, <https://www.uspto.gov/corda/dashboards/patents/main.dashxml?CTNAVID=1004> (last visited Mar. 14, 2017).

the ‘design’ aspect of tech tattoos, patents can theoretically protect the entire wearable.<sup>99</sup> Two types of patents would be available to developers: utility and design. “A ‘utility patent’ protects the way an article is used and works, while a ‘design patent’ protects the way an article looks,” and “[b]oth design and utility patents may be obtained on an article if invention resides both in its utility and ornamental appearance.”<sup>100</sup> Utility patents are determined through the standard analysis conducted above, according to Section 101, while design patents apply to “the configuration or shape of an article, to the surface ornamentation applied to an article, or to the combination of configuration and surface ornamentation.”<sup>101</sup> Developers can seek to protect the look and function of their tattoos, without the added cushion of a possible copyright in the design. While both design and utility patents have different features—namely, maintenance costs and duration—the possible complete protection is an attractive option.<sup>102</sup>

#### IV. CONCLUSION

While the obstacles developers face in obtaining either copyright or patent protections seem manageable, albeit difficult, the real issue emerges when analyzing whether these protections are even worth their while. What may be the most disheartening to small teams of developers is the threat of possible litigation and the ferocity of companies like FitBit and Jawbone. With valuable partnerships on the line, popular, profitable wearable companies are willing to rack up expensive legal bills to fight out even the most remote patent infringement claims.<sup>103</sup> Yet “there is currently little in the way of rules, regulations or guidelines” for wearables.<sup>104</sup> Where and how they fit in the intellectual property field will almost certainly be affected by “[t]he surge in use of wearable tech in the very near future” and will force the intellectual property field to evaluate how and where wearables fit in the protection schemes, as these disputes “begin to wind their way through the legal system.”<sup>105</sup>

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<sup>99</sup> Additionally, a developer can elect to file for both a design patent and copyright. *See* Manual of Patent Examining Procedure, 1512 (Nov. 2015), <https://mpep.uspto.gov/RDMS/MPEP/current#/result/d0e160967.html?q=1512&ccb=on&ncb=off&icb=off&fcb=off&ver=current&syn=adj&results=compact&sort=relevance&cnt=10&index=2> (“[A]n ornamental design may be copyrighted as a work of art and may also be subject matter of a design patent.”).

<sup>100</sup> Manual of Patent Examining Procedure, 1502.01 (Nov. 2015), <https://mpep.uspto.gov/RDMS/MPEP/e8r9#/e8r9/d0e150156.html>.

<sup>101</sup> *Id.* § 1502.

<sup>102</sup> *See supra* note 66.

<sup>103</sup> Brian Socolow, *Wearable Tech Will Change Pro Sports—And Sports Law*, LAW360 (Sept. 17, 2015), <http://www.law360.com/articles/701415/wearable-tech-will-change-pro-sports-and-sport-s-law>.

<sup>104</sup> *Id.*

<sup>105</sup> *Id.*

Thus, tech tattoo developers are faced with a two-fold issue. Initially, seeking any intellectual property protection may be time-consuming, expensive, and ultimately fruitless. Small teams or companies may see their efforts—and funding—are better spent improving their products. The lack of definitiveness regarding the appropriate applicable protection does not incentivize these developers to go through the process. Furthermore, assuming that copyright protection would either be unavailable or limited, developers seeking patent protection would likely find that the wait time is longer than the expense of filing is worth. Comparing the number of adhesive wearables that have been released this year alone with even the turnaround for a first ruling on a patent application, developers may not find that the release of other wearables and variations of them outpace the protection process.<sup>106</sup>

However, assuming an accelerated, more cost-effective and complete protection process could be available to these developers, the threat of losing these hard-earned protections is ever looming. Better funded and more popular wearable companies have both the capital and incentive to challenge even the smallest dispute.<sup>107</sup> And even the best design and funded patent applications can come under fire.<sup>108</sup> Fitbit alone has been involved in patent disputes in the double digits across multiple districts in the past year alone.<sup>109</sup> However, small companies and individual teams of developers seeking to protect their work may find it difficult to defend against these larger companies. Even assuming their patents are valid, the legal defense may not be something developers can afford.

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<sup>106</sup> See *supra* note 98.

<sup>107</sup> Socolow, *supra* note 103.

<sup>108</sup> *Id.*

<sup>109</sup> See generally *Fitbit Inc. v. Aliphcom*, 2016 U.S. Dist. LEXIS 150764, Case No. 16-cv-00117-BLF (Cal. Dist. Ct. Oct. 31, 3016); *Fitbit, Inc. v. Fitbug Ltd.*, 2015 U.S. Dist. LEXIS 119648, Case No. 14 C 1267 (N.D. Ill. Sept. 9, 2015); *Logantree, LP v. Fitbit, Inc.*, 2016 U.S. Dist. LEXIS 86749, Case No. 2:15-cv-1575-JRG (F.D. Tex. Apr. 25, 2016).