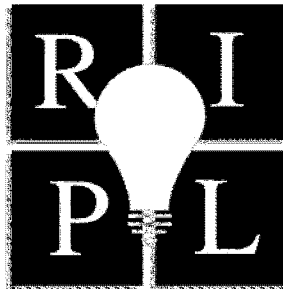


# THE JOHN MARSHALL REVIEW OF INTELLECTUAL PROPERTY LAW



FENDER BENDER: 3D COMPUTER MODELING OF COMMERCIAL OBJECTS  
AND THE *MESHWERKS V. TOYOTA* DECISION

ANDREW C. LANDSMAN

## ABSTRACT

The Ninth Circuit Court of Appeals established a standard of originality for three-dimensional wireframe computer models for purposes of copyright protection in *Meshwerks, Inc. v. Toyota Motor Sales USA, Inc.* The court applied the standard of originality used by courts when assessing the originality of photographs. In doing so, the court created a test for wireframes that precludes any wireframe from acquiring copyright protection. This comment proposes that courts reconsider the holding in *Meshwerks* and treat wireframes as sculptures rather than photographs, which would allow wireframes to be copyrightable.

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FENDER BENDER: 3D COMPUTER MODELING OF COMMERCIAL OBJECTS  
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ANDREW C. LANDSMAN\*

*To me, [Computer Generated Imagery] is a complete misnomer, because the computers are just the tools. People generated the imagery using computers. Word processors don't write for you, but people assume the computers do a lot more than they really do. . . . What I'm looking forward to is the growth of this medium from a novelty to an every day art form.*<sup>1</sup>

- John Lasseter, CEO, Pixar and Disney Animation Studios

INTRODUCTION

On June 18, 2008, the United States Court of Appeals for the Tenth Circuit issued its opinion in *Meshwerks, Inc. v. Toyota Motor Sales U.S.A., Inc.*<sup>2</sup> In *Meshwerks*, the question before the court was whether three-dimensional (“3D”) wireframe models of Toyota automobiles were sufficiently original to qualify for copyright protection.<sup>3</sup> The court compared Meshwerks’ models to photographs and held that Meshwerks’ models were not sufficiently original to garner copyright protection because they lacked the “individualizing features,” such as scenery or the placement of objects in the scene, that make photographs unique.<sup>4</sup> The court, however, qualified its holding by stating that its decision did not preclude *all* 3D models from copyright protection.<sup>5</sup> Only those models that lack all lighting, angle, perspective, and “other ingredients” associated with original expression would fail to qualify for protection.<sup>6</sup>

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<sup>1</sup> Kenneth Turan, *Animation Infinity and Well Beyond*, L.A. TIMES, Dec. 27, 1999, at F1. (quoting John Lasseter, CEO, Pixar and Disney Animation Studios and Principal Creative Advisor, Walt Disney Imagineering).

<sup>2</sup> 528 F.3d 1258 (10th Cir. 2008), *cert. denied*, 129 S. Ct. 1006 (U.S. Jan. 21, 2009) (No. 08-638).

<sup>3</sup> *Id.* at 1260.

<sup>4</sup> *Id.* at 1265.

[W]e think Meshwerks’ models are not so much independent creations as (very good) copies of Toyota’s vehicles. . . . Meshwerks’ digital wire-frame computer models depict Toyota’s vehicles without any individualizing features: they are untouched by a digital paintbrush; they are not depicted in front of a palm tree, whizzing down the open road, or climbing up a mountainside. Put another way, Meshwerks’ models depict nothing more than unadorned Toyota vehicles—the car *as* car.

*Id.* at 1264–65.

<sup>5</sup> *Id.* at 1269–70 (“[D]igital imaging is a relatively new and evolving technology. . . . Digital modeling. . . no doubt increasingly will be used to create copyrightable expressions. Yet, just as photographs *can be*, but are not *per se*, copyrightable, the same holds true for digital models.”).

<sup>6</sup> *Id.* at 1270.

This comment examines the court's ruling in *Meshwerks* and explores the impact that *Meshwerks* will have on 3D computer models and the firms that create them. Part I describes the 3D modeling process, highlighting the various types of 3D models and how they are created. It also provides information regarding copyrights, specifically the development of copyright protection regarding new technology, photography, and courts' interpretation of the originality standard used in *Feist Publications, Inc., v. Rural Telephone Service Co.*<sup>7</sup> Part II analyzes whether the court in *Meshwerks* applied the correct test to determine the originality of Meshwerks' 3D models. Part III proposes that courts reconsider the holding in *Meshwerks* to allow 3D wireframe models of utilitarian or commercial products to qualify for copyright protection.

## I. BACKGROUND

### A. 3D Digital Models

The last twenty years have witnessed an explosion of 3D Computer Generated Imagery ("CGI").<sup>8</sup> As the sophistication of computers and their accompanying software evolved, so did this emergent art form. Today, CGI is so commonplace we may not even notice it, which is exactly how the artist responsible for creating the CGI intends it to be.<sup>9</sup> CGI is often combined with live action, which makes it difficult for the viewer to distinguish between the two. This section describes the development of 3D computer models and the different types of 3D models that exist today. This section also explains the current state of copyright law and how the Tenth Circuit applied the law in *Meshwerks*.

CGI has taken an especially strong hold on the film industry.<sup>10</sup> This is evidenced by the credit reel of virtually any film distributed by a major motion picture studio revealing a credit to a visual effects & animation team.<sup>11</sup> Over time, the quality of CGI improved to the point that filmmakers even began combining CGI representations of everyday objects with traditional live-action.<sup>12</sup> This technique has

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<sup>7</sup> 499 U.S. 340 (1991).

<sup>8</sup> PETER WEISHAR, BLUE SKY: THE ART OF COMPUTER ANIMATION: FEATURING *ICE AGE* AND *BUNNY6* (2002).

<sup>9</sup> *Id.* at 80 ("If live-action film is part of the mix, the goal is the creation of a seamless, photorealistic image incorporating animated digital models.").

<sup>10</sup> *Id.* at 6 ("3D computer animation is the most revolutionary development in feature films since the introduction of color. The power of the computer has limitless potential to transform the art of filmmaking, giving artists and technicians the tools to bring even the most fantastic visions to life on screen.").

<sup>11</sup> See *LITTLE MISS SUNSHINE* (Big Beach Films 2006); Internet Movie Database, *Little Miss Sunshine* (2006)—Full Cast and Crew, <http://www.imdb.com/title/tt0449059/fullcredits> (last visited May 3, 2009). Even films such as *Little Miss Sunshine*, a low-budget, independently produced comedy released in 2006, that did not include any action scenes, included a team of six people devoted to visual effects. *Id.*

<sup>12</sup> See ANIMATION ART: FROM PENCIL TO PIXEL, THE HISTORY OF CARTOON, ANIME, & CGI 12 (Jerry Beck gen. ed., 2004) [hereinafter ANIMATION ART]. The technique of combining animation with live action has been a constant since the beginning of the animation art form. *Id.*; see [Premiere.com, 20 Benchmark Films in Computer Animation History, http://archive.premiere.com/best/4226/20-benchmark-films-in-computer-animation-history.html](http://archive.premiere.com/best/4226/20-benchmark-films-in-computer-animation-history.html) (last

blurred the barrier between what is real and what is created on a computer, and it is increasingly difficult for the audience to distinguish a real object from a computer-generated object.<sup>13</sup> Digital images are not exclusively in the realm of special effects for action movies.<sup>14</sup> Throughout its development, CGI has also been used to depict real-life objects in scenes, such as lamps, tables, and the walls of rooms.<sup>15</sup> Computer modelers have a variety of different types of modeling software at their disposal that allow them to effectively create objects in a 3D virtual world.<sup>16</sup>

Even as computers have become more powerful and less expensive, the basic techniques for creating 3D computer models have not changed.<sup>17</sup> Virtually all 3D computer modeling falls into one of four general categories: (1) polygonal, (2) spline, (3) patch, and (4) parametric.<sup>18</sup> Each category employs the wireframe, the most basic

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visited May 3, 2009). An online gallery of 20 Benchmark Films in Computer Animation that illustrates the progression of CGI in films. *Id.* Included in the gallery is *The Matrix*, which included some of the first uses of CGI to create full background shots. *Id.*

<sup>13</sup> See Fake or Foto?—The Challenge, <http://area.autodesk.com/index.php/fakeorfoto/challenge/> (last visited May 3, 2009). Autodesk, the software company responsible for the most widely used 3D modeling software packages such as Maya and 3DStudio Max includes a link on its website where the internet user is challenged to pick between CGI images out of a mix of CGI images and traditional photographs. *Id.*

<sup>14</sup> See WEISHAR, *supra* note 8, at 9.

<sup>15</sup> See MARK GIAMBRUNO, 3D GRAPHICS & ANIMATION 5–20 (2d ed. 2002); Pixar History—1986, <http://www.pixar.com/companyinfo/history/1986.html> (last visited May 3, 2009) [hereinafter Pixar History]; Pixar—Luxo Jr.—The Tale, <http://www.pixar.com/shorts/ljr/tale.html> (last visited May 3, 2009) [hereinafter Luxo Jr.]; Pixar Shorts, <http://www.pixar.com/theater/shorts/index.html> (last visited May 3, 2009) [hereinafter Pixar Shorts]; Pixar—Luxo Jr.—Behind the Scenes, <http://www.pixar.com/shorts/ljr/behind.html> (last visited May 3, 2009); Filmsite.org, Visual and Special Effects Film Milestones, <http://www.filmsite.org/visualeffects.html> (last visited May 3, 2009). In 1986, Pixar, created its first short film, *Luxo Jr.* Pixar History, *supra*. Like all Pixar films, it was entirely CGI. *Id.* The subject of the film was a simple table lamp that could move and pursued a bouncing ball. Luxo Jr., *supra*. The lamp from *Luxo Jr.* continues as Pixar's mascot and is featured during the opening credits of Pixar films. *Id.* When John Lasseter, the creator of *Luxo* was looking for subjects to model, he picked the lamp sitting on his desk. Pixar Shorts, *supra*.

<sup>16</sup> GIAMBRUNO, *supra* note 15 at 82.

<sup>17</sup> See CGI in the Movies, <http://design.osu.edu/carlson/history/lesson14.html> (last visited May 3, 2009) [hereinafter CGI in the Movies]; Videotape: The Star Wars Computer Animation (Circle Graphics Habitat 1977) (on file with the Electronic Visualization Laboratory, University of Illinois at Chicago) [hereinafter Star Wars Computer Animation], available at <http://www.youtube.com/watch?v=yMeSw00n3Ac>; 1UP.com, The Essential 50 Part 5, <http://www.1up.com/do/feature?cId=3133873> (last visited May 3, 2009) [hereinafter 1UP.com]. Science fiction films from the late 1970s and early 1980s illustrate the earliest uses of 3D computer graphics in film and television. CGI in the Movies, *supra*. The famous scene from *Star Wars* where Luke Skywalker uses a targeting computer as he is flying toward the Death Star is an early example of 3D computer graphics. *Id.* The targeting computer provided Luke with a wire-frame 3D representation of the surface of the death star. Star Wars Computer Animation, *supra*. Early 3D computer graphics were exclusively wire-frame because the processing power of the computers at the time was not enough to add texture, surface, or lighting characteristics to the images on the screen. *Id.* The scene in *Star Wars* was created at the Electronic Visualization Laboratory at the University of Illinois—Chicago. *Id.* Atari's "Battlezone" was released in 1980 and is credited as the first video game to use first person perspective, which relies on the ability to generate a three-dimensional virtual world. 1UP.com, *supra*. Atari created the 3D virtual world in "Battlezone" with vector graphics. *Id.*

<sup>18</sup> GIAMBRUNO, *supra* note 15, at 82–87.

element of 3D modeling.<sup>19</sup> While wireframes are very useful when modeling complex objects, they lack the ability to show shading or texture.<sup>20</sup> Once shading and/or texture are added to a wireframe model, the wireframe is no longer visible, and the object appears solid.<sup>21</sup> This allows designers to create wireframes consisting of only the outside shell of an object, yet when a surface texture is applied, the object may appear to have more depth.<sup>22</sup>

A common example of this technique is the creation of buildings for video games and films.<sup>23</sup> A modeler need not create the floors, stairs, and support columns of the interior of a building to create a realistic model of it.<sup>24</sup>

The oldest and most basic type of modeling software exclusively uses polygons to create 3D shapes.<sup>25</sup> Each such Polygon is defined by specifying X, Y, and Z coordinate points that the software connects with lines or “edges” to complete the figure.<sup>26</sup> By grouping many of these polygons together, a modeler may create a representation of virtually any shape.<sup>27</sup> One major drawback to polygonal modeling is that all edges are straight lines.<sup>28</sup> As a result, in order to represent an object that has curved surfaces, many polygons are necessary to prevent the object from appearing faceted.<sup>29</sup> However, as the number of polygons increases, the object’s complexity also increases and the computer must process a higher volume of data to represent the object.<sup>30</sup>

As computers have become more powerful, an increasing number of software packages have transitioned to spline-based modeling, which uses curved lines between points rather than the straight lines of polygonal models.<sup>31</sup> Unlike polygonal models, spline models are not “resolution-dependent,” meaning that even as the modeler zooms in on a spline object, it will not become faceted.<sup>32</sup> Because spline modelers work with curves rather than straight lines, they are particularly “well suited to creating complex organic shapes.”<sup>33</sup>

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<sup>19</sup> See MICHAEL E. MORTENSON, *GEOMETRIC MODELING* 8 (2d ed. 1997); ADAM WATKINS, *INTRODUCTION TO 3D GRAPHICS & ANIMATION USING MAYA* 26 (2006); WEISHAR, *supra* note 8, at 16. The wireframe is analogous to the chicken wire paper-maché artists use under a paper-maché form. WATKINS, *supra*, at 26. The wireframe actually “defines the edges of each polygon . . . of the form.” *Id.* The wireframe reveals exactly how the polygons are assembled to create the 3D model. *Id.* “A *wireframe model* is composed of lines and curves defining edges of an object and it is usually constructed interactively.” MORTENSON, *supra*, at 8. “The intersecting lines [of the wireframe] serve as ribs for the surface of the model—like chicken wire under papier-mâché. The software that creates 3D objects by describing their surfaces is known as a ‘surface modeler.’ The models created in a 3D program are often simply referred to as ‘the geometry.’” WEISHAR, *supra* note 8, at 16.

<sup>20</sup> GIAMBRUNO, *supra* note 15, at 57–58, 62, 73.

<sup>21</sup> *Id.*

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

<sup>23</sup> *Id.* at 215–27.

<sup>24</sup> *Id.*

<sup>25</sup> *Id.* at 82–83.

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

<sup>27</sup> *Id.*

<sup>28</sup> *Id.*

<sup>29</sup> *Id.*

<sup>30</sup> *Id.*; WATKINS, *supra* note 19, at 56.

<sup>31</sup> GIAMBRUNO, *supra* note 15, at 84.

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*

Patch modeling is a variation on spline-based modeling, but the basic principles are the same.<sup>34</sup> Patch models combine spline curves to create a “curve-bounded collection of points” called a patch.<sup>35</sup> Individual patches are then combined to generate a 3D representation.<sup>36</sup>

Parametric models allow individual elements to be defined in terms of other elements. When elements are related together in a parametric model, they become interdependent: if the modeler changes any one element, all related elements will also be affected by the change.<sup>37</sup> The ability to designate features on 3D models as parametric is a common feature in 3D modeling software packages.<sup>38</sup> Many modern modeling software packages allow the modeler to take advantage of more than one category of model.<sup>39</sup>

Today, 3D computer models are used in a wide variety of applications, such as film special effects,<sup>40</sup> mechanical part design,<sup>41</sup> engineering simulations,<sup>42</sup> architecture,<sup>43</sup> and video games<sup>44</sup> to name a few. Like painters and sculptors, artists and engineers who create 3D computer models are concerned with protecting their work, and copyright would seem the natural choice.

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<sup>34</sup> *Id.* at 85.

<sup>35</sup> *Id.*; MORTENSON, *supra* note 19, at 149.

<sup>36</sup> GIAMBRUNO, *supra* note 15, at 84.

<sup>37</sup> *Id.* at 84–85.

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

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

<sup>40</sup> Autodesk.com, Autodesk Maya—Overview, <http://usa.autodesk.com/adsk/servlet/index?siteID=123112&id=7635167> (last visited May 3, 2009) [hereinafter Autodesk Maya—Overview]; see AUTODESK, AUTODESK MAYA (10th anniversary ed. 2009), available at <http://images.autodesk.com/adsk/files/maya2009.pdf>; Autodesk.com, Autodesk Maya—Customer Stories, <http://usa.autodesk.com/adsk/servlet/index?siteID=123112&id=7478647&linkID=7679643> (last visited May 3, 2009).

<sup>41</sup> See SolidWorks.com, MCAD 3D Design Software for Mechanical Engineers, <http://www.solidworks.com/sw/products/mcad-3D-design-software.htm> (last visited May 3, 2009); SolidWorks.com, SolidWorks Customer Success Stories and Testimonials, <http://www.solidworks.com/sw/successes/customer-success-stories.htm> (last visited May 3, 2009).

<sup>42</sup> See DANIEL L. SCHODEK, STRUCTURES 571–73 (4th ed. 2001). Finite Element Method (“FEM”) is the most common type of engineering simulation run with 3D models. *Id.* FEM allows engineers to simulate how their 3D models would perform if they were subjected to forces in the physical world. *Id.*

<sup>43</sup> See Autodesk.com, AutoCAD—What’s New, <http://usa.autodesk.com/adsk/servlet/index?siteID=123112&id=8446058> (last visited May 3, 2009) [hereinafter AutoCAD Features]; Autodesk.com, AutoCAD—Customer Stories, <http://usa.autodesk.com/adsk/servlet/index?siteID=123112&id=9851724&linkID=12404125> (last visited May 3, 2009). AutoCAD developed originally as a two dimensional CAD tool, but has expanded into the 3D realm. AutoCAD Features, *supra*. AutoCAD is a favorite of architects and engineers. *Id.*

<sup>44</sup> See Autodesk.com, Autodesk 3Ds Max—What’s New, <http://usa.autodesk.com/adsk/servlet/index?siteID=123112&id=7658360> (last visited May 3, 2009) [hereinafter 3Ds Max Highlights]; Autodesk.com, Autodesk 3Ds Max—Customer Showcase—Games, <http://usa.autodesk.com/adsk/servlet/item?siteID=123112&id=5666147&linkID=5572501> (last visited May 3, 2009). Autodesk 3Ds Max is the leading software package for creating videogames and is also used to made CGI for film and television. 3Ds Max Highlights, *supra*.

### *B. General Copyright Information*

Copyright protection is available for “original works of authorship fixed in any tangible medium of expression, now known or later developed.”<sup>45</sup> 3D models easily meet the fixation requirement because they are stored in computer memory.<sup>46</sup> Once the fixation requirement is met, the inquiry turns to the “original works of authorship” requirement.<sup>47</sup>

The Copyright Act does not define an “original work.”<sup>48</sup> However, courts have reasoned that “an author is ‘the beginner . . . or first mover of anything . . . [the] creator, [or] originator,’ it follows that a work is not the product of an author unless the work is original.”<sup>49</sup> Courts have further distinguished originality from the novelty requirement associated with patents.<sup>50</sup> “Originality in the copyright sense means only that the work owes its origin to the author, *i.e.*, is independently created, and not copied from other works.”<sup>51</sup> Even if a work is completely identical to a prior work, as long as it was not copied from that prior work, but is “rather a product of the independent efforts of its author,” it will pass the originality test and may qualify for copyright protection.<sup>52</sup>

The Copyright Act distinguishes between original works of authorship and what the Act calls “derivative works.”<sup>53</sup> Original works of authorship enjoy an extremely low standard of originality.<sup>54</sup> On the contrary, the standard of originality for

<sup>45</sup> 17 U.S.C. § 102(a) (2006).

<sup>46</sup> See *Advanced Computer Servs. of Mich., Inc. v. MAI Sys. Corp.*, 845 F. Supp. 356, 363 (E.D. Va. 1994). Data stored in random access memory (“RAM”) is sufficiently “fixed” under the Copyright Act, even though the data disappears when the computer is turned off. *Id.*

<sup>47</sup> See 1 NEVILLE B. NIMMER & DAVID NIMMER, *NIMMER ON COPYRIGHT* § 2.03 (2008) (discussing fixation as a constitutional requirement for copyright protection).

<sup>48</sup> See *id.* § 2.01. “The phrase ‘original works of authorship,’ which is purposely left undefined, is intended to incorporate without change the standard of originality established by the courts under the present [1909] copyright statute.” H.R. REP. NO. 94-1476, at 51 (1976). However, the 1909 act did not provide a definition of originality. NIMMER, *supra* note 47, § 2.01. In fact, it did not even expressly require that a work be “original” to qualify for protection. *Id.* Courts inferred the requirement, finding that only “authors” could claim copyright protection. *Id.*

<sup>49</sup> NIMMER, *supra* note 47, § 2.01.

<sup>50</sup> *Id.* “The originality necessary to support a copyright merely calls for independent creation, not novelty. Thus, a work will not be denied copyright protection simply because it is substantially similar to a work previously produced by others, and hence, is not novel.” *Id.*

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

<sup>52</sup> *Id.*; see *Feist Publ’ns, Inc., v. Rural Tel. Serv. Co.*, 499 U.S. 340, 345 (1991); *Roth Greeting Cards v. United Card Co.*, 429 F.2d 1106, 1109 (9th Cir. 1970); *Lin-Brook Builders Hardware v. Gertler*, 352 F.2d 298, 301 (9th Cir. 1965); *Wihtol v. Wells*, 231 F.2d 550, 553 (7th Cir. 1956); *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*, 191 F.2d 99, 102–03 (2d Cir. 1951).

<sup>53</sup> 17 U.S.C. § 101 (2006) (“A ‘derivative work’ is a work based upon one or more preexisting works . . . in which a work may be recast, transformed, or adapted. A work consisting of . . . other modifications which, as a whole, represent an original work of authorship, is a ‘derivative work.’”)

<sup>54</sup> See *Feist*, 499 U.S. at 345.

Original, as the term is used in copyright, means only that the work was independently created by the author (as opposed to copied from other works), and that it possesses at least some minimal degree of creativity. To be sure, the requisite level of creativity is extremely low; even a slight amount will suffice. The vast majority of works make the grade quite easily, as they possess some creative spark, “no matter how crude, humble or obvious” it might be.

*Id.*



derivative works is much higher.<sup>55</sup> Rather than the very low quantum of originality necessary for an original work, a derivative work must have “substantial variation” from the original to qualify for protection.<sup>56</sup> Courts have held that merely changing the medium in which an item is fixed, and “mere sweat of the brow” does not satisfy the substantial variation requirement.<sup>57</sup>

“Ordinarily in derivative works cases the underlying work is copyrightable, and courts implicitly recognize copyrightability as a prerequisite to invocation of a derivative rights claim.”<sup>58</sup> Courts have further recognized that copyright protection extends to original depictions of commercial products.<sup>59</sup> If the original work is a utilitarian object, or does not otherwise qualify for copyright protection, the derivative-works standard does not apply.<sup>60</sup>

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<sup>55</sup> See *ATC Distribution Group, Inc. v. Whatever It Takes Transmissions & Parts, Inc.*, 402 F.3d 700, 712 (6th Cir. 2005) (holding illustrations of parts copied from photographs in a catalog were not sufficiently original because the illustrations were intended to be as accurate as possible in reproducing the parts shown in photographs); *Norma Ribbon & Trimming, Inc. v. Little*, 51 F.3d 45, 47 (5th Cir. 1995) (permitting “physical” skill alone to constitute the originality required for a derivative work would, in effect, give the derivative work copyright owner a *de facto* copyright in the underlying work); *Gracen v. Bradford Exch.*, 698 F.2d 300, 302 (7th Cir. 1983); *Durham Indus., Inc., v. Tomy Corp.*, 630 F.2d 905, 910 (2d Cir. 1980); *Past Pluto Prods. Corp. v. Dana*, 627 F. Supp. 1435, 1441 (S.D.N.Y. 1986).

<sup>56</sup> See *L. Batlin & Son, Inc. v. Snyder*, 536 F.2d 486, 491 (2d Cir. 1976) (requiring an original contribution not present in the underlying work and more than mere copying from one medium to another); *ATC*, 402 F.3d at 712 (distinguishing “substantial variation” from “trivial variation” such as translating an object to a different medium).

<sup>57</sup> See *ATC*, 402 F.3d at 712; *NIMMER*, *supra* note 47, § 3.03 (“[T]he ‘physical skill’ and ‘special training’ required to convert a cast iron ‘Uncle Sam’ bank into plastic form [not sufficiently original] to support copyright; instead, to warrant protection, there must be ‘some substantial variation, not merely a trivial variation such as might occur in the translation to a different medium.’”) (quoting *L. Batlin & Son*, 536 F.2d at 491); *Bridgeman Art Library, Ltd. v. Corel Corp.*, 36 F. Supp. 2d 191, 199 (S.D.N.Y. 1999) (noting that “a copy in a new medium is copyrightable only where, as often but not always the case, the copier makes some identifiable original contribution”).

<sup>58</sup> *ETS-Hoskin v. Skyy Spirits, Inc.*, 225 F.3d 1068, 1078 (9th Cir. 2000); see, e.g., *Stewart v. Abend*, 495 U.S. 207 (1990) (discussing a motion picture based upon a magazine story); *Pickett v. Prince*, 207 F.3d 402 (7th Cir. 2000) (discussing a guitar based upon the copyrighted symbol associated with the rock star Prince); *Micro Star v. Formgen Inc.*, 154 F.3d 1107 (9th Cir. 1998) (discussing video game software based upon other video game software); *Entm’t Research Group, Inc. v. Genesis Creative Group, Inc.*, 122 F.3d 1211 (9th Cir. 1997) (discussing costumes based upon cartoon characters); *Russell v. Price*, 448 F. Supp. 303 (C.D. Cal. 1977) (discussing a movie based upon the play “Pygmalion”).

<sup>59</sup> See *ETS-Hoskin*, 225 F.3d at 1073; see also *SHL Imaging, Inc. v. Artisan House, Inc.*, 117 F. Supp. 2d 301 (S.D.N.Y. 2000) (photographs of defendant’s picture frames protected by copyright). “[P]roduct shots” of defendant’s vodka bottle received copyright protection because “[t]he essence of copyrightability is originality of artistic, creative expression.” *ETS-Hoskin*, 225 F.3d at 1073. Because the photographs were protected by copyright, defendant did not have the right to copy or use said photographs without permission. *Id.*

<sup>60</sup> See 17 U.S.C. § 101 (2006) (defining “utilitarian objects” as objects “having an intrinsic utilitarian function that is not merely to portray the appearance of the article or to convey information.”); *ETS-Hoskin*, 225 F.3d at 1078 (holding that a vodka bottle was not a “preexisting work” under the Copyright Act because it was utilitarian, thus, a photograph of the object was not a “derivative work” subject to the higher standard of originality).

Copyright protection automatically attaches at the moment a work is “created.”<sup>61</sup> A work is “created” when it is fixed in a “tangible medium” for the first time.<sup>62</sup> In order for a party to bring an infringement action, however, the party need only have applied for a certificate.<sup>63</sup> A registration certificate creates a rebuttable presumption that the copyright is valid.<sup>64</sup> The burden of overcoming this presumption lies with the defendant.<sup>65</sup>

If a work is protected by a valid copyright, courts will often consider the merger doctrine to determine whether the other party infringed on the copyright.<sup>66</sup> The merger doctrine says that when the idea and the expression cannot be separated, copyright protection will be denied because it would effectively preclude others from using the same idea.<sup>67</sup> The merger doctrine analysis does not analyze the copyrightability of the original work.<sup>68</sup>

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<sup>61</sup> See *Montgomery v. Noga*, 168 F.3d 1282, 1288 (11th Cir. 1999) (“[C]opyright automatically inheres in the work at the moment it is created without regard to whether it is ever registered.”); *Well-Made Toy Mfg. Corp. v. Goffa Int’l Corp.*, 210 F. Supp. 2d 147, 157 (E.D.N.Y. 2002), *aff’d*, 354 F.3d 112 (2d Cir. 2003) (“Registration with the United States Copyright Office is not required to obtain copyright protection.”); *Chere Amie, Inc. v. Windstar Apparel, Corp.*, 191 F. Supp. 2d 343, 350 (S.D.N.Y. 2001); *Don Post Studios, Inc. v. Cinema Secrets, Inc.*, 124 F. Supp. 2d 311, 313 n.3 (E.D. Pa. 2000).

<sup>62</sup> 17 U.S.C. § 101; see *Arthur Rutenberg Homes, Inc. v. Drew Homes, Inc.*, 29 F.3d 1529, 1530 (11th Cir. 1994); *Compaq Computer Corp. v. Ergonome Inc.*, 210 F. Supp. 2d 839, 842 (S.D. Tex. 2001).

<sup>63</sup> 17 U.S.C. § 411(a) (“[N]o action for infringement of the copyright in any United States work shall be instituted until preregistration or registration of the copyright claim has been made [with the Copyright Office].”); see also 2 NIMMER, *supra* note 47, § 7.16 (“[A]ction for copyright infringement’ extends to all copyright infringement actions, including counterclaims, even if the only relief sought is an injunction. . . . Once registration takes place, a subsequent infringement action may address infringing acts that occurred either after or before that registration.”).

<sup>64</sup> 17 U.S.C. § 410(c); see also *Durham Indus., Inc. v. Tomy Corp.*, 630 F.2d 905, 908 (2d Cir. 1980) (“[C]ertificate of registration creates no irrebuttable presumption of copyright validity. Where other evidence in the record casts doubt on the question, validity will not be assumed.”).

<sup>65</sup> See *M. Kramer Mfg. Co. v. Andrews*, 783 F.2d 421, 434 (4th Cir. 1986) (“The defendants, in disputing the validity of such copyright on those grounds, have the burden of overcoming the presumption arising out of the granting of the copyright by the Copyright Office.”); *Hasbro Bradley, Inc. v. Sparkle Toys, Inc.*, 780 F.2d 189, 192 (2d Cir. 1985); *Eckes v. Card Prices Update*, 736 F.2d 859, 861 (2d Cir. 1984).

<sup>66</sup> *Todd v. Mont. Silversmiths, Inc.*, 379 F. Supp. 2d 1110, 1112 (D. Colo. 2005) (“[C]opyright protection only extends to expression, never the underlying idea.”).

<sup>67</sup> *Id.*; see *Kregos v. Associated Press*, 937 F.2d 700, 705 (2d Cir. 1991); *Data East USA, Inc. v. Epyx, Inc.*, 862 F.2d 204, 207–08 (9th Cir. 1988) (holding defendant may use ideas contained in copyrightable work, as long as protected expression is not taken); *Whelan Assocs., Inc. v. Jaslow Dental Lab., Inc.*, 797 F.2d 1222, 1236 (3d Cir. 1986) (noting that a utilitarian work’s idea is its purpose or function, and everything not necessary to that purpose or function is part of the expression for purposes of copyright); *Toro Co. v. R & R Prods. Co.*, 787 F.2d 1208, 1211–12 (8th Cir. 1986); *Mattel, Inc. v. Azrak-Hamway Int’l, Inc.*, 724 F.2d 357, 360 (2d Cir. 1983); *Reyher v. Children’s Television Workshop*, 533 F.2d 87, 90–91 (2d Cir. 1976); *Herbert Rosenthal Jewelry Corp. v. Kalpakian*, 446 F.2d 738, 740 (9th Cir. 1971); *Peter Pan Fabrics, Inc. v. Martin Weiner Corp.*, 274 F.2d 487, 489 (2d Cir. 1960).

<sup>68</sup> See *N.Y. Mercantile Exch., Inc. v. IntercontinentalExchange, Inc.*, 497 F.3d 109, 116 n.8 (2d Cir. 2007); *CCC Info. Servs., Inc. v. Maclean Hunter Mkt. Reports, Inc.*, 44 F.3d 61, 72 n.26 (2d Cir. 1994).

*C. The Issue in Meshwerks Was Whether Meshwerks' 3D Computer Models  
Were Sufficiently Original to be Copyrightable*

The question in the *Meshwerks* case, for copyright purposes, was whether 3D computer models qualify as original works of authorship.<sup>69</sup> Digital works are a relatively new art form and are not listed explicitly as a protected form of expression in the copyright act.<sup>70</sup> As long as a work is “fixed in any tangible medium of expression, now known or later developed,” however, a work of authorship may be protected by copyright.<sup>71</sup> The court in *Meshwerks* relied on the development of photography as an analog to the development of 3D modeling.<sup>72</sup>

Photography was initially criticized for lacking artistic merit by some, who debated whether a camera could “do anything more than merely record the physical world.”<sup>73</sup> It was not until *Burrow-Giles Lithographic Co. v. Sarony*<sup>74</sup> that the United States Supreme Court provided guidance on the question of copyright protection relating to photography.<sup>75</sup> The Court held that photographs were copyrightable, to the extent of the photograph’s original depiction of the subject.<sup>76</sup> The Court distinguished between the subject of a photograph, which, in the case of a person is not copyrightable, and the creative decisions the photographer makes, such as choosing the lighting, posing, and costume of the subject.<sup>77</sup> The Court granted

<sup>69</sup> See *Meshwerks, Inc. v. Toyota Motor Sales U.S.A., Inc.*, 528 F.3d 1258, 1263 (10th Cir. 2008), *cert. denied*, 129 S. Ct. 1006 (2009).

<sup>70</sup> 17 U.S.C. § 102(a) (2008). The copyright act explicitly protects: “(1) literary works; (2) musical works, including any accompanying words; (3) dramatic works, including any accompanying music; (4) pantomimes and choreographic works; (5) pictorial, graphic, and sculptural works; (6) motion pictures and other audiovisual works; (7) sounds recordings; and (8) architectural works.” *Id.*

<sup>71</sup> *Id.*; see *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 58 (1884). The court in *Burrow-Giles* found that photographs were excluded from the 1802 Copyright Act because at the time the Act was passed, photography did not exist. *Id.* But, this did not preclude photographs from qualifying for copyright protection as long as “they are the representatives of original intellectual conceptions of the author.” *Id.*

<sup>72</sup> See *Meshwerks*, 528 F.3d at 1263 (“While there is little authority explaining how . . . principles of copyright law apply to the relatively new digital medium before us, some lessons may be discerned from how the law coped . . . with a previous revolution in technology: photography.”).

<sup>73</sup> *Id.*; see *SHL Imaging, Inc. v. Artisan House, Inc.*, 117 F. Supp. 2d 301, 306–09 (S.D.N.Y. 2000); MARY WARNER MARIEN, *PHOTOGRAPHY AND ITS CRITICS: A CULTURAL HISTORY, 1839–1900* at 39–40, 57–61 (1997). During the early development of photography, critics were unsure how to classify photographs. *Id.* Many were hesitant to consider photographs art, as they saw the photographic process as a scientific, rather than artistic one. *Id.* One vocal critic, John Ruskin, stated, “a photograph is *not* a work of art, though it requires certain delicate manipulations of paper and acid and subtle calculations of time, in order to bring out a good result.” *Id.* at 59. Ruskin went on to say that a work of art “expresses the personality, the activity, and living perception of a good and great human soul.” *Id.*

<sup>74</sup> 111 U.S. 53 (1884).

<sup>75</sup> *Id.* In *Burrow-Giles*, Burrow-Giles, a lithography firm, copied a photographer’s photograph of Oscar Wilde and sold 85,000 prints without the photographer’s permission. *Id.* at 55. Burrow-Giles defended on the ground that the photograph was a “mere mechanical reproduction of the physical features” of Wilde and thus not copyrightable. *Id.* at 59.

<sup>76</sup> See *id.* at 59. While Wilde himself is not copyrightable, a photograph of him is copyrightable to the extent of the photographer’s original depiction of him. *Id.* at 60.

<sup>77</sup> *Id.* at 60.

copyright protection only to such *creative* elements of photographs.<sup>78</sup> The decision in *Burrow-Giles* clarified the distinction between facts and expression, forming the basis for the decision in *Feist Publications, Inc., v. Rural Telephone Service Co.*,<sup>79</sup> where the Court addressed the copyrightability of compilations of facts.<sup>80</sup>

In *Feist*, Feist exerted considerable effort, intending to create a unique and protectable phonebook.<sup>81</sup> The Court in *Feist* held that “only the compiler’s selection and arrangement [of facts] may be protected; the raw facts [themselves] may be copied at will.”<sup>82</sup> The Court reasoned that although Feist labored arduously in compiling the names and numbers, the Copyright Act protects only originality, not effort or “sweat of the brow.”<sup>83</sup>

In assessing originality, the court in *Meshwerks* also examined the intent of the parties to determine whether Meshwerks’ 3D models contained any creative spark.<sup>84</sup> The court considered the fact that Meshwerks was hired as a sub-contractor to create the 3D models for Toyota.<sup>85</sup> The court ultimately concluded that Meshwerks’ intent was to “create base-layer digital models to which the original and creative elements viewers would see in actual advertisements could be added by others in subsequent processes.”<sup>86</sup>

The court in *Meshwerks* held that Meshwerks’ 3D computer models of Toyota vehicles were not sufficiently original to garner copyright protection because they lacked the “individualizing features” traditionally associated with photographs.<sup>87</sup>

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<sup>78</sup> *Id.*

<sup>79</sup> 499 U.S. 340 (1991).

<sup>80</sup> *Id.* In *Feist*, a telephone utility company brought infringement action against Feist, a publisher of phone books. *Id.* at 343. The utility claimed that Feist copied listings from its white pages telephone directory. *Id.* The Supreme Court held that the names, towns, and telephone numbers listed in the utility’s white pages were uncopyrightable facts, and that Feist did not select or arrange them in an original way to meet the requirements for copyright protection. *Id.* at 364.

<sup>81</sup> *Id.* at 343–44.

<sup>82</sup> *Id.* at 350.

<sup>83</sup> *Id.* at 360; see also *Key Publ’ns, Inc. v. Chinatown Today Publ’g Enters.*, 945 F.2d 509, 512 (2d Cir. 1991) (holding that selection, coordination, and arrangement of listing in yellow page directory was sufficiently original to be copyrightable); *Kregos v. Associated Press*, 937 F.2d 700, 704 (2d Cir. 1991); *Eckes v. Card Prices Update*, 736 F.2d 859, 862 (2d Cir. 1984) (holding that subjective selection and arrangement of information can merit protection).

<sup>84</sup> See *Meshwerks, Inc. v. Toyota Motor Sales U.S.A., Inc.*, 528 F.3d 1258, 1264–68 (10th Cir. 2008), *cert. denied*, 129 S. Ct. 1006 (2009) ([W]hen determining whether Meshwerks’ models were original works of authorship “we rely on (1) an objective assessment of the particular models before us and (2) the parties’ purpose in creating them. . . . authorial intent sometimes can shed light on the question of whether a particular work qualifies as an independent creation or only a copy.”).

<sup>85</sup> *Id.* at 1269 (“The purchase order . . . asked Meshwerks to ‘digitize and model’ Toyota’s vehicles . . . digitization and modeling [is] an attempt accurately to depict real-world, three-dimensional objects as digital images viewable on a computer screen.”).

<sup>86</sup> *Id.*; see *ATC Distribution Group, Inc. v. Whatever It Takes Transmissions & Parts, Inc.*, 402 F.3d 700, 712 (6th Cir. 2005) (“The illustrations were intended to be as accurate as possible in reproducing the parts shown in the photographs on which they were based, a form of slavish copying that is the antithesis of originality.”).

<sup>87</sup> See *Meshwerks*, 528 F.3d at 1265, 1269.

## II. ANALYSIS

The court in *Meshwerks* evaluated the originality of 3D computer models by comparing them to photographs.<sup>88</sup> In doing this, it failed to properly recognize the differences between the final two-dimensional outputs of 3D models and the 3D models themselves.<sup>89</sup> As a result, the court improperly held that wireframe models of the type in *Meshwerks* were not sufficiently original to garner copyright protection.<sup>90</sup>

This section first examines the standard of originality used by the court, and then considers whether the court was correct to compare the final output of the 3D computer modeling process to photographs. Next, this section compares the function of Meshwerks' 3D wireframe models to taxidermy mounts, specifically those at issue in *Hart v. Dan Chase Taxidermy Supply Co.*<sup>91</sup>

*A. The Standard of Originality for Photographs As Applied in Meshwerks Does Not Adequately Describe 3D Models*

The court in *Meshwerks* applied the standard of originality associated with photography to Meshwerks' 3D computer models.<sup>92</sup> A 3D computer model may be displayed in two ways, as a wireframe or as a solid.<sup>93</sup> The court in *Meshwerks* held that Meshwerks' wireframe models were insufficiently original to warrant copyright protection because they did not possess qualities such as, lighting, shading, and posing that courts have traditionally considered as the copyrightable elements of photographs.<sup>94</sup> The court, however, failed to recognize that wireframe models, like the ones at issue in *Meshwerks*, *cannot* possess the qualities the court deemed necessary to garner copyright protection.<sup>95</sup>

Wireframe models are essentially wire sculptures in a 3D virtual world.<sup>96</sup> Unlike "real" wire sculptures, 3D wireframes are merely a collection of points that are connected by digital lines.<sup>97</sup> The lines that connect the vertices in a wireframe do

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<sup>88</sup> *Id.* at 1263.

<sup>89</sup> *See id.* at 1270 (stating that the only the same aspects that are copyrightable in photographs such as "unique shading, lighting, angle, background scene, or other choices" would be copyrightable features of 3D models).

<sup>90</sup> *Id.* at 1269.

<sup>91</sup> 884 F. Supp. 71 (N.D.N.Y. 1995).

<sup>92</sup> *See Meshwerks*, 528 F.3d at 1265.

<sup>93</sup> *See WATKINS*, *supra* note 19, at 25–27.

<sup>94</sup> *See Meshwerks*, 528 F.3d at 1269; *see also* *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 60 (1884) (finding that the copyrightable elements of photographs were limited to posing, costume selection, set arrangement, framing, lighting, and shading).

<sup>95</sup> *See WATKINS*, *supra* note 19, at 26.

<sup>96</sup> *See WEISHAR*, *supra* note 8, at 16. "All models must be 'built' from scratch as 3D forms that can be seen from different angles within the virtual space of the computer. The modelers work on what appear to be wire sculptures inside the computer." *Id.*

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

Inside the computer, points in space are mapped along three intersecting perpendicular axes. The software gives a numerical value for height . . . width . . . and depth. The artist uses these X, Y, and Z coordinates to locate points on the surface of an object. The points in space describe the general shape of the object,

not have any “weight,” meaning they cannot be shaded and do not cast shadows from virtual light sources.<sup>98</sup> During the modeling phase, and in the form that Meshwerks sought copyright protection, 3D wireframe models exist only in a computer-generated environment.<sup>99</sup> Unlike a photograph, which captures a moment in time, the 3D models Meshwerks sought to protect did not suffer the same constraint.<sup>100</sup> It is not until the models are rendered<sup>101</sup> that they acquire properties similar to the protectable aspects of photographs.<sup>102</sup>

Central to the court’s reasoning for using the photography originality standard was the idea that a “photographer . . . cannot claim to have originated the matter depicted therein . . . [and] is entitled to copyright solely based on lighting, angle, perspective, and the other ingredients that traditionally apply to that art-form.”<sup>103</sup>

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and the software draws lines to connect them. The intersecting lines will serve as ribs for the surface of the model . . . .

*Id.*

<sup>98</sup> See GIAMBRUNO, *supra* note 15, at 73.

<sup>99</sup> Appellant’s Reply Brief at 7, *Meshwerks, Inc. v. Toyota Motor Sales U.S.A., Inc.*, 528 F.3d 1258 (10th Cir. 2008) (No. 06-4222), *cert. denied*, 129 S. Ct. 1006 (2009).

The Toyota Defendants also assert . . . that the 3-D Digital Models can be adequately examined simply by looking at a few computer screen print outs. Contrary to that assertion, screen prints of the 3-D Digital Models do not accurately reflect the models themselves, which are embedded in interactive computer software, and designed to be viewed in that fashion. In fact, the 3-D Digital Models appear much differently when being run through the software on a computer screen or other digital projection, and can be moved in different ways, viewed from different angles, and manipulated by the viewer to explore interior and detail areas. To that same end, the 3-D Digital Models were registered with the Copyright Office as lines of digital code, not as visual representations of those objects.

*Id.* (citations omitted).

<sup>100</sup> Appellant’s Opening Brief at 3–4, *Meshwerks*, 528 F.3d 1258 (No. 06-4222).

[T]he complete 3-D Digital Models cannot be printed out on paper except as the computer code reflecting 1) the Maya computer software file format, 2) the computer code evidencing the use of Meshwerks’ special modeling tools, and 3) the embedded digital information reflecting the models themselves. In the alternative, screen prints from parts of the 3-D Digital Models can be generated as paper images, although they do not accurately represent the complete models.

*Id.*

<sup>101</sup> See VALLIERE RICHARD AUZENNE, *THE VISUALIZATION QUEST: A HISTORY OF COMPUTER ANIMATION* 16 (1994) (“Image rendering is the ‘process of using the computer model of an object or scene to create its picture.’ ‘It is the frame-by-frame realization of the data base into two dimensions,’ and is achieved by the incorporation of shadows, shading, and textures.”); WATKINS, *supra* note 19, at 25 (“Rendering refers to the way the computer draws or paints on the projection plane (your computer screen) the information it has. 3D is the process of creating the world and then telling the computer to paint it for you and how to paint it.”); WEISHAR, *supra* note 8, at 74 (“Rendering is [a] complex process whereby the virtual 3D scene, bathed in virtual light, is recorded by a virtual camera, and turned into a 2D image.”).

<sup>102</sup> See WEISHAR, *supra* note 8, at 74–79. See generally, JEREMY BIRN, *DIGITAL LIGHTING AND RENDERING* (2d ed. 2006).

<sup>103</sup> *Meshwerks*, 528 F.3d at 1265.

It seems to us that exactly the same holds true with the digital medium now before us: the facts in this case unambiguously show that Meshwerks did not make any decisions regarding lighting, shading, the background in front of which a vehicle would be posed, the angle at which to pose it, or the like—in short, its models reflect none of the decisions that can make depictions of things or facts in

The court improperly applied this test because, unlike a photograph, the Toyota cars depicted in Meshwerks' 3D computer models did originate with Meshwerks and cannot possess the "other ingredients that traditionally apply to [photography]." <sup>104</sup>

Although Meshwerks' wireframes closely resemble Toyota vehicles, the wireframes themselves originate with Meshwerks. <sup>105</sup> Meshwerks' process for creating wireframe models is an involved one. <sup>106</sup> Digital sculptors gather information wherever it is available and replicate, as best they can, the item being modeled. <sup>107</sup> Unlike photographs, where the camera lens captures exactly what is in front of it, wireframes do not exactly capture the object being replicated. <sup>108</sup> Meshwerks' wireframes originated with Meshwerks because the models are not exact copies of Toyota vehicles but rather are the modeler's interpretation of the cars such that they would appear aesthetically pleasing when rendered and used online or on television. <sup>109</sup>

Applying the *Meshwerks* court's reasoning would deny copyright protection to any wireframe model because wireframes cannot be shaded or posed. <sup>110</sup> The court, however, explicitly said it could envision 3D computer models, like those in *Meshwerks*, being copyrightable. <sup>111</sup> The court was presumably referring to renderings of 3D computer models because those are the only 3D computer models that possess the copyrightable elements of photographs. <sup>112</sup> The court failed to recognize that a wireframe model is not fettered by the constraints of photography, which captures a moment in time, allowing the subject to be posed or frozen in a

the world, whether Oscar Wilde or a Toyota Camry, new expressions subject to copyright protection.

*Id.*

<sup>104</sup> *Id.*; see also WATKINS, *supra* note 19, at 26–27 (noting that wireframes merely define edges of polygons and cannot be shaded).

The 3-D Digital Models reflect the graphic sculptor's efforts to create enticing and interactive three dimensional depictions of complicated real-world objects on a two dimensional screen. . . . Moreover, many of the detail and interior areas must be rendered completely from scratch, as they are not captured in the digital measurement process.

Appellant's Opening Brief at 14, *Meshwerks*, 528 F.3d 1258 (No. 06-4222).

<sup>105</sup> See Appellant's Opening Brief at 13, *Meshwerks*, 528 F.3d 1258 (No. 06-4222).

<sup>106</sup> *Id.* at 3.

Meshwerks' digital sculptors used various tools, including measurements of the actual vehicle, photographs of the vehicle and its detail areas, engineering drawings, computer hardware, and general modeling software programs such as Maya 5.0, as well as proprietary digital modeling tools developed by Meshwerks. Meshwerks' digital sculptors use these tools much like a traditional painter or sculptor might use a reference photograph or measurements of the object being depicted, and a pencil or chisel to create the artist's depiction of that object.

*Id.*

<sup>107</sup> *Id.* at 3–4.

<sup>108</sup> *Id.* Modelers used precise digital measurements taken from the Toyota being replicated, but modified over 90% of the data points through the modeling process to "achieve the desired result." *Id.*

<sup>109</sup> *Id.*

<sup>110</sup> See WATKINS, *supra* note 19, at 56; GIAMBRUNO, *supra* note 15, at 62.

<sup>111</sup> See *Meshwerks*, 528 F.3d at 1269. "Digital modeling can be, surely is being, and no doubt increasingly will be used to create copyrightable expressions." *Id.*

<sup>112</sup> See AUZENNE, *supra* note 101, at 16; WATKINS, *supra* note 19, at 25; WEISHAR, *supra* note 8, at 74.

certain perspective.<sup>113</sup> A 3D computer model may be shaded, posed, lit, or put in a certain perspective during the rendering process where it is converted into a two-dimensional image.<sup>114</sup> However, before a 3D model is rendered, a modeler applies a surface texture, which creates a virtual “skin” over the “skeletal” wireframe much like a taxidermist lays an animal skin over a form or a paper maché artist lays paper maché over a chicken wire form.<sup>115</sup> It is not until the rendering process that 3D computer models share some of the characteristics traditionally associated with photographs.<sup>116</sup> The court in *Meshwerks* erred in applying the originality test for photographs to Meshwerks’ 3D models because the 3D models do not possess any of the “ingredients” that are copyrightable in photographs.

*B. The Court in Meshwerks Should Have Treated 3D Computer Models Like Sculptures Rather Than Photographs*

The court in *Meshwerks* ignored the fact that 3D computer models, specifically wireframes, are more analogous to sculptures than photographs.<sup>117</sup> Much like photographs depict real world objects on a piece of film, 3D computer models depict such objects on a two-dimensional plane.<sup>118</sup>

Photographers capture preexisting real-world objects in their photographs.<sup>119</sup> The photographer can only affect the appearance of such objects by manipulating factors such as lighting, shutter speed, framing, etc.<sup>120</sup> He may construct sets or modify objects in a scene, but the copyrightable expression in his photograph lies not in the objects themselves, but in the way they are captured.<sup>121</sup>

<sup>113</sup> See *Meshwerks*, 528 F.3d at 1263–65.

<sup>114</sup> See AUZENNE, *supra* note 101, at 16; WATKINS, *supra* note 19, at 25; WEISHAR, *supra* note 8, at 74.

<sup>115</sup> See WEISHAR, *supra* note 8, at 44–45. “Every surface of every visible object in CGI has to have a texture. . . . Image mapping is often used for photorealistic animations. The artist can use a photograph of a real wall and place it on simple geometry rather than recreating the complex texture of a wall in 3D.” *Id.* Lighting and shading in CGI is provided by virtual light sources created in the digital realm. *Id.* at 68. The animator may place lights wherever he/she wants to achieve the desired effect. *Id.*

<sup>116</sup> *Id.* at 74. The rendering process captures the 3D model with a virtual camera to produce a 2D image like a photograph. *Id.* Rendering is like taking a virtual photograph of the virtual 3D world where the models exist. *Id.*

<sup>117</sup> *Id.*

<sup>118</sup> *Id.*

<sup>119</sup> MICHAEL LANGFORD, BASIC PHOTOGRAPHY 3 (6th ed. 1997). “[P]hotography . . . is a quick, convenient and seemingly truthful way of *recording* something . . . . Photography is evidence, identification, a kind of diagram of a happening.” *Id.*

<sup>120</sup> *Id.*; see TERENCE WRIGHT, THE PHOTOGRAPHY HANDBOOK 7 (1999); JOHN HEDGECOE, THE BOOK OF PHOTOGRAPHY 7–8 (2d ed. 2005). The fundamental elements of a photograph are composition, lighting, form, texture, tone, and color. WRIGHT, *supra*, at 7. The photographer may manipulate these fundamental elements to transform the scene into a permanent image. *Id.* The photographer can manipulate light to affect form, color, texture, shape, and pattern. *Id.* Composing a photograph “involves arranging the subject elements to achieve the desired effect.” HEDGECOE, *supra*, at 68. “The difference between an outstanding photograph and an ordinary one can often be the result of a minor adjustment in the angle of a light or a slight shift in viewpoint that totally changes the emphasis of a composition.” *Id.* at 71.

<sup>121</sup> See *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 60 (1884).



Sculptors, on the other hand, work with raw materials to build an object from nothing.<sup>122</sup> Although the ultimate result of a 3D computer model appears much like a photograph, it is created using tools familiar to a sculptor.<sup>123</sup> In the same way that sculptors use pieces of wood or metal, 3D modelers create and manipulate vectors and spline curves in a virtual 3D environment to build wireframes from scratch.<sup>124</sup> With enough time and effort, a 3D modeler can model anything he or she imagines.<sup>125</sup>

Even beyond the basic components of vectors and spline curves, advanced 3D modeling software allows modelers to perform operations such as “extrude,” “fillet,”

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[I]n regard to the photograph in question, that it is a ‘useful, new, harmonious, characteristic, and graceful picture, and that plaintiff made the same . . . entirely from his own original mental conception, to which he gave visible form by posing the said Oscar Wilde in front of the camera, selecting and arranging the costume, draperies, and other various accessories in said photograph, arranging the subject so as to present graceful outlines, arranging and disposing the light and shade, suggesting and evoking the desired expression, and from such disposition, arrangement, or representation, made entirely by plaintiff, he produced the picture in suit.’

These findings, we think, show this photograph to be an original work of art, the product of plaintiff’s intellectual invention, of which plaintiff is the author, and of a class of inventions for which the Constitution intended that Congress should secure to him the exclusive right to use, publish and sell . . . .

*Id.*

<sup>122</sup> See KARIN HESSENBERG, *SCULPTING BASICS: EVERYTHING YOU NEED TO KNOW TO CREATE THREE-DIMENSIONAL ARTWORKS* 6 (2005); JANE HILL, *SCULPTURE* 1 (1998); JOHN MILLS, *THE ENCYCLOPEDIA OF SCULPTURE TECHNIQUES* 192–94 (1990); OLIVER ANDREWS, *LIVING MATERIALS: A SCULPTORS HANDBOOK* 1 (1983); DONALD J. IRVING, *SCULPTURE: MATERIAL AND PROCESS* 10 (1970). “Humans have been painting and sculpting since prehistoric times. Where painting is a two-dimensional art form, sculpture is three-dimensional and can be viewed from all around . . . .” HESSENBERG, *supra*, at 6. “Sculpture is an art form that traditionally stands in space. It may have been modeled, carved or constructed.” *Id.* The three basic methods of sculpture are modeling, carving, and construction. HILL, *supra*, at 1–2. A fourth important type of sculpture is casting. *Id.* at 2. Modeling is a process where “form is built up out of malleable material such as clay or wax.” *Id.* at 1. Carving “involves cutting away or subtracting material; this technique is generally associated with stone, wood or bone, but many other materials can be carved: leather-hard clay, plaster, polystyrene or building blocks.” *Id.* Construction “means building sculpture out of ready-made or pre-formed parts. Constructions can be made from individual materials such as wood, metal, plastics and ‘found objects’, or combinations of these.” *Id.*

<sup>123</sup> See GIAMBRUNO, *supra* note 15, at 101–07, 115–18, 152–54 (describing 3D modeling functions such as “lathing,” “sweeping,” “skinning,” “bend,” and “radius edges and bevels”). See generally SCOTT SPENCER, *ZBRUSH CHARACTER CREATION: ADVANCED DIGITAL SCULPTING* (2008).

<sup>124</sup> See WATKINS, *supra* note 19, at 22–23. The virtual world within the computer screen appears three-dimensional through the use of perspective. *Id.*

The basis of perspective is that the surface of a painting or drawing acts as an invisible plane that sits perpendicular to the viewer, called the *projection plane*. The viewer stands at a point referred to as the *viewpoint*. As the viewer looks through the projection plane, he sees a horizon usually depicted by a straight line, which includes a vanishing point. The vanishing point is the point at which all parallel lines also parallel to the viewer converge. As perspective advanced, artists realized that lines not parallel to the viewer had their own vanishing points, some of which were out of the projection plane.

*Id.*

<sup>125</sup> *Id.*

and “emboss.”<sup>126</sup> Meshwerks’ 3D models are more like sculptures than photographs because the modelers create the 3D models from virtual raw materials rather than posing existing objects in a scene.

### *C. Meshwerks Models are Similar in Function to Taxidermy Mounts*

Courts have repeatedly awarded copyright protection to taxidermy mounts and animal mannequins.<sup>127</sup> The court in *Hart v. Dan Chase Taxidermy Supply Co.*,<sup>128</sup> for example, provided a framework for determining the copyrightability of gamehead mounts that can be applied to the 3D models in *Meshwerks*.<sup>129</sup> In *Hart*, the plaintiffs and defendants produced and sold plastic animal mannequins used by taxidermists to mount animal skins.<sup>130</sup> Like the models in *Meshwerks*, the taxidermy mounts in *Hart* did not fit “neatly into any specific definition set forth in the Copyright Act.”<sup>131</sup> The court in *Hart* balanced the fact that on one hand, the mounts “serve to portray the appearance of the animal,” but on the other hand, “serve to aid the skin mounting process.”<sup>132</sup>

The rationale behind awarding copyright protection to taxidermy mounts is that even though they exist to mount animal skins, they “reflect artistic expression uninhibited by functional considerations.”<sup>133</sup> Taxidermy gamehead mounts provide structure beneath animal skins to match “the size, pose, and anatomical characteristics of the specimen” being mounted.<sup>134</sup> Each species of game requires different mannequins because each species exhibits unique anatomical characteristics.<sup>135</sup>

Central to the court’s holding was the testimony of the plaintiffs who testified that taxidermists will “often forsake strict anatomical accuracy [in a mount] to

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<sup>126</sup> *Id.*; see SolidWorks Mechanical CAD Capabilities, <http://www.solidworks.com/sw/products/mcad-3D-design-software.htm> (last visited May 2, 2009); SolidEdge Demos, [http://www.plm.automation.siemens.com/en\\_us/products/velocity/solidedge/demos.shtml](http://www.plm.automation.siemens.com/en_us/products/velocity/solidedge/demos.shtml) (last visited May 3, 2009) (use of processes illustrated in web-based demos).

<sup>127</sup> See *Kamar Int’l, Inc. v. Russ Berrie & Co.*, 657 F.2d 1059, 1061 (9th Cir. 1981) (finding stuffed toys that were realistic depictions of animals copyrightable); *Rushton v. Vitale*, 218 F.2d 434, 436 (2d Cir. 1955); *Hart v. Dan Chase Taxidermy Supply Co.*, 884 F. Supp. 71, 74 (N.D.N.Y. 1995) (finding that animal mannequins qualify for copyright protection); *Superior Form Builders v. Dan Chase Taxidermy Supply Co.*, 851 F. Supp. 222, 223 (E.D. Va. 1994) (holding taxidermy forms were not “useful articles” within meaning of Copyright Act but, rather, were copyrightable as sculptural works).

<sup>128</sup> 884 F. Supp. 71 (N.D.N.Y. 1995).

<sup>129</sup> *Id.* at 77.

<sup>130</sup> *Id.* at 73.

<sup>131</sup> *Id.* at 74.

<sup>132</sup> *Id.*

<sup>133</sup> *Id.* at 75.

<sup>134</sup> Taxidermy.net: Gamehead Taxidermy Techniques, <http://www.taxidermy.net/information/gamehd1.html> (last visited May 3, 2009) [hereinafter Taxidermy.net]; see TODD TRIPLETT, THE COMPLETE GUIDE TO SMALL GAME TAXIDERMY: HOW TO WORK WITH SQUIRRELS, VARMINTS, AND PREDATORS 16–17, 145–46 (2003). “Wildlife experts have painstakingly sculpted models which have taken weeks or even months to produce, yet urethane manikins of these models are mass produced and are available for any taxidermist to use. They are offered in a wide variety of sizes and poses to fit almost any specimen.” Taxidermy.net, *supra*.

<sup>135</sup> Taxidermy.net, *supra* note 134.

achieve a particular look or concept.”<sup>136</sup> The court in *Hart* also considered the intent of the taxidermy mount sculptor in its analysis of copyrightability and found that the intent of the sculptor can weigh in the analysis.<sup>137</sup> Even though the taxidermy mount sculptor intends to create lifelike models, he also intends to create a dynamic and flattering pose.<sup>138</sup> The court in *Hart* held that the sculptor’s intent to create a lifelike, yet dynamic pose for the animal mount weighed in favor of copyright protection.<sup>139</sup>

Meshwerks’ wireframe models serve the same function as taxidermy mountings in that the wireframes provide an underlying structure to which artists attach a “skin.”<sup>140</sup> The same factors the court considered in *Hart*<sup>141</sup> can also be applied to Meshwerks’ models. Like the taxidermist, the Meshwerks modelers also made decisions that sacrificed the dimensional accuracy of its models to achieve the desired aesthetic appearance.<sup>142</sup> In fact, some of the components included in Meshwerks’ models, such as some interior details and the headlamps, were created without the benefit of Toyota measurements.<sup>143</sup> Rather, those parts were modeled by hand, and Meshwerks modelers’ relied on their skill and artistic vision in their creation.<sup>144</sup> Both when modeling parts from scratch and when starting with baseline measurements from the Toyota vehicles, Meshwerks’ modelers manipulated and changed the wireframes in order to achieve the desired appearance would be achieved once the “skin” of the vehicle was applied.<sup>145</sup>

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<sup>136</sup> *Hart*, 884 F. Supp. at 75.

Changes were made to other mannequins to portray a particular shape, to express an emotion or attribute, to inspire a particular feeling in the viewer, or simply to cast shadows in a particular way. These goals are not constrained by, and in fact are divorced from, the functional consideration of applying animal skin to the mannequin. Therefore, there are artistic aspects of many of these mannequins that are conceptually separable and distinct from the function of mounting skin.

*Id.*

<sup>137</sup> *Id.* (“[T]he sculptors’ intent and purpose in creating the animal mannequins . . . was to make lifelike forms . . . which expresses the pose, attitude and appearance of the animal that will satisfy his or her customer.”).

<sup>138</sup> *Id.*

<sup>139</sup> *Id.*

<sup>140</sup> See GIAMBRUNO, *supra* note 15, at 61–62.

<sup>141</sup> See *Hart*, 884 F. Supp. at 77.

[E]ven if the function of the full-body animal mannequins and the animal head and shoulder mannequins is to mount skins, the pose, attitude, gesture, muscle structure, facial expression and skin wrinkles of those mannequins are separable artistic parts. Those characteristics are added to each mannequin not to accommodate and further skin mounting, but to represent the particular sculptor’s perception of the animal.

*Id.*

<sup>142</sup> *Id.*; see Appellant’s Opening Brief at 13, *Meshwerks, Inc. v. Toyota Motor Sales U.S.A., Inc.*, 528 F.3d 1258 (10th Cir. 2008) (No. 06-4222), *cert. denied*, 129 S. Ct. 1006 (2009) (“Meshwerks’ 3D Digital Models are not ‘slavish copies’ of the vehicles themselves, but rather creative and interactive depictions of those objects in a different medium and dimension.”).

<sup>143</sup> See Appellant’s Opening Brief at 14, *Meshwerks*, 528 F.3d 1258 (No. 06-4222) (“[M]any of the detail and interior areas [of the Toyota cars] must be rendered completely from scratch, as they are not captured in the digital measurement process.”).

<sup>144</sup> *Id.*

<sup>145</sup> See Appellant’s Reply Brief at 6, *Meshwerks*, 528 F.3d 1258 (No. 06-4222) (“[T]he digital sculptor makes numerous creative efforts and decisions in how to best represent the vehicle in a

*D. Meshwerks Intended to Create Models of Toyota Cars That Looked Realistic  
When Viewed On a Computer Screen or on Television*

The court in *Meshwerks* considered the fact that Meshwerks intended only to “depict real-world, three-dimensional objects and digital images viewable on a computer screen.”<sup>146</sup> But, rather than view Meshwerks’ intent to create wireframe models as evidence weighing toward originality, the court instead viewed Meshwerks’ intent as evidence that its models were only “base-layer digital models to which the original and creative elements . . . could be added by others in subsequent processes.”<sup>147</sup>

Some courts have considered the intent of the author to be a factor in determining originality.<sup>148</sup> Scholars, however, have cautioned that intent should only be one consideration in the originality analysis.<sup>149</sup> The volume of case law discussing intent relating to originality is relatively light compared to other discussions of originality. Early in the development of United States copyright law, Justice Holmes’ opinion in *Bleistein v. Donaldson Lithographing Co.*<sup>150</sup> made it clear that the purpose for which a work is created does not affect its copyrightability.<sup>151</sup> Intent, however, weighed heavily in the Tenth Circuit’s holding that Meshwerks’ models were

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digital form. To that end, the digital sculptor creates his or her own lines to develop the most desirable perspectives, contours and details, using the least amount of digital data.”).

<sup>146</sup> *Meshwerks*, 528 F.3d at 1269.

<sup>147</sup> *Id.*

<sup>148</sup> *Id.*; see *ATC Distribution Group, Inc. v. Whatever It Takes Transmissions & Parts, Inc.*, 402 F.3d 700, 712 (6th Cir. 2005); *Bridgeman Art Library, Ltd. v. Corel Corp.*, 36 F. Supp. 2d 191, 197 (S.D.N.Y. 1999) (“[P]laintiff . . . has labored to create ‘slavish copies’ of . . . works of art . . . this required both skill and effort, [but] there was no spark of originality—indeed, the point of the exercise was to reproduce the underlying works with absolute fidelity. Copyright is not available in these circumstances.”).

<sup>149</sup> See Russ VerSteeg, *Intent, Originality, Creativity and Joint Authorship*, 68 BROOK. L. REV. 123, 128–35 (2002) (discussing whether intent to copy is evidence against originality). “[C]ourts need not examine an author’s intent in order to determine whether a work is original. At most . . . if courts do consider intent in their analysis of originality, intent may be only one relevant factor.” *Id.* at 142.

<sup>150</sup> 188 U.S. 239 (1903).

<sup>151</sup> *Id.* at 251–52.

It would be a dangerous undertaking for persons trained only to the law to constitute themselves final judges of the worth of pictorial illustrations, outside of the narrowest and most obvious limits. At the one extreme some works of genius would be sure to miss appreciation. Their very novelty would make them repulsive until the public had learned the new language in which their author spoke. It may be more than doubted, for instance, whether the etchings of Goya or the paintings of Manet would have been sure of protection when seen for the first time. At the other end, copyright would be denied to pictures which appealed to a public less educated than the judge. Yet if they command the interest of any public, they have a commercial value -- it would be bold to say that they have not an aesthetic and educational value -- and the taste of any public is not to be treated with contempt. It is an ultimate fact for the moment, whatever may be out hopes for a change. That these pictures had their worth and their success is sufficiently shown by the desire to reproduce them without regard to the plaintiffs’ rights.

*Id.*

insufficiently original.<sup>152</sup> While the court properly considered intent as a factor, it erred in concluding that Meshwerks' intent in creating the 3D models weighed against copyright protection.

The 3D wireframe models in *Meshwerks* were not granted copyright protection because the court in *Meshwerks* evaluated Meshwerks' models as photographs for the purpose of evaluating originality.<sup>153</sup> Because the models lacked any copyrightable elements of photographs such as pose, positioning, background, lighting, and shading, the court held that Meshwerks' wireframes were not sufficiently original to garner copyright protection.<sup>154</sup> The court in *Meshwerks* erred in applying the photography standard because Meshwerks' models are more like sculptures or the taxidermy forms in *Hart* than photographs, as they also cannot take on the copyrightable elements of photographs. Just as the taxidermy forms in *Hart* were designed to have animal skins attached to them,<sup>155</sup> Meshwerks' models were designed to have skins applied to them to complete the appearance of Toyota automobiles.<sup>156</sup> The court in *Meshwerks* would have more completely captured the creative elements of Meshwerks' 3D models had it analyzed the models as sculptures instead of using the photography standard.

### III. PROPOSAL

The following section proposes that courts should reconsider the Tenth Circuit's holding in *Meshwerks* regarding the copyrightability of wireframe computer models. Rather than analyzing 3D computer models as photographs to determine originality, courts should treat 3D models differently depending on what state the model is in. There are essentially three ways 3D computer models can be displayed: (1) as wireframe 3D models, (2) as shaded renderings, or (3) as un-shaded or bare wireframe rendering. As sculptural works, wireframe 3D models would rightfully gain copyright protection in the underlying digital shape and structure necessary to create CGI that already enjoys copyright protection. Shaded renderings possess many of the copyrightable elements traditionally associated with photographs and should be analyzed under the photography standard. Un-shaded or bare wireframe renderings are similar to sketches or drawings and should be held to the same "modicum of creativity" standard.

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<sup>152</sup> See *Meshwerks, Inc. v. Toyota Motor Sales U.S.A., Inc.*, 528 F.3d 1258, 1268–69 (10th Cir. 2008), *cert. denied*, 129 S. Ct. 1006 (U.S. Jan. 21, 2009) (No. 08-638) (holding that "authorial intent sometimes can shed light on the question of whether a particular work qualifies as an independent creation or only a copy").

<sup>153</sup> *Id.* at 1266 (finding that Meshwerks' models were simply "unadorned images of Toyota's vehicles").

<sup>154</sup> *Id.* at 1269 (holding that Meshwerks' digital wireframe models did not possess the "spark of originality" necessary for copyright protection).

<sup>155</sup> See *Hart v. Dan Chase Taxidermy Supply Co.*, 884 F. Supp. 71, 75 (N.D.N.Y. 1995) (discussing how taxidermy mounts provide structure and shape to animal skin mounts as well as functioning to aid the skin mounting process).

<sup>156</sup> See *Meshwerks*, 528 F.3d at 1269. "The parties thus intended to have Meshwerks create base-layer digital models to which the original and creative elements viewers would see in actual advertisements could be added by others in subsequent processes." *Id.*

### A. Courts Should Treat 3D Wireframe Models as Sculpture Objects

Rather than treating 3D computer models like photographs, which are two-dimensional images, courts should treat them as sculpture objects. Even though the court seemed to recognize that wireframe models like Meshwerks' *could* qualify for copyright protection,<sup>157</sup> the test it relied on eliminated that possibility because wireframes cannot possess the copyrightable elements of photographs.<sup>158</sup> It is clear, therefore, that courts should apply a different test.

The test applied to the taxidermy forms in *Hart*<sup>159</sup> could be applied to any 3D wireframe model.<sup>160</sup> Courts should be able to determine whether there are elements of the 3D wireframe at issue that reflect "artistic expression uninhibited by functional considerations."<sup>161</sup> Had the court in *Meshwerks* applied this test, it is likely that Meshwerks would have been granted copyrights on its models.

There are some instances where modelers employ wireframes called "crude forms" to create objects that appear in the background or outside the primary focus of a scene and do not require the level of detail of other wireframes.<sup>162</sup> "Crude forms" are a valuable tool for computer modelers because they don't require as much computing power as more complex models.<sup>163</sup> Also, not all 3D wireframes are designed to have skins applied; some are considered finished products themselves.<sup>164</sup>

<sup>157</sup> *Id.* "Digital modeling can be, surely is being, and no doubt increasingly will be used to create copyrightable expressions." *Id.*

<sup>158</sup> See MORTENSON, *supra* note 19, at 8 (discussing that wireframes simply define the edges of a model).

<sup>159</sup> See *Hart*, 884 F. Supp. at 77.

With regard to the full-body animal mannequins and the animal head and shoulder mannequins, the Court holds that the function of the mannequins is merely to portray the appearance of the animal and therefore the mannequins are copyrightable as sculptural works. In the alternative, the Court holds that even if the function of the full-body animal mannequins and the animal head and shoulder mannequins is to mount skins, the pose, attitude, gesture, muscle structure, facial expression and skin wrinkles of those mannequins are separable artistic parts. Those characteristics are added to each mannequin not to accommodate and further skin mounting, but to represent the particular sculptor's perception of the animal. Further, the plaintiffs testified that in some instances changes are made to the anatomical accuracy of the mannequins to achieve a particular look or concept. Those attributes "reflect the designer's artistic judgment exercised independently of functional influences."

*Id.*

<sup>160</sup> See *Meshwerks*, 528 F.3d at 1269. Like the taxidermy forms in *Hart*, the wireframes in *Meshwerks* provided a structure to which a "skin" could be attached. *Id.*

<sup>161</sup> See *Hart*, 884 F. Supp. at 75. The court in *Hart* referred to the fact that that "almost any crude form" could perform the function of mounting an animal skin, but the animal mannequins at issue contained "an undeniable artistic element—the artists' expression of a lifelike animal." *Id.*

<sup>162</sup> See GIAMBRUNO, *supra* note 15, at 215–43. The computing power necessary to create simple wireframe models is much less compared to the power required to create complex shaded renderings. *Id.* One of the more common uses of very simple wireframes that have a more complex "skin" applied are models of buildings in the background of video games. *Id.* This allows game designers to create very realistic, detailed backgrounds without sacrificing game performance because there is not enough computing power to display the model quickly. *Id.*

<sup>163</sup> *Id.*

<sup>164</sup> See AUZENNE, *supra* note 101, at 15; see also ANIMATION ART, *supra* note 12, at 280 (describing the band Radiohead's animated music video that included a partially shaded wireframe

Regardless of whether a wireframe is very complex, like the models in *Meshwerks*, very simple like the model of a building in a video game, or intended to be the final product itself, it should be eligible for copyright under the sculpture standard described in *Hart* because wireframes function identically to taxidermy forms, only they exist in a virtual world instead of the physical world.

*B. "Skinned and Shaded" Renderings of 3D Computer Models Should Be Treated as Photographs and Subjected to the Test Applied in Meshwerks*

There is a place for the photography standard for copyrightability in the CGI medium. When a 3D computer model is rendered, a software program takes a virtual photograph of the 3D model so that it may be viewed in two-dimensions.<sup>165</sup> After rendering, the scene is frozen, just like a photograph.<sup>166</sup> Courts should consider using the photography standard for copyrightability only in cases where the images at issue are renderings of models because a rendering is more similar to a photograph than a sculpture.

Analyzing renderings of 3D models as photographs is not without its problems however. 3D models are sometimes rendered in their bare wireframe form.<sup>167</sup> In fact, the court in *Meshwerks* viewed renderings of the wireframe models at issue in the case as evidence, even though *Meshwerks* sought copyright protection on both the 3D models themselves and the underlying computer code.<sup>168</sup> The renderings of bare wireframes or un-shaded 3D models do not possess photographic qualities as the court in *Meshwerks* made clear.<sup>169</sup> Renderings of bare wireframes are similar to drawings or sketches because they are simply a collection of lines that when viewed together, create an image.<sup>170</sup>

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model of a head). "Wire-framed models, which are the 'oldest and simplest,' are based specifically on three-dimensional line drawings, and do not possess the capability of creating realistic images." AUZENNE, *supra* note 101, at 15.

<sup>165</sup> See AUZENNE, *supra* note 101, at 16; WEISHAR, *supra* note 8, at 74 (discussing how the rendering process works).

<sup>166</sup> See WATKINS, *supra* note 19, at 25–26; WEISHAR, *supra* note 8, at 74–79 (discussing that objects that have been rendered can no longer be re-posed, lit, or shaded without undergoing the rendering process again).

<sup>167</sup> See GIAMBRUNO, *supra* note 15, at 73; CGI in the Movies, *supra* note 17; Star Wars Computer Animation, *supra* note 17. Even today, wireframes are sometimes rendered bare for aesthetic reasons in films and in print. CGI in the Movies, *supra* note 17. Renderings of bare wireframes is done when "a 'computery' look is desired for the image." GIAMBRUNO, *supra* note 15, at 73.

<sup>168</sup> See *Meshwerks, Inc. v. Toyota Motor Sales U.S.A., Inc.*, 528 F.3d 1258, 1261 (10th Cir. 2008), *cert. denied*, 129 S. Ct. 1006 (2009); Appellant's Opening Brief at 24, *Meshwerks*, 528 F.3d 1258 (No. 06-4222). The court in *Meshwerks* did not view *Meshwerks*' models in their three-dimensional form. *Id.* at 24. The court only viewed a two-dimensional screen print of the models that failed to fully describe the models. *Id.*

<sup>169</sup> *Meshwerks*, 528 F.3d at 1265 (discussing that the photography standard for copyrightability does not grant protection for renderings of bare wireframes that lack the shading, lighting, and other elements of the photography test).

<sup>170</sup> See MORTENSON, *supra* note 19, at 8 (discussing that wireframes are merely a collection of lines and curves).

In instances where a rendering does not possess the copyrightable elements of photographs, courts should establish a new standard that allows artists to acquire copyright protection. One possibility for an originality standard would be one similar to the standard for paintings and drawings described in *Bleistein v. Donaldson Lithographing Co.*<sup>171</sup> In *Bleistein*, the Supreme Court held that lithographs were sufficiently original to be granted copyright protection even though they may not be “fine art.”<sup>172</sup>

The court could also determine originality for renderings of wireframes using the “modicum of creativity” test the Court used in *Feist*.<sup>173</sup> In *Feist*, the Supreme Court held that originality for purposes of copyright only requires that the work originate with the author and possess only a minimum amount of creativity.<sup>174</sup> Renderings of 3D models should be subject to the photography standard if the 3D models are shaded models because they would then possess the copyrightable elements of photographs.<sup>175</sup> Renderings of un-shaded 3D models or bare wireframes, however, should be analyzed using the modicum of creativity test because they possess the characteristics of drawings.

*C. Companies May Be Able To Acquire Some Protection For Their 3D Models  
Even If The Copyrightability Standard Does Not Change*

If the photography standard continues to be the only standard applied to 3D computer models, companies like Meshwerks should take steps to protect their work outside of copyright. Artists who would like to protect their work even though it is beyond the reach of copyright protection may enter into contracts with parties who would use the 3D models.<sup>176</sup> Copyright law would still not protect the models, but the modeler would have a breach of contract claim against the other party if it were to put the models to a use in violation of the terms of the contract. The scope of contract protection, however, may be relatively narrow because the only action possible would be against the party in breach, not any subsequent users of the models.<sup>177</sup>

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<sup>171</sup> 188 U.S. 239 (1903).

<sup>172</sup> *Id.* at 251.

<sup>173</sup> See *Feist Publ'ns, Inc., v. Rural Tel. Serv. Co.* 499 U.S. 340, 346 (1991) (“[O]riginality [for copyright] requires independent creation plus a modicum of creativity.”).

<sup>174</sup> *Id.* at 345. “To be sure, the requisite level of creativity is extremely low; even a slight amount will suffice. The vast majority of works make the grade quite easily, as they possess some creative spark, ‘no matter how crude, humble or obvious’ it might be.” *Id.*

<sup>175</sup> See AUZENNE, *supra* note 101, at 16 (“Image rendering . . . [incorporates] shadows, shading, and textures.”); WATKINS, *supra* note 19, at 25; WEISHAR, *supra* note 8, at 74.

<sup>176</sup> See RESTATEMENT (SECOND) OF CONTRACTS § 1 (1981) (“A contract is a promise or a set of promises for the breach of which the law gives a remedy, or the performance of which the law in some way recognizes as a duty.”); *Id.* at cmt. b (discussing that a contract results in a “legal obligation” to do or refrain from doing an act).

<sup>177</sup> See *id.* § 346(1). “The injured party has a right to damages for any breach by a party against whom the contract is enforceable unless the claim for damages has been suspended or discharged.” *Id.*



## CONCLUSION

The court in *Meshwerks* failed to distinguish between the three ways a 3D computer model can be displayed.<sup>178</sup> Courts should classify 3D computer models into three types when determining whether the models qualify for copyright protection: (1) wireframe 3D models, (2) shaded renderings, and (3) un-shaded or bare wireframe rendering. Classifying the models into these three categories would allow courts to more precisely apply the appropriate test for copyrightability to each type of model.

Courts should examine the 3D models themselves as sculptures as the court in *Hart* examined taxidermy mounts.<sup>179</sup> But, if a dispute arises only over a rendering of a model, it should be subject to the photography standard described in *Burrow-Giles*.<sup>180</sup> Finally, if the 3D wireframes are rendered in an un-shaded form, the renderings should be analyzed using the “modicum of creativity” originality standard used in *Feist*.<sup>181</sup>

If courts do not adopt a new standard for analyzing 3D computer models, companies like Meshwerks could only obtain copyright protection for fully rendered images, and any models it created to produce the renderings would not be copyrightable. Companies would be forced to rely on contract law to protect their underlying wireframes, even though their fully rendered models may be protected under copyright law.

CGI is an art form that continues to develop and change the way filmmakers, advertising agencies, engineering firms, and a host of other industries create images.<sup>182</sup> Many of the 3D models artists use to create CGI deserve copyright protection because they possess the necessary originality required by the Copyright Act. Hopefully, future decisions will recognize this important difference and grant copyright protection to deserving 3D computer models.

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<sup>178</sup> See generally *Meshwerks, Inc. v. Toyota Motor Sales U.S.A., Inc.*, 528 F.3d 1258 (10th Cir. 2008), *cert. denied*, 129 S. Ct. 1006 (2009).

<sup>179</sup> See *Hart v. Dan Chase Taxidermy Supply Co.*, 884 F. Supp. 71, 74 (N.D.N.Y. 1995). “[U]seful articles will be considered a pictorial, graphic, or sculptural work only if, and only to the extent that, such design incorporates pictorial, graphic, or sculptural features that can be identified separately from, and are capable of existing independently of, the utilitarian aspects of the article.” *Id.*

<sup>180</sup> See *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 60 (1884). The elements of a photograph that are copyrightable are posing, selecting and arranging the costume and background accessories, “arranging the subject so as to present graceful outlines,” lighting, and “suggesting and evoking the desired expression.” *Id.*

<sup>181</sup> See *Feist Publ'ns, Inc., v. Rural Tel. Serv. Co.*, 499 U.S. 340, 346 (1991).

<sup>182</sup> See Autodesk Maya Overview, *supra* note 40; Mechanical CAD Capabilities of Solid Works, *supra* note 41; SCHODEK, *supra* note 42 at 571–73; AutoCAD Features, *supra* note 43; 3Ds Max Highlights, *supra* note 44 (providing an overview of a wide variety of computer design software and techniques that employ wireframe models and 3D models in general).