

# 3D SCANNING:

A WORLD WITHOUT COPYRIGHT\*

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# Introduction

This paper is about 3D scanning and copyright. It mostly focuses on 3D scanning of individual objects, although it does briefly consider scans on a slightly larger and more complex scale. This paper was written in part because many more people will be creating many more 3D scans in the coming years than they have in the years past. 3D scanning technology is getting better, cheaper, and more ubiquitous – it is quite possible that by the time you read this your phone has a decent 3D scanner built into it. At the same time, 3D printing, 3D graphics, and even virtual reality provide people with even more things to do with 3D scans once they make them.

A growth in 3D scanning will raise a number of questions. One of them may be how to treat 3D scans in the context of existing intellectual property law, specifically copyright law. People will want to understand who “owns” (or at least gets to control) a scan, and what that ownership means in practice.

This paper focuses on the copyright element of that ownership analysis. It is important to remember that copyright is only part of this analysis. There are many ways to own and control something in addition to copyright protection. Foremost among these are contracts: contracts that govern payment for the initial creation of the scan, contracts that govern how other people can access the scans, and contracts that govern how the scans can be accessed once they are created. While copyright can be part of these contracts, contracts that exercise a level of control over a scan can exist without copyright.

That being said, copyright can make patrolling ownership easier. As a general rule, contracts can only be enforced against people who have agreed to be bound by the contract. Copyright infringement does not suffer from the same limitation. That makes copyright a powerful right if, for example, a scan leaks “into the wild” and is accessed by people who never had any contact with the person who created it in the first place. This power also makes it important to understand how copyright does – and does not – come into contact with 3D scans.

So how does copyright apply to 3D scans? The short answer is that in many cases copyright does not – and should not – protect 3D scans. This is especially true for scans that are primarily designed to turn a physical object into an accurate digital representation. If the scanner is primarily motivated by “simply” making a realistic digital representation of a physical thing, it is unlikely that the scan file will be protected by its own copyright.

That is the short version. The longer version takes up the rest of this paper. Hopefully it will address many of the “yes but what about...?” questions you have after reading the short version. This paper will look into how we think about copyright and photographs, which are in some ways analogous to scans and yet not quite the same. It will also explore where concepts like originality and effort come into contact with copyright.



Regardless of whether the short version is good enough for you and you are stopping here, or if you are curious enough to look into the long version, it is worth keeping two caveats in mind. The first is that this paper is grounded in United States copyright law. That is primarily because I am most familiar with United States copyright law, although many of the concepts and arguments are similar in much of the rest of the world.<sup>1</sup> Professor Thomas Margoni examines some similar issues in his paper on digitizing cultural heritage if you are looking for a more EU-focused perspective on some of these questions.<sup>2</sup>

The second is that this paper is necessarily speculative. I believe that the law and case law that exists supports its conclusions. However, I could be wrong. I could also be right today, only to have the law and case law change tomorrow. If you are skeptical of the arguments I'm making – which you probably should be – there are plenty of footnotes that should at least allow you to examine the sources I'm relying on. Now, let's get on with it.

## The Long(er) Version

### 1. HARD WORK AND SKILL ARE NOT ENOUGH

It can be easy to lose sight of the fact that copyright does not automatically protect everything. Though it does not always feel this way, there are criteria for what types of work can and cannot be protected by copyright, and minimum thresholds that need to be met in order for a specific work to be protected.<sup>3</sup> Some works fail to meet those criteria, and are therefore outside of the scope of copyright protection. This paper spends most of its time focusing on one of those criteria: the requirement that a work be original in order to be eligible for copyright protection. If a work does not meet that threshold it is ineligible for copyright protection. Keep in mind that, as is often the case with laws, "original" has a fairly specific meaning in the copyright context.

But before diving into originality and the threshold requirements of copyright protection, we need to pause to understand one thing that does not justify copyright protection: hard work. More specifically, hard work alone does not justify copyright protection.

Hard work is obviously a part of many original, creative works that are protected by copyright. However, those works are not protected *because of* the hard work involved in creating them, nor because of the special skill required to bring them into the world. Instead, those works are protected by copyright because they are original and creative.

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<sup>1</sup> Paul Banwatt and Laura Robinson of the 3D scanning company Matter and Form take what is reasonably described as a more rigorous approach to some of the U.S. legal questions around scanning in their forthcoming paper "Dispatches from the Front Lines of 3D Copyright" which will be available in an upcoming edition of *Intellectual Property Law Journal*.

<sup>2</sup> Thomas Margoni, *The digitisation of cultural heritage: originality, derivative works and (non) original photographs*, Institute for Information Law, University of Amsterdam (Dec. 3, 2014), <http://www.ivir.nl/publicaties/download/1507>.

<sup>3</sup> See 17 U.S.C. § 102. This paper is not going to go into detail about these lines and thresholds. If you are curious about them, you might want to check out the previous whitepaper *It Will Be Awesome if They Don't Screw It Up* Public Knowledge (2010), <https://www.publicknowledge.org/files/docs/3DPrintingPaperPublicKnowledge.pdf> (It Will Be Awesome).



From the standpoint of copyright, hard work just happens to frequently coexist with originality and creativity. In and of itself it does not justify copyright protection.

This distinction between hard work and creativity matters in copyright in general, and in the context of scanning in particular. Creating accurate digital scans of physical things can take a significant amount of time as well as a significant amount of skill. If time and skill alone were the basis for copyright protection, these facts would pretty much put an end to this inquiry: the vast majority of scans would be protected by copyright.

However, the concept of copyright as reward or incentive for hard work or skill alone has been thoroughly rejected in the United States.<sup>4</sup> No matter how hard, work alone does not get you copyright protection. If scans are going to be protected by copyright, it needs to be for reasons beyond the fact that it requires time and skill to produce them.

The lack of copyright protection for many things that require hard work and skill to produce is not intended to diminish the value of that work or skill, or to suggest that the result of that hard work and skill is devoid of value.<sup>5</sup> It is merely recognition that copyright protection requires originality and creativity in addition to those attributes.

Starting from this premise – that scanning requires both hard work and skill, but that copyright protection requires originality in addition to hard work and skill – we need to look to the concept of originality in order to understand the relationship between copyright and scanning.

## 2. A DETOUR INTO THE HISTORY OF PHOTOGRAPHY AND COPYRIGHT

The story of photography and copyright can help give the inquiry into originality and scanning some context.<sup>6</sup> Originally, photographs were not eligible for copyright protection. There were two reasons for this. The first, more pedestrian reason was simply that it took some time after photographs were invented for them to be included in the law as works that could be protected by copyright.<sup>7</sup>

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<sup>4</sup> An early articulation of this distinction was made by Justice Brandeis dissenting in *International News Service v. Associated Press*: “But the fact that a product of the mind has cost its producer money and labor, and has a value for which others are willing to pay, is not sufficient to ensure to it this legal attribute of property.” 248 U.S. 215, 250 (1918) (250). It was later explicitly rejected in *Feist Publications, Inc. v. Rural Telephone Service Co.*: “In summary, the 1976 revisions to the Copyright Act leave no doubt that originality, not ‘sweat of the brow,’ is the touchstone of copyright protection in directories and other fact-based works.” 499 U.S. 340, 359-60 (1991).

<sup>5</sup> See, e.g. “In reaching this conclusion, we do not for a moment seek to downplay the considerable amount of time, effort, and skill that went into making Meshwerks’ digital wire-frame models. But, in assessing the originality of a work for which copyright protection is sought, we look only at the final *product*, not the process, and the fact that intensive, skillful, and even creative labor is invested in the process of creating a product does not guarantee its copyrightability.” *Meshwerks v. Toyota*, 528 F.3d 1258, 1264-5 (10th Cir. 2008).

<sup>6</sup> Justin Hughes’ paper is a fantastic examination of both the history of copyright and photography and a look at how photographs and copyright will interact in the future. If you are interested enough in this topic to be reading this footnote in this paper you should do yourself a favor and check it out. Justin Hughes, *The Photographer’s Copyright – Photograph as Art, Photograph as Database*, Harvard Journal of Law and Technology, Vol. 25 (2012), [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1931220](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1931220).

<sup>7</sup> See, e.g. *Wood v. Abbott*, 30 F. Cas. 424, 425 (C.C.S.D.N.Y. 1866). See also *Burrow-Giles Lithographic Company v. Sarony*, 111 U.S. 53, 58 (1884).

The more theoretical reason stemmed from a contemporary debate about the human role in photography. Since copyright requires an author, the role of a human in the creation of a work is key.

Many early courts viewed photography as merely the result of naturally occurring light interacting with specially treated paper where,<sup>8</sup> in the words of copyright scholar Jane Ginsburg, “no one (other than the – capital C – Creator) can be the ‘author’.”<sup>9</sup> This view was grounded in early photography writing which described photography as “the pencil of nature” a “process of obtaining permanent images of objects by the chemical action of light on prepared surfaces.”<sup>10</sup> However skilled, the photographer was merely using a machine to record the world as it existed, not interpreting that world through a creative filter. This machine meant that there was no human author to take credit for the photograph’s creation, and therefore no copyright.<sup>11</sup>

## 2.1. CONDITIONAL RECOGNITION

In the United States this view of authorless photography was famously revised by the Supreme Court in 1884.<sup>12</sup> In a case involving a portrait of Oscar Wilde, the Court recognized that there could be an element of human creativity involved in photography. In that case, the combination of posing the subject, arranging the lighting, and generally setting the scene involved was declared to be sufficiently creative for copyright protection. The photograph in question had not merely occurred – it was created by someone exercising artistic judgment.

However, that revision was not categorical. The decision noted that “the ordinary production of a photograph” – one that is “mere mechanical reproduction of the physical features or outlines of some object animate or inanimate, and involves no originality of thought or any novelty in the intellectual operation collected with its visible reproduction in shape of a figure” – was not eligible for copyright protection.<sup>13</sup>



Any discussion of U.S. photography and copyright is obligated to include the actual portrait of Oscar Wilde subject to dispute in *Burrow-Giles*.

<sup>8</sup> See, e.g. “the only force that contributes to the formation of the image is the chemical force of light, operating on a surface made of sensitive powder.” *Wood* at 425. See also *Burrow-Giles* at 58-9.

<sup>9</sup> Jane C. Ginsburg, *The Concept of Authorship in Comparative Copyright Law*, Columbia Law School, Pub. Law Research Paper No 03-51 at 14 (2003), later published in 52 *DePaul L. Rev.* 1063 (2003), [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=368481](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=368481).

<sup>10</sup> Christine Haight Farley, *The Lingering Effects of Copyright’s Response to the Invention of Photography*, 65 *U. Pitt L. Rev.* 385, 396 (2003-4), <http://lawreview.law.pitt.edu/ojs/index.php/lawreview/article/view/10/10>.

<sup>11</sup> See, e.g.



<sup>12</sup> *Burrow-Giles*.

<sup>13</sup> *Id.* at 58-9.



Thus, a qualification existed even in the earliest copyright for photographs. Some photographs that relied on creative decisions regarding lighting, posing, etc. were eligible for copyright protection. Others that merely mechanically reproduced the world were not. This distinction – while clean in theory – was and is a bit messy to put into practice. Over time, the law has moved to instinctively place almost all photographs in the first category, sometimes losing sight of the existence of the second.

Furthermore, there was and is a lingering fuzziness about how to connect the creative decisions with the resulting photograph. In addition to originality, copyright is tied to the act of “fixing in a tangible medium” – that is making some original expression concrete. In the context of the photograph, when does that fixation occur? Staging or lighting a photograph can happen well before the image is actually fixed. How strong must the nexus be between fixation and creativity? What if the person who does the arranging and selecting is not the person who actually clicks the shutter on the camera? And what if the actual creative decisions occur well after the image is captured (and fixed), in post-processing or additions? The harder one examines these practical questions, the less precise the rules appear to become.

These questions were not unique to the United States, nor are they fully resolved today. France explicitly required ‘artistic or documentary character’ in order for a photograph to be eligible for copyright protection for most of the 20<sup>th</sup> century and during the same period Germany granted photographs a comparatively short term of protection compared to other works.<sup>14</sup> All of this suggests that the idea that all photographs are fully protected by copyright is not as straightforward as one might casually assume.

## 2.2. ONGOING DEBATE

Defining the line between non-copyrightable photographs that merely capture reality and copyrightable ones that rely on a degree of creativity continues to challenge courts today. With perhaps one well-known exception,<sup>15</sup> courts recognize that the two categories of photographs exist.<sup>16</sup> That does not necessarily mean that they have moved towards a consensus test that can easily be applied to any given photograph. Even well-known copyright treatises can differ on the specifics.<sup>17</sup>

This debate on how to distinguish between original and non-original images is likely to become more – not less – important as more and more images are generated by automatic means. As scholar Justin Hughes points



The creation of this satellite image was driven more by the need to accurately capture the surface of the earth than to produce an aesthetically pleasing image.

<sup>14</sup> *Ginsburg* at 14-15.

<sup>15</sup> *Jewelers' Circular Publ'g Co. v. Keystone Publ'g Co.*, 274 F.932 (S.D.N.Y. 1921).

<sup>16</sup> See, e.g. *Oriental Art Printing, Inc. v. Goldstar Printing Corp.* 175 F.Supp.2d 542 (S.D.N.Y. 2001); *Ets-Hokin v. Skyy Spirits, Inc.* 255 F.3d 1068 (9<sup>th</sup> Cir. 2000) (Skyy I); *American Mutoscope & Biograph v. Edison Manufacturing*, 137 F. 262 (C.C. N.J. 1905).

<sup>17</sup> See *Hughes* at 363-4.



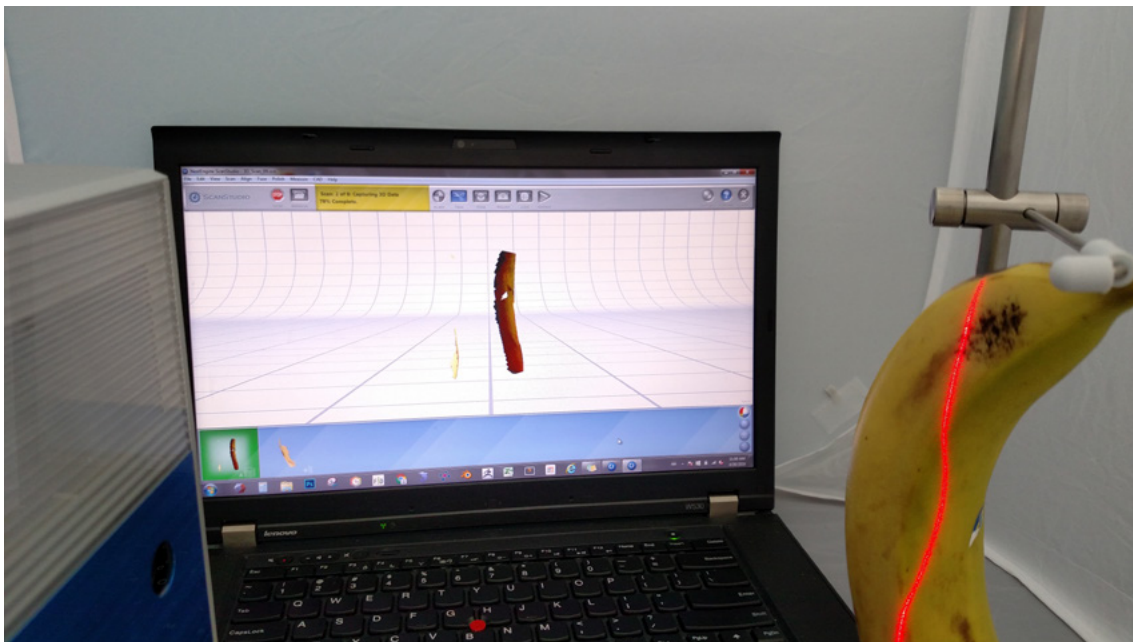


out, security cameras and satellites are constantly recording images.<sup>18</sup> In almost all of those cases, decisions about lighting, shot composition, and the like are driven exclusively by practical considerations and are devoid of the types of creative choices required for copyright protection. The same can be said for other types of automatically generated images that are the result of practical or technical goals.<sup>19</sup>

As Hughes posits, ultimately it may be the dual nature of photography – both as a form of expression and form of recording information about the world – that makes it hard to apply general rules of copyright to it.<sup>20</sup>

In the context of this paper, the slipperiness of photographic copyright suggests that even attempting to draw direct analogies between scans and photographs does not automatically lead to simple answers about the copyrightability of scans.

### 3. SEARCHING FOR ORIGINALITY IN SCANS



Scanning requires many decisions, but are they driven by artistic vision or technical necessity?

Precision is important when thinking about copyrights and scanning. We can break the scanning process down into three general phases of work: preparing the scan, making the scan, and processing the data generated by the scan.<sup>21</sup>

Each of these steps could conceivably require originality (again, skill and effort are assumed). In preparing the scan, the person doing the scanning must think about lighting, backgrounds, and even how to position the object so it can be scanned completely.

<sup>18</sup> *Id.* at 368.

<sup>19</sup> See *Compendium of U.S. Copyright Office Practices, Third Edition*, 313.2: Works that Lack Human Authorship (2014), <http://www.copyright.gov/comp3/chap300/ch300-copyrightable-authorship.pdf> (Copyright Office Compendium).

<sup>20</sup> See *Hughes* at 412-13.

<sup>21</sup> Professor Hughes quotes Justice Hugh Laddie's copyright treatise establishing a similar framework with the categories of framing, capture, and being at the right place at the right time. Hugh Laddie, *The Modern Law of Copyright and Design*, Peter Prescott & Mary Vitoria § 4.57 (2000).



Actually making the scan might be as simple as pushing a button, or as complex as guiding the scanner in paths (if those paths weren't predetermined in the preparation phase) over an object. Processing the data can include a multitude of transformations designed to make the data useful, aesthetically pleasing, or both.

When discussing photographs and scanning, courts tend to be a bit vague about which of these steps they have in mind when they assign creativity to the creation of an image. There is a widespread recognition that the person who conceives of the plan – as opposed to the one who physically executes the steps necessary to realize it – is the “author” for the purposes of copyright.<sup>22</sup> Similarly, as discussed above, the involvement of a machine in the production of the image does not automatically eliminate the protectable contributions of the author.<sup>23</sup>

While these distinctions can be helpful in trying to determine the true author of a scan, they do not lend themselves to a single rule about the point at which creative decisions must necessarily occur. It is perfectly reasonable that creative decisions about one particular scan might occur during that scan's staging phase, while the creative decisions about another scan may occur during their physical scanning phase or their post processing phase. The staging and post-processing phases can be problematic in the sense that, by statute, copyright (to the extent it exists) attaches at the moment of fixation. However, courts have proven themselves willing to collapse all three phases enough for everything to work out.

### 3.1. IS THERE ORIGINALITY? REPRESENTATIONAL VS. EXPRESSIVE SCANS

It is notoriously dangerous for lawyers and judges to be put in charge of determining what is creatively original and what is not.<sup>24</sup> A creator's intent can also be a complicated thing to judge from the outside (and in retrospect). However, the best way to determine if a scan should receive copyright protection may be to look at the intent of the scanner at the time of scanning. Doing so will help to sort scans into two categories: representational scans and expressive scans.

At their core, representational scans are those designed primarily to transfer a physical thing into a digital medium. They can serve as a foundation for a creative work, but are not themselves creative and therefore are not eligible for copyright protection.<sup>25</sup> In contrast,

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<sup>22</sup> Ginsburg at 11-12.

<sup>23</sup> *Id.* at 13-16.

<sup>24</sup> *See, e.g.* “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.” *Bleistein v. Donaldson Lithographic Company*, 188 U.S. 239, 251 (1903).

<sup>25</sup> Here is as good a place as any to note that the *Burrow-Giles* court considered and rejected the argument that the Wilde photograph was essentially a representational scan. Attributing the position to an unspecified “it is said,” the court described the argument as conceding the innovative discovery of the process of photography itself while asserting that “the remainder of the process [that is, actually staging and taking the image] is merely mechanical, with no place left for novelty, invention or originality.” The court then conceded that the argument “may be true in regard to the ordinary production of a photograph” before finding that the Wilde photograph itself did involve creative decision making. *Burrow-Giles* at 59. This distinction between the “ordinary” photograph not eligible for copyright protection and the extraordinary photograph at the heart of the dispute is likely to be mirrored in



expressive scans are those designed explicitly to interpret the scanned object differently, and to imbue the resulting file with expressive purpose that varies in some way from the original. For this, they are eligible for copyright protection.

Today, it is likely that the vast majority of scans are representational scans, and therefore are not eligible for copyright protection.

Courts have rightly rejected equating the skill required to shift an object from one medium to another with the type of original artistic skill required for copyright protection.<sup>26</sup> This is not a value-based decision: the courts are not saying that one type of skill is “better” than the other. Rather, it is a categorical decision: one type of skill happens to qualify for copyright protection, the other does not.

### 3.1.1. REPRESENTATIONAL SCANS

One key to distinguishing between representational and expressive scans is to look for substantial variation, both from the object being scanned and the resulting file, and between scans produced by different scanners. By definition, representational scans are designed to reproduce the scanned object as accurately as possible. That means that the scanners strive to eliminate variation, and even two scans from different highly skilled scanners should appear very much alike and very much like the object being scanned. Injecting original, creative decision making into representational scanning undermines its primary goals.<sup>27</sup>

Another way to approach this is to consider the breadth of choice available to the person doing the scanning. There may be a number of decision points when the goal of a scan is to digitally capture an entire object. However, when creating a representational scan those decisions will be driven by the need to accurately capture the entire object digitally. A more skilled scanner may be able to make better decisions than a less skilled scanner – but that in and of itself does not make those decisions creative or original. In representational scans all scanners are striving towards the same goal. As a result, such scans are not eligible for copyright protection.

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scanning debates where the vast majority of scans are not eligible for protection while the occasional extraordinary one is.

<sup>26</sup> See, e.g. “The mere reproduction of a work of art in a different medium should not constitute the required originality...” *L.. Batlin & Son v. Snyder*, 536 F.2d 486, 491 (2nd Cir. 1976) (internal quotes omitted); “Particularly important for the decision of the case before us is the explicit rejection in *Batlin* of the contention that the originality requirement of copyrightability can be satisfied by the mere reproduction of a work of art in a different medium, or by the demonstration of some ‘physical’ as opposed to ‘artistic’ skill.” *Durham Industries v. Tomy Corporation*, 630 F.2d 905, 910 (2nd Cir. 1980); *Bridgeman Art Library v. Corel Corp.*, 25 F.Supp.2d 421, 427 (S.D.N.Y. 1998).

<sup>27</sup> See., e.g. *Bridgeman* at 195; *ATC Distribution Group v. Whatever it Takes Transmissions*, 402 F. 3d 700, 712 (6th Cir. 2005), *Meshwerks* at 1269.



In most cases using a photocopier does not require creative decision making.  
Photo by Alan Cleaver on Flickr under a CC-BY 2.0 license.

Scanning two-dimensional works operates under the same copyright principles. At its least skilled and least original, using a photocopier to copy or scan a document requires no originality or creative decision making. The few decisions that an operator might make (which way to orient the paper, what resolution to scan at) are driven exclusively by practical considerations related to the quality of scan or copy. Certainly a photocopier or flatbed scanner can be used to make original and creative art – but for most people in most cases, photocopiers and scanners are merely used to shift works from one medium to another. The resulting copy is not eligible for additional copyright protection.

Even in cases where the process of scanning involved a good deal more operator input than pushing a big green button, courts have found that scanning for the purpose of digitizing existing works does not create a new copyright interest in the scan file. The process of creating high resolution, high quality scans of great paintings undoubtedly requires great technical skill. However, a court concluded that it does not require the type of original decision making that results in copyright protection.<sup>28</sup> Similarly, an attempt to claim copyright protection for scans of vehicles failed because the goal was to create as slavish a reproduction of the real-life vehicles as possible.<sup>29</sup>

Medical imaging provides both 2D and 3D examples of highly technical scanning that is nevertheless defined by its lack of room for creative expression. Technicians who prepare 2D x-rays or 3D CAT scans make a multitude



While it required a great deal of skill for the Rijksmuseum to scan Albrecht Dürer's 1504 *Adam en Eva*, the scan is not eligible for a new copyright in the work.

<sup>28</sup> See *Bridgeman*.

<sup>29</sup> See *Meshwerks*.

of decisions. A skilled technician will make those decisions differently from an unskilled technician. But those decisions are all guided by a practical, non-expressive desire to get the best diagnostic image possible – not a desire to create an aesthetically appealing work. As a result, medical scans are not eligible for copyright protection.<sup>30</sup>

Yet another test to help identify representational scans is the importance of verifiability and reproducibility. A representational scan of an artifact is primarily designed to measure, allowing the artifact to be accurately rendered in a digital environment or reproduced on a 3D printer. In that case, a high quality scan will be verifiable against the original and reproducible by other equally skilled scanners.<sup>31</sup> Even a second scanner who was unaware of the previous scan would be expected to produce a virtually identical result.

### 3.1.2. EXPRESSIVE SCANS

In contrast, expressive scans could vary significantly from one another without undermining the expectations of the person doing the scanning or their intended audience. If the scanner's goal is to create a creative impact or to make an expressive statement, reproducibility and verifiability become much less important. That scan is no longer a reference – it is a creative work that is justifiably protected by copyright.



Sophie Kahn's *L:Gold* (2012) uses intentionally imprecise scanning as the basis of an expressive work. Image courtesy Sophie Kahn under a CC-BY-SA 4.0 International License.

These expressive scans are not merely theoretical. The artist Sophie Kahn uses nonrepresentational scanning to deconstruct ancient works of sculpture.<sup>32</sup> The sculpture she builds from scans are intentionally incomplete and distortive, not perfect replicas of the source material. Similarly, the artist Geoffrey Mann intentionally avoided best practices to scan a shiny candelabra in order to create his work "Shine."<sup>33</sup> The resulting file and physical object are intentionally and idiosyncratically distorted. Artistic merit notwithstanding, the scan is worthless as an accurate digital representation of source object.

<sup>30</sup> See *Copyright Office Compendium* at 313.2: The Originality Requirement for Compilations.

<sup>31</sup> See Cindy Alberts Carson, *Laser Bones: Copyright Issues Raised by the Use of Information Technology in Archaeology*, *Harvard Journal of Law & Technology* at 294 (Winter 1997).

<sup>32</sup> <http://www.sophiekahn.net/>

<sup>33</sup> <http://geoffreymann.com/>





Geoffrey Mann's *Shine* was created using techniques that intentionally avoided creating an 'accurate' scan of the object. Image courtesy Geoffrey Mann, all rights reserved.

Even as the number of expressive scans increase, they are likely to remain in the distinct minority when weighed against the number of representational scans made for more mundane purposes. It is certainly possible that some representational scans will have copyrightable elements, but that scenario is likely to occur comparatively rarely.<sup>34</sup>

The two categories do not mean that representational and expressive scans are wholly separate. Post-processing and presentation techniques can be used to transform a representational scan into an expressive one. In contrast it is less likely that an expressive scan that intentionally distorted elements during the scanning process could be used to create a representational one. Regardless, the copyright analysis would occur on a scan as it exists at the time of analysis.

#### 4. BROAD SCAN COPYRIGHT WOULD IMPOSE SOCIETAL COSTS

Avoiding granting copyright protection to representational scans is not only legally sound, it is also good public policy. Representational scans are designed to be reproducible and verifiable – even by scanners unaware of the first scan. If scans were granted blanket copyright protection, this reproducibility and verifiability would create a number of independent creation problems.

Since scanning is focused on accurately transforming an object from one medium (the physical world) to another (a digital file), it is highly likely that follow-on scanners would create files that are substantially similar to the scanners who came before them. If such scans were eligible for copyright protection, the similarity between various scan files would likely lead to infringement litigation between the first scanners and the follow on scanners even if the files were in fact created independently of one another.

While the principle that “[o]thers are free to copy the original. They are not free to copy the copy” has been enshrined in case law for over a century,<sup>35</sup> situations where every copy

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<sup>34</sup> Of course, everything is relative. As the number of scan files soar, the absolute number of expressive scans would grow as well and such scans could become common.

<sup>35</sup> *Bleistein* at 249.

of the original is nearly identical create significant enforcement challenges. The prospect – and cost – of having to prove that a given scan was a “copy of the original” as opposed to a “copy of the copy” could make it easy for early scanners to borrow a page from today’s patent trolls. When faced with a letter offering a choice between a relatively low cost settlement and a lengthy court battle to prove original provenance, even a follow-on scanner confident of their legal position might reasonably elect to pay the settlement and move on.

Courts have rightly raised concerns about the threat that over-extending copyright can create “a weapon for harassment in the hands of mischievous copiers”<sup>36</sup> by allowing them to monopolize the public domain or impinge on the ability of rightsholders of the underlying scanned object to fully exercise their own rights.<sup>37</sup> A notable infringement case involving a straightforward product picture of a vodka bottle seems to prove this case – it took years of litigation and untold thousands of dollars for a court to decide that even essentially identical photographs were not infringing because the follow on images were not literal reproductions of the original.<sup>38</sup>

Taken together, this suggests that the costs associated with broadly granting copyrights in scans and litigating the subsequent allegations of infringement well outweighs the benefits of extending copyright to the scans in the first place. If scans by multiple creators are essentially identical, there is no reason to waste time and money parsing which scan can be attributed to which party, or determining if the follow on scans were improperly influenced by the earlier ones.

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<sup>36</sup> *Batlin* at 492.

<sup>37</sup> *Durham Industries* at 910-11. Courts have also recognized that even traditionally “artistic” reproduction techniques like hand drawing that strive towards realistic reproduction of their subjects may have a harder time proving infringement because copying involves the appropriation of expression. See *Franklin Mint v. National Wildlife Art Exchange*, 575 F.2d 62, 65 (3rd Cir. 1978).

<sup>38</sup> *Skyy I; Ets-Hokin v. Skyy*, 323 F.3d 763 (9th Cir. 2003) (*Skyy II*).



# Additional Considerations

While this paper focuses primarily on the relatively straightforward question of if there is a copyright interest in a scan of an object, there are a handful of other related questions that are worth at least flagging for consideration.

## 1. THE OBJECT BEING SCANNED MAY STILL BE PROTECTED BY COPYRIGHT

The primary question of this paper is if copying a scan should be considered an infringement in a right held by the person who created the scan. Overlooked – at least until this section – is if the act of scanning itself might infringe on a copyright in the object actually being scanned.

The short answer is that the act of scanning itself may very well infringe on a copyright in the object being scanned. If the object being scanned is protected by copyright, the act of creating a copy – even in another medium – can be considered infringement. Even if the person creating the copy does not get a new copyright in the file, the person who owns the copyright in the original scanned object may have a claim of infringement against the person who created the scan and anyone else who reproduces the file.<sup>39</sup>

There are exceptions, however. Some copying that merely transfers a work from one medium to another is protected by fair use and therefore is not copyright infringement. For example, ripping a CD you own into MP3s makes copies, but those copies are protected by fair use.<sup>40</sup> As with many discussions connected to fair use, the transferability of that argument to the 3D scanning world will depend on the specific facts of the case.

The most important thing to remember from this section is this: making a digital copy of a copyrighted physical object can be copyright infringement regardless of whether the digital copy itself is or is not protected by a new and independent copyright.

## 2. SCANS THAT CAPTURE SCENES

Another primary focus of this paper has been on scanning to digitize a single object. In part, that is because scanning an object (even large objects like buildings) is the primary application of 3D scanning as the paper is being written. However, as (or if) scanning diversifies away from digitizing single objects and moves more towards capturing a moment or scene, the analysis may change.

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<sup>39</sup> For a slightly longer explanation of this that includes graphics and an example to help this concept make more sense, see the previous whitepaper *What's the Deal with Copyright and 3D Printing?*, Public Knowledge at 18 (2013), [https://www.publicknowledge.org/files/What's%20the%20Deal%20with%20Copyright\\_%20Final%20version2.pdf](https://www.publicknowledge.org/files/What's%20the%20Deal%20with%20Copyright_%20Final%20version2.pdf).

<sup>40</sup> See *RIAA v. Diamond Multimedia Systems*, 180 F.3d 1072 (9th Cir. 1999); see also Transcript of Oral Argument at 12, *MGM Studio v. Grokster*, 545 U.S. 913 (2005).

These types of tableau scans may start to look more and more like traditional photographs, with complex backgrounds and creative choices involving lighting, staging, and arranging the scene being captured. The analysis based on intent described earlier in this paper will be similar, but the outcome may very well be different. This is not to say that all scans of scenes will or will not be protected by copyright, or even that the scale of what is being scanned matters to the analysis. Instead, it is likely that as the subject being scanned becomes more complex and less purely utilitarian, actual creative decisions will be made by the person making the scan.<sup>41</sup>

### 3. SCANNING IS JUST DATA

The larger debate about the ongoing analog-to-digital shift in creation and its impact on copyright is well beyond the scope of this paper. However, the nature of 3D scanning is likely to mean that it may become an important example for both sides of the debate.

Briefly, at least partially for reasons alluded to above, copyright tends not to protect “facts” such as measurements. This can become complicated because, on at least some level, many works that are protected by copyright are built on those uncopyrightable facts.

The challenge associated with 3D scanning is that 3D scan files can be described as merely being collections of measurements between various points. Each data point in a 3D scan exists in a distance relationship with all of the other points in a 3D scan. Therefore, just as the fact that a basketball hoop is ten feet off the ground, that electrical outlets in the United States provide 120 volts of electricity, or that a negroni cocktail is 1 part gin plus 1 part sweet vermouth plus 1 part Campari cannot be protected by copyright, the facts of the relative relationships between millions of points that describe a scanned object should not be protectable by copyright either. That is true even if they are nicely bundled together in a single digital file.

While a logical extension of the rule, this argument becomes highly problematic for copyright when it is followed to its conclusion. After all, digital photographs can also be described as collections of readings of pixel colors and digital audio files are collections of sound frequency measurements. The mere fact that a work can be recorded in a digital file should not make it ineligible for copyright protection.

This is not to suggest that the copyright analysis for a 3D scan file is identical to that of a digital music file, or to dismiss the argument that 3D scan files are merely collections of measurements. Instead, this subsection merely attempts to flag this debate as an interesting one that is beyond the scope of this paper, yet one that nonetheless may impact the paper’s conclusions.

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<sup>41</sup> Prof. Hughes considered the impact that structured light imaging might have on this analysis. *See Hughes* at 412.

## 4. THE ABSENCE OF COPYRIGHT DOES NOT MEAN THE ABSENCE OF CONTROL

It is easy to turn a discussion about copyright into a proxy for a discussion about control. Copyright is, in many cases, an incredibly effective tool for control. However, it is not the only mechanism that can be used to control things like digital scan files. Similarly, a lack of copyright in a 3D scan file does not prohibit anyone from making money from the scan itself.

There are obvious ways to profit from 3D scanning that are unrelated to copyright. The first is being paid to create the scan itself. As of this writing, creating high quality 3D scans is hard work that requires high levels of expertise. People with that expertise can – and do – charge substantial fees to scan objects. The fact that the files they create are not protected by copyright does nothing to prevent them from charging to create them.

Similarly, the absence of copyright does not prevent a person or company from charging a fee to access the scans once they are created. There are countless examples of companies who charge fees to access information with weak or no copyright protections.

Both of these mechanisms of control ultimately rely on contracts. Contracts are robust, flexible, and legally enforceable. There is no reason why they cannot be used to control some uses of 3D scanners. Contract law is not a cure-all (there are reasons that copyright owners do not want to trade in their copyrights for contracts) but it should also not be dismissed out of hand.

While it may develop differently than other industries, there is no reason to assume that the lack of robust copyright protections in the world of 3D scanning means that it will be devoid of commercial enterprise.



# Conclusion

Copyright will not apply as cleanly to 3D scanning as it does to seemingly analogous activities such as digital photography. Or perhaps it will, but in ways that force us to reexamine the relationship between copyright and photography. Regardless, today's utilitarian focus on turning physical things digital will often lack the creative flexibility that is required to obtain copyright protection. At the same time, 3D scanning cannot be categorically excluded from the world of copyright. There are files that started as 3D scans today that easily fall within the scope of copyright protection. As 3D scanners become smaller, cheaper, and more ubiquitous, it is all but inevitable that they will migrate away from their functional uses towards more creative applications.

The challenge then is to recognize that there are probably no clean rules of thumb about 3D scans and copyrightability today, and to accept that clarity may not come in the near future. This ambiguity is simply the cost of doing something new.