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Reinventing the Silver Screen… Again: the Copyright Licensing Implications of Using Video Game Technology for Virtual Production On Film and TV Sets

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REINVENTING THE SILVER SCREEN… AGAIN: THE COPYRIGHT LICENSING IMPLICATIONS OF USING VIDEO GAME TECHNOLOGY FOR VIRTUAL PRODUCTION ON FILM AND TV SETS

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I. INTRODUCTION

In the short history of cinema, visual effects have become increasingly sophisticated with each major phase of cinematic development. The most important moment for advancing visual effects was the digital revolution that introduced computer-generated imagery ("CGI"). In recent years, a notable technological advancement from traditional green screen chroma key is the introduction of virtual LED screen sets ("virtual sets"), which have had a major impact on filmmakers.[1] Borrowing video game technology, visual special effects ("VFX") companies create virtual sets that are projected onto massive LED screens.[2] The final product motion picture is thus created through virtual production.[3] Two primary benefits of LED screen sets are: (1) talent can see the environment in which they are acting and (2) cinematographers have complete control over lighting, location, and background.[4]

VFX companies regularly use third-party asset libraries to create these virtual sets.[5] An individual artist creates an asset that is licensed by the VFX company, then a studio licenses the entire scene from the VFX company.[6] The lack of privity of contract between the individual asset creator and studio poses a problem for both parties involved.[7] Asset creators effectively have no recourse against a studio if the VFX company fails to maintain a valid license.[8] Simultaneously, studios are at risk of violating copyright law by incorporating an asset that is not properly licensed.[9] Thus, this scheme completely relies upon VFX companies as an intermediary for licensing.[10]

1. Kyle Deguzman, *What is Virtual Production – Pros, Cons & Process Explained*, STUDIO BINDER (Apr. 15, 2023), https://www.studiobinder.com/blog/what-is-virtual-production-definition/.

2. Nate Verones, *How Do Virtual Production Studios Work?*, REFRESH LED BLOG, https://refreshled.com/blog/how-do-virtual-production-studios-work (last visited Jan. 21, 2024).

3. *See infra* Section I.B: Overview of LED Technology.

4. Deguzman, *supra* note 1.

5. Nichole DeMichelis, *VFX Librarianship: Designing a Global Asset Library for a Visual Effects Studio*, VRA BULLETIN (Sept. 1, 2015), at Article 5, 2.

6. *See infra* Part III.

7. *See infra* Section III.A.2.

8. *Id.*

9. *Id.*

10. *Id.*

As the use of virtual LED screen sets is in the early stages of adoption, this lack of privity between studios and individuals is a cutting-edge issue that invites an open question of liability in the near future.[11]

To address the issue of liability, the entertainment industry should adopt a unique type of copyright license—"copyleft"—that requires every licensee in the chain of title to maintain license permissions identical to that of the original license.[12] Copyleft is already used in software development and video game creation.[13] However, within the context of the entertainment industry, the value of adopting copyleft lies in the protections it would afford to individuals[14] creating copyrightable digital assets that are then sold on third-party asset library marketplaces.[15] Further, adopting copyleft could protect studios from inadvertent copyright infringement that may arise from a VFX company's negligent accounting of licensed digital assets.[16]

While the majority of previous scholarship focuses on the copyrightability of specific special effects, such as deepfakes and rights of publicity, this Note explores the complications of the emerging licensing scheme in blending video game and motion picture technology.[17] This Note proceeds in three parts to propose a solution to the cutting-edge issue of using third-party video game assets in LED screen film and television sets. Part II outlines a brief history of special effects to provide relevant background as to why LED screen sets are useful tools in filmmaking. Part III describes how filmmakers are open to copyright infringement liability when using third-party assets initially created for video games. Part III also explains how VFX companies and studios are similarly exposed to liability. Part IV explains a proposed solution to use a copyleft-type license that avoids copyright infringement from the perspective of the creator, studio, and insurance companies. Overall, this Note argues that blending motion picture and video game licenses with this new technology calls for a reevaluation of

11. *See infra* Part IV.

12. *What is Copyleft?*, FREE SOFTWARE FOUND., https://www.gnu.org/licenses/copyleft.html (last visited Apr. 29, 2023).

13. *See infra* Section III.A.2.

14. *See infra* Section IV.B.

15. DeMichelis, *supra* note 5.

16. *See infra* Section IV.C.

17. *See* Sammi Elefant, *The Tricky Business of Computer-Generated Imagery: When Copyright Law Meets Movie Magic*, 8 ARIZ. ST. SPORTS & ENT. L.J. 26 (2019); Bryce Newell, *Independent Creation and Originality in the Age of Imitated Reality: A Comparative Analysis of Copyright and Database Protection for Digital Models of Real People*, 6 BYU INT'L L. & MGMT. REV. 93 (2010); Adam Faier, *Digital Slaves of the Render Farms?: Virtual Actors and Intellectual Property Rights*, U. ILL. J.L. TECH. & POL'Y 321 (2004); Craig P. Bloom, *Hangover Effect: May I See Your Tattoo, Please*, 31 CARDOZO ARTS. & ENT. L.J. 435 (2013); Peter Jaszi, *When Works Collide: Derivative Motion Pictures, Underlying Rights, and the Public Interest*, 28 UCLA L. REV. 715 (1981); Igor Dubinsky, *The Race to the Box Office Leads to Cinematic Déjà Vu: Modifying Copyright Law to Minimize Rent Dissipation and Copyright Redundancy at the Movies*, 29 WHITTIER L. REV. 405 (2007).

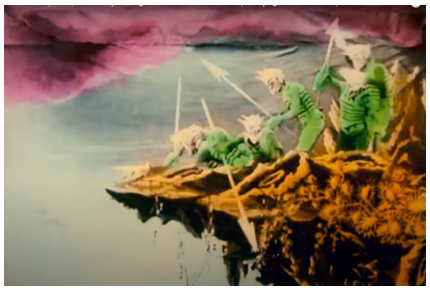
whether this model is sustainable or practicable for all parties as more filmmakers adopt virtual sets.

II. HISTORY

A. ORIGINS OF VISUAL EFFECTS

Georges Méliès is considered to be the father of cinematic special effects.[18] Méliès' innovative filmmaking developed now-standard cinematographic devices including slow motion, double exposure, dissolve, and color film.[19] In the 1899 film, *The Conjuror*, Méliès miraculously makes his assistant disappear and turn into confetti before making himself disappear in the one-minute demonstration of the early power of special effects.[20] The 1902 film, *Le Voyage dans La Lune* (*A Trip to the Moon*), his most influential film, depicts a rocket launch landing in the human-esque eye of the moon and a subsequent adventure amongst lunar aliens.[21] As one of the first films in color, each frame of nitrate film of the 845-foot, fourteen-minute-long picture was hand painted with tiny brushes and aniline dyes by a dedicated team.[22]

Eye of the Moon[23]



Moon Aliens[24]

18. Editors of Encyclopædia Britannica, *George Méliès*, ENCYC. BRITANNICA, https://www.britannica.com/biography/Georges-Melies (last visited Apr. 29, 2023).

19. *Id.*

20. THE CONJUROR (Star Film 1899).

21. LE VOYAGE DANS LA LUNE (A TRIP TO THE MOON) (Star Film 1902).

22. Daniel Eagan, *A Trip to the Moon as You've Never Seen it Before*, SMITHSONIAN MAG. (Sept. 2, 2011), https://www.smithsonianmag.com/arts-culture/a-trip-to-the-moon-as-youve-never-seen-it-before-68360402/.

23. Open Culture, *A Trip to the Moon – the 1902 Science Fiction Film by George Méliès*, YOUTUBE (Nov. 27, 2016), https://www.youtube.com/watch?v=zCMl11KAP40.

24. *Id.*

Subsequently, early cinema relied heavily upon stop motion techniques to achieve what is visually impossible on film.[25] One of the most notable examples is the landmark 1933 film, *King Kong*, which is the first film to star an animated character in stop-motion.[26] Inspired by this style, Ray Harryhausen went on to develop what he called "dynamation," a stop motion effect that allows live-action actors to interact with animated characters.[27] The 1963 film, *Jason and the Argonauts*, demonstrates the dynamation effect as the protagonist defeats a gang of skeletal soldiers in battle.[28] The 1960s and early 1970s saw a surge in stop-motion special effects in commercials, such as the Pillsbury Doughboy, before it fell out of fashion with the rise of green screen.[29]

Jason Fighting Stop-Motion Soldiers[30]

Behind the special effects that brought many incredible characters to life are the backgrounds, which have been equally important to achieving believable world-creation. Since nearly the beginning of cinema, matte paintings have been essential in creating the illusion of various expansive landscapes.[31] Matte paintings are two-dimensional background paintings that create depth and perspective without building a physical set or shooting on

25. *A Brief History of Stop-Motion*, FOCUS FEATURES (June 19, 2012), https://www.focusfeatures.com/article/a__brief_history_of_stop_motion.

26. Lee Pfeiffer, *King Kong: Film by Cooper and Schoedsack [1933],* ENCYC. BRITANNICA (Feb. 27, 2024), https://www.britannica.com/topic/King-Kong-film-1933.

27. Alison Eldridge, *Ray Harryhausen*, ENCYC. BRITANNICA (Mar. 22, 2024), https://www.britannica.com/biography/Ray-Harryhausen.

28. JASON AND THE ARGONAUTS (Columbia Pictures 1963).

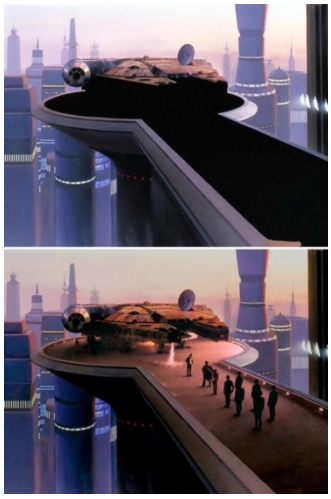
29. *Light & Magic: Gang of Outsiders* (Lucasfilm streaming docuseries July 27, 2022).

30. Photograph of Fighting Scene, *in* JASON AND THE ARGONAUTS, *supra* note 28.

31. Caleb Ward, *Incredible Matte Painting Inspiration*, SCH. OF MOTION, https://www.schoolofmotion.com/blog/matte-painting-inspiration (last visited Apr. 29, 2023).

location.[32] Common examples include elaborate cityscapes and expansive landscapes.

To add movement and depth to matte paintings, filmmakers since Méliès have used the double-exposure technique on film.[33] Double exposure captures both the background and foreground by exposing the roll of film to light twice, with a lower exposure to not blow out the image.[34] One shoot captures the background matte painting with a section blocked off where the live actors will be shot, and on a second exposure, the background is blocked off.[35] The result is a properly-lit image that combines the actors with the background on a single strip of film.



Millennium Falcon Matte Painting[36]

IndianaJones Warehouse Matte Painting[37]

Taking the static matte painting one step further, chroma key, a visual-effect production technique more commonly known as green screen, replaces a solid color with a still image or video.[38] Blue and green are used most often, as those hues contrast the strong red hues present in human

32. *Light & Magic: Gang of Outsiders* (Lucasfilm streaming docuseries July 27, 2022).

33. Editors of Encyclopædia Britannica, *supra* note 18.

34. Alyssa Maio, *What is Double Exposure? Techniques in Photography and Film*, STUDIO BINDER (May 2, 2021), https://www.studiobinder.com/blog/what-is-double-exposure-photography/.

35. *Id.*

36. Photograph of Millennium Falcon Matte Painting *in* STAR WARS: EPISODE IV – A NEW HOPE (Lucasfilm/Twentieth Century Studios 1977).

37. Paramount Photograph of Indiana Jones Warehouse Matte Painting *in* RAIDERS OF THE LOST ARK (Paramount Pictures 1981).

38. Theo Friedman, *How to Use a Green Screen - Setup, Lighting and Creative Uses*, STUDIO BINDER (Feb. 13, 2022), https://www.studiobinder.com/blog/how-to-use-a-green-screen-effects/.

skin.[39] This allows the subject to be easily differentiated from the background.[40] The immense versatility of this technology has made green screens a staple in film special effects.[41]

A true turning point was the paradigmatic film that pushed the boundaries of special effects into the new era, the original *Star Wars: Episode IV - A New Hope* in 1977.[42] While the production still used matte paintings and green screens, the talented crew that created the special effects studio, Industrial Light and Magic ("ILM"), fabricated a new system from scratch.[43] ILM was founded as the special effects arm of Lucasfilm, specifically for *Star Wars*.[44] The extent of special effects required for the scripted story forced a group of machinists, matte painters, and stop-motion effects artists to fabricate a new technology called motion control.[45] This early motion control system is the key technology in virtual sets now.[46]

The crew began by reviving an old film technology called VistaVision, that had not been used since C.B. DeMille's *The Ten Commandments* in 1956.[47] VistaVision is a high-resolution widescreen process that uses 35mm film oriented horizontally, which allows for an image capture two times larger than a traditional 35mm.[48] A larger negative allowed for multi-image layering without a loss in quality.[49] As George Lucas envisioned, the space dog-fights and complex aliens in *Star Wars* required multiple layers of effects that could not afford quality loss.[50] Despite the impressive, groundbreaking visuals, Lucas said the film was only a fraction of what he imagined.[51]

Another complication that ILM had to overcome was the precision necessary to overlay multiple effects on different strips of film. Thus, ILM developed the most sophisticated version of motion control to exist, which allowed for precise repetition of exact camera movements.[52] Despite

39. Radio Corporation of America, *Studio: The World: NBC Introduces "Chroma-Key" to extend scope of TV Settings*, 17 ELEC. AGE. 8, 9 (1958).

40. *Id.*

41. *History of Chroma Key Green Screen*, PROJECTOR SCREEN WORLD (Feb. 1, 2023), https://www.projectorscreenworld.com/blogs/news/history-of-the-chroma-key-green-screen#:~:text=The%20green%20screen%20was%20used,staple%20in%20visual%20effects%20work.

42. *Light & Magic: Gang of Outsiders* (Lucasfilm streaming docuseries July 27, 2022).

43. *Id.*

44. *Id.*

45. *Id.*

46. Resolution Productions Group, *LED // UNREAL ENGINE Virtual Production Demo at Resolution Studios in Chicago*, YOUTUBE (Feb. 9, 2021), https://www.youtube.com/watch?v=c3AtksnPr-o.

47. *Light & Magic: Gang of Outsiders* (Lucasfilm streaming docuseries July 27, 2022).

48. Rafael Abreu, *What is VistaVision – A History of Widescreen in Hollywood*, STUDIO BINDER (June 20, 2021), https://www.studiobinder.com/blog/what-is-vistavision/.

49. *Light & Magic: Gang of Outsiders* (Lucasfilm streaming docuseries July 27, 2022).

50. *Id.*

51. *Id.*

52. *Id.*

successfully building this new technology, the crew had to learn how to use the motion control camera they built.[53] As opposed to traditional cinematography where the subject moves and the camera follows it, the illusion of space required the lighting to remain the same, as if from a single sun.[54] Therefore, ILM moved the camera while the model-subjects remained static to create movement.[55] For example, in the opening scene of *Star Wars*, the Imperial Star Destroyer ominously enters from off screen to fill the entire frame.[56] Oftentimes, the camera would hit the Star Destroyer model during the shoot to accomplish these effects that create the illusion of a massive ship in space.[57]

Star Destroyer Opening Scene[58]

Following *Star Wars*, three major categories of computer-generated visual effects solidified over the next few decades: CGI, compositing, and motion capture ("Mocap").[59] CGI is mainly considered to be entirely digitally animated films, the first of which was *Toy Story* in 1995.[60] Compositing involves visual effects techniques including double exposure and chroma key with green screens.[61] Lastly, mocap uses a live-action

53. *Id.*
54. *Id.*
55. *Id.*
56. STAR WARS: EPISODE IV – A NEW HOPE (Lucasfilm/Twentieth Century Fox 1977).
57. *Light & Magic: Gang of Outsiders* (Lucasfilm streaming docuseries July 27, 2022).
58. STAR WARS: EPISODE IV – A NEW HOPE, *supra* note 56.
59. Alyssa Maio, *What is VFX? Defining the Term and Creating Impossible Worlds*, STUDIO BINDER (Feb. 21, 2021), https://www.studiobinder.com/blog/what-is-vfx/.
60. TOY STORY (Walt Disney Pictures/Pixar Animation Studios 1995).
61. Maio, *supra* note 59.

reference to create realistic CGI.[62] Zoë Saldana as Neytiri in *Avatar* is perhaps the most notable example of mocap.[63]

Neytiri Mocap[64]

B. OVERVIEW OF LED TECHNOLOGY IN VIRTUAL SETS

Going one step beyond chroma key, LED screens have the potential to dramatically change the structure of the film industry's special effects by utilizing virtual sets and virtual production. The Visual Effects Society defines virtual production as "a technique that uses technology to join the digital world with the physical world in real time.[65] It enables filmmakers to interact with live-action production.[66] As a general overview, virtual sets are created by VFX companies and virtual production is the final product created after the virtual set is projected onto large LED screens.[67] There are several key pieces of technology that are necessary in virtual production, including specific production equipment and a powerful video game processor.[68] Two important concepts of perception allow this technology to work: frustum and

62. *Id.*
63. AVATAR (Twentieth Century Fox 2009).
64. *Id.*
65. THE VIRTUAL PROD. GLOSSARY, https://www.vpglossary.com/vpglossary/virtual-production/ (last visited Apr. 29, 2023).
66. Ryan L'Italien, *What is Virtual Production?*, PERFORCE (Nov. 21, 2022), https://www.perforce.com/blog/vcs/what-is-virtual-production.
67. *Id.*
68. *Id.*

parallax. The last element is motion control that tracks specific camera movements to bring the virtual scene together. These virtual sets are then projected onto large LED walls using cameras synced to the engines for accurate depth perception and realism.[69]

There are three technological elements required to create a virtual set: the LED screens, a graphics processor, and a special camera.[70] Generally, one-half meter by one-half meter LED screens are bolted together to create a seamless screen of practically any size.[71] Props and practical effects are then used in the foreground with which talent can interact, blending into the virtual scene seamlessly.[72] Practical effects are "effects that are accomplished live, without any post-production," and in this case, in pre-production.[73] Examples include smoke, explosions, or artificial rain.

The graphics processor in a virtual set borrows video-game technology and is built in processors like Unreal Engine, owned by Epic Games, to make a photo-realistic scene that is projected onto the screens.[74] Visual effects designers work with the art department, director, and cinematographer to achieve the desired look in pre-production.[75] Both Unreal Engine and third-party asset libraries provide assets with varying degrees of complexity.[76] An asset library is a collection of pre-made video game assets like 3D models, characters, and textures that can be downloaded and used in creating a scene.[77] Rather than creating assets from scratch, artists can browse and download already made assets and use them in virtual sets.[78]

For example, ILM's graphics processor technology is called StageCraft.[79] StageCraft uses Unreal Engine as its graphics processor to create a virtual scene.[80] The final scene that is created in StageCraft is known as the "Volume."[81] The Volume can be changed on a moment's notice, including lighting adjustments and even changing assets like the position of a mountain range.[82]

69. *Id.*

70. Deguzman, *supra* note 1.

71. Resolution Productions Group*, supra* note 46.

72. *Light & Magic: No More Pretending You're Dinosaurs* (Lucasfilm streaming docuseries July 27, 2022).

73. *Practical Effects (Floor Effects)*, THE VIRTUAL PROD. GLOSSARY, https://vpglossary.com/vesglossary/practical-effects-floor-effects/ (last visited Apr. 11, 2024).

74. Deguzman, *supra* note 1.

75. Resolution Productions Group*, supra* note 46.

76. *See* Marketplace, UNREAL ENGINE, https://www.unrealengine.com/marketplace/en-US/store (last visited Jan. 21, 2024).

77. *Most Useful 2D/3D Models & Asset Libraries for Artists*, HOUND STUDIO, https://hound-studio.com/blog/most-useful-2d-3d-models-asset-libraries-for-artists/ (last visited Feb. 4, 2024.)

78. *Id.*

79. *Light & Magic: No More Pretending You're Dinosaurs*, *supra* note 72.

80. *Id.*

81. *Id.*

82. Resolution Productions Group*, supra* note 46.

A successful Volume requires an understanding of visual perception concepts like frustum and parallax. In short, the frustum is what the camera sees, and parallax is how humans visually perceive information on camera.[83] Frustum is the camera's perspective of the photo-realistic background scene in virtual sets.[84] The LED screens work in tandem with the camera by projecting a three-dimensional background that moves strictly with the camera's field of view.[85] The key element in the frustum is a concept known as parallax.[86] Parallax is the natural visual phenomenon combining motion and depth where objects closer to the foreground move faster than objects in the background.[87] For example, when driving a car down the street, a traffic sign moves faster than a mountain.

Once again, achieving this groundbreaking visual effect requires motion control technology like that created for the original *Star Wars*.[88] Smaller cameras track the precise movements of the practical camera that is capturing principal footage.[89] This allows the Volume to live-adjust for depth, focal length, and focus.[90] Therefore, there is a constant stream of data from the practical camera cataloguing its movements as well as focus, focal length, and depth of field, which requires tremendous processing power.[91] This precise tracking brings the virtual scene together by adjusting the Volume in a way that is not offputtingly unnatural to the human eye.[92]

Living up to their innovative reputation, ILM with Lucasfilm is one of the first companies to employ LED virtual sets, as seen in the major production of *The Mandalorian*.[93] *The Mandalorian* built a set that was seventy-five feet in diameter and twenty-one feet high, along with an LED roof.[94] For one scene, the only physical props were a desk, two columns, and the floor.[95] Other notable productions that have relied upon LED screen sets

83. *Frustum*, THE VIRTUAL PRODUCTION GLOSSARY, https://vpglossary.com/vpglossary/frustum/; *Parallax Effect - Filmmaking tutorial*, FENCHEL & JANISCH FILM PROD., https://www.fenchel-janisch.com/parallax-effect-filmmaking-tutorial/.

84. *Frustum*, THE VIRTUAL PROD. GLOSSARY, https://vpglossary.com/vpglossary/frustum/ (last visited Apr. 11, 2024).

85. Conner Blake, *How 'The Mandalorian' uses LED sets over green screens*, INSIDER (May 4, 2021), https://www.insider.com/green-screen-virtual-sets-mandalorian-2020-4.

86. Resolution Productions Group*, supra* note 46.

87. *Id.*

88. *Id.*

89. *Light & Magic: No More Pretending You're Dinosaurs*, *supra* note 72.

90. *Id.*

91. *Id.*

92. *Id.*

93. *Id.*

94. Conner Blake, *How 'The Mandalorian' uses LED sets over green screens*, INSIDER (May 4, 2021), https://www.insider.com/green-screen-virtual-sets-mandalorian-2020-4.

95. *Id.*

include: *Oblivion*, *The Lion King*, *The Irishman*, *Bullet Train*, *War for the Planet of the Apes*, *Ford v. Ferrari*, and *Top Gun: Maverick*.[96]

The Mandalorian Scene[97]

C. WHY VIRTUAL LED SCREEN SETS?

The benefits of using a virtual set are massive. Talent can now see and interact with the environment in which they are acting, rather than only seeing a green screen.[98] Acting with a green screen is notoriously challenging as Dakota Johnson, lead superhero in Marvel's *Madame Web*, described acting with a green screen as "psychotic."[99] The most significant issue with green screen is inconsistent lighting.[100] Shooting on location brings the inherent risk of changes in lighting depending on the day. Thereafter, lighting that is created by CGI can be inconsistent with the live-action footage.[101] This problem is entirely eliminated by the use of virtual sets, since

96. Chris Hodges, *12 Movies You Had No Idea Were Shot on Virtual Sets*, LOOPER (Mar. 18, 2023), https://www.looper.com/1229192/movies-you-had-no-idea-were-shot-on-virtual-sets/; OBLIVION (Universal Pictures 2013); THE LION KING (Walt Disney Studio Pictures 2019); THE IRISHMAN (Netflix 2019); WAR FOR THE PLANET OF THE APES (20th Century Studios 2017); FORD V. FERRARI (20th Century Studios 2019); TOP GUN: MAVERICK (Paramount Pictures 2022).

97. Blaze, supra note 94.

98. Deguzman, *supra* note 1.

99. Devan Coggan, *Dakota Johnson discovered she's 'really good' at stunt driving in* Madame Web, ENT. WKLY. (Jan. 19, 2024), https://ew.com/madame-web-dakota-johnson-exclusive-preview-8432016 ("I've never really done a movie where you are on a blue screen, and there's fake explosions going off, and someone's going, 'Explosion!' and you act like there's an explosion. That to me was absolutely psychotic. I was like, 'I don't know if this is going to be good at all! I hope that I did an okay job!'").

100. Conner Blake, *How 'The Mandalorian' uses LED sets over green screens*, INSIDER (May 4, 2021), https://www.insider.com/green-screen-virtual-sets-mandalorian-2020-4.

101. *Id.*

the artificial lighting is consistently projected from the same screens.[102] This also provides realistic reflections of lighting without the green shade of a green screen, called "spill."[103]

Also, practical restrictions such as time limits for shooting at sunrise and sunset, night, and mid-day are no longer an issue.[104] Directors and cinematographers are able to change the scene on a moment's notice and reshoot with that new or manipulated element in real time, reducing time and budget expenses in post-production.[105] Also, virtual sets allow for fabricated shoots "on location" anywhere in the real or imagined world, dramatically reducing production costs.[106] Working with video game processing technology, VFX companies can reuse the same assets across different productions.[107] Moreover, any section of the virtual scene can still be narrowed to incorporate an area of green screen within a larger scene for effects that may need to be developed later.[108] Thus, studios exhibit a willingness to utilize virtual production based on the plethora of benefits, however, there are many uncertainties in using new technology.[109]

III. THE PROBLEM WITH ASSET LICENSING FOR LED SCREENS

To create these virtual sets, VFX companies license digital assets from third-party asset libraries.[110] Digital assets are the "building block[s] of digital content creation used in virtual production. [They] can range from 2D files (photo, video, graphics,) to 3D files (models, rigs, animation, assemblies)."[111] These assets are placed on a virtual marketplace where anyone can purchase and use those assets.[112]

102. *Id.*

103. *Features*, UNREAL ENGINE, https://www.unrealengine.com/en-US/features (last visited Apr. 29, 2023).

104. Lewis McGregor, *Filming with Natural Light*, MEDIUM (Apr. 7, 2021), https://medium.com/aputure/too-much-light-how-to-control-sunlight-on-a-film-set-f936d0dd84ac.

105. *Light & Magic: No More Pretending You're Dinosaurs*, *supra* note 72.

106. *Id.*

107. *Features*, UNREAL ENGINE, https://www.unrealengine.com/en-US/features (last visited Apr. 29, 2023).

108. Conner Blake, *How 'The Mandalorian' uses LED sets over green screens*, INSIDER (May 4, 2021), https://www.insider.com/green-screen-virtual-sets-mandalorian-2020-4.

109. Arkenberg, Chris et al., *Virtual Production Gets Real*, THE WALL STREET J. (Mar. 21, 2023), https://deloitte.wsj.com/cmo/virtual-production-gets-real-24b6195d#.

110. L'Italien, *supra* note 66.

111. *Digital asset*, THE VIRTUAL PROD. GLOSSARY, https://vpglossary.com/vpglossary/digital-asset/ (last visited Jan. 21, 2024).

112. *See* Marketplace, UNREAL ENGINE, https://www.unrealengine.com/marketplace/en-US/store (last visited Apr. 11, 2024).

Like most copyrightable works, licensing requirements are generally dictated by the individual creator.[113] Without express authorization, assets cannot be sublicensed or monetized.[114] Even with a license, a party could still be liable for copyright infringement, depending on the license's terms.[115] However, the substantial similarity standard makes it nearly impossible to succeed in a copyright infringement lawsuit against a studio.[116]

There are multiple competing interests regarding copyright protection and the use of third-party digital assets. First, individual creators must protect their intellectual property from infringing use by others.[117] Whether the infringement occurs through unlicensed use of an asset or unlicensed alterations to an asset, individual creators have an interest in protecting their original works of authorship.[118] Second, VFX companies are uniquely positioned to infringe these assets when creating scenes and when licensing the scene to a studio.[119] Lastly, studios have an interest in avoiding copyright infringement litigation arising from negligent unlicensed alterations to third-party assets.[120]

Additionally, the types of intellectual property at risk differ for each party. Both individual assets and entire scenes are subject to copyright infringement and are analyzed using different standards in the Ninth Circuit.[121]

A. COPYRIGHT WITHIN THE CONTEXT OF THIRD-PARTY ASSETS

The Ninth Circuit's test for copyright infringement is the most relevant for this narrow issue of emerging LED screen sets and their related copyright protection. From 1996 to 2018, California was the state with the highest number of copyright filings in the United States.[122] In the Ninth Circuit, the typical case for copyright infringement requires: (1) ownership of a valid

113. *What is Copyright?*, U.S. COPYRIGHT OFF., https://www.copyright.gov/what-is-copyright/#:~:text=U.S.%20copyright%20law%20provides%20copyright,rental%2C%20lease%2C%20or%20lending (last visited Jan. 21, 2024).

114. Unity End-Users Rights and Obligations § 2.2.1.1(b)-(d).

115. *Id.*

116. Steven T. Lowe, *Death of Copyright*, 33 L.A. LAW. 32, 32 (2010).

117. 17 U.S.C. § 106(1)-(6).

118. *Id.*

119. *See* Unreal Engine End-User License Agreement § 3(c); Unity End-Users Rights and Obligations § 2.2.1(d).

120. Deguzman, *supra* note 1.

121. *See infra*, Section B.1.

122. *Just the Facts: Intellectual Property Case – Patent, Copyright, and Trademark*, U.S. CT. (Feb. 13, 2020), https://www.uscourts.gov/news/2020/02/13/just-facts-intellectual-property-cases-patent-copyright-and-trademark ("Just the Facts is a feature that highlights issues and trends in the Judiciary based on data collected by the Judiciary Data and Analysis Office").

copyright, (2) access, and (3) substantial similarity between the two works.[123] The third prong for substantial similarity analysis is most relevant here and requires satisfaction of the extrinsic and intrinsic tests.[124] The extrinsic test distinguishes between protectable and unprotectable elements and compares the protectable "objective similarities of specific expressive elements in the two works."[125] The intrinsic test looks "for similarity of expression from the standpoint of the ordinary reasonable observer, with no expert assistance."[126] The extrinsic test utilizes expert testimony, while the intrinsic test is "uniquely suited for determination by the trier of fact" as it focuses on the lay viewer's interpretation.[127]

However, *scenes a faire*, which are elements that flow naturally from generic plots and genres, are not protectable.[128] More specifically, *scenes a faire* are "standard or general themes that are common to a wide variety of works and therefore are not copyrightable."[129] Examples include a gunslinger, a shoot-out on the main street, and dance hall girls in a Western.[130] Nevertheless, the selection and arrangement of those unprotected elements may satisfy the originality requirement for copyright protection to attach.[131] The selection and arrangement test says the particular way in which the artistic elements form a coherent pattern, synthesis, or design is protected.[132]

1. Individual Creators

For individual creators, the risk of copyright infringement stems from traditional violation of the standard bundle of rights that copyright grants and

123. *Feist Publ'ns, Inc. v. Rural Tel. Servs. Co.*, 499 U.S. 340, 361 (1991); *Baxter v. MCA, Inc.*, 812 F.2d 421, 423 (9th Cir. 1987).

124. *Skidmore v. Zeppelin*, 952 F.3d 1051, 1064 (9th Cir. 2020).

125. *Id.*

126. *Id.*

127. *Gray v. Hudson*, 28 F.4th 87, 97 (9th Cir. 2022); *Television Prods., Inc. v. McDonald's Corp.*, 562 F.2d 1157, 1166 (9th Cir. 1977).

128. *Metcalf v. Bochco*, 294 F.3d 1069, 1074 (9th Cir. 2002).

129. *Scènes à Faire*, BLACK'S L. DICTIONARY (11th ed. 2019).

130. Westerns are defined by the American Film Institute ("AFI") as "a genre of films set in the American West that embodies the spirit, the struggle and the demise of the new frontier." AFI selected the ten greatest western films of all time including: The Searchers (1956), High Noon (1952), Shane (1953), Unforgiven (1992), Red River (1948), The Wild Bunch (1969), Butch Cassidy and the Sundance Kid (1969), McCabe & Mrs. Miller (1971), Stagecoach (1939), Cat Ballou (1965). American Film Institute, *AFI's 10 Top 10: The 10 Greatest Movies in 10 Categories*, https://www.afi.com/afis-10-top-10/ (last visited Feb. 4, 2024); Adam Philipp, *Westerns, Software, and Scènes à Faire*, *Aeon Law* (Feb. 25, 2018), https://aeonlaw.com/westerns-software-scenes-faire/; *see also* Robert W. Clarida, *Making Sense of Scènes a Faire Through the Lens of* Feist, 43 COLUM. J.L. & ARTS 419, 419-20 (2020).

131. *Gray*, 28 F.4th at 101.

132. *Skidmore*, 952 F.3d at 1074.

protects.[133] When creators place their original assets on third-party libraries, they often have discretion to dictate the asset's use.[134] According to Unity's End User License Agreement ("EULA"), an end-user cannot, without express authorization, monetize, use, reproduce, duplicate, display, perform, copy, modify, adapt, prepare derivative works, distribute, transfer, license, sublicense, or sell any asset.[135] "Restricted Assets" have license terms different from other assets, which control when different from the EULA.[136]

Thus, issues arise when VFX companies license these protected assets and use them in ways that violate the EULA and creator's copyright. Misappropriation of the creator's asset in violation of the EULA or specifically delineated restrictions by the VFX company or the studio gives the creator a cause of action for copyright infringement.[137] The lack of privity of contract between the individual asset creator and the studio leaves little recourse for the creator against a massive studio with deep pockets.

2. VFX Companies

In creating a scene, a VFX company also runs into an issue with copyright licensing that opens them up to potential infringement. Often, the VFX company is hired by a studio as an independent contractor, not an employee.[138] As part of their work creating the final scene, VFX companies license a digital asset from third-party asset libraries.[139] However, the work for hire doctrine states when an individual is an employee of a company instead of an independent contractor, any copyrightable work that employee creates within the purview of his employment is owned by the company, not the individual.[140] This means, as an independent contractor, the VFX

133. 17 U.S.C. § 106(1)-(6).

134. Unity End-User's Rights and Obligation § 2.2.

135. Unity End-User's Rights and Obligation §§ 2.1, 2.2.1.1(a)-(d).

136. Unity End-User's Rights and Obligation § 2.2.2.

137. Unity End-User's Rights and Obligation §§ 2.1, 2.2.1.1(a)-(d).

138. *Visual Effects and Working Conditions Survey Results*, INT'L ALL. OF THEATRICAL STAGE EMP. (Mar. 1, 2023), https://vfxunion.org/2022-survey-results/.

139. Allan V. Cook, *The future of content creation: Virtual production*, DELOITTE, https://www2.deloitte.com/us/en/pages/technology-media-and-telecommunications/articles/the-future-of-content-creation-virtual-production.html (last visited Jan. 21, 2024).

140. The work-for-hire doctrine as a specially ordered or commissioned work is likely not implicated because the four-prong test is not satisfied. The four prongs are: (1) the work falls within one of the nine enumerated categories, (2) there must be a written agreement between the parties, (3) the agreement must expressly state the work is a work made for hire, and (4) the agreement must be signed by all parties. Here, while a contribution to a motion picture is within one of the nine enumerated categories for specially ordered or commissioned works, this is not satisfied where there is no written agreement between the parties that expressly states the work is to be considered a work made for hire. An express work-for-hire agreement is outside the scope of this discussion. 17 U.S.C. § 101(2); *Circular 30: Works Made for Hire*, U.S. COPYRIGHT OFF. (Mar. 2021), https://www.copyright.gov/circs/circ30.pdf (last visited Feb. 20, 2024); 17 U.S.C. § 201(2)(B); 1 Nimmer on Copyright § 5.03.

company's works made when creating the final scene are not automatically the studio's intellectual property. Because the VFX company is a licensee and not the owner of the third-party assets it uses, the VFX company cannot assign the license to the studio.[141] Therefore, the studio does not have initial ownership rights to what the VFX companies create.[142]

Since there is no privity of contract between the studio and the creator, the VFX contractor must maintain valid licenses for each asset it uses in creating a virtual scene.[143] The impetus is on the VFX company to maintain valid licenses when licensing the entire scene to the studio. For example, depending on the type of license, derivative works may not be permitted, which can create issues if the studio decides to change an asset or scene.[144] Therefore, the VFX company can violate the creator's rights by sublicensing the entire scene to the studio or by modifying the asset themselves.

For example, an important threshold question is whether the asset in question is recognizable.[145] A hypothetical character may be recognizable as copyrighted by someone else, like Mario as owned by Nintendo.[146] If an individual created a character that was substantially similar to Mario, the VFX company licensing the assets would notice and be less likely to use that asset. However, if a VFX company did use this substantially similar character, this could foreseeably lead to a lawsuit. Furthermore, other rights may be implicated, such as rights of publicity based on the complexity of the asset.[147] If an individual asset resembles a celebrity or public official, this could bring about other causes of actions.

A similar issue arose in *Lohan v. Take-Two*, where celebrity Lindsay Lohan filed an action against Take Two Interactive Software Inc., the owner and distributor of the video game Grand Theft Auto V ("GTA V").[148] Lohan claimed that a GTA V avatar named "Lacey Jones" misappropriated her likeness in a part of the game's plotline and in the "transition screens."[149] The transition screens were still images of the avatar that were also used in

141. *See* Unreal Engine End-User License Agreement § 3(c); Unity End-Users Rights and Obligations § 2.2.1(d).

142. 17 U.S.C. § 201(2)(B); 1 Nimmer on Copyright § 5.03.

143. *See Privity*, CORNELL L. SCH. LEGAL INFO. INST., https://www.law.cornell.edu/wex/privity (last visited Jan. 21, 2024) (explaining nonparties to a contract cannot be bound by the terms of that agreement).

144. *See* Unreal Engine End-User License Agreement § 3(c); Unity End-Users Rights and Obligations § 2.2.1(d).

145. *See* Section III.B.1.

146. *Super Mario Bros.*, U.S. COPYRIGHT OFF., https://publicrecords.copyright.gov/detailed-record/11130468 (last visited Feb. 5, 2024).

147. *The Right of Publicity in the AI Age*, QUINN EMANUEL URQUHART & SULLIVAN, LLP (Oct. 23, 2023), https://www.quinnemanuel.com/the-firm/publications/the-right-of-publicity-in-the-ai-age/ (explaining rights of publicity claims no longer exclusively for celebrities as private figures live increasingly public lives via social media).

148. *Lohan v. Take-Two Interactive, Inc.*, 97 N.E.3d 389, 392 (N.Y. 2018).

149. *Id.* at 391-92.

real-world advertising.[150] In New York, the right to publicity is construed narrowly to only protect commercial use of one's name and likeness.[151] The Court of Appeals held that the avatar was a "portrait" within the meaning of the right of publicity statute.[152] However, it also stated that the avatar was an indistinct, satirical representation of style, look, and persona of a modern, beach-going young woman.[153] Because the court did not find the avatar in question to be a portrait recognizable as Lohan, the case was properly dismissed.[154]

Accordingly, the VFX company is not only opening itself up to liability by violating third-party asset licenses, but also opens the studio up to liability as well from assets in the final scene.

3. Studios

Studios are bound to the VFX company's warrant that each asset used is properly licensed and able to be altered. Since one of the primary benefits of virtual LED screen set technology is the ability to quickly change the scene, a studio may inadvertently infringe a copyrighted asset that did not allow for alterations.[155]

A studio can become a downstream infringer for the VFX company's initial acts of infringement in different ways. Notwithstanding the VFX company's initial infringement of a copyrighted asset, the studio using the scene in shooting footage is a separate instance of infringement by infringing the creator's exclusive right of reproduction or public display.[156] Further, if a studio changes an asset in the scene, this could be a separate instance of copyright infringement. This infringes the creator's exclusive right to prepare derivative works.[157]

This raises the question of joint and several liability between the VFX company and studio. Section 504(c)(1) permits the owner of a valid copyright to recover statutory damages for all infringements of any one work for which one infringer is liable individually or where two or more infringers are joint and severally liable.[158] Under *Desire*, a party is only entitled to one statutory award per work, even where multiple parties are joint and severally

150. *Id.* at 392.
151. *Id.* at 393.
152. *Id.* at 394.
153. *Id.*
154. *Id.* at 395.
155. *See generally* Deguzman, *supra* note 1.
156. 17 U.S.C § 106(1), (3)-(4).
157. 17 U.S.C. § 106(2).
158. 17 U.S.C. § 504(c)(1).

liable.[159] This forces the studio to defend itself against the creator for violating the third party-asset restrictions and the VFX company who may attempt to shift blame to the studio. Strategically, the VFX company may argue the studio's use of the final scene in the film constitutes the infringement or may attempt to apportion the bulk damages to the studio. It is the studio-defendant's burden to apportion profits when calculating non-statutory damages.[160] Where the infringing and non-infringing works are inextricably intertwined, such as in a motion picture, this becomes a significant issue.[161]

Overall, the studio bears the brunt of the infringement claim because it has the deepest pockets and, theoretically, the most revenue from the distribution of the motion picture.[162] The studio has multiple opportunities to unknowingly infringe a creator's copyrighted asset. Therefore, the studio needs to protect itself on multiple fronts to avoid infringing use of assets in virtual LED screen sets.

B. TYPES OF INTELLECTUAL PROPERTY AT RISK

While various parties are at risk of copyright infringement, a successful claim hinges on how the copyrighted asset is being used. First, individual assets which are copyrightable can be infringed on their own right under the *Towle* test.[163] Second, entire scenes can infringe an asset's copyright under the selection and arrangement test.[164] However, the creator's small likelihood of success in copyright infringement litigation against powerful studios invites questioning whether pursuing a claim is even worth the cost.

1. Individual Digital Assets

First, individual assets like recognizable characters are likely to raise stronger infringement cases than other assets. For a comic book, television, or motion picture character to be copyrightable requires satisfaction of a three-part test:[165] (1) the character must generally have physical as well as conceptual qualities, (2) the character must be sufficiently delineated to be recognizable as the same character whenever it appears, and (3) the character

159. *Desire, LLC v. Manna Textiles, Inc.*, 986 F.3d 1253, 1264 (9th Cir. 2021).

160. *Polar Bear Prods., Inc. v. Timex Corp.*, 384 F.3d 700, 711 (9th Cir. 2004).

161. 5 Nimmer on Copyright § 14.03.

162. Quentin Ryan, *How Do Production Companies Make Money?*, LINKEDIN (Sept. 19, 2023), https://www.linkedin.com/pulse/how-small-businesses-drive-american-economy-quentin-ryan/.

163. *DC Comics v. Towle*, 802 F.3d 1012, 1021 (9th Cir. 2015).

164. *Feist Publ'ns, Inc. v. Rural Tel. Servs. Co.,* 499 U.S. 340, 362 (1991).

165. *Towle*, 802 F.3d at 1021.

must be especially distinctive and contain some unique elements of expression.[166] A stock character, such as a wizard in a standard magician garb, is not distinctive, but Harry Potter with his lightning-bolt scar and circular glasses likely is.[167]

In *DC Comics v. Towle*, the Ninth Circuit held that the Batmobile satisfied the three-part test to garner copyright protection.[168] First, as the Batmobile appeared graphically in comic books and three-dimensionally in television series and motion pictures, it satisfied the first prong and was not merely a literary character.[169] Second, despite some alterations in appearance, the Batmobile maintained distinct physical and conceptual qualities since its first comic appearance in 1941.[170] Such qualities included status as a highly-interactive vehicle, its equipment with high-tech gadgets and weaponry to fight crime, and a bat-like appearance.[171] The Batmobile also had consistent character traits such as being a crime-fighting car with sleek and powerful characteristics, jet engines, and exceptional maneuverability.[172] Third, the Batmobile was especially distinctive and contained unique elements of expression.[173] The Batmobile had a highly unique and recognizable name in addition to the character traits explored in the second prong.[174] Thus, the Batmobile was copyrightable for the purposes of an infringement claim.[175]

This analysis, as illustrated by *Towle*, all but destroys a plaintiff's opportunity to succeed on a copyright infringement case for an individual asset that is a character. While stock images do not garner protection, even images that contain a highly unique character may not satisfy the *Towle* test to be copyright protected. In theory, a highly unique character created by an individual and published on a third-party asset library is no less deserving of copyright protection than a highly unique and recognizable character like the Batmobile. For example, one asset on the Unreal Engine marketplace is named "Winter Girl."[176] Under the third, distinctive prong of the *Towle* test, this character does not rise to the level of distinctiveness like the Batmobile, as Winter Girl does not have a highly recognizable name or reappearing

166. *Id.*
167. *Id.*
168. *Id.* at 1022.
169. *Id.* at 1021.
170. *Id.*
171. *Towle,* 802 F.3d at 1021.
172. *Id.* at 1021-22.
173. *Id.* at 1022.
174. *Id.*
175. *Id.*
176. *Marketplace-Characters*, UNREAL ENGINE, https://www.unrealengine.com/marketplace/en-US/content-cat/assets/characters?count=20&sortBy=effectiveDate&sortDir=DESC&start=0 (last visited Jan. 21, 2024).

distinctive features.[177] However, this does not mean that Winter Girl's creator is any less deserving of enjoying copyright protection than the Batmobile's creator.

While this analysis may sufficiently establish a copyright protection framework for comic book, television, or motion picture characters, it likely will not fit for individual digital assets. This test effectively requires that an asset be famous to successfully bring a claim for copyright infringement, which most digital assets cannot satisfy.[178]

In *Daniels*, the Ninth Circuit held that the plaintiff's line of anthropomorphic characters, "the Moodsters," did not satisfy the *Towle* test and, therefore, did not enjoy copyright protection that would be enforceable against Disney's *Inside Out*.[179] The Moodsters were five color-coded characters that represented different emotions: pink for love, yellow for happiness, blue for sadness, red for anger, and green for fear.[180] The plaintiff demonstrated access by showing she was in contact with multiple executive level Disney employees before the animated film *Inside Out* was released.[181] *Inside Out* likewise centered around five anthropomorphized emotions that lived inside the mind of the main character including: joy, fear, sadness, disgust, and anger.[182] The court held that the Moodsters failed to satisfy the second prong of the *Towle* test because the characters were not sufficiently delineated to be recognizable whenever they appeared.[183] Unlike the Batmobile, the physical appearance of the Moodsters change over time from insect-like appearances with skinny bodies and tall antennas to small, loveable bears.[184] Unlike the Batmobile, which remained a crime-fighting car through each of its iterations over time, the Moodsters lacked identifiable and consistent character traits.[185] While the Batmobile had jet-engines, modern weaponry, and more power than an ordinary car, the Moodsters' representation of an emotion through color was not sufficient to pass the *Towle* test.[186]

The Moodsters were a highly unique anthropomorphized version of emotions, but they did not rise to the level of a copyrightable entity.[187] While

177. *Towle*, 802 F.3d at 1022.

178. *Towle*, 802 F.3d at 1022; *see Metro-Goldwyn-Mayer, Inc. v. Am. Honda Motor Co.*, 900 F. Supp. 1287, 1295-96 (C.D. Cal. 1995) (James Bond) (cited with approval in *Rice v. Fox Broad. Co.*, 330 F.3d 1170, 1175 (9th Cir. 2003)); *Toho Co. v. William Morrow & Co.*, 33 F. Supp. 2d 1206, 1216 (C.D. Cal. 1998) (Godzilla) (cited with approval in *Rice*, 330 F.3d at 1175).

179. *Daniels v. Walt Disney Co.*, 958 F.3d 767, 769 (9th Cir. 2020).

180. *Id.* at 770.

181. *Id.*

182. *Id.*

183. *Id.* at 771.

184. *Id.* at 772.

185. *Id.* at 773.

186. *Walt Disney Co.*, 958 F.3d at 773.

187. *Id.* at 773.

it has been permissible for the Batmobile to undergo visual changes over time, the Moodsters were not permitted the same opportunity without foregoing copyright protection. The rather low bar that the Batmobile is a crime-fighting car with jet-engines, modern weaponry, and more power than an ordinary car is, seemingly, only applicable to famous characters. Even though the plaintiffs demonstrated that Disney executives had access to the plaintiff's work in *Daniels*, the court was unwilling to extend copyright protection to a highly original work.[188] Thus, this is one example indicating that plaintiffs who have identifiable characters appropriated from a third-party asset library may have no recourse in copyright law. Without being famous like Godzilla or James Bond, individuals who create unique characters are not likely to succeed under the restrictive *Towle* test.[189]

Additionally, protectable assets that are commonplace, but original, pose the most complex determinations. If an asset is compiled of multiple elements, the degree of complexity of those elements is essential to determining whether two works are substantially similar, as more complex and unique works can receive a broader scope of protection.[190] For example, if a creator fabricates a simple tree, the first inquiry is whether to consider that digitally rendered tree is original enough to receive copyright protection.[191] As seen in *Towle*, this is unlikely.[192] It would be difficult and unreasonable to establish that a commonplace object, such as a tree with few obviously unique features, would be substantially similar to another tree. However, if that tree were a highly unique part of an entire fictional cinematic universe, there is a reasonable argument that that asset should garner copyright protection.[193] A plaintiff's argument would be stronger where an entire set of assets from a creator's collection is infringed. This could bolster the claim that an asset is highly unique and recognizable when it belongs to a specific, fictional world.

Thus, the first hurdle an independent asset creator faces in bringing a successful copyright infringement case is establishing an individual asset is entitled to copyright protection. The second hurdle is establishing substantial

188. *Id.* at 770.

189. *See Metro-Goldwyn-Mayer, Inc. v. Am. Honda Motor Co.*, 900 F. Supp. 1287, 1295-96 (C.D. Cal. 1995) (James Bond) (cited with approval in *Rice v. Fox Broad. Co.*, 330 F.3d 1170, 1175 (9th Cir. 2003)); *Toho Co. v. William Morrow & Co.*, 33 F. Supp. 2d 1206, 1216 (C.D. Cal. 1998) (Godzilla) (cited with approval in *Rice*, 330 F.3d at 1175).

190. *Idema v. Dreamworks, Inc.*, 162 F. Supp. 2d 1129, 1178 (C.D. Cal. 2001), aff'd in relevant part, dismissed in part, 90 F. App. 496 (9th Cir. 2003), as amended on denial of reh'g (Mar. 9, 2004) ("Where a copyrighted work is composed largely of 'unprotectable' elements, or elements 'limited' by 'merger,' 'scenes a faire,' and/or other limiting doctrines, it receives a 'thin' rather than a 'broad scope of protection.").

191. *Feist Publ'ns, Inc. v. Rural Tel. Servs. Co.,* 499 U.S. 340, 347 (1991).

192. *DC Comics v. Towle*, 802 F.3d 1012, 1022 (9th Cir. 2015).

193. *See* 1 Nimmer on Copyright § 2.01 (explaining "originality" requirement means independent creation and not novelty).

similarity between the creator's asset and the asset used in the scene if it has been altered. Coupled with the immense difficulty of bringing a successful Ninth Circuit copyright infringement suit against a studio, an individual asset creator has miniscule opportunity to be made whole under current copyright law.

2. Entire Scenes

Looking at compiled scenes as a whole invokes the selection and arrangement test for substantial similarity to determine whether a scene of otherwise uncopyrightable elements is protected.[194] Under the extrinsic test, the unprotectable elements are not considered in the substantial similarity comparison.[195] The *scenes a faire* are filtered out to look at the protectable elements that may be substantially similar.[196] The selection and arrangement test says that when dealing with works largely or entirely composed of unprotectable elements, choices as to the selection and arrangement of those elements are sufficiently original when the choices are made independently by the complier and contain a minimal degree of creativity.[197]

Looking at a Western, the Monument Valley desert may be considered *scenes a faire* because of its proliferation in the Western genre, as seen in ubiquitous John Ford classics like *Stagecoach* and *The Searchers*.[198] This would also include the stock wizard from *Towle* or the unoriginal tree mentioned above, as the magician and tree are likely *scenes a faire*. However, looking back to *Star Wars*, the matte painting created with the Millennium Falcon in the background is highly unique, and a scene including a substantially similar depiction would likely be infringement.[199] Thus, there is ambiguity in whether the entire scene created by the VFX company and licensed to the studio would be copyrightable, or if the protection only extends to the original assets within the scene. The selection and arrangement of the scene would, arguably, only extend to the VFX company's selection and arrangement of the digital assets. So, if the studio were to infringe upon the entire scene, the VFX company would have a case. On the other hand, the individual creator cannot argue the unique selection and arrangement of the scene that includes his asset entitles him to a copyright infringement claim.

194. *See Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.,* 499 U.S. 340, 349 (1991).
195. *Skidmore v. Zeppelin*, 952 F.3d 1051, 1064 (9th Cir. 2020).
196. *Metcalf v. Bochco*, 294 F.3d 1069, 1074 (9th Cir. 2002).
197. *Feist Publ'ns, Inc. v. Rural Tel. Servs. Co.,* 499 U.S. 340, 348 (1991).
198. STAGECOACH (United Artists 1939); THE SEARCHERS (Warner Bros. 1956).
199. STAR WARS: EPISODE IV – A NEW HOPE, *supra* note 36.

In *Alfred v. Disney*, the Ninth Circuit held that a screenplay which shared similarities with the motion picture *Pirates of the Caribbean: The Curse of the Black Pearl* survived a motion to dismiss under the selection and arrangement test.[200] The similarities between the selection and arrangement of the two works were more than de minimis, meaning the use was not too minor to constitute infringement.[201] Despite the district court granting the defendant's motion to dismiss, the Ninth Circuit held that expert testimony would be particularly helpful because the works were twenty years old and the film franchise may, itself, have shaped pirate-movie tropes.[202] The Ninth Circuit relied primarily on the following similarities: both works begin with a prologue taking place ten years prior, introduce the main character during battle at gunpoint, involve treasure stories taking place on islands in jewel-filled caves, past stories of betrayal by a former first mate, fearful moments driven by skeleton crews, redemption of a young, rogue pirate, and similarities in tone and dialogue.[203]

Accordingly, the selection and arrangement argument extends to scenes where multiple assets are used in unique ways. In *Alfred,* the seemingly commonplace elements like the introduction of the main character at gunpoint, jewel-filled caves, past stories of betrayal, skeleton crews, and similarities in dialogue garnered copyright protection from selection and arrangement; the same can be said for the VFX's scene.[204] Multiple commonplace assets are incorporated into a unique background scene, the selection and arrangement of which are original and would earn copyright protection.

However, a party cannot assert a de minimis use defense when there is identical copying.[205] Therefore, when a VFX company uses the entirety of a digital asset, that company is prohibited from claiming that the use was de minimis in relation to creating the entire scene.[206] This favors plaintiffs who pursue a copyright infringement cause of action for their entire individual asset.

Additionally, individual creators should still be aware of the fair use defense that may be used by VFX companies and studios.[207] The Supreme

200. *Alfred v. Walt Disney Co.*, 821 Fed. Appx. 727, 729 (9th Cir. 2020).
201. *Id.*
202. *Id.*
203. *Id.*
204. *Id.*
205. *Bell v. Wilmott Storage Servs., LLC*, 12 F.4th 1065, 1074 (9th Cir. 2021).
206. *Id.*
207. The fair use of a copyrighted work for criticism, comment, news reporting, teaching, scholarship, or research is not copyright infringement. 17 U.S.C. § 107. The four fair use factors are (1) the purpose and character of the use, including commercial use, (2) 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. *Andy Warhol Foundation for the Visual Arts, Inc. v. Goldsmith*, 143 S. Ct. 1258, 1273-74 (2023).

Court recently dealt with a tangential inquiry in *Andy Warhol Foundation for the Visual Arts v. Goldsmith*.[208] There, the Court decided whether a work was transformative for purposes of fair use if it conveys a different meaning from the source material.[209] The Court held that Andy Warhol's use of Goldsmith's photograph of Prince was not transformative because it shared substantially the same purpose and was commercial in nature.[210] The outcome of *Andy Warhol* in determining what is artistically substantially transformative for a successful fair use defense has important ramifications on digital assets used on these virtual sets. For example, will a court look to the scene as a whole or just the individual digital asset? Must the entire scene be substantially transformative or just the individual assets for the fair use defense? Under *auteur* theory, where the director is viewed as the major creative force or "author" of a motion picture, would every change be meaningful?[211]

3. Copyright Infringement Litigation: Is It Worth It?

Succeeding on a copyright infringement claim in motion pictures as an individual against a studio has become increasingly difficult and uncommon.[212] As reported in Steven T. Lowe's *Death of Copyright*, between 1990 and 2010, the Second and Ninth Circuits issued final verdicts in favor of the studio-defendant in all forty-eight cases filed against studios, nearly all on summary judgment.[213] Lowe argued that the difficulty in establishing substantial similarity is particularly attributable to the Ninth Circuit's refusal to correctly utilize the selection and arrangement test established by the Supreme Court in *Feist*.[214] For example, in *Funky Films*, the Ninth Circuit held that courts must filter out the non-protectable elements and inquire whether the protectable elements, *standing alone*, are substantially similar.[215] This directly contradicts the Supreme Court's holding in *Feist* that expressly permits non-copyrightable elements to earn copyright protection if they are selected and arranged in unique ways.[216]

208. *Andy Warhol Foundation for the Visual Arts, Inc. v. Goldsmith*, 142 S. Ct. 1412 (2022) (granting certiorari and argued Oct. 12, 2022).

209. Brief for Petitioner at 33, *Andy Warhol Foundation for the Visual Arts, Inc. v. Goldsmith*, 142 S. Ct. 1412 (2022) (No. 21-869).

210. *Andy Warhol Foundation for the Visual Arts, Inc. v. Goldsmith*, 143 S. Ct. 1258, 1273 (2023).

211. *See* Editors of Encylopædia Britannica, *Auteur Theory*, ENCYC. BRITANNICA, https://www.britannica.com/art/auteur-theory (last visited Apr. 29, 2023).

212. Steven T. Lowe, *Death of Copyright*, 33 L.A. LAW. 32, 32 (2010).

213. Steven T. Lowe, *Death of Copyright*, 33 L.A. LAW. 32, 32 (2010).

214. *Id.*; *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 362-63 (1991).

215. *Funky Films, Inc. v. Time Warner Ent. Company, L.P.*, 462 F.3d 1072, 1077 (9th Cir. 2006); Steven T. Lowe, *Death of Copyright*, 33 L.A. LAW. 32, 35-36 (2010).

216. *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340 (1991).

In Lowe's 2018 article *Death of Copyright 3*, he further explains that since 2010 there has been even more confusion around applying the now-common substantial similarity filtration test, which filters out unprotectable elements, in motion picture literary works like scripts.[217] However, Lowe points out that in non-literary cases, courts normally follow the *Feist* selection and arrangement test to determine substantial similarity.[218] The difficulty in bringing a successful infringement claim against a studio is particularly important here, as individual creators are putting their work on third-party asset libraries.

The threshold issue of whether a digital asset is sufficiently original to obtain copyright protection is essential. While the exact copying of a digital asset may involve a simpler analysis, where an asset is modified to varying degrees creates ambiguity for judicial review. As strong cases of copyright infringement with a high degree of access and substantial similarity are already difficult to win, weaker cases of third-party digital assets are not situated to fare any better. Even in cases like *Daniels,* where the subject characters are apparently substantially similar, the *Towle* test makes plaintiffs' success all that more unlikely.[219] Further, as the Ninth Circuit and California Federal District Courts continually rely upon summary judgment for copyright infringement cases, plaintiffs again are disadvantaged against the studio giants.[220]

IV. THE SOLUTION

The use of virtual LED screen sets is cutting-edge technology and still in the early ages of adoption.[221] Thus, there is no litigation that has expounded guidance around liability. At this point, trying to prevent liability before it occurs is the best practice for studios and individual creators alike. The process should be streamlined to replace the confusing mess of the current licensing structure. Guidance from the Copyright Office may be the best way to standardize the licensing scheme explored here. However, without that guidance, studios and individual creators only have themselves and their lawyers to avoid expensive litigation.

Again, each relevant party has competing interests in protecting themselves. First, adopting a copyleft-like licensing scheme would streamline the process of creating scenes from third-party assets. Second,

217. Steven T. Lowe, *Death of Copyright 3*, 5 L.A. LAW. 28, 30 (2018).

218. *Id.*

219. *DC Comics v. Towle*, 802 F.3d 1012, 1022 (9th Cir. 2015).

220. Steven T. Lowe, *Death of Copyright*, 33 L.A. LAW. 32, 40 (2010).

221. *XR LED Screen for Virtual Production*, LENSEN LED, https://www.linsnled.com/virtual-production-led-wall.html (last visited Feb. 5, 2024).

this type of license would protect individual creators by removing varying license permissions in using an asset while providing financial incentive to the creators. Third, studios should require assignment of all rights and proceeds, then adopt the copyleft-like license to streamline the creative process from individual to final cut. Fourth, and finally, insurance companies should provide a policy specifically for virtual LED screen set technology and potential copyright litigation from the use of third-party assets.

A. COPYLEFT

Copyleft is a concept that was developed by the GNU Project as supported by the Free Software Foundation, whose goal is to maintain a completely free software system.[222] "Copylefted software is free software whose distribution terms ensure that all copies of all versions carry more or less the same distribution terms."[223] Copyleft is a copyright that intends to keep software "free" rather than restrict use of the software program as typical copyright protection would.[224] Free, in this sense, means freedom to "run, copy, distribute, study, change, and improve" the software, rather than meaning no price.[225] The four freedoms that should be maintained are the freedoms to: (1) use the software for any purpose, (2) change the software to suit the user's needs, (3) share the software and, (4) share the changes made.[226]

Copyleft is different from putting software in the public domain, where the software is completely devoid of copyright protection. For software in the public domain, any user can use, change, and improve the program, and free software can be converted into proprietary software.[227] Proprietary software is synonymous with non-free software, or software whose use, redistribution, or modification is prohibited, requires permission, or is otherwise restricted.[228] Copyleft attempts to prevent the middleman from using and modifying free software into proprietary software to then distribute it under different licensing terms, commercially or noncommercially.[229]

222. *Philosophy of the GNU Project*, GNU OPERATING SYS., https://www.gnu.org/philosophy/philosophy.html (last visited Apr. 29, 2023).

223. Brett Smith, *Categories of Free and Nonfree Software*, GNU OPERATING SYS., https://www.gnu.org/philosophy/categories.html (last visited Apr. 29, 2023).

224. Brett Smith, *A Quick Guide to GPLv3*, GNU OPERATING SYS., https://www.gnu.org/licenses/quick-guide-gplv3.en.html (last visited Apr. 29, 2023).

225. *What is Free Software?*, GNU OPERATING SYS., https://www.gnu.org/philosophy/free-sw.html (last visited Apr. 29, 2023).

226. Smith, *supra* note 224.

227. FREE SOFTWARE FOUND., s*upra* note 12.

228. Smith, *supra* note 223.

229. FREE SOFTWARE FOUND., *supra* note 12.

One copyleft license is the GNU General Public License ("GNU GPL" or "GPL").[230] If a licensor distributes software modified from the original to a future licensee, this license requires licensees to adhere to the same terms that the original licensor was bound to in modifying the software.[231] Future licensing requires the licensor to specify which modifications he made to the software and to license it as a whole.[232] The GPL does not allow for additional restrictions to use software, including a subsequent imposition of a license fee, royalty, or other charge.[233]

B. INDIVIDUAL CREATORS

The industry should adopt a common usage of a license similar to a copyleft to standardize the creation of virtual sets using video game digital assets. Creating a scene with potentially hundreds of digital assets requires the VFX company to maintain immaculate records. Each asset has its own license with separate obligations and, likely, fees or royalties. Like any license, each asset's license must be maintained when licensing an entire scene to the studio downstream.

Unlike with video game companies who have teams of creative artists and software engineers whose assets are owned by the employer under the work for hire doctrine, non-animation motion picture studios generally do not have in-house VFX departments.[234] In creating a film, the studio may hire "client-side" workers, meaning directly employed by the studio, or "vendor-side" workers, meaning freelance independent contractors.[235] Often, studios contract with a VFX company as an independent contractor.[236] However, the deep collaboration between motion pictures and video games in using virtual set technology requires a blending of these two standard practices.

Copyleft seeks to protect the distribution and modification of software without restrictions that prohibit free software. Similarly, individual asset creators who allow their work to be used in motion picture virtual sets should

230. FREE SOFTWARE FOUND., *supra* note 12.

231. *GNU General Public License*, GNU OPERATING SYS., https://www.gnu.org/licenses/gpl-3.0.html (last visited Apr. 29, 2023).

232. *Id.*

233. *Id.*

234. *See* Lisa McNamara, *Workflow From Home: Episode 7 – Taking the VFX Industry Remote*, FRAME.IO INSIDER (Dec. 18, 2023).

235. 2022 VFX Workers Survey, INT'L ALL. OF THEATRICAL STAGE EMP. (Mar. 1, 2023), https://vfxunion.org/2022-survey-results/.

236. *See* Shane Sansom, *VFX Industry Suffers Poor Conditions and Low Budget with More Work than Ever*, THE STANDARD (Oct. 3, 2022), https://www.the-standard.org/news/vfx-industry-suffers-poor-conditions-and-low-budget-with-more-work-than-ever/article_2e9b3f3c-4027-11ed-9455-abf8b1e54dca.html.

make their assets available with a similar license to copyleft. For clarity, this proposed license structure will be referred to as Motion Picture Virtual Asset Copyleft ("MPVA Copyleft").

For example, suppose a creator develops an asset that is then released to a third-party asset library and made available for use in larger works. The VFX company licenses the asset through the asset library under a MPVA Copyleft license. In this proposed scheme, under the license agreement, derivative works must be expressly permitted to avoid potential infringement from the beginning. This license would require the VFX company to pay an advance license fee that resembles an option fee in an Option Agreement. Thus, the individual creator is guaranteed a smaller advance license fee, but the entire license fee is contingent on final use in the picture. This allows for the unforeseeable on-set changes that the cinematographer and director may make during principal photography. If an asset is removed, then the individual creator still retains the "option fee" but does not earn the entire fee. Not only does this maintain the benefits of last-minute changes to the virtual scene, but it does so without risking copyright infringement by creating derivative works of an important asset.

The VFX company creates the scene and licenses it to the studio with intent to use it on a virtual set. With the MPVA Copyleft license, neither the VFX company nor the studio would risk copyright infringement by not maintaining a valid license. Recognizing one of the goals of copyleft is to maintain complete freedom for use, distribution, and modification of a software, this licensing fee structure for MPVA Copyleft would be standardized from individual creator to VFX company to studio.

With this scheme, an individual has causes of action for both contract and copyright infringement. In *Jacobsen v. Katzer*, the Federal Circuit applied Ninth Circuit precedent to hold that a breach of an open-source license allowed both a breach of the contractual provisions claim and an enforceable copyright infringement claim.[237] The court explained because use, modification, and distribution of a computer software was conditioned on certain restrictive terms of the license, this allowed for a copyright infringement claim.[238] The license had clear language that created conditions to protect the economic rights in granting an open-source license for the software.[239] The same would be applicable to individual assets in virtual LED screen sets, allowing for both copyright infringement and breach of contract claims.

Also, this standardized organization of asset licensing opens the opportunity for the film industry to create comparable asset libraries similar to video game libraries. A creator can then work exclusively in motion

237. Jacobsen v. Katzer, 535 F.3d 1373, 1382 (Fed. Cir. 2008).
238. *Id.*
239. *Id.* at 1381.

picture asset creation to release his assets to one or two large asset libraries which adhere to a common structure. Despite similarities, motion pictures and video games fundamentally require different types of assets. While video games rely almost entirely upon digital assets for world creation, characters, and story development, motion picture virtual sets are primarily for background and middle ground immersion.[240] The primary benefit to this LED technology is allowing talent to interact with a tangible environment, rather than imagine what it will look like with a green screen.[241] Thus, the types of assets required to seamlessly blend with tangible, live action acting in the foreground are different than even the most realistic video games. Creators dedicating their abilities to developing these types of assets would benefit and would simplify virtual sets by having a parallel third-party library rather than borrowing from video game libraries.

In *Technologies of Storytelling*, Henry Perritt proposes a similar idea in the context of crowd sourcing for film productions.[242] Perritt proposed the principal creator would define a theme and character, then shoot the first ten minutes of the project.[243] From crowdsourcing solicitations, the principal creator would choose scripts and plot points for the film or television project.[244] He would apply the same concept to footage where creators would submit short videos with different artistic interpretations, cast, and direction.[245] The principal creator could then reshoot the winning video with the principal talent and with his creative direction.[246] With this structure, Perritt suggests using open-source licensing to reduce the cost of video production and facilitate collaboration among multiple filmmakers.[247] Finally, Perritt proposes using the same open-source license with each unidentifiable creator to delineate the restrictions in creating content based on a copyrighted work down the stream of ownership.[248]

Perritt analyzes copyright ownership for this proposal through work for hire and joint authorship.[249] The work for hire doctrine is precluded from practical application to virtual LED screen scenes because VFX companies do not commonly establish an employer-employee relationship with a studio.[250] Joint authorship is also precluded under the Ninth Circuit's opinion

240. L'Italien, *supra* note 66.

241. *Id.*

242. Henry H. Perritt, Jr., *Technologies of Storytelling: New Model for Movies*, 10 VA. SPORTS & ENT. L.J. 106 (2010).

243. *Id.* at 190.

244. *Id.*

245. *Id.*

246. *Id.*

247. *Id.* at 192.

248. *Id.* at 201.

249. *Id.* at 195, 199.

250. *Visual Effects and Working Conditions Survey Results*, INT'L ALL. OF THEATRICAL STAGE EMP. (Mar. 1, 2023), https://vfxunion.org/2022-survey-results/.

in *Aalmuhammed v. Lee*, where providing a valuable, independently copyrightable contribution to a film does not necessarily mean the work was created by joint authorship.[251] Absence of control is strong evidence of absence of co-authorship, and a VFX company contributing a scene for a virtual LED set likely does not indicate control.[252] While the background scene projected onto the LED screen set may be significant to the film, the VFX company cannot be said to have control over the film because of this. The author must be the "mastermind" of the film by superintending the work and exercising control.[253] VFX companies are not the masterminds of films just by creating the background scenes, nor do the special effects contracts manifest a shared intent to be coauthors.[254]

C. STUDIOS

In the current landscape, studios should require third-party contractors to assign all rights in the results and proceeds of the motion picture in perpetuity. As the digital asset cannot be assigned to the studio from the individual creator, or the final scene from the VFX company, assignment of the rights in results and proceeds is necessary to protect from copyright infringement claims. The VFX company must also warrant to the studio that it holds and will maintain valid licenses on all assets used in the final scene. Studios should also require meticulous accounting of each asset that is used and reserve the right to refuse use of a particular asset. Finally, studios should covenant to only permit money damages. Allowing for recovery through equitable damages could open the potential for a preliminary injunction, which could delay the premiere date, losing the studio millions. As a strategy, potential plaintiffs could file a cause of action immediately before the release, denying the studio sufficient time to settle or fight a preliminary injunction.

However, the standardized use of an MPVA Copyleft license would streamline this process. Instead of requiring a complex regime of covenants and warranties with each VFX company, a single license that maintains identical terms with each party will avoid unnecessary complication.

D. INSURANCE

251. Aalmuhammed v. Lee, 202 F.3d 1227, 1231-32 (9th Cir. 2000).
252. *Id.* at 1235.
253. *Id.* at 1233.
254. *Id.* at 1231.

Film productions require a set of insurance policies that are specifically tailored to each project.[255] While general coverage policies are required, an action picture with extensive pyrotechnic effects requires specialty add-ons, for example.[256] Errors and Omissions ("E&O") Insurance is essential to any production.[257] E&O Insurance "offers specialized coverage for a wide variety of media risks against . . . lawsuits for libel, slander, invasion of privacy, infringement of copyright and other specified torts."[258] Practically any type of distribution deal, including theatrical, television, video-on-demand, straight to streaming, internet, DVD, documentary, and podcasts requires E&O coverage.[259]

A "claims made" policy covers lawsuits arising during the policy period while an "occurrence" policy covers all claims arising out of occurrences during the policy period, even if the lawsuit is filed after the policy expires.[260] An occurrence is the first publication of a particular piece of content.[261] However, for copyright infringement, the separate-accrual rule applies, which states each time an infringing work is reproduced or distributed, the infringer commits a new wrong.[262] Therefore, the three-year statute of limitations on copyright infringement resets with each new violation. [263] This can drastically elongate the availability of copyright infringement claims, even with E&O insurance.

Some equipment also requires specialty add-ons, like drones and aerial photography from helicopters or gliders.[264] These policies can be added on a daily basis or for the remainder of a short term or annual policy.[265] Insurance companies should adopt a similar structure specifically for LED screen sets. The upfront investment in the equipment to create these sets is massive.[266] Again, existing equipment cannot be repurposed because a set of specialty equipment is necessary for these virtual LED screen sets.[267] The

255. *Film Production Insurance: A Definitive Guide*, MEDIA SERV.: A CAST & CREW CO. (July 12, 2022), https://www.mediaservices.com/blog/film-production-insurance-a-definitive-guide/.

256. AJ Unitas, *A Producer's Guide to Film Production Insurance*, STUDIOBINDER (Apr. 21, 2017), https://www.studiobinder.com/blog/the-producers-guide-to-film-production-insurance/.

257. MEDIA SERV.: A CAST & CREW CO., *supra* note 255.

258. *Producer's E&O Insurance*, FILM EMPORIUM, https://filmemporium.com/errors-and-omissions-for-producers/ (last visited Apr. 29, 2023).

259. *Id.*

260. Mark Litwak, *Attention, Filmmakers: Here's What You Need to Know About Malpractice Insurance*, INDIEWIRE (Aug. 19, 2015), https://www.indiewire.com/features/craft/attention-filmmakers-heres-what-you-need-to-know-about-malpractice-insurance-59131/.

261. Leib Dodell, *Occurrence Form Gives Eternity of Coverage*, PROPERTYCASUALTY360 (Nov. 5, 2006), https://www.propertycasualty360.com/2006/11/05/occurrence-form-gives-eternity-of-coverage/.

262. Petrella v. MGM, 572 U.S. 663, 671 (2014).

263. 17 U.S.C. § 507(b).

264. Unitas, *supra* note 256.

265. *Id.*

266. Drew Viehmann, *Virtual Production: Exactly Where to Start*, MEDIUM (June 30, 2020), https://drewviehmann.medium.com/virtual-production-exactly-how-to-start-f73323c3b1d5.

267. *Id.*

cameras, LED panels, monitors, and processors necessary to the production can easily shoot into the tens of thousands of dollars.[268] Whether renting or buying, insurance on this specialty equipment should be specifically covered rather than being included on the general policy.

While a copyright infringement claim arising from virtual assets used on LED screen sets is likely to be covered by E&O insurance, avoiding liability in the first place is preferrable. Additionally, insurance policies should specifically include this expensive specialty equipment that must be used as a unit.

V. CONCLUSION

Overall, virtual LED set technology is likely to become more commonplace in the film industry. The level of control in creating accurate real-world reconstructions as well as imaginary worlds is unparalleled. Despite the larger up-front investment that this technology requires, the payoff in both post-production VFX costs, shooting on location, and employment is likely to be recognized by filmmakers and studios. No longer do filmmakers bend to the will of light and shadow which drove the industry to sunny Southern California, but light bends to the will of filmmakers.[269]

The licensing structure that relies on an intermediary VFX company should be reevaluated. It is practically impossible for individual creators to bring a successful infringement claim against a studio. Studios are at the will of VFX companies to maintain valid licenses on each digital asset in a scene. Instead of the current three-party structure requiring meticulous accounting that may not fairly compensate a creator and leave the studio open to liability, using MPVA Copyleft, a version of copyright that requires each licensor to contract with a licensee using identical terms, has the potential to dramatically simplify the licensing process while maintaining creative integrity.

Virtual LED screen set technology is cutting edge and still being adopted by the industry. Thus, legal issues are bound to arise, and the impetus is on studios to protect themselves from liability and for individual creators to protect their creative products from the beginning. As the film and video game industries continue to merge, creatively and functionally, legal issues will rise quickly and guide this new hybrid area of entertainment.

In the short time from Méliès' groundbreaking special effects in 1902 to today, the industry has evolved exponentially. The spearheading efforts of ILM, in particular, have driven this force forward as *The Mandalorian* has

268. *Id.*

269. Cliopatria, *Why Did the Film Industry Settle in Hollywood*, HIST. NEWS NETWORK (Aug. 22, 2005), https://historynewsnetwork.org/blog/14513.

demonstrated just how effective this new technology can be. The industry adopts new technology at increasing speeds from sound to color to television to green screens to virtual sets. It is time for the industry to recognize and reconsider this complex regime of licensing and streamline ways for individual creators and studios alike to succeed in this ever-changing landscape.