

# COPYRIGHT ISSUES AND IMPLICATIONS OF EMERGING VIRTUAL REALITY TECHNOLOGIES

LAUREN E. BEAUSOLEIL

**Abstract:** Virtual reality (“VR”) technologies allow users to experience three-dimensional, multi-sensory environments (“virtual worlds”). This new and rapidly-developing technological platform is promising, but does not come without legal challenges. Issues regarding copyrights for virtual worlds and creations within those worlds can be expected. This article involves an exploration into potential application of copyright law to virtual reality technologies, focusing on what might be protected by copyright, potential infringement challenges, and how enforcement of these copyrights might play out for both users and developers.

## I. INTRODUCTION

Virtual reality (“VR”) technologies allow users to experience a three-dimensional, multi-sensory environment (a “virtual world”), which mimics reality through the use of a computer-generated simulation.<sup>1</sup> This illusion can be achieved through the use of dual functioning headsets, which display 3D images and block out the “real world,” while tracking the user’s head movements so that the displayed images seem to exist in a 360-degree environment.<sup>2</sup> The available systems currently range from high-end systems, such as Oculus Rift, to cheaper, cardboard headsets designed for use with smartphones.<sup>3</sup>

With advances in virtual reality technologies, legal issues regarding application of existing copyright policies to such novel technologies can be expected. Users of virtual

---

<sup>1</sup> See Jack Russo & Michael Risch, *The Law of Virtual Reality* - Law Firm Computer Law Group LLP Attorneys Palo Alto, California Computer Law Group, LLP (1993), <http://www.computerlaw.com/Articles/The-Law-of-Virtual-Reality.shtml> (last visited Oct 9, 2017).

<sup>2</sup> See Alec Wheatley, *Copyright Protection in Virtual Reality*, 8 *Informed Counsel* 1–2 (2017), [http://www.tilleke.com/sites/default/files/2017\\_Feb\\_Copyright\\_Protection\\_Virtual\\_Reality.pdf](http://www.tilleke.com/sites/default/files/2017_Feb_Copyright_Protection_Virtual_Reality.pdf) (last visited Oct 9, 2017).

<sup>3</sup> *Id.*

reality technologies have a unique role, as they will be granted “greater freedom to adapt, modify, and extend existing virtual worlds and existing virtual objects,” which clouds the potential copyright protections for these technologies.<sup>4</sup> In general, users will not be held liable for infringement due to their role in creating virtual worlds “except in the cases where (1) strikingly similar or nearly identical copying occurs for virtual worlds and virtual objects that simulate the real world and real objects or (2) substantial similarity exists for unique virtual worlds and unique virtual objects.”<sup>5</sup>

Regardless, questions emerge regarding what exactly can be protected via copyrights. Both developers of VR technologies (also known as “world owners”) and users will have an interest in securing copyrights for their creations, and both groups may also face claims of infringement if they do not act carefully. Additionally, both groups must deal with enforcement of existing copyrights.

## II. SECURING COPYRIGHTS

Developers will likely seek copyright protection for software and any other original or creative content relating to the underlying VR program. Users will also likely seek copyright protection of their virtual creations. Courts will likely apply copyright protections to virtual reality platforms using principles that have been applied to computer programs and video games.

---

<sup>4</sup> Russo, *supra* note 1.

<sup>5</sup> *Id.*

## A. Copyrights for Developers

### 1. Software – Literal and Nonliteral Elements

For computer software, copyright protection not only extends to literal elements of the software, such as the source code (“human-readable instructions” typed by a programmer) and object code (the machine-readable, binary-language-based translation of the source code), but also may extend to nonliteral elements of software.<sup>6</sup> The nonliteral elements of a computer program are those that make up the structure, sequence, and organization of a program, including user interface, screen displays, and menu structures.<sup>7</sup> Protection against infringement of nonliteral elements has been difficult, and courts tend to determine infringement based on the idea-expression distinction.<sup>8</sup> Most courts have held that protection should extend to nonliteral elements when there is original expression of ideas, whereas ideas underlying a program alone cannot be protected.<sup>9</sup>

The abstract-filtration-comparison test, first adopted by the Second Circuit Court of Appeals in *Computer Assocs. Int'l, Inc. v. Altai, Inc.*, has been applied by various courts to determine which of the nonliteral elements can be protected.<sup>10</sup> This test requires a court to start by breaking down the allegedly infringed program into its constituent

---

<sup>6</sup> 17 U.S.C.A. § 101 (2000); *DSMC, Inc. v. Convera Corp.*, 479 F. Supp. 2d 68 (D.D.C. 2007); Deborah F. Buckman, Annotation, *Copyright Protection of Computer Programs*, 180 A.L.R. Fed. 1 (2002).

<sup>7</sup> 17 U.S.C.A. § 102(b); *Rouse v. Walter & Associates, L.L.C.*, 513 F. Supp. 2d 1041 (S.D. Iowa 2007); Buckman, *supra* note 6.

<sup>8</sup> Buckman, *supra* note 6.

<sup>9</sup> See *Johnson Controls, Inc. v. Phoenix Control Systems, Inc.*, 886 F.2d 1173 (9th Cir. 1989); *Cognotec Services, Ltd. v. Morgan Guar. Trust Co. of New York*, 862 F. Supp. 45 (S.D. N.Y. 1994); Buckman, *supra* note 6.

<sup>10</sup> See *Computer Assocs. Int'l, Inc. v. Altai, Inc.*, 982 F.2d 693, 707 (2d Cir. 1992); reviewed by Buckman, *supra* note 6.

structural parts, and then isolate each level of abstraction beginning with the code and ending with the program's ultimate function.<sup>11</sup> The second step is to filter out all non-protectable elements found, and the final step is to compare the protectable elements that remain with the structure of the allegedly infringing program to reveal which of the protectable elements of the programs are substantially similar to warrant a finding of infringement.<sup>12</sup>

Methods used for determinations regarding copyright protection for nonliteral elements of computer and video game software, such as the abstract-filtration-comparison test discussed above, might be applied to virtual reality software. Still, one unique element of virtual technologies might cause some challenges in application of the tests that have been applied in cases involving video games. This element is that VR technologies involve a much greater degree of user interaction than past entertainment technologies, and this might have implications for copyrights. Developers of virtual reality platforms "often create only the virtual world's skeleton, encouraging players to create new material that the developers integrate into the game space."<sup>13</sup> However, it is possible that co-authorship will provide a means for dealing with this novel element, because copyright protection for co-authorship of the audiovisual display in video games has not been precluded in the past, as demonstrated by *Williams Electronics, Inc. v. Arctic Intern, Inc.*<sup>14</sup>

---

<sup>11</sup> *Computer Assocs. Int'l, Inc.*, *supra* note 10.

<sup>12</sup> *Id.* at 706.

<sup>13</sup> See Erez Reuveni, *On Virtual Worlds: Copyright and Contract Law at the Dawn of the Virtual Age*, 82 Ind. L.J. 261, 272 (2007).

<sup>14</sup> See *Williams Electronics, Inc. v. Arctic Intern, Inc.*, 685 F.2d 870, 875 (3d Cir. 1982).

## 2. Copyrights for Computer Programs & VR Application

*Williams Electronics, Inc.* was the first case to deal with copyrighted computer programs in the context of videogames, as prior courts had only considered copyrights secured in visual works.<sup>15</sup> One of the defendant's arguments was that "the player's participation withdraws the game's audiovisual work from copyright eligibility because there is no set or fixed performance and the player becomes a co-author of what appears on the screen."<sup>16</sup> The court rejected this argument and found that copyright protection exists because "there is always a repetitive sequence of a substantial portion of the sights and sounds of the game, and many aspects of the display remain constant from game to game regardless of how the player operates the controls."<sup>17</sup> The court also found that the fact that the "original audiovisual features of the DEFENDER game repeat themselves over and over" allows the game to meet the "fixed" requirement for obtaining a copyright despite the seemingly transient nature of the images.<sup>18</sup> The importance of fixation for protection of audiovisual components of video games should not be overlooked when considering implications for virtual reality technologies. It seems likely that repetition will be a crucial factor in determining whether copyright protections extend to virtual reality worlds, especially in light of the fact that virtual reality users may become "co-authors" of virtual worlds, with even more power to do so than video game users have ever had.

---

<sup>15</sup> *Id.*

<sup>16</sup> *Id.* at 874.

<sup>17</sup> *Id.*

<sup>18</sup> *Id.*

### *B. Copyrights for Users*

Users of VR systems may also seek to secure copyright protection for their VR creations because they can act as “co-authors.” These creations may include both avatars, which are characters that users employ to represent themselves in virtual worlds, and artistic works created within the virtual world.<sup>19</sup> Securing these protections will likely be limited by the fact that such a high degree of collaboration between users and developers exists.<sup>20</sup> The originality of a user’s avatar and other virtual artistic works created by the user will depend on the tools for creation provided by the developer’s code.<sup>21</sup> If a developer’s code provides only limited tools, freedom to create will be very limited and copyright protection will be unlikely.<sup>22</sup> However, protection is not impossible and “where a developer's code does not excessively limit the scope of a player's artistic creations, copyright should attach where originality and fixation are satisfied.”<sup>23</sup>

## III. ISSUES REGARDING INFRINGEMENT

### *A. Infringement by Users*

#### 1. In General

While the nature of virtual reality platforms might encourage users to attempt to secure copyright protections for virtual creations, it also allows greater opportunity for

---

<sup>19</sup> Reuveni, *supra* note 13, at 280.

<sup>20</sup> *Id.* at 272.

<sup>21</sup> *Id.* at 281-83.

<sup>22</sup> *Id.* at 283.

<sup>23</sup> *Id.* at 284.

infringement by users. These technologies grant a large amount of creative power to users, allowing for a lot of potential for users to infringe on protected works through their creations. Transplanting a real-world copyrighted object into a virtual world, for example, would likely be considered infringement.<sup>24</sup> This infringement would involve reproduction of the copyrighted work, preparation of a derivative work, and distribution of the copyrighted work to the public, which are three exclusive rights granted to copyright holders.<sup>25</sup> Additionally, a charge for contributory infringement could be brought.<sup>26</sup>

A virtual representation of the copyrighted work would be considered reproduction of that copyrighted work, because it is simply reproduced into a virtual world. A derivative work is defined as “a work based upon one or more preexisting works, such as a translation, musical arrangement, dramatization, fictionalization, motion picture version, sound recording, art reproduction, abridgment, condensation, or any other form in which a work may be recast, transformed, or adapted.”<sup>27</sup> A derivative work must also be able “to exist on its own, fixed and transferable from the original work, i.e., having a separate ‘form.’”<sup>28</sup> A virtual representation of a real-world object would be a derivative work under these definitions.

---

<sup>24</sup> See Timir Chheda, *Intellectual Property Implications in A Virtual Reality Environment*, 4 J. Marshall Rev. Intell. Prop. L. 483, 493–94 (2005).

<sup>25</sup> 17 U.S.C. § 106 (2000); Chheda, *supra* note 24, at 493.

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

<sup>27</sup> 17 U.S.C. § 106 (1988).

<sup>28</sup> *Lewis Galoob Toys, Inc. v. Nintendo of Am., Inc.*, 780 F. Supp. 1283, 1291 (N.D. Cal. 1991), *aff'd*, 964 F.2d 965 (9th Cir. 1992), *as amended* (Aug. 5, 1992).

## 2. Defenses

When faced with claims of infringement, alleged infringers have limited defenses, namely fair use and parody.<sup>29</sup> They may be able to claim that they were using the protected content in a parody.<sup>30</sup> For this to apply, the use must express some type of commentary of the author's works, having some "critical bearing on the substance or style of the original composition."<sup>31</sup> The defense of fair use could also be brought for a derivative work.<sup>32</sup> This defense requires an examination of:

(1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (2) the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and (4) the effect of the use upon the potential market for or value of the copyrighted work.<sup>33</sup>

The purpose and character of the use may weigh in the favor of the allegedly infringing user if a court finds that such use simply constitutes private home enjoyment by the user and is non-commercial or non-profitable in nature.<sup>34</sup> Otherwise, to justify the use as "fair use," the alleged infringer could argue that the use was designed to benefit the VR community as a whole by creating a productive use.<sup>35</sup> However, this requires a showing that the use "results in some added benefit to the public beyond that produced by first author's work," although the "defendant need not show that the use 'genuinely and

---

<sup>29</sup> See Jonathan M. Purow, *Virtual Reality May Create Novel IP Issues In The Real World*, Law360 (Mar. 28, 2016, 10:10 AM), <https://www.law360.com/articles/769479/virtual-reality-may-create-novel-ip-issues-in-the-real-world>.

<sup>30</sup> *Id.*

<sup>31</sup> See *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 580 (1994).

<sup>32</sup> Chheda, *supra* note 24.

<sup>33</sup> 17 U.S.C. § 107 (2000).

<sup>34</sup> See *Lewis Galoob Toys, Inc.*, *supra* note 28, at 1293.

<sup>35</sup> See 17 U.S.C. § 106 (2000).



substantially benefited the public,’ but only that the use ‘could have benefited the public marginally.’”<sup>36</sup> One could also argue that such use was transformative use, which requires the court to consider “whether the new work merely supersedes the objects of the original creation,” or “whether and to what extent the work is transformative,” by altering the original work with “new expression, meaning, or message.”<sup>37</sup>

It should be noted that if the individual who reproduced a protected work in a virtual world were a VR developer, as opposed to a user of that world, a commercial or profitable use might be found because the world owner “stands to profit from exploitation of the copyrighted material without paying the customary price” and would favor the copyright holder.<sup>38</sup>

The second factor, or nature of the copyrighted work, can weigh in favor of either party depending on what exactly is copied.<sup>39</sup> If the copyrighted object is creative by nature, rather than informational, a finding of fair use would be less likely.<sup>40</sup> Additionally, a finding of fair use is unlikely if the disputed work has an entertainment purpose.<sup>41</sup>

The third factor requires an examination of the amount and substantiality of the portion used in relation to the copyrighted work as a whole.<sup>42</sup> This factor involves both quantitative and qualitative review of how much of the work was used, and the amount of use that is permissible under fair use depends largely on the second element (*i.e.*, the

---

<sup>36</sup> *Rubin v. Brooks/Cole Pub. Co.*, 836 F. Supp. 909, 916 (D. Mass. 1993).

<sup>37</sup> *Campbell*, *supra* note 31, at 579.

<sup>38</sup> *See Harper & Row Publishers, Inc. v. Nation Enterprises*, 471 U.S. 539, 562 (1985).

<sup>39</sup> *See* 17 U.S.C. § 106 (2000).

<sup>40</sup> *Bridge Publications, Inc. v. Vien*, 827 F. Supp. 629, 635 (S.D. Cal. 1993).

<sup>41</sup> *Playboy Enterprises, Inc. v. Frena*, 839 F. Supp. 1552, 1558 (M.D. Fla. 1993).

<sup>42</sup> 17 U.S.C. § 106 (2000).

nature of the work).<sup>43</sup> It may be challenging for a user who reproduces an entire copyrighted work, albeit in virtual form, to claim that the amount copied would be justifiable by the fair use doctrine.

The final factor focuses on the effect on the value or potential market, which would most likely favor the original copyright holder, who only needs to show that if the alleged infringing use “should become widespread, it would adversely affect the *potential* market for the copyrighted work.”<sup>44</sup> A virtual version of an ordinary object would most likely lessen demand for the original object, especially if it is capable of performing all the functions of the original.

### *B. Infringement by Developers & Secondary Liability*

World owners, or VR developers, will most likely avoid infringement by looking to the protections that have been applied to videogames and will avoid incorporating anything that could be considered a derivative work into their virtual world. Application of the fair use doctrine as a defense for a world owner, rather than a user, who reproduces a copyrighted work in a virtual world would favor a finding of infringement more so than fair use, as the use would most likely be considered commercial or profitable—as explained above.

Additionally, for world owners creating allegedly infringing content via incorporating copyrighted works into their virtual worlds, “case law that applies First Amendment protection to video game developers” may protect them if they are doing so “to increase the realism of the virtual world.”<sup>45</sup>

---

<sup>43</sup> *Bridge Publication Inc.*, *supra* note 40.

<sup>44</sup> *Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417, 451 (1984).

<sup>45</sup> Purow, *supra* note 29.

The biggest concern for world owners will likely be issues of liability and whether or not they are held liable for any infringing done by users. If the virtual reality platform falls under the definition of a service provider, the world owner can avoid liability for infringement by a user by following the requirements set out in the *Digital Millennium Copyright Act*.<sup>46</sup> The service provider can avoid secondary liability for infringement by a user of “the system or network controlled or operated by or for the service provider,” if the service provider does not have actual knowledge of the infringing activity or material, is unaware of facts or circumstances from which the infringing activity is apparent, and, upon obtaining such knowledge or awareness, quickly acts to remove or disable access to that material.<sup>47</sup> Additionally, the world owner must not receive a financial benefit stemming directly from the infringing activity.<sup>48</sup>

#### IV. ENFORCEMENT

Both VR developers and real-world copyright holders play a role in enforcement of copyrights against infringement. Copyright holders will likely contribute to enforcement in order to protect their own interests in sole ownership of their work. VR developers, on the other hand, will primarily contribute to enforcement in order to avoid being held liable for infringement by users.

Enforcement by copyright holders will likely be challenging. One reason is practical; the collaborative element among users and developers that is inherent in virtual reality platforms makes it difficult to identify who should be held liable in light of the various parties who contribute and the large number of contributors would make

---

<sup>46</sup> See Crystal Nwaneri, *Ready Lawyer One: Legal Issues in the Innovation of Virtual Reality*, 30 Harv. J.L. & Tech. 601, 620–21 (2017).

<sup>47</sup> *Digital Millennium Copyright Act*, *supra* note 46.

<sup>48</sup> *Id.*

litigation costly.<sup>49</sup> Moreover, “if a video game is composed of many unprotectable elements, it is unlikely that its producer will succeed in suing a competitor for infringement of its content and obtain an injunction.”<sup>50</sup>

For example, in *Rodesh v. Discronics, Inc.*, Rodesh, a copyright holder for a horse racing video game, brought infringement claims against a similar horse race video game produced by Discronics.<sup>51</sup> Both games involved betting on pre-recorded horse races.<sup>52</sup> Because ideas are not protectable, the court examined only the expressive, protectable elements.<sup>53</sup> After factoring out all unprotectable elements, the court held that “no reasonable factfinder could find substantial similarity of expression” because so many “expressive features of the video discs are inseparably linked to Rodesh’s idea – the ‘*scenes a faire*’ – while others are entirely independent of the idea.”<sup>54</sup> These *scenes a faire* elements included the sounds of the hoof beats, crowds, and the commentator.<sup>55</sup> These independent elements, however, “cannot be said to make the works substantially similar,” because “the *scenes a faire* elements account for the expressive similarity of the rival disks.”<sup>56</sup>

---

<sup>49</sup> Nwaneri, *supra* note 46, at 619.

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

<sup>51</sup> *Rodesh v. Discronics, Inc.*, No. 91-55694, 1993 U.S. App. LEXIS 26255, at \*2 (9th Cir. Sep. 30, 1993).

<sup>52</sup> *Id.* at 3.

<sup>53</sup> *Id.*

<sup>54</sup> *Id.* at 4-9.

<sup>55</sup> *Id.* at 4.

<sup>56</sup> *Id.* at 9.

Suing for infringement might also be impractical “if the infringer earns low profits (if any) from the infringing code or content.”<sup>57</sup> If the infringer earns low profits, the damages and lost profit recoverable by the copyright holder might not be worth the cost of filing suit.<sup>58</sup>

Enforcement by VR developers or world-owners is much more effective. By laying out policies against infringement in End-User Licensing Agreements (“EULAs”) and in the terms of service (“TOS”), and by removing any infringing material upon knowledge or awareness of that material, world owners will be able to effectively enforce copyrights.<sup>59</sup> It seems that penalizing infringers, either by simply removing infringing material or deleting user accounts for violating these agreements, might be the most effective way for virtual reality platforms to avoid any issues of liability for users.<sup>60</sup>

## V. CONCLUSION

Application of copyright law to emerging virtual reality technologies presents many uncertainties regarding the limits of copyright law, especially in terms of what can and cannot be protected by copyright, what can be reproduced in the virtual world without infringing on existing copyrights, and how copyright enforcement will play out. Implications for both VR developers (“world owners”) and VR users (“players”) exist due to this novel technology. Case law offers suggestions, but unique aspects of these technologies challenge the application of existing precedent.

---

<sup>57</sup> Nwaneri, *supra* note 46, at 620 (citing from Matthew Becker, *Conceptualizing Copyright in Virtual Worlds*, JOLT DIGEST (Dec. 25, 2010), <http://jolt.law.harvard.edu/digest/digest-comment-re-conceptualizing-copyright-in-virtual-worlds> [<https://perma.cc/8E6M-SR69>]).

<sup>58</sup> See 17 U.S.C.A. § 504.

<sup>59</sup> Nwaneri, *supra* note 46, at 620.

<sup>60</sup> See *supra id.*; Purow, *supra* note 29.