

**READY LAWYER ONE: LEGAL ISSUES IN THE INNOVATION
OF VIRTUAL REALITY**

*Crystal Nwaneri**

TABLE OF CONTENTS

I. INTRODUCTION	601
II. BACKGROUND	604
III. EXPLORING THE LEGAL IMPLICATIONS OF VIRTUAL REALITY	606
<i>A. Current Legal Challenges in Virtual Reality</i>	606
1. Protecting Company Secrets During Virtual Reality Development	606
2. Intellectual Property Rights in Virtual Reality	612
<i>B. Future Legal Challenges in Virtual Reality</i>	622
1. Privacy Risks	622
2. Cognitive and Physical Risks	624
IV. CONCLUSION	627

I. INTRODUCTION

In the novel *Ready Player One*, James Halliday, the elusive creator of the fictional virtual reality platform OASIS, hides the key to his massive fortune in an Easter egg in his video game-like immersive world.¹ Corporations and users alike take drastic measures in order to obtain those immeasurable riches.² That fictional world exists in the year 2045 — a time both far off and close.³ But with the advent of commercially viable virtual reality peripherals and games, a similar future and a similar fortune for genius developers may be just around the corner. Before getting there, however, lawyers working for hardware developers and content producers must become familiar with the

* J.D. Candidate, Harvard Law School, 2017; B.A. Communication, Stanford University, 2013; Fellow, Berkman Klein Center for Internet & Society, Harvard University, 2017. I would like to thank Professor Christopher Bavitz for his guidance and support as this Note was written. I would also like to thank my family and friends who have supported my life-long fascination with digital worlds.

1. See ERNEST CLINE, *READY PLAYER ONE* (2011).

2. *Id.*

3. *Id.*

legal implications of commercial virtual reality (“VR”) to best protect their clients’ interests.

Although scholars have been considering the legal implications of VR for decades,⁴ VR peripherals have just become household consumer products, and it is time to consider the growing contractual, proprietary, and security issues such goods may pose. Consumers can now buy virtual reality head-mounted displays at varying price ranges, from cheaper sets made of cardboard to more technologically advanced devices.⁵ Many view VR as the next big field in tech; in the first quarter of 2016 alone, venture capitalists had already invested at least \$1.1 billion in the industry.⁶ Because of its growing prominence in the tech sector and increasingly widespread use to accomplish such formerly inconceivable feats as scaling Mount Everest,⁷ more and more developers and consumers will see the allure in using and innovating such platforms. VR will also pose old and new challenges to lawyers attempting to advise and support clients that decide to take a chance in this growing industry.

But what do we refer to when we talk about today’s VR industry? While video games have been around arguably since the late 1950s,⁸ and virtual worlds have been accessible since players could roam open digital worlds, we are in a new era with VR. VR has been used to livestream surgeries,⁹ incorporated into roller coasters to provide more immersive experiences,¹⁰ used to develop fully immersive

4. See, e.g., Greg S. Weber, *The New Medium of Expression: Introducing Virtual Reality and Anticipating Copyright Issues*, 12 *COMPUTER/L.J.* 175 (1993); Wendy J. Gordon et al., *Virtual Reality, Appropriation, and Property Rights in Art: A Roundtable Discussion*, 13 *CARDOZO ARTS & ENT. L.J.* 91 (1994).

5. See Adi Robertson, *The Ultimate VR Headset Buyer’s Guide*, *THE VERGE* (Feb. 29, 2016, 5:30 PM), <http://www.theverge.com/a/best-vr-headset-oculus-rift-samsung-gear-htc-vive-virtual-reality> [<https://perma.cc/J6M2-GKTB>].

6. Michael Grothaus, *Augmented and Virtual Reality Investment Hits \$1.1 Billion in 2016*, *FAST COMPANY* (Mar. 7, 2016, 7:30 AM) <http://www.fastcompany.com/3057528/fast-feed/augmented-and-virtual-reality-investment-hits-11-billion-in-2016> [<https://perma.cc/7EGN-W452>].

7. See John Gaudiosi, *Now Anyone Can Climb Mount Everest in VR*, *FORTUNE* (Apr. 24, 2016), <http://fortune.com/2016/04/24/climb-mount-everest-vr/> [<https://perma.cc/Y9YE-4FA7>].

8. *The First Video Game?*, *BROOKHAVEN NAT’L LAB.*, <https://www.bnl.gov/about/history/firstvideo.php> [<https://perma.cc/EC4V-XX57>].

9. James Peckham, *World’s First Virtual Reality Operation is Underway Today — and You Can Watch*, *TECHRADAR* (Apr. 14, 2016), <http://www.techradar.com/us/news/wearables/world-s-first-virtual-reality-operation-will-happen-this-week-and-you-can-watch-1318817> [<https://perma.cc/93LE-CHHP>].

10. *The New Revolution Virtual Reality Coaster*, *SIX FLAGS*, <https://www.sixflags.com/magicmountain/attractions/vr/overview> [<https://perma.cc/E6XA-YGFA>].

gaming centers,¹¹ and is even breaking out of its common bounds to make highly lifelike hovering simulations.¹² While the technology of the last example remains a billion-dollar trade secret,¹³ it is easier to explain modern virtual reality displays. For example, Oculus Rift's head-mounted display ("HMD") contains sensors that detect the orientation and tilt of the user's head and is comprised of a mask with a screen large enough to encompass around one hundred degrees of a user's vision.¹⁴ Programmers who bought developer toolkits from Oculus have made a multitude of games.¹⁵ Some focus on the first person exploration experience.¹⁶ Others provide unique experiences such as looking down on an adventure from a god-like view.¹⁷ The numerosity and scale of the types of experiences available are drastically different from the digital worlds governed and continuously expanded upon by one company¹⁸ and the standalone blockbuster video games produced over a series of years.¹⁹ This means that games and experiences are being developed for VR machines in the same way that apps are being developed for smartphones and tablets — developers are independently creating content, and users are able to download these apps through Oculus's mobile digital store.²⁰ This development and distribution system creates multiple points of liability.

11. Daniel Sandison, *A Look Inside the World's First Immersive Virtual Reality Gaming Center*, HYPEBEAST (Aug. 16, 2015), <http://hypebeast.com/2015/8/a-look-inside-the-worlds-first-immersive-virtual-reality-gaming-centre> [https://perma.cc/YTP8-NH82].

12. Kevin Kelly, *The Untold Story of Magic Leap, the World's Most Secretive Startup*, WIRED (Apr. 19, 2016), <http://www.wired.com/2016/04/magic-leap-vr/> [https://perma.cc/77VM-M369].

13. *Id.*

14. Jeff Grubb, *Everything You Need to Know About the Oculus Rift*, VENTURE BEAT (Aug. 6, 2014, 7:30 AM), <http://venturebeat.com/2014/08/06/everything-you-need-to-know-about-the-oculus-rift/> [https://perma.cc/5V26-EB86].

15. *Id.*

16. *Id.*

17. *Id.*

18. One example is the online virtual world, Second Life, created and operated by Linden Lab. You can now access virtual worlds similar to Second Life with the Oculus Rift. Adi Robertson, *Inside Sansar, the VR Successor to Second Life*, THE VERGE (Nov. 18, 2016, 2:36 PM), <http://www.theverge.com/2016/11/18/13501492/linden-lab-project-sansar-vr-second-life-hands-on> [https://perma.cc/UW65-HX5D]; SECOND LIFE, <http://secondlife.com> [https://perma.cc/JWB4-3H23]; WORLD OF WARCRAFT, <http://us.battle.net/wow/en/> [https://perma.cc/5FX7-FAZ7]; LEAGUE OF LEGENDS, <http://na.leagueoflegends.com/> [https://perma.cc/8LF5-6QBD].

19. See Daniel Carlson, *The Insidious Rise of the Blockbuster Video Game*, ATLANTIC (Aug. 29, 2014), <http://www.theatlantic.com/entertainment/archive/2014/08/the-insidious-rise-of-the-blockbuster-video-game/379180/> [https://perma.cc/M8VL-PS9F].

20. See *Using the Oculus Store and Oculus Library*, OCULUS, <https://product-guides.oculus.com/en-us/documentation/gear-vr/latest/concepts/ug-b-st-store/> [https://perma.cc/N66B-BPLZ].

Some of the challenges that lawyers will face in this new environment will be familiar — these include concerns about retaining company secrets during the development process and protecting intellectual property in the virtual world. But some challenges will be new. Lawyers will have to work with clients to develop best practices on how to limit or prevent liability due to the risks that stem from using VR HMDs. As more HMD producers, game developers, and their potential partners join this industry, lawyers need to be prepared to advise them on the legal concerns that arise from VR.

This Note begins by providing more background information on the mechanics of VR in Part II. Part III will analyze the legal issues posed by the development and use of VR. Section III.A will examine the confidentiality and funding challenges faced by VR innovators as start-up founders. Next it will discuss the discrete challenges of protecting intellectual property rights in VR. Section III.B will examine the new risks posed by the use of HMDs currently on the market. Part IV concludes by noting that because VR is an evolving industry, this Note only begins to outline some of the considerations lawyers may need to be aware of in the future.

II. BACKGROUND

Before analyzing its legal issues, one must define what exactly VR is and what distinguishes today's VR devices from previous iterations in the field's long history. The phrase "virtual reality" refers to an immersive three-dimensional computer-generated environment.²¹ Although the phrase itself was popularized by computer scientist and musician Jaron Lanier in the early 1990s, what we consider to be VR had by then already been around for over thirty years.²² Morton Heilig developed a 3D head-mounted display in 1957 and a Sensorama machine that allowed users to immerse themselves in an experience with "artificial vision, sound, smell, and vibration."²³ Ivan Sutherland, a pioneer of human-computer interaction, created a stereoscopic HMD in 1968.²⁴ Lanier coined the term "virtual reality" in 1987 when his company, VPL Research, developed VR peripherals including HMDs and data gloves that detect hand and finger motions that interact with

21. *History of Virtual Reality*, VIRTUAL REALITY SOC^Y, <http://www.vrs.org.uk/virtual-reality/history.html> [<https://perma.cc/9TSS-QGNR>].

22. *Id.*; Chris Woodford, *Virtual Reality*, EXPLAIN THAT STUFF! (Dec. 25, 2016), <http://www.explainthatstuff.com/virtualreality.html> [<https://perma.cc/X7DM-RJE3>].

23. Woodford, *supra* note 20; *History of Virtual Reality*, *supra* note 21.

24. *History of Virtual Reality*, *supra* note 21.

the virtual world.²⁵ The peripherals — sensors that detect your body’s position in space and sometimes even provide haptic or touch feedback — allow the user to interact with the digital world.²⁶ As the users move and change position, what they see changes as well, just like in the real world.²⁷

The visual tools and motion detection sensors that are contained in the peripherals enable this responsiveness and immersive experience.²⁸ An HMD is composed of a screen for each eye as well as stereo or surround sound speakers, all enclosed by a blackout blindfold that insulates a user’s perception from external distractions.²⁹ The two screens show slightly different stereoscopic images that take advantage of human binocular vision, which fuses the two separate images to create a strong 3D depth perception.³⁰ HMDs also contain accelerometers that track the position of the head, which permits head-referenced navigation of the virtual environment.³¹ Data gloves and other peripherals that provide haptic feedback, or artificial smells and sounds, enhance the realism of interactions with virtual objects.

Although VR technologies have been around since the 1950s, Palmer Luckey’s Oculus Rift system, which Facebook acquired in 2014 for around \$2 billion, marked a breakthrough.³² Unlike many other headsets on the market for much higher prices, the Oculus Rift provided a wide 100-degree field of view, a high resolution display, and low latency in its tracking system.³³ Oculus’s distinct “Adjacent Reality Tracker,” composed of a magnetometer, gyroscope, and accelerometer, is able to capture and track movements one thousand

25. *Id.*; see also Gilson A. Giraldi, Rodrigo Silva & Jauvane C. de Oliveira, *Introduction to Virtual Reality*, LNCC 1 (2003), <http://www.lncc.br/~jauvane/papers/RelatorioTecnicoLNCC-0603.pdf> [<https://perma.cc/CP82-4TRR>].

26. See Woodford, *supra* note 22.

27. See *Head-Mounted Displays (HMDs)*, VIRTUAL REALITY SOC’Y, <https://www.vrs.org.uk/virtual-reality-gear/head-mounted-displays/> [<https://perma.cc/XFX6-FZV9>].

28. See *id.*

29. *Id.*

30. Giraldi, Silva & de Oliveira, *supra* note 25, at 6.

31. *Id.*

32. Stuart Drudge, *Facebook Closes Its \$2bn Oculus Rift Acquisition. What Next?*, GUARDIAN (July 22, 2014), <https://www.theguardian.com/technology/2014/jul/22/facebook-oculus-rift-acquisition-virtual-reality> [<https://perma.cc/2S75-UZAR>]; Mark Zuckerberg, FACEBOOK (Mar. 25, 2014), <https://www.facebook.com/zuck/posts/10101319050523971> [<https://perma.cc/L7FC-YK85>].

33. See David Nield, *How Oculus Rift Works: Everything You Need to Know About the VR Sensation*, WAREABLE (Mar. 29, 2016), <https://www.wareable.com/oculus-rift/how-oculus-rift-works> [<https://perma.cc/7V4B-MQVG>]; Latency refers to the issue of not making a VR experience truly immersive by not having a visual display change at a rate high enough to trick the human eye. Michael Abrash, *Latency — the Sine Qua Non of AR and VR*, RAMBLINGS VALVE TIME (Dec. 29, 2012), <http://blogs.valvesoftware.com/abrash/latency-the-sine-qua-non-of-ar-and-vr/> [<https://perma.cc/4VL7-LS32>].

times per second.³⁴ The Oculus system, with its advances over existing VR technology, made commercial home use of VR technology feasible rather than an '80s pipe dream. Mark Zuckerberg, founder of Facebook, noted that such a system could change the future of social media interaction and said his company was making a bet on the future of computing when it made the purchase.³⁵

In 2017, Zuckerberg's prediction that VR is the future of computing is what many people are banking on. At this year's South by Southwest Interactive Festival, an annual tech, gaming, media, and policy conference noted for attracting top speakers,³⁶ VR was everywhere.³⁷ NASA used VR systems to allow people to pretend to go on space missions, and a company called Blue Goji demonstrated a VR enhanced workout experience.³⁸ While speaking on a panel at the event, the director of advanced prototypes at the University of Southern California Institute for Creative Technologies, Todd Richman, noted that while VR is mostly seeing development in the gaming industry today, the technology will impact all other industries in the long run including healthcare, education, and "anything that has a spatial component in the commercial sector."³⁹

III. EXPLORING THE LEGAL IMPLICATIONS OF VIRTUAL REALITY

A. Current Legal Challenges in Virtual Reality

1. Protecting Company Secrets During Virtual Reality Development

The current legal disputes regarding VR technology generally involve the hardware and software used to develop the headsets them-

34. Nield, *supra* note 33.

35. Zuckerberg, *supra* note 32.

36. Nathan Matisse & Sam Machkovech, *Thirty years in, South by Southwest still keeps it weird and wonderful*, ARS TECHNICA (Mar. 19, 2017, 10:00 AM), <https://arstechnica.com/information-technology/2017/03/thirty-years-in-south-by-southwest-still-keeps-it-weird-and-wonderful/> [<https://perma.cc/G3S6-VK8W>].

37. Michel Martin, *Take A Peek Under The Helmet Of Virtual Reality At SXSW*, NPR (Mar. 19, 2017, 6:01 PM), <http://www.npr.org/2017/03/19/520752758/take-a-peek-under-the-helmet-of-virtual-reality-at-south-by-southwest> (last visited Apr. 9, 2017).

38. *Id.*

39. *Id.*; see also Marc Schneider, *Universal Music Pacts With MelodyVR in Virtual Reality Deal*, BILLBOARD (Mar. 20, 2017), <http://www.billboard.com/articles/business/7728758/universal-music-melodyvr-virtual-reality-app> [<https://perma.cc/XLG6-2RNZ>]; Alexandra Schwartz, *Confronting The "Shocking" Virtual-Reality Artwork at the Whitney Biennial*, NEW YORKER (Mar. 20, 2017, 3:38 PM), <http://www.newyorker.com/culture/cultural-comment/confronting-the-shocking-virtual-reality-artwork-at-the-whitney-biennial> [<https://perma.cc/2HQN-DFC5>].

selves and should act as cautionary tales to VR developers. Oculus's main legal battle in the nascent field of retail VR hardware is a reminder to other developers not to fall prey to common legal mistakes made by startup founders.⁴⁰ Specifically, Facebook and its subsidiary Oculus Rift, LLC ("Oculus") have been in legal battles with Total Recall Technologies ("Total Recall") over a breach of confidentiality regarding Total Recall's HMD,⁴¹ and with ZeniMax Media Inc. and its subsidiary id Software LLC (collectively "ZeniMax") regarding trade secrets that may have been appropriated when former employees left to work for Oculus.⁴² Like many startups, Oculus is being plagued by unclear agreements between founding partners and ambiguous confidentiality agreements that can affect the company's rights to the knowledge retained by some of its employees.⁴³

In the case with Total Recall, Oculus founder Palmer Luckey had signed a nondisclosure, exclusivity, and payments agreement with one of Total Recall's general partners, Thomas Seidl, for exclusive rights to Luckey's designs for a head-mounted display.⁴⁴ Total Recall was formed with the goal of "developing a prototype of a head-mounted 3D display."⁴⁵ Seidl's agreement with Luckey provided that Total Recall would have exclusive use of Luckey's designs, with the company's specifications, in exchange for at least \$10,000 per year.⁴⁶ The agreement was meant to protect "Confidential Information," which included all the information that had "commercial value or other utility."⁴⁷ After Luckey sent a prototype to Seidl, Luckey announced the commercial development of his own head-mounted display, the "Rift."⁴⁸ Although Total Recall itself was never mentioned in the agreement, the court ruled that the partnership still had standing to sue as a third-party beneficiary of the agreement and as an undisclosed principal on behalf of which Seidl was acting.⁴⁹ Luckey argued that, even if Total Recall had standing, he had not breached the contract since the agreement had not taken full effect — he claimed that Total

40. Richard Harroch & Richard N. Frasc, *10 Big Legal Mistakes Made by Startups*, FORBES (Oct. 3, 2013, 12:47 PM), <http://www.forbes.com/sites/allbusiness/2013/10/03/big-legal-mistakes-made-by-start-ups/#558b8f10488f> [<https://perma.cc/JPB2-BNDV>].

41. Amended Complaint, Total Recall Techs. v. Luckey, No. 3:15-cv-02281-WHA (N.D. Cal. Mar. 21, 2016), ECF No. 118.

42. Second Amended Complaint, ZeniMax Media Inc. v. Oculus VR, LLC, No. 3:14-cv-01849-K (N.D. Tex. May 20, 2016), ECF No. 610.

43. See Harroch & Frasc, *supra* note 40.

44. Total Recall Techs. v. Luckey, No. C 15-02281 WHA, 2016 U.S. Dist. LEXIS 5659, at *1-2 (N.D. Cal. Jan. 16, 2016).

45. *Id.*

46. *Id.* at *3-4.

47. *Id.* at *3.

48. *Id.* at *5.

49. See *id.* at *8-13.

Recall had not performed its part of the agreement and therefore had not triggered the exclusivity clause.⁵⁰ Luckey also contended that the agreement violated California's laws prohibiting covenants not to compete.⁵¹ While Total Recall brought a number of other claims, including violation of an implied covenant of good faith, constructive and actual fraud, and conversion,⁵² this case highlights the necessity of drafting clear contracts to support clients who are working in conjunction with other developers to produce cutting-edge products.⁵³

This case also shows the need to advise clients on what promises they should and should not make in casual communication with developers or hardware producers. Total Recall asserted fraud against Luckey based on an alleged conversation in which Seidl gave permission to Luckey to open source the prototype, after which Luckey proceeded to commercialize it.⁵⁴ The claims based on ambiguous language in formal agreements or casual conversations may have gone away if the agreement between Luckey and Seidl was drafted clearly. Ultimately, the case was dismissed on other grounds on March 9, 2017.⁵⁵

The ZeniMax case teaches similar lessons. There, ZeniMax alleged, among other things, that the defendants misappropriated trade secrets, infringed its copyrights, breached a contract between Luckey and the company, engaged in unfair competition, and tortiously interfered with the prior contract.⁵⁶ In response, the defendants argued that all of the contractual claims rested on an unenforceable nondisclosure agreement; the agreement itself supposedly left the proper purpose of the confidential information undefined.⁵⁷ According to the defendants, this meant that the nondisclosure agreement could not have bound Luckey, nor could it have bound Oculus, which was created after the agreement was signed.⁵⁸ Although the court denied the defendants'

50. *See id.* at *13–14.

51. *See id.* at *15–16.

52. *Id.* at *6–7.

53. *Cf. id.* at *15 (discussing “grammatical defect” and ambiguity).

54. *See id.* at *24–27.

55. The Northern District of California dismissed the action because Ron Igra, one of the partners of Total Recall Technologies, never brought proof that the action on behalf of the partnership had ever been properly authorized; Seidl in fact never authorized or ratified the lawsuit. *Total Recall Techs. v. Luckey*, No. C 15-02281 WHA, 2017 WL 930788, at *4 (N.D. Cal. Mar. 9, 2017).

56. Second Amended Complaint, *supra* note 42, at 44–52.

57. Defendants Oculus VR, LLC and Palmer Luckey's Motion to Dismiss Counts 1, 3, and 6, and in the Alternative to Dismissing Count 1, Motion for Order Requiring Identification of Trade Secrets with Particularity, and Memorandum of Law in Support of Motion at 1–2, *ZeniMax Media Inc. v. Oculus VR, LLC*, No. 3:14-cv-01849-K (N.D. Tex. May 20, 2016), ECF No. 45.

58. *Id.*

motion to dismiss the claims based on these allegations,⁵⁹ a clearer agreement could have strengthened the position of either the defendant or plaintiff. This case had serious financial ramifications for Oculus and Facebook since a jury awarded ZeniMax half a billion dollars after it found that Oculus and Oculus's executives had breached the nondisclosure agreement, infringed the company's copyrights, and committed false designation.⁶⁰

Although statutes and the common law may protect a startup's secrets, confidentiality agreements are vital in that they clarify which information is proprietary, define the scope of its use, and impress upon employees their obligation to protect and preserve confidentiality.⁶¹ In a field like VR where the proprietary goods are still being developed, lawyers must be even more cognizant of the language used in such agreements. Agreements must be open enough to allow innovation, yet still stringent in outlining what information employees are not permitted to share during and after their employment with the company. Labeling information as confidential or as a trade secret "does not conclusively establish that the information satisfies the definition of a trade secret" without other factors that reflect the information's value and show that the information could not otherwise be obtained.⁶² It will take strategic thinking to write contracts that effectively protect what may constitute billion-dollar VR technology.

A more distinctive feature of the Oculus/Facebook arrangement is the technology's crowdfunded origins. Fully immersive VR has existed for decades, but most past attempts to develop the technology were too large, too costly, or too fantastical to make it feasible.⁶³ But Oculus changed this by raising \$2,437,429 on the Kickstarter crowdfunding platform after being named one of the best products at the

59. Order, *ZeniMax Media Inc. v. Oculus VR, LLC*, No. 3:14-cv-01849-P (N.D. Tex. July 27, 2015), ECF No. 190; Brian Crecente, *Judge Denies Motion to Dismiss in ZeniMax, Oculus VR Lawsuit*, POLYGON (Aug. 11, 2015, 2:06 PM), <http://www.polygon.com/2015/8/11/9132245/oculus-rift-lawsuit-motion-to-dismiss-denied> [<https://perma.cc/VX9V-XD52>].

60. Court's Charge to the Jury and Jury Verdict, *ZeniMax*, No. 3:14-01849-K, ECF No. 914; Adi Robertson, *Oculus Ordered to Pay \$500 million in ZeniMax lawsuit*, VERGE (Feb. 1, 2017, 3:37 PM), <http://www.theverge.com/2017/2/1/14442212/facebook-oculus-zenimax-vr-lawsuit-verdict-palmer-luckey> [<https://perma.cc/PNU4-XQKV>].

61. LEE R. PETILLON, ROBERT JOE HULL & MARK T. HIRAIDE, REPRESENTING START-UP COMPANIES § 9:47, Westlaw (database updated Dec. 2015).

62. Jonathan Rubens, *Early-Stage IP Protection: A Primer and Overview for Working with the Startup*, BUS. L. TODAY, July 2016, at 1, 1, <http://www.americanbar.org/content/dam/aba/publications/blt/2016/07/ip-protection-201607.authcheckdam.pdf> [<https://perma.cc/PGU2-U2ZX>].

63. See Stephen Goldmeier, *7 Failed Virtual Reality Technologies*, 109 (June 5, 2009), <https://io9.gizmodo.com/5280347/7-failed-virtual-reality-technologies> [<https://perma.cc/FJX7-W7E7>].

2012 Electronic Entertainment Expo.⁶⁴ It is not surprising that Oculus started there given that traditional investors had little reason to think Oculus would bring pivotal changes to the field in light of VR's long but thus far non-commercially viable history.⁶⁵ And the crowdfunding success of Oculus and other big-name hardware companies — for example, the Pebble watch — has made similar start-ups turn more and more to backers rather than traditional investors for early stage capital.⁶⁶ With the passage of the Jumpstart Our Business Startups Act (“JOBS Act”) in April 2012, backers can be investors.⁶⁷ Although the distinction between the two labels may be opaque, individuals falling into each category play different roles in providing capital to a company. While a backer may choose to provide a small amount of funds to a project to generally support the creative endeavor in exchange for early access to the good or service or a branded gift, investors provide funds in order to receive equity in a company.⁶⁸ With the JOBS act, individuals who would be able only to invest a small amount may now obtain a financial stake in a company they support.⁶⁹ The Act permits “securities-based crowdfunding” where “a large number of individuals [can] contribut[e] small amounts of capital to fund a company in exchange for the company's securities.”⁷⁰

Some argue that this shift in financing is a boon to hardware start-ups, even going so far as to call backer-funded projects preferable to gaining capital from traditional angel investors and venture capitalist

64. Oculus, *Oculus Rift: Step into the Game*, KICKSTARTER, <https://www.kickstarter.com/projects/1523379957/oculus-rift-step-into-the-game> [https://perma.cc/Q53Z-GTUT].

65. Adi Robertson & Michael Zelenko, *Voices from A Virtual Past*, VERGE, http://www.theverge.com/a/virtual-reality/oral_history (last visited May 6, 2017).

66. Matt Ward, *Why Hardware Startups Should Screw VC and Go Straight to Crowdfunding*, VENTURE BEAT (Nov. 29, 2014), <http://venturebeat.com/2014/11/29/why-hardware-startups-should-screw-vc-and-go-straight-to-crowdfunding/> [https://perma.cc/HE8X-HL2U].

67. Edmund W. Kitch, *Crowdfunding and an Innovator's Access to Capital*, 21 GEO. MASON L. REV. 887, 891–92 (2014).

68. See Vann Alexandra Daly, *Investors vs. Backers: Crowdfunding for Equity*, BIG THINK, <http://bigthink.com/the-crowdsourceress/investors-vs-backers-crowdfunding-for-equity> [https://perma.cc/Z2NJ-MTA6].

69. *Id.*

70. Nicholas Herdrich, *Just Say No to Crowdfunding*, 6 U. PUERTO RICO BUS. L.J. 157, 158 (2015); 1-4 Federal Securities Act of 1933 § 4.01 (2017) (“Section 4(a) of the Securities Act provides that the requirements of Section 5 shall not apply to: . . . (6) Transactions involving the offer and sale of securities by an issuer through “crowdfunding[.]”); 1-4 Federal Securities Act of 1933 § 4.10 (2017) (“The JOBS Act created a new federal exemption from registration requirements for . . . crowdfunding to an unlimited number of investors, without any investor qualifications other than a limit on the amount of money one may invest in relation to his or her income and net worth.”).

firms, which comes at the cost of losing control of one's business.⁷¹ But Kickstarter campaigns and other crowdfunded investments pose their own distinct problems. With regard to Kickstarter campaigns, hardware companies often give the "promise of an opportunity or good related to the project being funded along with any utility [backers] may derive from feeling like they are part of the creative process or supporting the person or project they have committed to fund."⁷² Breaking such a promise may constitute fraud that will trigger charges from the Federal Trade Commission ("FTC").⁷³ On the other hand, crowdfunded investments enabled by the JOBS Act may scare away angel investors and venture capitalists from future rounds since it may be a sign that the start-up was unable to raise money from an established investor.⁷⁴ Further, the requirements of the JOBS Act may be overly burdensome for early-stage start-ups which might have been found unsustainable if professional investors had vetted them.⁷⁵

The next concern is what non-legal obligations a company will have to backers from these alternative forms of funding. With Oculus, the company produced a state-of-the-art VR peripheral funded by backers that was later acquired by a major tech conglomerate for millions above the original crowdfunding goal. Oculus's sale to Facebook for over \$2 billion two years after its successful Kickstarter campaign for \$2.5 million caused some backlash among the company's early supporters.⁷⁶ Although Oculus had carried out its Kickstarter promise to all of its backers, in January 2016 in response to this backlash, the company decided to give all those who originally provided higher tiers of funds to the campaign an ad hoc freebie bundle (valued at over \$275), including the first commercial release of its Rift headset.⁷⁷ Oculus, however, was never obligated to provide such

71. Kathryn Judge, *The Future of Direct Finance: The Diverging Paths of Peer-To-Peer Lending and Kickstarter*, 50 WAKE FOREST L. REV. 603, 629–30 (2015).

72. *Id.*

73. Anne Flaherty, *Federal Regulators Go After Crowdfunding Scams on Kickstarter and GoFundMe*, PBS NEWSHOUR (June 11, 2015), <http://www.pbs.org/newshour/rundown/federal-regulators-go-crowdfunding-scams-kickstarter-gofundme/> [https://perma.cc/RD75-LLXV]; Ben Popper, *FTC Announces It Will Go After Scummy Kickstarter Projects that Steal Backers' Money*, VERGE (June 11, 2015), <http://www.theverge.com/2015/6/11/8765557/ftc-kickstarter-deceptive-fraud-doom-that-came-atlantic-city> [https://perma.cc/W5V8-DLJ7].

74. Herdrich, *supra* note 70, at 169.

75. *Id.* at 171 ("Under the JOBS Act, an early-stage business has to provide an offering memorandum and audited financials, which will require the help of attorneys and accountants. Once fully implemented by the SEC, these initial reporting requirements may prove prohibitive, especially for smaller rounds of funding.")

76. *Id.*

77. Alex Hern, *Oculus Responds to Kickstarter Criticism with Free Headsets*, THE GUARDIAN (Jan. 6, 2016), <https://www.theguardian.com/technology/2016/jan/06/oculus-rift-kickstarter-free-headsets-virtual-reality> [https://perma.cc/9BL4-RMWR].

a gift to backers, nor does obtaining crowdfunding preclude a company from being bought by a different company.⁷⁸

Between the FTC charges and Oculus's decision to provide another freebie to backers after it was scrutinized post-acquisition, it is clear that legal and non-legal obligations that crowdfunded companies owe to backers remain to be disputed and potentially clarified in court.⁷⁹ This indicates that VR start-ups and their lawyers must not only be vigilant against the common legal mistakes that plague early stage start-ups, but also mindful of the promises that companies make and the requirements that companies must meet to take advantage of crowd-based funding.

2. Intellectual Property Rights in Virtual Reality

Beyond start up concerns, there are also several opportunities for goods and brands to be exploited through exposure in VR.⁸⁰ Take for example the Mount Everest VR climbing experience mentioned before.⁸¹ While the game developers can choose not to brand the gear used in the game, in their efforts to make the experience more authentic, they could create virtual replications of real equipment used to climb the mountain, such as North Face's Prophet 52 pack⁸² and Black Diamond's Sabretooth crampons.⁸³ With the ubiquity of virtual environments, if not immersive VR, one scholar has already predicted that intellectual property law "will make a smooth expansion into a virtual reality environment because of legislative foresight, the current trend to expand the scope of protected interests, and the probability of using a virtual reality environment for commerce."⁸⁴ In thinking about how to protect themselves from direct or secondary liability, VR platform providers should look to best practices adopted by other game and app ecosystems such as Google Play, Steam, and iOS since they also stand as proprietary distribution channels for content made by

78. *See id.*

79. *See* Lucas E. Buckley et al., *The Intersection of Innovation and the Law How Crowdfunding and the On-Demand Economy Are Changing the Legal Field*, WYO. LAW., Aug. 2015, at 36, 40.

80. *See Total Recall*, *supra* note 33; *accord ZeniMax*, *supra* note 41; *Oculus, LLC v. Oculus VR, Inc.*, 2015 U.S. Dist. LEXIS 74666 *51 (C.D. Cal. 2015) (finding no likelihood of confusion between the plaintiff's and defendant's trademarks).

81. *See* Gaudiosi, *supra* note 7.

82. Stephen Regenold, *Everest Climbing Gear: Hillary to Hilaree*, NATIONAL GEOGRAPHIC (2012), http://adventure.nationalgeographic.com/adventure/everest/gear-edmund-hillary-hilaree-oneill/#/sir-edmund-hillary-gear_49924_600x450.jpg [https://perma.cc/F7YS-ZANL].

83. *Id.*

84. Timir Chheda, *Intellectual Property Implications in a Virtual Reality Environment*, 4 J. MARSHALL REV. INTELL. PROP. L. 483, 484 (2005).

individual developers.⁸⁵ Content developers could be held directly liable for intellectual property theft and may even be held secondarily liable if they allow users to create and store content within their worlds.⁸⁶ Rather than allowing a client to make itself vulnerable to an infringement suit, VR platform providers and developers need to know the risks of having unauthorized real-world objects in virtual reality.

i. Patent Rights

Patents allow an inventor to prevent others from making, using, selling, offering for sale, and importing a claimed invention for a limited period of time if the invention is found to be useful, novel, and nonobvious to a person having ordinary skill in the art.⁸⁷ If such a claimed invention is used, made, or sold without authorization, the patent owner may sue for infringement.⁸⁸ But does replicating a product in a VR environment without authorization infringe upon an owner's patent rights?

In some circumstances, such an action may explicitly infringe upon a claimed invention. Notably, in order to protect their clients' work, some patent attorneys have added language to patent applications that would extend preclusive rights to computer embodiments of their clients' work.⁸⁹ Attorney James Gatto suggests that attorneys write more than one patent or claim set to protect their clients' work in digital spaces.⁹⁰ For those considering recreating inventions in VR, it is worthwhile to be conscious of the changing ways that patents are or will be written to accommodate VR's growing prevalence. Patent owners might also use the doctrine of equivalents, which permits an owner to sue for the use, production, or sale of a good that carries out a substantially similar function in a substantially similar way with a

85. See *Game Distribution*, MOZILLA DEVELOPER NETWORK, https://developer.mozilla.org/en-US/docs/Games/Publishing_games/Game_distribution [<https://perma.cc/S6PP-UBBQ>]; Maria Korolov, *Five Leading VR Ecosystems*, HYPERGRID BUS. (Dec. 17, 2015), <http://www.hypergridbusiness.com/2015/12/five-leading-vr-ecosystems/> [<https://perma.cc/UB6F-ZRWU>].

86. See *infra* notes 136 and 137 (alludes to the DMCA information).

87. See Rubens, *supra* note 62, at 4.

88. See 35 U.S.C. § 271(a)–(d) (2012).

89. Thai Phi Le, *More Than Just a Game*, DC BAR: WASH. LAW. (May 2013), <https://www.dcbar.org/bar-resources/publications/washington-lawyer/articles/may-2013-virtual-game.cfm> [<https://perma.cc/NL54-C3WS>] (“With these issues in mind, when Danenberg works on a patent application, he includes language regarding a computer embodiment of the product, if applicable.”).

90. *Id.* (“James Gatto . . . agrees. ‘If you’re dealing with virtual goods . . . it’s important to understand how to write your patent,’ he says. ‘You might need to have two patents instead of one. . . . [The functionality of a virtual good] may be different than the functionality of a[n] [analogous] real-world product’”).

substantially similar result to her claimed invention,⁹¹ to allege that a VR good is infringing upon a claimed invention.⁹² While some may think that a virtual representation of an invention should be considered an entirely separate entity, if the good operates the same way and simulates the laws of physics, it may only be “trivially” different before a court of law and thus infringing.⁹³

VR ecosystem owners or content producers (if they allow their users to create digital goods within their services) should look to contract law to protect themselves from secondary inducement infringement liability.⁹⁴ VR ecosystem owners must take care to outline in their terms of service that content developers may not reproduce patented goods in VR without obtaining proper permission.⁹⁵ Although an explicit clause to that effect (rather than representations that a developer will not violate another’s rights) would be a new addition to terms of service, courts will generally enforce these agreements if existing users of the digital platform agree to terms of use that sufficiently put them on notice.⁹⁶ Platform owners and content producers could even leverage the immersive nature of VR to affirmatively put users on notice of what they can and cannot do. For example, users could virtually read the terms of use like a book before they start a game, play a mini-game where the users seek the most salient portions of the terms hidden in a 3D space, or use the platform in a variety of other creative manners.

ii. Trademark Rights

VR content developers may have greater protections in a trademark infringement suit. A trademark is any “word, name, symbol, or device” that has been used or is intended to be used to distinguish one manufacturer’s or seller’s goods from another’s goods or services.⁹⁷

91. *Id.*

92. See Chheda, *supra* note 84, at 492.

93. ROSS A. DANNENBERG & STEVE MORTINGER, *COMPUTER GAMES AND VIRTUAL WORLDS: A NEW FRONTIER IN INTELLECTUAL PROPERTY LAW* 128 (2011).

94. 35 U.S.C. § 271(b) (2012); *Contributory Infringement*, LEGAL INFORMATION INSTITUTE, https://www.law.cornell.edu/wex/contributory_infringement [https://perma.cc/E888-2LUJ].

95. *Infra* note 117.

96. See *Long v. Provide Commerce, Inc.*, 200 Cal. Rptr. 3d 117, 123–26 (Cal. Ct. App. 2016); Hannah Ji, *On My Terms: The Key to Designing an Enforceable Digital Agreement*, BYTE BACK (May 19, 2016), <http://www.bytebacklaw.com/2016/05/on-my-terms-the-key-to-designing-an-enforceable-digital-agreement/> [https://perma.cc/4G9F-9UB4]; Rich Reese, *Appellate Court Addresses Enforceability of Website “Terms of Use” Under Browsewrap Agreements*, LINCOLN, GUSTASON & CERCOS, LLP (Apr. 7, 2016), <http://www.lgclawoffice.com/appellate-court-addresses-enforceability-of-website-terms-of-use-unde> [https://perma.cc/S9L8-SQ75].

97. 15 U.S.C. § 1127 (2012) (defining the term “trademark”).

For example, the word “Apple” is a registered trademark for computers, software, and computer peripherals for the manufacturer, Apple, Inc.⁹⁸ One has infringed another’s trademark when she has used a reproduction of the other’s mark in commerce or attached such a reproduction to the packaging of her goods in a manner that is likely to cause confusion or deceive a customer as to the source of the good.⁹⁹

Although it may seem like the replication of a mark should clearly be infringing, a trademark owner may have a difficult time asserting that infringement has occurred for three reasons. First, the replication of the mark may constitute a permissible parody. A parody is “a simple form of entertainment conveyed by juxtaposing the irreverent representation of the trademark with the idealized image created by the mark’s owner.”¹⁰⁰ When a defendant is charged with trademark infringement, she may claim that her use of the mark will not cause confusion because an evaluation of the mark fails trademark law’s traditional multi-factor test to determine confusion and a reasonable viewer would not think the mark owner was the source of the parodying good.¹⁰¹

Currently, claims of parody generally prevail over the rights of the trademark owner if such a work garners First Amendment protection as speech.¹⁰² It is worth initially noting that video games as a whole garner First Amendment protection because they communicate ideas through literary devices.¹⁰³ This same protection extends to parodies in virtual environments and will likely extend generally to VR content. In *E.S.S. Entertainment v. Rock Star Videos, Inc.*, the owner of a nude dancing club called “Play Pen” sued the publisher of the popular “Grand Theft Auto” video game series for trade dress infringement under § 43(a) of the Lanham Act for creating a parody of the club within one of its games.¹⁰⁴ The Ninth Circuit affirmed the grant of summary judgment in favor of the defendants, holding that

98. *Apple Trademark List*, APPLE, <https://www.apple.com/legal/intellectual-property/trademark/appletmlist.html> [<https://perma.cc/D6U4-K2GZ>].

99. See 15 U.S.C. § 1114(1) (2012).

100. *Louis Vuitton Malletier, S.A. v. My Other Bag, Inc.*, 156 F. Supp. 3d 425, 434–35 (S.D.N.Y. 2016), *aff’d*, No. 16-241-CV, 2016 WL 7436489 (2d Cir. Dec. 22, 2016).

101. See *id.* at 441; see also Roberto Ledesma, *The Parody Defense Is Dead. Long Live the Parody Defense!*, EVERYTHINGTRADEMARKS.COM (July 19, 2015) (noting the success of parody defenses in court and that such defenses arise when the parody is alleged to cause consumer confusion or as an affirmative defense to a trademark dilution claim), <https://everythingtrademarks.com/2015/07/19/the-parody-defense-is-dead-long-live-the-parody-defense/> [<https://perma.cc/LQ3U-W7EZ>].

102. See William McGeeveran, *The Imaginary Trademark Parody Crisis (and the Real One)*, 90 WASH. L. REV. 713, 753 (2015).

103. *Brown v. Entm’t Merchs. Ass’n*, 564 U.S. 786, 790 (2011).

104. See *E.S.S. Entm’t 2000, Inc. v. Rock Star Videos, Inc.*, 547 F.3d 1095, 1095–98 (9th Cir. 2008).

the First Amendment protected the defendants' use of "Pig Pen" because it was not misleading.¹⁰⁵ The use of a trademark in an artistic work will not violate the Lanham Act unless the mark has no artistic relevance to the underlying work or, if it does have artistic relevance, it still explicitly misleads consumers as to the source of the work.¹⁰⁶ The court determined that even though the defendants' club had a similar look and feel to the plaintiff's, this had "artistic relevance" and did not mislead consumers into believing that the plaintiff created the video game or that the defendants operated "Play Pen."¹⁰⁷ The defendants' club with a similar look and feel to the plaintiff's had artistic relevance because it was part of the game developers' overall creation of a "cartoon-style parody of East Los Angeles."¹⁰⁸ While this case shows that courts may accept First Amendment defenses from VR content producers, it is not guaranteed because of the fact-specific nature of the analysis and the manner in which Grand Theft Auto mirrored East Los Angeles.

Given that immersive virtual environments may range in appearance from the cartoonish to the hyper-realistic, whether a judge views the use of a mark as infringement or parody may be largely dependent on the characteristics of the virtual world. The presence of a trademark in a more realistic VR world, whose creator has deals with other existing brands, seems more likely to cause confusion than in a more fantastically-rendered one that lampoons or replicates that same mark. This is to note that creators of content in hyper-realistic environments may have to take more care to license trademarks present in their virtual worlds.¹⁰⁹

Second, a trademark owner may not be able to establish that the mark is likely to cause confusion as to affiliation or sponsorship.

105. *Id.* at 1101.

106. *Id.* at 1099.

107. *Id.* at 1100–01 (“[W]e conclude that Rockstar’s modification of ESS’s trademark is not explicitly misleading and is thus protected by the First Amendment. Since the First Amendment defense applies equally to ESS’s state law [and] Lanham Act claim[s], the district court properly dismissed the entire case on Rockstar’s motion for summary judgment.”).

108. *Id.* at 1100.

109. See James G. Gatto et al., *Trademark Claims Against Virtual World Strip Club Denied on 1st Amendment Grounds*, PILLSBURY LAW (Jan. 20, 2009) at 7, <https://www.pillsburylaw.com/images/content/2/0/v2/2042/AF89E8555F7FF7B0DB453F21904807CC.pdf> [<https://perma.cc/C9LM-DKDR>]. Video games currently make product placement deals to feature branded goods in their digital world. It logically follows that VR developers will make similar deals as more people navigate their synthetic worlds. Cf. Sean Buckley, ‘*Final Fantasy XV*’ Tricked Me into Buying Cup Noodles, ENGADGET (Jan. 18, 2017), <https://www.engadget.com/2017/01/18/final-fantasy-xv-tricked-me-into-buying-cup-noodles/> [<https://perma.cc/32JZ-U7FV>]; Adam Rosenberg, ‘*Final Fantasy XV*’ has Killer Product Placement, MASHABLE (Nov. 28, 2016), <http://mashable.com/2016/11/28/final-fantasy-15-cup-noodles-quest/#CZrO3xgakkqp> [<https://perma.cc/K2KJ-GZTR>].

What this means is that it may be hard to argue that customers will be confused about whether a brand agreed to be affiliated with or to sponsor the virtual product. It may be that the defendant in such a suit has already disavowed affiliation, criticized the mark or affiliated products, identified the true owner of a mark, or all of these situations combined.¹¹⁰ Further, the defendant may argue nominative fair use. Under the rule of nominative fair use, use of a mark is not infringing if such a use is “descriptive of and used fairly and in good faith only to describe the goods or services of [the trademark owner], or their geographic origin.”¹¹¹

Several courts have dismissed trademark infringement claims for reproductions of marks in video games because they found it was unlikely that a consumer believed that they were purchasing a copy of the markholder’s goods when they were purchasing the game.¹¹² It is possible that the law will treat the reproduction of marks in immersive virtual environments similarly where the owner of a mark would not or did not sponsor or endorse the product of an alleged infringer. To truly show sponsorship, VR platforms can enter into product placement deals similar to those made for video games.¹¹³

Third, a trademark owner may also find it difficult to argue that a digital replication of their mark is being used in commerce.¹¹⁴ This will depend on whether an allegedly infringing use of a mark statically performs some source-signifying function within the virtual world or whether it is considered part of a virtual good that users can sell or exchange.¹¹⁵ If the mark on a digital good is not designating a source in some type of transaction or is only being exchanged for virtual currency, it is unclear whether this constitutes “use in commerce.”¹¹⁶ It could be argued that the mark’s presence in a VR

110. *Hensley Manufacturing, Inc. v. ProPride, Inc.*, 579 F.3d 603, 611 (6th Cir. 2009) (finding there was no likelihood of confusion as to association where website explicitly noted that former trademark owner was no longer connected with the company); *Architectural Mailboxes, LLC v. Epoch Design, LLC*, No. 10CV974-DMS, 2011 WL 1630809, at *3 (S.D. Cal. Apr. 28, 2011) (finding that plaintiff did not allege sufficient facts to support its trademark infringement claim where defendant identified plaintiff as trademark owner and criticized the product on which the mark is used); *Radiance Found., Inc. v. N.A.A.C.P.*, 786 F.3d 316, 329 (4th Cir. 2015) (holding that satirical, provocative use of non-profit’s name did not cause likelihood of confusion as to the title’s authorship or association).

111. 15 U.S.C. § 1115(b)(4).

112. Brittany Frandsen, *Is Using Call of Duty in this Comment Infringement?*, 2016 BYU L. REV. 295, 301 (2016).

113. See Rosenberg, *supra* note 109.

114. Wali Raja, *Virtual Reality: A Complex World for Intellectual Property Owners*, LINKEDIN PULSE (July 22, 2015), <https://www.linkedin.com/pulse/virtual-reality-complex-world-intellectual-property-owners-wali-raj> [<https://perma.cc/8DJY-9Y25>].

115. See Le, *supra* note 89.

116. Tim Lince, *Virtual Reality Is Set to Emerge as a New Trademark Battleground, Brand Owners Are Warned*, WORLD TRADEMARK REV. (May 12, 2016),

experience that was part of a commercial transaction between users, platform providers, and developers is enough, but that argument seems tenuous. Most likely, the issue of what constitutes “use in commerce,” both on a platform providing an array of VR experiences and in the VR experiences themselves, will have to be litigated before the topic can come to any clear resolution.

VR platform providers can preempt these issues if they inform content producers that they must acquire rights or obtain licenses to the marks used in their environments. Most likely, platform owners will require that developers or content publishers make warranties and representations that they own all the content in the program and that it does not infringe upon the rights of any other parties.¹¹⁷ Being contractually on the hook for any potential unauthorized uses, developers may use a parody defense or the fair use doctrine to justify some uses of trademarks in virtual content.

iii. Copyrights

Copyright law grants exclusive rights to authors of original works “fixed in [a] tangible medium of expression.”¹¹⁸ This body of law’s constitutional origin is meant “[t]o promote the Progress of Science” by granting authors exclusive rights over their work for a limited period of time.¹¹⁹ Copyrights cover a wide array of creative works and other original writings including software code.¹²⁰ Because some VR experiences are meant to be lifelike, it seems inevitable that copyright-protected content will be both produced and reproduced in VR.

In order to make a claim of infringement, the copyright owner must have a valid copyright, prove that actual copying has occurred, and demonstrate that a “substantial similarity between the accused work and the original exists.”¹²¹ When examining the validity of the copyright of a plaintiff’s work, courts determine whether the work falls into one of the eight enumerated subject matters under § 102 of

<http://www.worldtrademarkreview.com/Blog/detail.aspx?g=955a9c25-9eab-483d-9de3-25c22f22d497> [<https://perma.cc/F4TJ-6HKB>].

117. Cf. David Greenspan, *Mastering the Game: Business and Legal Issues for Video Game Developers*, WORLD INTELL. PROP. ORG. 144 (2013), <http://www.wipo.int/publications/en/details.jsp?id=3233&plang=EN> [<https://perma.cc/5DZH-MWYG>].

118. 17 U.S.C. § 102(a) (2012).

119. U.S. CONST. art. I, § 8, cl. 8.

120. See *Lotus Dev. Corp. v. Borland Int’l, Inc.*, 49 F.3d 807, 814 (1st Cir. 1995) (“The Second Circuit designed its *Altai* test to deal with the fact that computer programs, copyrighted as ‘literary works,’ can be infringed by what is known as ‘nonliteral’ copying, which is copying that is paraphrased or loosely paraphrased rather than word for word.”).

121. *Alexander v. Haley*, 460 F. Supp. 40, 43 (S.D.N.Y. 1978).

the Copyright Act.¹²² Although VR environments are new, it is likely that virtual materials will be copyrightable because the various three-dimensional representations displayed in VR will constitute several of the subject matters of copyright protection.¹²³ Most people have already encountered digital representations of architectural, pictorial, sculptural, literary, choreographic and dramatic works; it is no stretch to imagine how those works could be given 3D shape.¹²⁴ A VR developer may also be using copyright-protected software code to augment the user's experience.¹²⁵ "Video games in general are entitled to copyright protections as audiovisual works," and this will likely extend to VR content.¹²⁶

Copyright owners have faced many obstacles in obtaining the same recourse for infringement in virtual spaces as they would have in instances of physical world infringement. There are two reasons for this. First, 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. In *Incredible Technologies, Inc. v. Virtual Technologies, Inc.*, the maker of Golden Tee, a video golf arcade game, sued its competitor for infringing its copyrights in the video display of the game.¹²⁷ The Seventh Circuit affirmed the district court's finding that the plaintiff did not have a likelihood of success of prevailing on the merits of its claims.¹²⁸ The court determined that parts of the game display were *scènes à faire*, or were incidental to the standard treatment of a game of golf, and thus not subject to copyright protection, and that the other representations in the game were sufficiently different to make success on the merits unlikely.¹²⁹ Games and applications with wholly

122. See 17 U.S.C. § 102(a); *Ward v. Barnes & Noble, Inc.*, 93 F. Supp. 3d 193, 207 (S.D.N.Y. 2015) ("The Copyright Act 'exclusively governs a claim when: (1) the particular work to which the claim is being applied falls within the type of works protected by the Copyright Act under 17 U.S.C. §§ 102 and 103, and (2) the claim seeks to vindicate legal or equitable rights that are equivalent to one of the bundle of exclusive rights already protected by copyright law under 17 U.S.C. § 106.'").

123. Anthony Reese, *Copyrightable Subject Matter in the "Next Great Copyright Act,"* 29 BERKELEY TECH. L.J. 1489, 1516–17 (2014). The only enumerated subjects that may be reproduced wholesale are sound recordings and audiovisual works. If a VR experience reproduces or distributes such works, that will constitute a more traditional form of infringement of the publisher's work — these are the only digital categories on the list.

124. See 17 U.S.C. § 102(a) (2012).

125. *Copyright Protection of Computer Software*, WORLD INTEL. PROP. ORG., <http://www.wipo.int/copyright/en/activities/software.html> [<https://perma.cc/C4LJ-752S>].

126. *Midway Mfg. Co. v. Bandai-Am., Inc.*, 546 F. Supp. 125, 139 (D.N.J. 1982).

127. *Incredible Techs., Inc. v. Virtual Techs., Inc.*, 400 F.3d 1007, 1009 (7th Cir. 2005).

128. *Id.* at 1015.

129. *Id.*; see also *Capcom U.S.A., Inc. v. Data E. Corp.*, No. C 93-3259 WHO, 1994 WL 1751482, at *15 (N.D. Cal. Mar. 16, 1994) (denying plaintiff's request for preliminary injunction in copyright infringement case regarding one-on-one fight games, reasoning that the plaintiff drew too heavily from the public domain of fighting moves and fighters, leav-

original expressions may have more success in court, but there is little case law on the subject despite the fact that copycat applications and games have been a persistent problem in the app marketplaces that the VR marketplace is modeled after.¹³⁰

Second, while it is within a copyright owner's rights to sue a virtual infringer, this form of enforcement may not be practical if the infringer earns low profits (if any) from the infringing code or content.¹³¹ Revenue matters because an infringer is liable for either the copyright owner's actual damages and their additional profits or for statutory damages.¹³² Users access VR content through a store similar to the app stores on smartphones, and very few applications make the types of profits that would make a lawsuit financially worthwhile for the copyright owner.¹³³ Further, if a creator distributed her content in an application or her application as a whole for free — or has not made enough profits — she would have little incentive to register her creation with the Copyright Office for \$35, a prerequisite to filing a lawsuit.¹³⁴ Currently, the best option for producers of copyright-protected content in the VR marketplace is to reach out to the operator of the VR platform to penalize infringers for violating the terms of service or end-user license agreements.¹³⁵

While a formal legal proceeding may not be economically feasible or worthwhile for some copyright holders, they may alternatively have recourse through the Digital Millennium Copyright Act

ing itself open to be emulated). *But see* Tetris Holding, LLC v. Xio Interactive, Inc., 863 F. Supp. 2d 394, 397, 414 (D.N.J. 2012) (finding that the expression of the defendant's mobile multiplayer puzzle game was substantially similar to Tetris, which the defendant readily admitted to copying); Midway Mfg. Co. v. Bandai-Am., Inc., 546 F. Supp. 125, 152-155 (D.N.J. 1982) (holding that summary judgment for plaintiff is appropriate in regard to substantial similarity, and that plaintiff has a high likelihood of success on the merits in infringement suit, warranting a preliminary injunction where plaintiff was able to make a strong showing that defendant's game had similar distinctive character, musical theme, and cartoon sequence).

130. See *The fight against clone apps*, DEVELOP (Sept. 5, 2014 10:00 AM), <https://www.develop-online.net/analysis/the-fight-against-app-clones/0197276> [<https://perma.cc/SLR6-VDKX>].

131. Matthew Becker, *Digest Comment: Re-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>].

132. See 17 U.S.C. § 504.

133. Tristan Louis, *How Much Do Average Apps Make?*, FORBES (Aug. 10, 2013, 5:30 PM), <http://www.forbes.com/sites/tristanlouis/2013/08/10/how-much-do-average-apps-make/#1ffdf31c12cb> [<https://perma.cc/95AC-D3SQ>]; see also Le, *supra* note 89 (“The problem is not that IP laws are not sufficiently strong. The problem is right now we’re dealing with an environment in which micropayments are the dominant form of payment for transactions. There is just not enough money to make the involvement of lawyers and litigation cost-effective in most cases,” Gatto says.”).

134. Becker, *supra* note 131; 17 U.S.C. § 411.

135. See Becker, *supra* note 131.

(“DMCA”).¹³⁶ The safe harbor provisions of the DMCA require online service providers to have a specific notice and takedown procedure in place in order to gain legal immunity for the infringing acts of their users.¹³⁷ For a service provider not to be held secondarily liable for storing infringing material at the direction of a user, it must lack knowledge of the infringement, cannot receive a financial benefit from the infringing activity or have the ability to control it, and upon notification the service provider must expeditiously remove or disable access to the infringing content.¹³⁸ While this procedure may currently be the best way to resolve small claims that copyright owners have against competing infringers — since it provides a fairly straightforward and expedient process to have infringing content removed without the assistance of a lawyer¹³⁹ — it has to be adopted by the service provider to be an available remedy for copyright owners. For upcoming VR mobile platforms, it may be difficult to determine who and what is tantamount to a service provider. The DMCA gives two definitions for the phrase “service provider”:

(A) As used in subsection (a), the term ‘service provider’ means an entity offering the transmission, routing, or providing of connections for digital online communications, between or among points specified by a user, of material of the user’s choosing, without modification to the content of the material as sent or received.

(B) As used in this section, other than in subsection (a), the term ‘service provider’ means a provider of online services or network access, or the operator of facilities therefor, and includes an entity described in subparagraph (A).¹⁴⁰

Oculus owns a platform that allows developers to share VR applications through the Internet. If the developers are considered users, and storage of their applications, despite a potentially long approval process,¹⁴¹ is considered storage at the direction of a user, Oculus

136. See 17 U.S.C. §§ 512, 1201–1205, 1301–1332; 28 U.S.C. § 4001.

137. 17 U.S.C. § 512.

138. 4-12B NIMMER ON COPYRIGHT § 12B.04 (2017).

139. See *id.*

140. *Wolk v. Kodak Imaging Network, Inc.*, 840 F. Supp. 2d 724, 743–44 (S.D.N.Y. 2012), *aff’d sub nom. Wolk v. Photobucket.com, Inc.*, 569 F. App’x 51 (2d Cir. 2014).

141. See Kia Kokalitcheva, *Apple’s App Approval Process Just Got A Lot Faster*, FORTUNE (May 12, 2016), <http://fortune.com/2016/05/12/apple-app-store-faster-approval-2/> [https://perma.cc/S5PT-2ZY2].

would likely qualify as a service provider.¹⁴² It is currently common practice for distribution platforms to have such procedures in place.¹⁴³ Further, these non-traditional users may host interactive services that allow their customers to interact and share content. When platform providers, content developers, and users all play a role in infringement and litigation may be too costly, holding someone liable for copyright infringement becomes even more challenging. New content and whole virtual worlds are being developed for these newer platforms¹⁴⁴ and it is unclear whether the existing means for dealing with infringement will resolve competing app developers' or external copyright owners' grievances.¹⁴⁵

B. Future Legal Challenges in Virtual Reality

1. Privacy Risks

Because privately owned VR platforms will be connected to the Internet and app stores in a way that older VR platforms were not, they raise privacy concerns that were unthinkable in the academic settings where these technologies were formerly used.¹⁴⁶ Consumers should be aware of the privacy risks they face when using services from operators like Facebook and Oculus Rift. Facebook has been known to run experiments on users and change its privacy policy without notice,¹⁴⁷ and it remains to be seen whether the company will change its practices with its VR platform. In 2014, given Facebook's data use policy, the company's data scientists were able to publish a scientific paper on how removing all the negative or positive posts on a user's news feed affected that user's mood.¹⁴⁸ Oculus's privacy pol-

142. *Id.*

143. See, e.g., *Notice of Copyright Infringement*, STEAM, <https://steamcommunity.com/dmca/create/> (last visited Mar. 26, 2017).

144. Hypatia, for example, is a new virtual world being developed to be accessed in new mobile head-mounted displays. See Amy Kraft, *Explore the world's first virtual reality city, Hypatia*, CBS NEWS (Apr. 4, 2016, 11:22 AM), <http://www.cbsnews.com/news/explore-the-worlds-first-virtual-reality-city-hypatia/> [<https://perma.cc/W6WZ-CYG9>].

145. Cf. Chris Kerr, *Apple IP infringement policy leaves developers in no-mans land*, POCKETGAMER.BIZ (Jan. 14, 2014, 6:05 PM), <http://www.pocketgamer.biz/news/56600/apple-ip-infringement-policy-leaves-developer-in-no-mans-land/> [<https://perma.cc/Z4JQ-NSAY>]; see also Alex Vorro, *Atari attacks App Store game developers*, INSIDE COUNSEL (Jan. 4, 2012), <http://www.insidecounsel.com/2012/01/04/atari-attacks-app-store-game-developers> [<https://perma.cc/R7VK-CUVV>].

146. Cf. *History of Virtual Reality*, *supra* note 21.

147. See Maria Korolov, *VR Privacy Problem Is Real: Here's What You Need To Know To Protect Yourself*, GEARBRAIN (June 7, 2016), <http://www.gearbrain.com/virtual-reality-privacy-consumer-battle-rights-1845199637.html> [<https://perma.cc/8A5Y-LTCM>].

148. See Kashmir Hill, *Facebook Manipulated 689,003 Users' Emotions For Science*, FORBES (June 28, 2014, 2:00 PM), <http://www.forbes.com/sites/kashmirhill/2014/06/28/>

icy states that not only may the company use the information it collects from users to provide services but that it also may use the information to conduct research, potentially for commercial purposes, on the way people use its services.¹⁴⁹ Thus, Oculus seems to have the same privileges as Facebook to experiment on users. This poses a far greater risk than social media because of the type of data that VR platform providers will be able to collect and manipulate.

Privacy risks to VR users are particularly relevant, given the new information that Facebook will be able to collect from its immersive VR platforms. These platforms currently track a user's head movement and could potentially have the capability to track eye movement.¹⁵⁰ As VR devices get more sophisticated, they will also likely come with peripherals that gather biometric data like a user's heart rate and hand movements.¹⁵¹ With such technological developments, companies will be able to track a user's every move.¹⁵² For example, Oculus's privacy policy states that it will collect information provided by users, information about how they access its services, information about the games installed on users' devices, and most importantly "[i]nformation about [the users'] physical movements and dimensions when [they] use a virtual reality headset."¹⁵³ Collecting all this information allows companies to obtain a richer picture of consumers, including their physical characteristics or health.¹⁵⁴ Having such rich data on consumers may facilitate discrimination or mass surveillance.¹⁵⁵ Risks to privacy are greater if a company that retains such data is hacked and the information falls into the wrong hands.¹⁵⁶

These privacy risks mean that companies developing either hardware or applications should definitively decide how much user data they will monitor and retain, and clearly communicate this both to employees and to users through their privacy policies. Not doing so

facebook-manipulated-689003-users-emotions-for-science/ (last visited Apr. 9, 2017); *Data Use Policy*, FACEBOOK, <https://www.facebook.com/policy.php> (last visited Mar. 7, 2017) ("We conduct surveys and research, test features in development, and analyze the information we have to evaluate and improve products and services, develop new products or features, and conduct audits and troubleshooting activities.").

149. *Oculus Privacy Policy*, OCULUS, <https://www.oculus.com/legal/privacy-policy/> [<https://perma.cc/FD59-BM8M>].

150. See Joe Newman & Joseph Jerome, "Press Start to Track?" *Privacy and the New Questions Posed by Modern Video Game Technology*, 42 AIPLA Q.J. 527, 537–38 (2014).

151. *Id.*

152. See Korolov, *supra* note 147.

153. *Oculus Privacy Policy*, *supra* note 149.

154. Steven C. Bennett, *Privacy Implications of Biometrics*, PRAC. LAW., June 2007, at 13, 17.

155. *Biometrics*, PRIVACY INTERNATIONAL, <https://www.privacyinternational.org/node/70> [<https://perma.cc/3L3H-AR4M>].

156. Korolov, *supra* note 147.

may mean that the company has violated FTC policies or state privacy and wiretapping laws, or the company might face backlash from individual users.¹⁵⁷ VR platform providers like Oculus may also be secondarily liable if a third-party application provided through their platform is insecure or collects more data than users realize.¹⁵⁸

The FTC takes legal action against companies that do not uphold their promises to consumers contained in their privacy policies.¹⁵⁹ Based on the FTC's practice of holding companies secondarily liable for advertising and telemarketing practices of their business partners, it would not be unprecedented if the FTC held companies liable for a contracting third party's failure to uphold their privacy promises.¹⁶⁰

Having a definitive privacy policy alongside the development and deployment of any online service is imperative today. Because of the expanding scope and amount of data that VR applications will be able to collect, it is essential to clearly outline the privacy and security standards that third-party content providers must comply with and to make reasonable efforts to explain to users what data is being collected and how it will be used.

2. Cognitive and Physical Risks

Because of the unknown, long-term effects of the immersive sensory experiences that VR provides, VR companies and game producers may be subject to product liability suits.¹⁶¹ VR startups — app developers and platform providers alike — could be sued years after they release a product for seizures, post-traumatic stress disorder, or even interference with childhood mental development.¹⁶² One scholar

157. See Jonathan Stempel, *Google won't face email privacy class action*, REUTERS (Mar. 19, 2014, 1:35 PM), <http://www.reuters.com/article/us-google-gmail-lawsuit-idUSBREA2113G20140319> [<https://perma.cc/6G7Y-C9Y3>] (describing how Gmail users sued Google for violating users' privacy rights).

158. Cf. James Rosenfeld, *Beware of Killer Apps: Platform Provider Liability for Third-Party Apps (and the Availability of Online Safe Harbors)*, MEDIA LAW MONITOR (June 13, 2011), <http://www.medialawmonitor.com/2011/06/beware-of-killer-apps-platform-provider-liability-for-third-party-apps-and-the-availability-of-online-safe-harbors/> [<https://perma.cc/J27S-8QAR>].

159. *Enforcing Privacy Promises*, FEDERAL TRADE COMMISSION, <https://www.ftc.gov/news-events/media-resources/protecting-consumer-privacy/enforcing-privacy-promises> [<https://perma.cc/X8J3-LQZJ>].

160. D. Reed Freeman Jr. & Maury Riggan, *A Primer on FTC Expectations for Your Partner and Vendor Relationships: Enforcement Show You Are Your Brother's Keeper*, BLOOMBERG BNA (May 4, 2015), <https://www.bna.com/primer-ftc-expectations-n17179926099/> [<https://perma.cc/KV3H-MLP2>].

161. See Eric Johnson, *Legal Danger: What We Don't Know About Virtual Reality Today Might Hurt Companies Tomorrow*, RECODE (Aug. 11, 2015, 11:18 AM), <http://recode.net/2015/08/11/legal-danger-what-we-dont-know-about-virtual-reality-today-might-hurt-companies-tomorrow/> [<https://perma.cc/3FXV-URAX>].

162. See *id.*

has posited that if the experiences are powerful enough, they may even “undermine the process by which our brain biologically registers what kind of behavior is necessary for our safety and survival.”¹⁶³ Professor March Jonathon Blitz notes that users might lose their survival instincts because they repeatedly face what would be real-life catastrophic experiences in virtual reality and walk away unscathed.¹⁶⁴

However, persuasive precedent that such a claim will not succeed may be found in *Sanders v. Acclaim Entertainment, Inc.*, where a federal court dismissed claims of negligence and strict product liability against a group of movie producers and video game manufacturers whose violent products were heavily consumed by the Columbine shooters.¹⁶⁵ The court dismissed the negligence claims because the manufacturers had no duty to the victim’s family, and the strict product liability claims because the intangible ideas and thoughts contained in the games were not products in themselves that could be subject to the strict liability doctrine.¹⁶⁶ It could likewise be argued that VR experiences are intangible thoughts and ideas that are not subject to strict liability doctrine.

But some emphasize that VR is supposed to produce tangible experiences in a way that existing video game platforms cannot match.¹⁶⁷ Yet, this is still not true. While VR devices are more powerful than ever, they still suffer from latency issues and are not fully immersive even with high tech peripherals. In the near future, courts may follow precedent set by *Sanders* and other cases that limit developer liability because of the limited availability of relevant case law.¹⁶⁸ The VR experience is still more akin to video games than to the fully immersive, tangible worlds dreamt of in fiction like *Ready Player One*. If VR continues to make advances at its current pace, such a future may not be as far off as one may imagine and the court may then develop wholly new criteria to determine if producers are liable.

VR headsets may also pose physical risks. For example, the armed forces use high-end VR devices to train U.S. soldiers, but they do not use Oculus Rift’s cheaper, comparatively low-end models because of the latency risks.¹⁶⁹ Wearing these displays can trigger nau-

163. March Jonathan Blitz, *The Freedom Of 3D Thought: The First Amendment In Virtual Reality*, 30 CARDOZO L. REV. 1141, 1147 (2008).

164. *See id.*

165. *See Sanders v. Acclaim Entm’t, Inc.*, 188 F. Supp. 2d 1264 (D. Colo. 2002).

166. *See id.* at 1264.

167. *See Johnson, supra* note 161.

168. *See also Watters v. TSR, Inc.*, 904 F.2d 378 (6th Cir.1990); *James v. Meow Media, Inc.*, 90 F. Supp. 2d 798, 810 (W.D. Ky. 2000), *aff’d*, 300 F.3d 683 (6th Cir. 2002).

169. Patrick Maines, *Keeping It Real: The Oculus Rift and Virtual Reality*, MEDIA & COMM. POL’Y (Jan. 28, 2014), <http://www.mediacompolicy.org/2014/01/articles/digital->

sea and even unexpected phobias that may cause users to act erratically.¹⁷⁰ Further, individuals with their entire visual field immersed may still incur self-inflicted physical harm or property damage.¹⁷¹ Clients choosing to develop an application or world within this industry should be aware of the risks consumers assume in the physical world while they are immersed in virtual reality. To prevent liability, companies could tailor terms and conditions so that users must accept these risks or provide clear warnings as users start up content. But even providing warnings may not be enough. In *Wyeth v. Levine*, the Supreme Court held that a drug company could still be liable under state law for harms caused by medicine that carries a warning label approved by the Food and Drug Administration.¹⁷²

Virtual reality may pose such new, multilayered threats to its users that the only way for developers to protect themselves from liability would be to push for new laws to protect their burgeoning industry. Companies could even form a coalition among content and platform producers to lobby Congress for laws that would protect them from liability even in some of the most egregious cases, such as an accidental death (whether because of the VR experience or because of an individual's carelessness while using VR). It is not far-fetched for players like Google, Facebook, HTC, and Sony to jointly protect their investments through lobbying even as they compete in the marketplace.¹⁷³

Lawyers should advise their clients to develop additional protective measures beyond just contractually denying liability and providing warnings to players. The Oculus Rift and Samsung Gear VR currently issue warnings every time the device is started.¹⁷⁴ However, lawyers can advise app developers to add technological measures that would enhance the app's safety considering the new harms that could stem from VR. This may include setting limits on the amount of time one can use an application or setting limits on the circumstances in

technology/keeping-it-real-the-oculus-rift-and-virtual-reality/ [https://perma.cc/TGR9-2LPR] ("One of the more difficult technological problems is called latency, which is the lag time when a person turns his head in VR before the new scene is rendered. If it happens too slowly the effect is unreal and causes motion sickness."); see Maria Korolov, *The Real Risks of Virtual Reality*, RISK MANAGEMENT (Oct. 1, 2014, 6:03 AM), <http://www.rmmagazine.com/2014/10/01/the-real-risks-of-virtual-reality/> [https://perma.cc/KGX5-HBCB].

170. See Korolov, *supra* note 169.

171. See *Safety*, FREEFLY VR, <https://www.freeflyvr.com/safety/> [https://perma.cc/Y5LS-XCKR].

172. See *Wyeth v. Levine*, 555 U.S. 555, 557 (2009).

173. See Daniel Terdiman, *The 10 Most Innovative Companies In VR/AR 2017*, FAST COMPANY (Mar. 6, 2017), <https://www.fastcompany.com/3068430/the-10-most-innovative-companies-in-vr-ar-2017> [https://perma.cc/5U79-XP3G].

174. Based on personal observation by the author.

which it can be used, such as how Pokémon Go will not spawn new monsters for players to catch if the players are moving at driving speed.¹⁷⁵ App stores could create standards that all applications distributed through their platform must follow.¹⁷⁶ Every level of production and distribution should have a hand in making the exploration of VR a safer experience.

IV. CONCLUSION

As virtual reality becomes a more commonplace “destination” in society, lawyers advising VR platform developers and app producers should keep numerous legal considerations in mind, ranging from the challenges of protecting intellectual property in VR to the responsible management of the large amounts of user data VR devices collect. Because virtual reality is currently the most disruptive force in gaming, case law from that field of intellectual property will be the most relevant to VR in the near future. However, it is highly likely that VR will be utilized in other areas, and video game-related case law will be useful only to a limited extent the more time passes. There are many other forms of liability, like physical harm and privacy breaches, where there is little existing legal guidance. For now, the most effective strategy for protecting and supporting VR clients is to adapt the prevailing best practices in these areas of law. But just as it was a surprise when VR made its resurgence, in less time than we could imagine there may be a new body of law focused on this emerging technology — it is our job to be ready.

175. Eric Suber-Jenkins, ‘Pokémon Go’ update disables spawns while in a moving vehicle. *Is there a workaround?*, MIC (Oct. 17, 2016), <https://mic.com/articles/156935/pokemon-go-update-generation-2-disables-spawns-while-driving-or-in-a-moving-vehicle-is-there-a-workaround> [<https://perma.cc/GPZ9-UUN3>].

176. For example, Apple has shared review guidelines with developers to explain why an application may be rejected after a request to be distributed through the Apple iTunes Store. *App Store Review Guidelines*, APPLE DEVELOPER, <https://developer.apple.com/app-store/review/guidelines/> (last visited Mar. 7, 2017).