



# Copyright and Legal Issues Surrounding 3D Data

## Citation

D'Andrea, Andrea, Michale Conyers, Kyle K. Courtney, Emily Finch, Melissa Levine, et. al. "Copyright and Legal Issues Surrounding 3D Data." In 3D Data Creation to Curation: Community Standards for 3D Data Preservation, eds. Jennifer Moore, Adam Rountrey, and Hannah Scates Kettler. Chicago: Association of Research and College Libraries (ALA), 2022.

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Chapter 5 from: Moore, Jennifer, Adam Rountrey, and Hannah Scates Kettler (Eds.). 2022. *3D Data Creation to Curation: Community Standards for 3D Data Preservation*. Association of College & Research Libraries. (Forthcoming)

# Copyright and Legal Issues Surrounding 3D Data

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## Abstract

An overview of essential legal concepts and strategies, this chapter synthesizes the ideas, questions, and legal issues that arise in relation to 3D data. Case studies provide scenarios based on real-world situations that will help readers recognize legal and policy issues. Readers will have a framework for thoughtful decision making that is consistent with their particular mission.

We begin with a general overview of US Copyright Law and then focus on case law that is relevant for understanding the legal status of 3D models. Case studies focus on creation or acquisition methodologies including: institutional **photogrammetry**<sup>i</sup> of an object, indigenous community and non-profit organization partnership to digitally document and preserve cultural artifacts, transferring ownership of 3D data to an institutional repository, and a complex researcher-developed 3D model. These case studies are used to provide relevant illustrations of practices and situations that may prompt legal questions, but we also recommend considering more complex ethical issues early on. These case studies will help readers recognize legal and policy issues that may be relevant to their current practices in 3D creation and dissemination, and review will emphasize expectations under both open and restricted **access**<sup>ii</sup> scenarios, including contracts and licensing. In certain case studies, expansions are included to highlight additional domain-specific questions.

## Introduction

The Copyright/Ownership working group examined legal questions related to generating and preserving 3D data. We surveyed basic copyright as currently defined by U.S. law then

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<sup>i</sup> See Glossary

<sup>ii</sup> See Glossary

mapped out elements in a generalized 3D-data **workflow**<sup>iii</sup> as a way to explore the legal and ethical issues. We developed four scenarios that might be associated with data from 3D representations of cultural objects to help readers identify legal issues in their own work. Each scenario includes corollary questions for issue-spotting for 1) **preservation**<sup>iv</sup>, 2) sharing of or access to data, and 3) use and reuse of data.

We extensively discussed questions of ethics and practice within particular disciplines (e.g. paleontology, anthropology, archaeology, etc.). Questions of ethics and practice are critical. They influence -- but are distinct from -- formal legal frameworks. Thus, we tried to focus the scenarios on legal questions because they are more generalizable than the ethics and disciplinary constructs. To emphasize, the ethical questions were not less important than the legal and business questions. However, ethical questions are subject to greater variety and range depending on the purpose of the data and the discipline in which it will be used.

At this stage, our recommendations for professional practice are notional, and we urge practitioners to continue to think about frameworks for their needs and interests. Our hope is that the questions investigated here support that ongoing work.

We start with an overview of essential legal concepts.

## Foundations: Copyright and the “Bundle of Rights”

Under current United States copyright law (Title 17 of the United States Code or “U.S.C”), authors or creators of original works hold copyrights in their works automatically. The law, under 17 U.S.C. § 106, grants authors a set of exclusive rights often referred to as a “bundle of rights.” These rights include the right to reproduce, distribute, make derivatives, publicly perform and publicly display their works. Categories of copyrightable works include literary works; musical works; dramatic works; pantomimes and choreographic works; pictorial, graphic, and sculptural works; motion pictures and other audiovisual works; sound recordings; and architectural works

### Fixed and Creative

In order to be eligible for these exclusive rights, the work must meet a threshold test: copyright only protects “original works of authorship fixed in any tangible medium of expression.”<sup>1</sup> This means that the work must have been created *independently and contain a sufficient amount of creativity*. It is relatively easy to meet these requirements for some creative works like fictional novels and new music. However, some kinds of works are not eligible for copyright and therefore are excluded from protection. For example, copyright does not protect things such as ideas, methods, titles, recipes, data, or facts.

This is where 3D data and copyright intersect. As a general rule, data are not eligible for copyright protection as a type of fact, and facts cannot be copyrighted. However, some expression of data may be sufficiently original to qualify for copyright or, further, may be

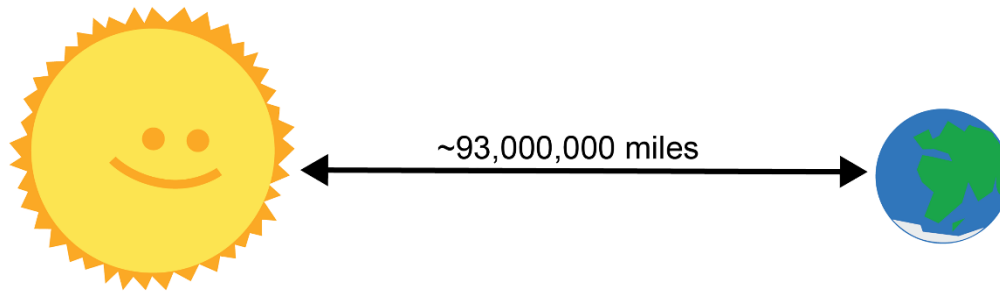
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<sup>iii</sup> See Glossary

<sup>iv</sup> See Glossary

arranged or compiled in a way that is eligible for copyright. Copyright can protect creative *expressions* of fact or data.

For example, the statement “The Sun is, on average, 93,000,000 miles away from Earth” is a fact. Therefore it is not copyrightable. However, what if we took this sentence, and its data, and expressed it in this drawing:



[FIGURE 1 HERE]

Now this *drawing* could, potentially, be copyrightable. It is a creative expression of the facts (the Sun and Earth) and the data (93 million miles).

[TEXT BOX 1 HERE]

#### Foundations: Case Law

In thinking about how data from scans of 3D objects might be treated, it is helpful to consider case law. Case law is comprised of decisions written by judges to address copyright disputes brought to court. Cases help provide factual examples of how judges interpret the copyright laws passed by the US Congress. In doing so, they give us guidance on how a given situation is more or like a given set of facts and thus could be treated analogously.

In the U.S. court system, and in common law in general (that is, law based on precedent and opinions written by judges rather than statutory law), courts typically look to earlier decisions to determine the outcome of the law's interaction with new technology. This was true of famous cases involving player pianos, photography, VCRs, mp3s, and more recently bittorrent file sharing. Where a statute like the U.S. Copyright Act is involved, court decisions are used to interpret these statutes, the broad categories of content they may protect, and the facts of the case.

The application of the law to 3D data is no different - we have to look at precedential cases and make an analysis. Sometimes even the simplest things can be the focus of important copyright case law. Take for example, telephone books.

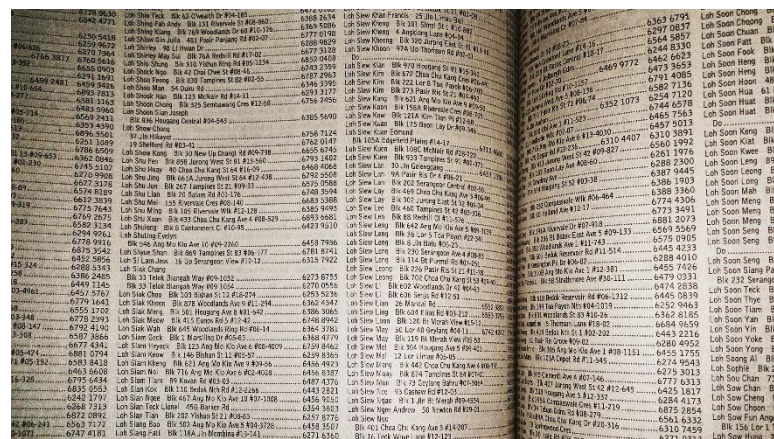
What is 'original' for the purpose of copyright? *Feist Publications v. Rural Telephone Service Co.*, 499 U.S. 340 (1991)

The first modern case which draws upon the current copyright law is *Feist Publications v. Rural Telephone Service Co.* In *Feist*, a company called Rural Telephone Service published a phonebook with an alphabetical list of the names of its subscribers in the whitepages. Feist Publications asked for a license to use the white page listings that Rural had collected and published for a particular geographic region. Rural refused the license, so Feist extracted the listings it needed from Rural's directory without permission. Feist then published a similar phonebook using the same list of subscribers from Rural's whitepages. Rural sued Feist for copyright infringement of its directory.<sup>2</sup>

The U.S. Supreme Court examined a former principle known as “sweat of the brow” doctrine which stated that acquiring copyright was a function of hard work or effort. The Court even heard evidence that Feist and Rural were discussing, during their failed negotiations, ideas surrounding the time and effort it might take to make most accurate whitepages possible. Time, money, and effort to hire staff to do door to door white page accuracy checks in certain neighborhoods was raised as a means to acquiring copyright. Ultimately, though, the Court rejected these principles.<sup>3</sup>

This is a seminal case because it illustrates the modern legal interpretation of copyrightability, moving from the effort-based “sweat of the brow” test to the more statute-centered “originality” test. As another court summarized in 1985, “[i]n 14 hours Mozart could write a piano concerto, J.S. Bach a cantata, or Dickens a week's installment of *Bleak House*. The Laffer Curve, an economic graph prominent in political debates, appeared on the back of a napkin after dinner, the work of a minute. All of these are copyrightable.”<sup>4</sup> Effort and time does not always equate to copyright's originality test.

*Feist*, however, ultimately centered on two well-established principles in United States copyright law. First, facts are not copyrightable. Second, while facts are not copyrightable, compilations of facts can be copyrightable if they possess the requisite level of originality/creativity.<sup>5</sup>





[FIGURE 2 HERE]

The court determined that Feist lacked the minimal degree of creativity necessary for copyright protections. The Supreme Court observed that “[a]s a constitutional matter, copyright protects only those constituent elements of a work that possess more than a de minimis quantum of creativity.”<sup>6</sup> Further, it found that there can be no copyright in a work in which “the creative spark is utterly lacking or so trivial as to be virtually nonexistent.”<sup>7</sup> Arranging a list of data alphabetically is not enough to establish copyright protection in a work. The court concluded by stating that “this decision should not be construed as demeaning Rural’s efforts in compiling its directory, *but rather as making clear that copyright rewards originality, not effort.*”<sup>8</sup> (authors’ emphasis.)

Building upon *Feist*, U.S. courts have continually found that facts and data are rarely copyrightable. The *Feist* test can be broken down into two parts. First, the work must have been independently created by the author, not copied from another work. Second, the work must possess sufficient creativity. Only a “modicum” of creativity is necessary. The Supreme Court has ruled that some works fail to meet even this low threshold. As simple lists arranged in alphabetical order, the whitepages telephone books in *Feist* are a common example of creations that are insufficiently original to garner copyright protection.

[TEXTBOX 2 HERE]

Some combinations of common or standard design elements may contain sufficient creativity with respect to how they are juxtaposed or arranged to support a copyright. Nevertheless, not every combination or arrangement will be sufficient to meet this test. A determination of copyrightability in the combination of standard design elements depends on whether the selection, coordination, or arrangement is done in such a way as to result in copyrightable authorship.

Another example: *Bridgeman Art Library v. Corel*, 36 F. Supp. 2d 191 (S.D.N.Y. 1999).

In 1999, eight years after the Supreme Court ruled on *Feist Publications v. Rural Telephone Service Co* (1991), the United States District Court for the Southern District of New York ruled on *Bridgeman Art Library v. Corel* (1999). While the decision's precedent is persuasive rather than binding, the case is frequently cited in debates on originality requirements for copyright protection, especially with photographs depicting ancient *two-dimensional* works.<sup>9</sup>

The Bridgeman Art Library was the copyright holder of a large collection of photographs and digital images of famous artwork. They sued Corel Corporation for copyright infringement, asserting that Corel had illegally obtained and distributed copies of these images. While the copyright on the original art had long since expired, the Bridgeman Art Library claimed to have copyright ownership of these new reproductions.<sup>10</sup>



[FIGURE 3 HERE]

In the first judgement, the court ascertained whether or not the photographs were copyrightable considering the public domain status of the originals. The judge found that there could be no infringement in the photographs because they were images of art that was already in the public domain (they were no longer eligible for copyright). A subsequent judgement dismissed the case. Judge Lewis Kaplan said that *exact photographic reproductions of two-dimensional objects (public domain art for example) were "slavish reproductions," and as such*

*could not receive copyright protection due to their lack of originality.* The *Bridgeman* case added a new term to the art and museum worlds: “slavish reproduction.” This doctrine helped settle the law that two-dimensional reproductions of two-dimensional material could not qualify for copyright protection.

With the concepts from the *Feist* and *Bridgeman* cases in mind, we turn to the question of whether and how scans of three-dimensional objects or physical sites are sufficiently original to warrant copyright protection where they are produced with tools like computerized tomography (CT) scan or photogrammetry. What aspect of the scanning data might be eligible for protection automatically? What can you do to enhance or reduce the likelihood of copyright depending on your project design goals.

3D Scans in the Courts: *Meshwerks, Inc. v. Toyota Motor Sales U.S.A., Inc.*, 528 F.3d 1258 (10th Cir. 2008)

One of the few cases we have involving 3D data emerges in a 2008 case from the 10th circuit. The *Meshwerks* case relies on the standards laid out in the *Feist* decision. Toyota hired an advertising firm which in turn hired Meshwerks into create digital 3D models of Toyota vehicles to be used in advertising materials. Meshwerks personnel took numerous measurements of each vehicle and then used software to generate a digital image resembling a wire-frame model of the vehicle based on the measurements taken (think of measurements as facts). From there, Meshwerks personnel digitally tweaked each model in order for it to more closely resemble the Toyota vehicle it was trying to recreate (think of this kind of skill and effort to reproduce something as closely as possible as “slavish” reproduction). Meshwerks personnel spent approximately 80 to 100 hours per vehicle, working on details with each digital model. The results were two-dimensional wire-frame depictions of Toyota vehicles that appeared three-dimensional on screen. They were exact replicas of the cars; no new features or additions were made to the digital renderings.

Toyota used these models in various print, online, and television advertisements. However, according to Meshwerks, the agreement was only for a single use of the models. And since Meshwerks had registered the work with the U.S. Copyright Office, a prerequisite to bringing a lawsuit, they claimed that the additional advertising uses were copyright infringement. Meshwerks sued Toyota, alleging that Toyota infringed on the copyrights Meshwerks held in the digital models it created.

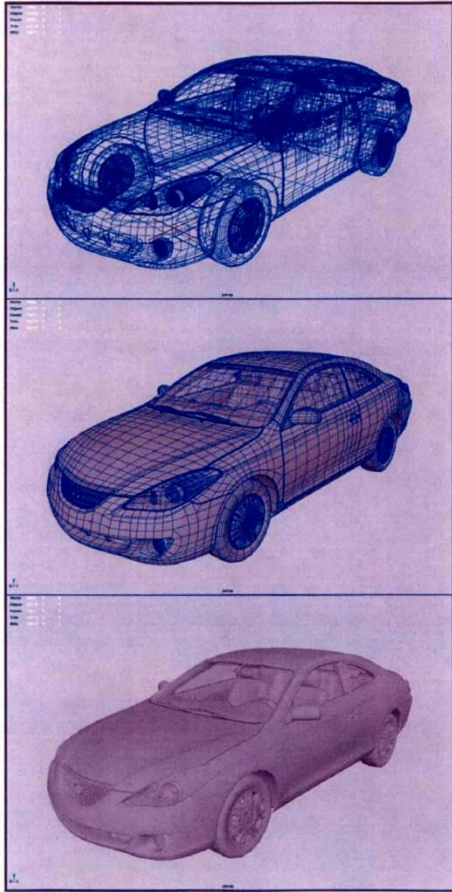
[TEXTBOX 3 HERE]

While Meshwerks argued specific points about the time, effort, and skills necessary to render the models, the court’s focus was on the test for creativity and originality. The court focused on whether Meshwerks’ models qualify as independent creations, as opposed to exact copies of Toyota’s vehicles/design. The court relied on the decision made in *Feist*, which stated a work must “possess at least some minimal degree of creativity” to qualify for copyright protection.



**APPENDIX A**

06-4222, Meshwerks v. Toyota

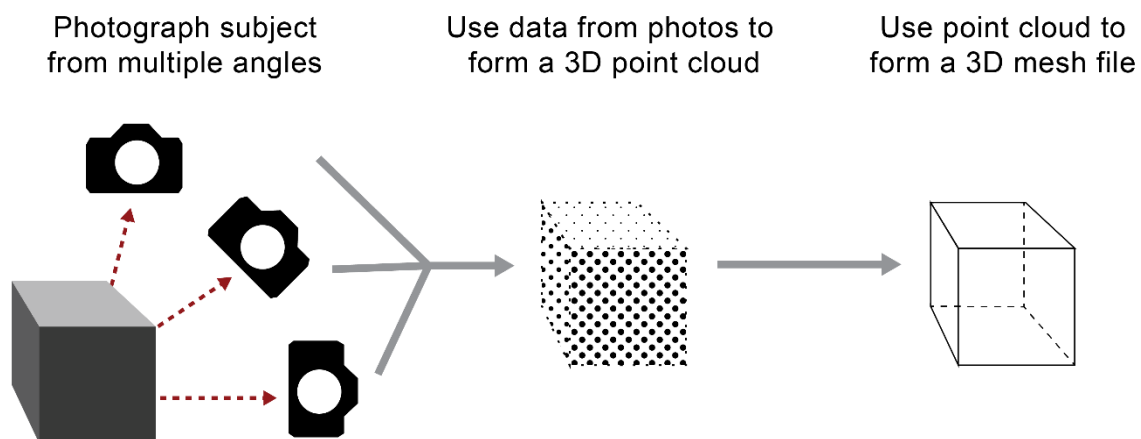


[FIGURE 4 HERE]

The court concluded by saying that Meshwerks did not have a valid copyright in the digitized models it created. The models were created using designs that the automobile manufacturer (Toyota) produced, so they were not original works of art that could be copyrighted, and because there was no valid copyright, there could be no infringement. The wire frames were nothing but very good copies of the original cars, adding no new original expression. The Court stated “[o]riginality is the [necessary component] of copyright. The designs of the vehicles, however, [are not original]. [They] owe their origins to Toyota, not to Meshwerks, and so we are unable to reward Meshwerks’ digital wire-frame models, no doubt the product of significant labor, skill, and judgment, with copyright protection.”

# Photographs and Photogrammetry: How copyright cases intersect with 3D scans or models

Photogrammetry is the science of making measurements from photographs, and the basic idea is almost as old as photography. Photogrammetry was traditionally used for land surveying, but with developments in structure from motion algorithms and GPU computing, it has become a common methodology for obtaining 3D digital models of physical objects. The input of photogrammetry is the photographs and the output is typically a 3D model or measurement set. The creation of a 3D model using photogrammetry relies on algorithms that identify matching points in photos and calculate lens distortion and camera position in order to create an output (3D model, map, etc).



[FIGURE 5 HERE]

It is well established that photographs are typically protected by copyright law, provided they are sufficiently original. Photographs were first added as a category of protected works to the United States Copyright Act in 1865 and continue to receive the same protection today. Photographs, like all other copyrightable works, must be “original works of authorship fixed in any tangible medium of expression” to qualify for copyright protection. In other words, photographs must possess a minimal amount of creativity to be copyrightable (in contrast to the facts in the *Bridgeman* case where the photographs of art in the public domain were intentionally as unoriginal as possible).

Early in the history of photography as a new technology, some argued that taking a photograph was merely a mechanical process accomplished by the camera rather than a creative expression. But in 1884, the US Supreme Court determined in *Burrow-Giles Lithographic Co. v. Sarony* that photography is a creative expression (art) rather than just a mechanical reproduction of an object. The Court came to this conclusion *because of the*

*creative choices* a photographer must make. The photographer must *choose the lighting, camera angle, how the subject will be posed, distance from the subject as well as other artistic features*.

To further explain the differences between photographer intentions: If an art photographer shoots art in museum galleries of 2D works that are in the public domain, and intends to make what the law calls a “slavish reproduction” of the work, regardless of the lighting, distance, or other factors, the photographer does not have a copyright over their photo of that public domain work. However, if the art photographer shoots art in museum galleries of 2D works *still under copyright*, or 3D works, choices about camera angle, lighting, distance, and other factors may be enough creative expression for copyright of the photos. The photogrammetrist’s goal is to produce 3D data from the photos for the object to be replicated, however, the photogrammetrist’s photos might have the creativity necessary to be copyrightable.

The concept of “slavish reproduction” in copyright only applies to reproductions of 2D works in the public domain. The concept is that the photographer can’t acquire a new copyright in their photo because it lacks the creativity necessary because it is a near-perfect reproduction of that 2D work that is in the public domain. However, if you are taking a photo of a 3D work, even a 3D work that is in the public domain, and even if you take hundreds of these photos, there is a presumption in the law that the lighting, angle, and other aspects of the photo have the minimum spark of creativity necessary for copyright to exist in the photos. The law does not look to the “intent” of the photos. The fact that photogrammetry rigs take hundreds of pictures from varying angles certainly makes a case for slavish reproduction, but there is no case or statute that states these photos are clearly not copyrightable.

With all this in mind, photogrammetry photographs could qualify for copyright protection because one must make these kinds of decisions. A photogrammetrist has to make choices about many elements of the photograph such as angle of camera, lighting, photo overlap and distance from which to take the photos. The ultimate goal of photogrammetry is to extract the data or measurements from the photos in order to create something else (3D model, map, etc). Although a work as a whole can be protected by copyright, there are occasions when individual parts of that work may not be protected by copyright. For example, an author of a textbook would most certainly receive copyright protection for the book. However, if the author used a public domain photograph in that book the photo would not be protected by copyright and another person could come along and extract and use that particular photo. Another example is recipes used in a cookbook. A cookbook as a whole can be protected by copyright but the author cannot receive copyright protection in the individual recipes. The recipes are simply a list of ingredients and therefore are outside the scope of copyright protection. By legal analogy, the same scenario is true for photogrammetry. The photographs taken by the individual would be copyrightable, but the data or measurements extracted from those photos would not qualify for copyright protection. For example, the data extracted from the photos in the photogrammetry process might consist of factual measurements of distances between points. As discussed, data and facts are not afforded copyright protection. Even if manipulation of the extracted data in pursuit of **accuracy**<sup>v</sup>, such as choice of the correct photos to extract data, or

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<sup>v</sup> See Glossary

manual corrections to make the data more precise, would likewise fall under the same “facts” category. These results fall outside of the categories of types of work that are generally protected by copyright.

## Foundations: Licensing and Contracts

In addition to having an essential understanding of copyright concepts, it is critical to have a basic understanding about how contracts work as a legal and practical matter. In addition to being legally binding documents, contracts are excellent tools for communication so that the parties to a relationship understand what is mutually expected. Whether they are called contracts, agreements, terms of use, memoranda of understanding or something else, these are important tools for designing your project. Also keep in mind that agreements with funders are contractual commitments. We deal with contracts on a daily basis so they seem familiar. Yet, in our conversations, we extensively discussed contracts and their role in 3D data preservation. Thus we felt it was important to review some basic information in this chapter.

What is a contract? What is a license?

It is important that you understand the basics of offer, acceptance, and the value of expressing things in writing. At its simplest, a contract is an agreement between two or more people or entities (like a corporation, a university, a state) to do or not do something in return for some kind of valuable benefit. That benefit is called “consideration.” For a contract to exist, there are seven key requirements. To form a contract, you need:

1. An offer
2. Acceptance of that offer
3. A promise to perform
4. Valuable consideration (for example, a promise or a payment)
5. A time or event at which the performance must be accomplished
6. Any terms and conditions for the performance

The seventh requirement is actual performance if the contract is “unilateral.” That is, there is a promise to pay (or give the valuable consideration) in return for actual performance. (“You agree to take photos of my rock for \$100 by Friday.” The performance is the taking of the photos.) By contrast, a “bilateral” contract is one in which a promise is exchanged for a promise. (“You promise to take photos of my rock by Friday, and I promise to pay you \$100 on Friday.”)

As a legal matter, many kinds of contracts can be written or oral. *We strongly recommend the practice of expressing your contracts in writing* for a few reasons -- both legal and practical. Written contracts are easier to prove and are more likely to articulate the intention of the parties than a contract entered into by verbal exchanges or implied by circumstances. Contracts for illegal purposes are not enforceable. Secondly, courts often look to “the four corners of the contract” to find the intention of the parties, and that which was not written within the “four corners” may not be held as a valid part of that contract. One other advantage of a

written contract is that the drafting process tends to flesh out places of disagreement, unexamined assumptions, or misunderstanding between the parties that can typically be worked out in negotiation discussions.

A license is a kind of contract that typically gives someone permission to do or use something. Think of it as a kind of authorization to do or use something by someone who owns something or has the authority to give the authorization. (This is distinct from, say, a license to practice law or medicine or a driver's license.) In the area of intellectual property like copyright, a license can be used to permit copying and thus excuse the licensee from being accused of copyright infringement. Intellectual property licenses typically describe the subject of the license along with a term (duration), sometimes the territory in which the license applies (a state, region, or country, for example Mexico/the United States/Canada but not Japan), renewal provisions (say, a three-year term with automatic renewal until one party gives the other notice of termination), and other conditions as appropriate. You see these every day in the click-through licenses you routinely agree to.

One of the key benefits to written contracts is that they allow for clarity. If you have ever been involved in a contract negotiation, you have had the experience of exchanging draft documents. Each side might strike out particular language that it cannot or will not agree to. They might provide new suggested language. Reading the document and passing it back and forth can improve the likelihood that the contract will be a guide for the relationship, in addition to being legally binding. There are also situations where you do not have the option to negotiate (or do not want to offer the option), typically for administrative reasons. It is impractical to renegotiate every contract for social media products, e-book or music licenses, terms of use on any website. Neither approach is particularly good nor bad, better nor worse. Each tool has a different purpose. Our hope is that you will start to think about contracts as tools that you can use to express your intentions and design your projects - or understand how to participate in someone else's project. You will see in the case studies that there are no firm rules or explicit practices that can be dictated. There is unavoidable complexity that can be addressed through careful thought and articulation of expectations. With that in mind, we turn to the case studies.

## Case Studies

We developed several case studies for current scenarios to identify legal issues that might be associated with data from 3D scans of cultural objects - and the corollary questions that might be associated with 1) preservation of data and 2) sharing of or access to that data, and 3) use and reuse of that data. We also discussed questions of ethics and practices within particular disciplines (for example, paleontology, anthropology, archaeology, or other fields). The latter was complex and difficult to define in the hypothetical. Questions of ethics and practice are critical - but distinct from formal legal frameworks. Thus, we tried to focus on the legal questions as somewhat less theoretical than the ethics and disciplinary constructs. To emphasize, the latter were not less important to the authors than the legal and business

questions. Indeed, there was more discussion of these concerns than of the formal legal questions. In part, this is because they are indeed important to practitioners - and they are still somewhat subjective and more familiar than some of the formal legal concepts.

The structure of each of the case studies varies somewhat to address the particulars of each situation. Despite the variations, each one takes into account essential considerations, and there are certainly others. Critically, you need to know what you want to accomplish in order to structure a new project in a way that the action of law supports - or at least does not hinder - your desired outcomes. Data comprised of facts is not eligible for copyright protection. However, collections of data as compilations may be eligible for purposes of copyright protection. These are commonly controlled through contracts (licenses) that confine use and reuse of the collection or its component parts. There is a general preference reflected in our conversations for openness, for minimizing controls and simplifying use and reuse. In our discussions, some participants wanted to generate totally open data, available to anyone for any reason. There were some situations where some level of 'closure' was legitimately desirable:

- A scan is a reproduction of an object or site that has some cultural sensitivity (ethics and sometimes law).
- A scan is a reproduction of an object that might have some explicit quality that requires security (making it inappropriate for open access) for ethical reasons or as a matter of law such as medical privacy (for example, consider the relevance of laws like HIPAA - the Health Insurance Portability and Accountability Act of 1996).
- The creator of a scan, or a repository, has a business model that requires users to pay a fee for access to data.

You could have scenarios where one or more of the above are relevant. We discussed the legal implications primarily under US law - but we also spent time on EU perspectives on copyright, privacy, and database directives. Because libraries, **archives**<sup>vi</sup>, and museums now work locally and globally, practitioners should become familiar with work by the [Research Data Alliance](#), [Digital Curation Centre](#) and others to think about how to preserve data in an optimal manner from a global perspective. There are some essential questions that arise in the design of a preservation approach for the scenarios considered:

- *What result do you want?* Freely open? Controlled/permissioned access and use?
- *What result is dictated by the inherent nature of the object?* Is the object to be scanned imbued with any copyright intrinsically? Does a scan create a 'new' set of facts (measurements of the object) that are ineligible for copyright - or a derivative work tied to the rightsholder of the original work (if applicable)?
- *What is the practice in a given discipline engaged in the work?* The field of practice is critical to ethics and behavior vis a vis preservation, access, use, reuse of scan data and in some cases any resulting model (whether software or 3D print). An art historian might make different choices than an anthropologist...a geologist would make different choices than an architectural scholar.

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<sup>vi</sup> See Glossary

- *How should you respond in this evolving arena?* Our discussions raised some important questions for which there is no immediate answer. For example, are import/export laws applicable to data sets of 3D scans in the same way as the physical objects they represent? (If you are not permitted to take a specimen over a border, is the reproduction treated the same way - or no?) Are *reproductions* of culturally sensitive items to be treated in the same way as the original? Is the reproduction vested with some meaning like the underlying object? Or is the reproduction/data set free for use and cross border movement? Is this something that requires case-by-case consideration?

The Case Studies provide some perspectives on real situations and ways that this working group imagined handling these scenarios as examples for discussion.

## Case Study 1: Natural History Specimen, Institutional Project -

### Background

This case study is intended to represent a situation in which a natural history object, such as a rock, fossil, bone, or other non-human biological specimen is subject to photogrammetry with the goal of producing a three-dimensional surface **mesh**<sup>vii</sup> with color information. Instances like this would be commonly found in museum and university settings. The context is general, but the location at which the specimen was collected, and the university itself are assumed to be in the United States.

### Object

The object being digitized is a fossil mastodon skull that was accessioned by a university museum. At the time of acquisition, the donor signed a deed of gift asserting that they were the true and legal owner of the specimen, and that they had the right to convey it. The donor irrevocably and unconditionally transferred ownership and all rights, title and interest in the specimen to the university through the deed of gift.

### Process

The 3D mesh is produced using photographs and photogrammetry software. A series of ~200 photos, taken in several rings around the object, are imported into a commercial photogrammetry software package. The photographer is an employee of the university and is doing the work as part of normal responsibilities. Lighting is designed to be diffuse and even limiting sharp shadows on the specimen. Camera settings are chosen to optimize for depth of field and low noise. The goal is to produce photos that can be used to create a detailed photorealistic digital replica of the specimen.

### Output

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<sup>vii</sup> See Glossary

The photogrammetry software produces a scaled 3D mesh (e.g., PLY file) with color information (either as vertex colors or UV-mapping of texture images). There may be multiple versions of the mesh at different sizes/**resolutions**<sup>viii</sup>. The photographs used in the photogrammetry process will be archived along with the 3D mesh.

## Usage

The 3D model will be distributed through an online institutional repository. Users may view and download the mesh file. The university's intent is that the model be used for research and educational purposes, and that appropriate credit will be given when it is used. Commercial usage will require payment.

## Issues

In this case study, a natural history object is the subject of digital reproduction by photogrammetry. As an unadorned work of nature, the mastodon skull itself is not subject to copyright protection. The Compendium of U.S. Copyright Office Practices explicitly excludes works “produced by nature, animals, or plants” from registration (Compendium (Third) § 313.2). However, the lack of protection under copyright law does not indicate the object is free from all restrictions. In some cases, prior contractual agreements may limit how the object can be used. For example, a cast of a specimen acquired from another museum may be encumbered by a contractual agreement stating that no additional duplicates are to be produced, or if the skull was collected on public land, the National Park Service or other government agency may place limitations on the production of copies. Here, the university museum acquired the skull from a donor who agreed to transfer the skull and all associated rights, title, and interest to the museum, and there are no contracts that would limit the use of the skull.

As part of the process of creating the 3D mesh, a series of several hundred photographs will be produced by a museum employee as part of their normal duties. Nearly all photographs of 3D objects are subject to copyright protection as a result of the judgements made by the photographer in the process (see discussion earlier in the chapter regarding *Burrow-Giles Lithographic Co. v. Sarony*), and the photographs of this mastodon skull, produced by the museum, are probably protected by copyright. Here, as the employee produced the photographs as part of their normal duties, they would be considered “work for hire” (17 U.S.C. § 101) and the copyright in the photos would be held by the museum as the employer. (The work for hire doctrine is an exception to the general rule that authors own copyright in their own creations.)

The photogrammetry software extracts data, such as feature positions and depth maps from the set of photographs to produce a 3D mesh with color information. This mesh can be considered as a “copy” of the physical object; the intent is to create an accurate, three-dimensional, digital representation of the physical object. Copies or slavish reproductions are not original works of authorship (see earlier discussion of *Meshwerks, Inc. v. Toyota Motor Sales U.S.A.*), and *new* rights are not created in copies. Because the skull itself is not subject to copyright protection and no new rights are created in the copy, the 3D mesh produced in this project is not subject to copyright.

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<sup>viii</sup> See Glossary



The university museum intends to share the 3D mesh publicly for research and educational purposes, but they want to be credited appropriately when the mesh is used, and they want to require payment for commercial usage. While at first glance, a Creative Commons license like CC-BY-NC might seem appropriate, Creative Commons licenses assume that copyright protections exist for the work. Because the model is not subject to copyright, and a CC license would imply copyright protection, a different means of meeting the university museum's requirements is needed. A contractual agreement could be used in this case. For example, users might need to agree to a Terms of Use statement that requires attribution and limits commercial use.

## Other thoughts

In this example, photographs were produced by a single individual with the goal of producing a 3D digital replica of the object. However, there may be cases in which an institution would seek to use photographs taken by many individuals. For example, an institution might seek to crowdsource photos of a popular tourist destination for use in the creation of a 3D model. In the U.S., the copyright for each photo would generally be held by the photographer. Yet, the use of hundreds of such photos for 3D reconstruction would likely be considered a fair use [See the extended fair use discussion in *Case Study 4* below]. Is there copyright associated with the 3D model produced by this process? We would argue that there is not likely to be copyright in such a 3D model unless there is some additional creative expression. Some organizations may consider using a click-through agreement or similar simple form that helps the user grant whatever rights needed in order to use their work product as you design your project.

A 3D model produced in the example above might be used in ways that involve new, creative expression, and those works may be subject to copyright. A rendering (a two-dimensional image of the model in virtual space) or an animation of the model would involve choices such similar to those made by a photographer and might thus be eligible for copyright. Is this your intended outcome? This choice is ideally documented in writing prior to the commencement of the production or creation of the new creative work.

## Case Study 2: Native American Artifact, Tax Exempt Organization, Chief's Regalia

### Background

This case study considers a scenario where an organization partners with a tribal authority to digitize an object for archival preservation. This scenario also applies where a tribal authority requests the digitization of an object. For example, a tribe might seek collaboration or consultation with an organization with technical or subject matter expertise for digitizing an artifact or collection.

Here, a US-based tax-exempt organization (the Partner) is working with a Native American tribal authority (the Tribal Authority) to digitally render and preserve an artifact from the tribal museum's collection in a 3D format. The artifact consists of several pieces of clothing

known as the “Chief’s Regalia,” created in 1890. Certainly, if the object was a more modern creation, where the “life of the author plus seventy” copyright term of protection was used, the analysis below might be different. Additionally, a “utilitarian item,” defined loosely as “something that people use,” is generally not protectable under copyright. As a result, clothing designs, for example, are not always protected under copyright law. There are, however, exceptions to this utilitarian doctrine. For example, a person that creates fabric can rely on copyright to protect designs imprinted on the fabric if the design features the sufficient amount of creative expression to be protectable.

The Partner’s mission is, “to help preserve Native American Culture by partnering with tribes to provide training, support and/or services to promote **digital preservation**<sup>ix</sup> of artifacts.” The organization’s rules and ethics are defined and publicly shared via their Native American Collection Policy. The Partner confirms that the artifact is associated with this particular, single Tribal Authority through research and consultation. If the artifact was associated with multiple communities, the Partner would have consulted with those communities as possible before the digitization project moved forward.

The Tribal Authority possesses the Chief’s Regalia and seeks to obtain a 3D reproduction through digitization for archival preservation on their own servers and for a term through on a 3rd party depository provided by the Partner. The Partner and the Tribal Authority enter a written Memorandum of Agreement (the Agreement) that outlines their plans and conditions for the project. Here is an overview of some of the key provisions of the agreement between the Partner and the Tribal Authority for this project:

## Object

The object represented by the 3D model (Chief’s Regalia) is in the possession of the Tribal Authority and is on display in their cultural heritage museum with seasonal viewing restrictions. The object consists of a feathered headdress and clothing worn on the body arranged on a clothing form. The object is the material that will be reproduced in 3D scans in this project.

- Two-dimensional images owned and copyrighted by the tribe were previously being seasonally displayed on the tribal museum website with a CC license displayed.
- The parties agree to include the existing local community’s cultural protocols for access and use to the 3D model; these will be provided by the Tribal Authority in detail.

## Copyright

The Tribal Authority takes the position that it is the sole owner of the Chief’s Regalia and any reproductions. The Partner does not believe that as a legal matter there is any copyright in the artifact, because of the 1890 date of the creation, but agrees to the Tribal Authority’s open license requirements as they do not seem inconsistent with the goal of the project. Further, the license requirements align with the Partner’s Native American Collection Policy and ethics; which calls for culturally affiliated communities to assert control over their own cultural heritage.

As the source images were taken by a single volunteer and member of the tribe, the Agreement could require that the volunteer transfer, via contract, copyright and control of the source images to the Tribe. This transfer is necessary since the volunteer would, at least initially, own copyright in the photos they created. The overall goal of this transfer is so that the Output is managed by the Tribal Authority rather than the single individual. (This is also distinct

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<sup>ix</sup> See Glossary

from cases like *Meshwerks v. Toyota* because this is not work for hire.)

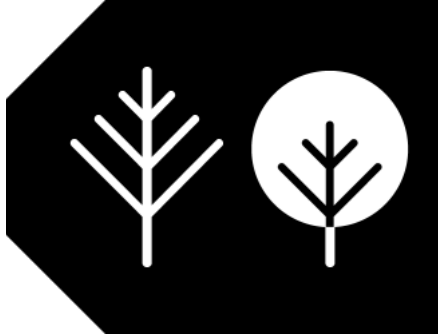
The following licenses and descriptions will be applied to the 3D object (service copies and future reproductions) and the source images (collectively the Outputs). *(Note that each of the following will be further explained in the Discussion.)*

- A Basic License - The Tribal Authority wants to assert copyright over the object, and wishes to also apply the Creative Commons license Attribution-NonCommercial-NoDerivatives (CC BY-NC-ND) to the 3D object and Outputs. However, this license is only appropriate for the source images, not the 3D data. The copyright holder of the Output (or source images) may use a CC license to allow public uses subject to the CC license. Here, however, (unlike the source images) there is no copyright in the object or its 3D data. The Tribal Authority should use a basic Terms of Agreement or other licenses (such as Rightsstatements.org NOC-NC) to meet its distribution goals for the 3D data.
- Traditional Knowledge Labels (“TK Labels”) - The 3D object and Output will be assigned TK Labels to incorporate protocols for tribal cultural practices related to the artifact into the **metadata**<sup>x</sup> and for public display. TK labels are informational and/or educational tags or badges that help identify and clarify materials that have community-specific restrictions regarding access and use. They help non-Indigenous people better understand and respect different cultural perspectives and concerns about access and use of heritage that derive from the local contexts where the material was made and continues to have meaning. (For more information see <http://localcontexts.org/>)
  - The parties agree to embed and display the “TK Verified” label to let users know that the digital content was created and is responsibly represented with tribal approval. The “TK Seasonal” label will be used as the artifact has seasonal conditions of access and use.
  - Dates of Display - Consistent with the TK Seasonal label, the Agreement states what times of the year that the digital content may be displayed as the Tribal Authority has defined expectations about proper handling and viewing conditions.



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<sup>x</sup> See Glossary



[INSERT FIGURE 6 HERE re TK labels]

#### *Preservation of Master/Source Images*

- The Partner will preserve the digitized 3D model master file and source images in long term digital storage.
- The Partner will use Open Archival Information System (OAIS) standards for a minimum of 20 years in three repositories in different geographic locations with **fixity**<sup>xi</sup> checking every 6 months.
- The same access and preservation protocols provided by the Tribal Authority will apply to all produced 3D master and service copies, all source images, and any future reproductions.
- The Partner will retain a single master copy of the 3D object and Output (source images) for long term preservation as well as a service copy for general permitted uses according to agreed upon access terms of use and protocols as defined in the Agreement.
- The Tribal Authority will retain and possess master and service copies of the 3D object and Output (source images).
- All copies will incorporate embedded copyright and protocol information in the source images and all the 3D file metadata.
- Master and service copies of textual descriptive information will be retained with the files in .pdf format. Any oral descriptions provided by the Tribal Authority will be preserved in .wav format.
- Terms of Use or appropriate licenses and Traditional Knowledge (TK) Labels will be used with all files associated with the artifact including but not limited to the 3D object and source files.

#### Process and Output

##### *3D Model and Source Images*

- The 3D model will be comprised of 900 source images captured via a photogrammetry based process shot in RAW format (used at the Partner's request).
- The source images will be taken by a volunteer member of the Tribal Authority after online training and after the test shots are uploaded and analyzed.
- Partner will review, approve, and discard, the test images. Then, a new set of production photos will be uploaded to the partner by the tribal volunteer photographer.
- Upon submission to the partner, images will be initially be saved in two locations as working and preservation copies. All copies will include the rights, licensing and TK label information as described in this agreement.

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<sup>xi</sup> See Glossary

- The 3D processing team then will create the digital 3D object from the working file source images.

#### *Treatment of Source Images*

- Source Images will be uploaded in RAW format to the Partner via their submissions webpage. Corresponding metadata question forms will be completed by the submitter.
- Available fields for source images should include: photographer information, affiliated community, image copyright restrictions; as well as artifact descriptive information provided by the Tribal Authority.
- The photographer's name (though not associated with the rights statement in favor of the community name) will be embedded in the metadata for reference purposes.
- If desired, an audio file can be uploaded for expanded oral description of the object with appropriate copyright ownership of the creator, licensing and TK labels.

#### *Archival Process*

- Upon completion of the 3D model, administrative, descriptive and reference metadata will be embedded as described in this agreement.
- The Partner will archive in a **digital repository**<sup>xii</sup> a preservation copy of the model and the specific source images in accordance with the Agreement.

#### Usage

##### *Access*

- The Partner may display the model; the parties acknowledge and agree that all metadata, website description and depictions will be reviewed for proper context in consultation with the Tribal Authority. The Tribal Authority will verify or amend as necessary.
- The Agreement is signed by the authorized representatives of the Partner and the Tribal Authority. Each party receives a copy of the signed agreement.

## Issues/Discussion

Copyright is a form of protection to authors and creators of “original works of authorship.” A work is automatically protected by copyright when it is created, that is, “fixed” in a copy or the first time. Copyright protects original “pictorial, graphic, and sculptural works,” which include two- and three-dimensional works of fine, graphic, and applied art. Neither registration in the Copyright Office nor publication is required for copyright protection. As a result, the Chief's Regalia was certainly protected by copyright when it was first created.

However, the copyright protection that exists in the Chief's Regalia does have a limit. Generally, copyright protection ceases after a certain period, which is defined by the applicable law at the time of creation. Duration of copyright has expanded over time, from an initial 14 years in the first copyright act, to seventy years after the creator's death under modern copyright law. Once the term has ended, works are no longer copyright-protected but have dropped into the public domain. Anyone can use a public domain work, for any use, without obtaining

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<sup>xii</sup> See Glossary

permission from the original creator. Here, the Chief's Regalia, with an estimated creation date of 1890 is in the public domain as a matter of copyright law, although the tribe philosophically and culturally rejects the concept of public domain. (either cite:

<https://www.wipo.int/export/sites/www/tk/en/igc/ngo/tulalipribes.pdf> or "For more information on this see: "

Yet, despite the lack of copyright and the object's public domain status, the Tribal Authority does still hold possession of the work, and can limit access to reproductions through a basic license that meets the goals of public access. As noted above, while the Tribal Authority wants to assert copyright over the object, and wishes to also apply the Creative Commons license Attribution-NonCommercial-NoDerivatives (CC BY-NC-ND) to the 3D object and Outputs, this is not an appropriate license for this type of use. The CC license is for the copyright creator/owners to allow uses subject to the CC license. Here, however, there is no copyright in the object, because of the public domain, or in its 3D data. The Tribal Authority could use a basic Terms of Use or other out of copyright license (such as [rightsstatements.org](https://rightsstatements.org)) to meet its distribution goals that is similar to a CC license, allowing certain types of usage, access, and attribution, but without any of the copyright language.

Additionally, there may be some copyrighted materials as part of the project. As part of the photogrammetry process, a series of several hundred photographs will be taken by a member of the Tribal Authority after online training and after the test shots are uploaded and analyzed. It is common for photographs of 3D objects to have copyright protection (see discussion earlier in the chapter regarding *Burrow-Giles Lithographic Co. v. Sarony*), so the *photographs* of the Chief's Regalia may be copyrightable. To be sure, the individual volunteer, and a member of the Tribe, may transfer rights in their photos to the Tribal Authority. Or the Tribal Authority, after training the volunteer, may have the volunteer sign a "work for hire" contract (17 U.S.C. § 101).

## Case Study 3: Natural History Specimen, Institutional Repository, Preserved Fish Specimen

### Background

This case study is intended to represent a situation in which an individual submits a constructed 3D model representing a natural history object (in this case, a preserved fish specimen) to an institutional repository. This scenario is very similar to that of Case Study 1, but differs critically in terms of who generates the 3D data, and who is interested in keeping a copy of it. Instances like this would be commonly found in museum and university settings. The location where the specimen was collected, and the institution itself are assumed to be in the United States. The institution owns the specimen, but the individual who created the 3D model of the specimen is not a staff member or affiliated with the institution.

## 3D Model

The individual constructed the 3D model (e.g., PLY file) from photographs or other scan data (e.g., CT image stacks or LIDAR data). There may be multiple versions of the 3D model at different sizes/resolutions. The photographs or scan data used in the model construction process will be archived along with the constructed 3D model. Metadata documenting data capture and model construction methods will also be archived alongside the 3D model.

## Object

The institution owns the preserved fish specimen represented by the 3D model. At the time of acquisition, the donor signed a deed of gift asserting that they (the donor) were the true and legal owner of the specimen, and that they had the right to convey it. The donor irrevocably and unconditionally transferred ownership and all rights, title and interest in the specimen to the institution through the deed of gift.

## Specimen Loan/Access Agreement

When the individual borrowed the specimen from the institution, they agreed to provide the institution with a copy of specimen images and data that they created as part of the formal loan agreement. The loan was in accordance with museum policies for this use.

## Media Submission Process

The institution's goal is to archive a 3D model and associated raw media in perpetuity, and to make it available for research or education purposes (noncommercial use). The individual who constructed the 3D model shares the following files with the institutional repository:

- 3D model (e.g., PLY file)
- Photographs and raw scan data (e.g., CT image stack, LIDAR data)
- Documentation on who created the media and how
- A signed release form transferring copyright to the institutional repository
  - The individual may request an embargo-period of up to 3 years.
  - If the model or media involves other conditions (e.g., cultural sensitivity), access restrictions can also be requested or otherwise applied.

## Archiving Process

The model and media are stored in the institution's digital asset management system ("DAMS") where it can be associated with related specimen data. Storage and management systems follow institutional policies for redundancy, data validation, and security.

## Public Access

The institution aims to provide access to the model (and appropriate credit information) for research and educational (noncommercial) purposes. Institutional data norms are as follows:

- Published collections data is public domain
- Published collections media is copyrighted by the institution and licensed "CC-BY-NC"

A preview of the 3D model is published online alongside related specimen data following any embargo or other restrictions as indicated in the release form. The model and raw media files themselves are provided to users upon request. (Due to file size limits and manual review of usage-requests, the model and media files are not immediately downloadable.)

Commercial usage (if approved) requires documented permission and payment.

## Issues

In this case study, a natural history object, a preserved fish specimen is the subject of digital reproduction from photographs and CT image stacks. As an unadorned work of nature, the object itself is not subject to copyright protection. The Compendium of U.S. Copyright Office Practices explicitly excludes works “produced by nature, animals, or plants” from registration (Compendium (Third) § 313.2). However, the lack of protection under copyright law does not indicate that the object is free from all restrictions. In some cases, prior contractual agreements may limit how the object can be used. For example, a cast of a specimen acquired from another museum may be encumbered by a contractual agreement stating that no additional duplicates are to be produced, or if the fish specimen was collected on public land, the National Park Service or other government agency may place limitations on the production of copies. Here, the institution owns the specimen, but the individual who created the 3D model of the specimen is not employed by or affiliated with the institution.

As part of the process of creating the 3D mesh, a series of several hundred photographs and CT scan data will be produced by a third party scanning firm. While the raw data is not protectable under copyright (see section on 3D Data above - “3D Scans in the Courts”), most photographs of 3D objects are subject to copyright protection as a result of the creative judgements made by the photographer in the process such as angle, lighting, exposure, and other factors (see discussion earlier in the chapter regarding *Burrow-Giles Lithographic Co. v. Sarony*). Therefore the photographs of this preserved fish specimen, produced by the individual employee of the scanning company, are probably protected by copyright. So, unless the contract indicated otherwise, the photos, at least initially, would belong to the scanning company taking the photos, until they are legally transferred to the museum in some capacity, typically via a copyright licensing agreement (see the section on contracts and licensing above).

The photogrammetry software extracts data, such as feature positions and depth maps from the set of photographs to produce a 3D mesh with color information. This mesh can be considered as a “copy” of the physical object; the intent is to create an accurate, three-dimensional, digital representation of the physical object. Copies or slavish reproductions are not original works of authorship (see earlier discussion of *Meshwerks, Inc. v. Toyota Motor Sales U.S.A.*), and *new* rights are not created in copies. Because the preserved fish specimen itself is not subject to copyright protection and no new rights are created in the copy, the 3D mesh produced in this project is not subject to copyright.

The museum intends to share the 3D mesh publicly for research and educational purposes, but the scanning company (and the donor) might want to be credited appropriately when the mesh is used. While at first glance, a Creative Commons license like CC-BY-NC might seem appropriate, Creative Commons licenses assume that copyright protections exist for the work. Because the 3D model is not subject to copyright, and a CC license would imply copyright protection, a different means of meeting the museum’s requirements is needed. A contractual agreement could be used in this case. For example, users might need to agree to a Terms of Use statement that requires attribution and limits commercial use.



For any of the photographs taken during the scanning company's process in building a 3D model of the preserved fish specimen, they more than likely have a copyright in those photos. Certainly, if the museum would want to utilize some of those photos, the scanning company could transfer copyright in the photos in a basic copyright transfer agreement. However, if the museum had, in its initial contract with the scanning company, a "work for hire" provision, then all the copyrighted work, including the photos, would be owned by the museum. Work for hire is defined in Section 101 of the Copyright Act (title 17 of the U.S. Code) in two parts: 1) a work prepared by an employee within the scope of his or her employment or 2) a work specially ordered or commissioned for use. The scanning company would most likely fall under the second section, and that would require both parties, the museum and the scanning company, expressly agree to a work for hire clause in a written contract.

## Other thoughts

In this example, photographs and CT scans were produced by the scanning company with the goal of producing a 3D digital replica of the object. At the end of the process, we would argue that there is not likely to be copyright in such a 3D model unless there is some additional creative expression. Some organizations may consider using a click-through agreement or similar simple form that helps the user grant whatever rights needed in order to use their work product as you design your project.

## Case Study 4: Researcher-Developed 3D model

### Background

This situation represents the creation of a 3D model of an ancient Egyptian complex for research and teaching purposes. The resulting 3D model is based on a combination of bibliographic research such as drawings, sketches, photography, plans, as well as on-site 3D scanning, and 3D hypothesis based on previous and new research. The goal of the 3D model is to provide a visual representation of no longer available/disappeared/destroyed/ephemeral cultural artifact or environment. The scanning was generated by a US institution, the research is based on bibliographic resources from around the world, the current creator of the 3D object is US based.

### Object

The object was created using measurements taken during an archaeological investigation in the 1950's funded by the University of Caltech. The specific object in this case is a 3D reconstruction of mortuary complex of a pharaoh in the Valley of the Kings. The object created in a representation of a cultural artifact inasmuch as a new scholarly monograph or performance is a new cultural artifact. It is an amalgamation of scholarly practice and creative research. The 3D model reconstruction of the mortuary complex is intended for publication as a

whole and complete 3D reconstruction to represent the total hypothesis as well as segmented derivatives that highlight specific areas for scholarly provocation. These segmented 3D objects that are derived from the 3D reconstruction are new data that do not exist physically. The resulting 3D reconstruction is an amalgamation of 3D scanned materials, scholarly research and projections in the 3D environment based on the researcher's hypothesis as well as other scholar's 3D reconstructions to create the whole.

## Process

The object was created using measurements taken during an archaeological investigation in the 1950's funded by the University of Caltexico. These measurements, however, were incomplete and did not allow for the recreation of a complete elevation of the mortuary complex. Therefore, a combination comparison to other like-sites in the area, 3D scans of relevant artifacts held at the University of Caltexico, and historical research was conducted by an interdisciplinary team of faculty and students at the US based public Xavo University to fill out missing details.

## Output

The output is an annotated 3D model reconstruction published online as an educational resource. There is a copy in the Xavo University institutional repository with associated creation metadata listing authors (the faculty and students of Xavo), and the bibliographic records used to create the model, i.e. University of Caltexico's archaeological reports, the other sources used to create the model, and any new measurements created to fill in any missing data to complete the mortuary complex elevation. The output includes an .obj file of the completed model, spreadsheets that represent the measurements and dimensions used to create the model, and a .txt / .csv that represents the bibliography including links to other 3D scans imported to the model as well as a .json file for 3D annotations.

## Usage

The 3D object will be published by Fordstan University Press. Xavo University holds a copy of the 3D output in the institutional repository, but because of the upcoming publication of the 3D reconstruction, the content will be embargoed for a specified amount of time. After the embargo, the 3D object will be made fully publicly accessible free of charge via Xavo University institutional repository.

## Discussion

Here we have an amalgam of copyright and non-copyright works mixed together to form a virtual architectural 3D model. Certainly there could be, as with the three cases above, many questions as to the copyrightability of the data, including measurements, notes, photos, and the scholarly "guesswork" that filled in any missing information. Arguably, some could have copyright protection and some could not. However, in this case, we will focus on the transformative nature of the use of all these works to create the virtual architectural 3D model. It is more than likely that this is considered a fair use of the copyrighted works.

At its core, fair use ensures that there are some kinds of uses that do not require permission or payment, and provides flexibility for users and new creators. There are, however, no easy rules for fair use. The source of fair use law is statutory: Section 107 of the Copyright

Act provides that fair use of a work “for purposes such as criticism, comment, news reporting, teaching...scholarship, or research” is not copyright infringement. This list is not exhaustive; other uses of copyrighted work without permission may also be fair. Section 107 further provides:

*In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include—*

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

Since the doctrine is an equitable rule of reason, no generally applicable definition is possible, and each case raising the question must be decided on its own facts. This examination of the four factors determines whether the use is “fair” or constitutes “copyright infringement.” Courts weigh each factor, and make a decision based on the overview of all four factors. In this 3D model creation context, this four factor test is used as a form of risk mitigation. By reviewing the four factors as a court might, a 3D data creator can determine whether or not the action she is taking might risk infringement or fall squarely within the realm of fair use.

In recent years, U.S. courts have focused increasingly on whether an alleged fair use is “transformative.” A work is transformative if, in the words of the Supreme Court, it “adds something new, with a further purpose or different character, altering the first with new expression, meaning or message.”

There are various ways that copyrighted third-party material – such as images, text, videos, and sketches – can be used transformatively. The key is for the use of the copyrighted material is repurposed to advance a point made in the presentation, lecture, chapter, or other work. Imagine, for example, taking a college music course on jazz. A jazz album may be written for a specific purpose: to share artistically created melodies for entertainment. However, if you are in a jazz class in college, the use of jazz songs is not for entertainment. The class may analyze, comment, criticize, and compare the music. Commentary on styles, historical development, instruments, and clips from various famous jazz composers would be part of the curriculum. This class on jazz, and the use of clips and songs in lectures, would be repurposing the original material that was for entertainment, for a new and different purpose: the scholarly study of a unique form of American music.

This repurposing comes in many forms. As illustrated the work could be the subject of the instructor’s analysis. In that case, the material is necessary because the instructor is analyzing, critiquing or explaining it. Or the material could illustrate the instructor’s point or help to make it more comprehensible. These examples are not exhaustive. The key is that the material is being re-purposed to significantly advance the instructor’s own point.

This could be readily adaptable to projects that make 3D reconstructions made up of multiple sources of copyrightable materials, some 3D data, the integration of other 3D models and non-copyrightable materials from other 3D facsimiles. Materials that are in the public domain or unprotectable under copyright can easily be used. For materials still under copyright, but are necessary for inclusion in the project, their “fair use” is all dependent on the type of use and the potential for repurposing those 3rd party copyrighted materials to serve this new use: building a complete 3D reconstruction.

In these scenarios the copyright judgment is indeed more complex. A best practice for determining copyright, or other related rights, is to consult the institution's Intellectual Property Rights (IPR) of the physical objects. Other rights to consider as part of this reconstruction include the IPR of the 3D reconstructions integrated into the completed reconstruction.

Only a good metadata schema could keep track of all possible IPRs. Metadata gives use information about authorship, creation date, publication, acquisition, and other information that aids the user in making a judgement as to the potential copyright. And it certainly is a matter of good scholarly record to cite to any materials used - whether it's footnotes in an article or in the creation of a 3D reconstruction work. A single metadata record should be associated with each part of the digital reconstruction. A final record should register the IPR of the complete reconstruction with appending IPR for the reconstruction's sub-parts to better identify the digital objects' **provenance**<sup>xiii</sup>.

For a similar example including US and non-US sources, see [Appendix 5 \(Case Study #5\)](#).

[INSERT TEXTBOX 4 HERE: 3D Architectural Models: Further Discussion ]

## Conclusion

Interaction between law and modern 3D technologies is in its infancy. Additionally, the laws that are “on the books,” including copyright, contract, licensing, and others, were developed in the past, prior to the advancement of our modern 3D processes and tools. There is very little legislation or cases that deal directly with the specific factual scenarios we outline. However, in common law systems like the U.S., we have the ability to adapt and use the law we have to interpret our work.

This chapter, hopefully, lays the legal and procedural groundwork for conversations surrounding the cutting-edge 3D work being done in our cultural institutions. We can't do our work unless we know what the law actually says. And we can also use this knowledge to “myth-bust” any long-held beliefs and assumptions about the law which could jeopardize our institution's mission. Lastly, we then learn how to harness that law to carry out our organizational mission.

Here, we reviewed some of the most relevant laws and cases that cultural institutions can utilize to make their 3D works available to the world. Some are not 3D related cases or laws, but they still have enormous value to our dialog. With the fundamental copyright policies that eliminates most prohibitions on sharing facts, data, and other information, combined with an understanding of where protections can still exist, a cultural institution can continue to play their role in being a balancing mechanism between rights and access. With a greater understanding of licenses and contracts, we can still preserve some of the values associated with our collections. Additionally, we can provide both donors and users with the proper information they need, including any potential concerns surrounding questions about rights, future uses, and

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<sup>xiii</sup> See Glossary

long-term access. Determining and documenting rights associated with 3D data is a critical component of long-term preservation.

Being able to identify the key legal issues is the first step towards structuring an approach. As you can see from the case studies, the legal and substantive questions are often intertwined. We sought to keep scenarios as simple as possible in order to identify essential common elements that would help articulate community practices. This was remarkably difficult. However, with these case studies, much like the case law, we want them to be used to benchmark some of the other 3D projects happening in cultural institutions. Read them, examine the law, distinguish the outcomes, and use them as a template or ground floor for the discussions that often surround new and challenging 3D data work in our workplaces.

## Copyright Chapter, Appendix 5 : Case Study 5

We have included this scenario as an appendix because of the extended detail.

[\[Document found here\]](#)

## Copyright Chapter, Appendix 6 : Examples of Contracts

[\[Documents found here\]](#)

## Resources

For further exploration, consider this very selective list of resources regarding items specifically discussed in the chapter.

### *Cases Discussed*

Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53 (1884) (considers the camera as new technology found that photographs are eligible for copyright protection)

Meshwerks, Inc. v. Toyota Motor Sales U.S.A, 528 F.3d 1258 (10th Cir. 2008)

### *Databases in the EU*

European Commission, [Priority, Digital single market: Bringing down barriers to unlock online opportunities](#) and [2018 Evaluation Report: Protection of Databases](#) (last visited February 27, 2019)

### *Preserving the public domain*

Rightsstatements.org Whitepaper (discussing how photos of public domain works are typically not eligible for copyright and - even if eligible in some cases - should be treated by cultural institutions as in the public domain for reasons of public policy)

*On the freedom of panorama*

[Public artworks and the freedom of panorama controversy: a case of Wikimedia influence](#),  
Mélodie Dulong de Rosnay, *Institute for Communication Sciences, French National Centre for Scientific Research (CNRS), Paris, France*, Pierre-Carl Langlais, CELSA, *Université Paris Sorbonne, France*, PUBLISHED ON: 16 Feb 2017 DOI: 10.14763/2017.1.447

## FIGURES

Figure 1. A potentially copyrightable expression of facts.

- **WG4\_Figure1\_SunEarth.png** - CC0

Figure 2. A picture of white pages showing no originality, and yellow pages showing some possible originality. Yellow pages image by “How can I recycle this”

(<http://www.recyclethis.co.uk>) is licensed under CC BY 2.0

(<https://creativecommons.org/licenses/by/2.0/>)

- **WG4\_Figure2a\_YellowPages\_CC0.jpg** - CC0
- **WG4\_Figure2b\_YellowPages\_CCBY\_HowCanIRecycleThis.jpg** - CC BY 2.0

Figure 3. Laughing Cavalier, a 17th century painting by Frans Hals, is currently in the public domain.

- **WG4\_Figure3\_FransHals\_LaughingCavalier.jpg** - CC0

Figure 4. Meshwerks’ 3D wireframe of a Toyota from APPENDIX A, Meshwerks, Inc. v. Toyota Motor Sales U.S.A., Inc., 528 F.3d 1258, 1271 (10th Cir. 2008).

- **WG4\_Figure4A\_Meshwerks.jpg** - CC0

Figure 5. Generation of a 3D file using photogrammetry.

- **WG4\_Figure4\_PhotogramText.png** - CC0

Figure 6. Traditional Knowledge Labels for TK V (Verified) and TK S (Seasonal).

(<http://localcontexts.org/tk-labels/>).

- **WG4\_Figure5a\_TKVerified2018.png**
- **WG4\_Figure5b\_TKSeasonal2018.png**

*Traditional Knowledge Labels for TK V (Verified) and TK S (Seasonal)*

## TEXT BOXES

### Textbox 1: Thinking Globally

This chapter focuses on US law which treats databases differently from the EU approach. In the EU, Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases governs the organization of facts in databases. This directive was reconsidered by the EU in 2018. In our discussions about data from scans of 3D objects, we observed that many projects are implicitly or explicitly global in nature. Thus it is important to develop a general awareness beyond US law for many projects. One of the key recommendations that emerged from our discussions: it is vital to design projects with the end result in mind. If the goal is to have an open access result, that needs to be designed into the structure of the project. If a more closed approach is desired, that too needs to be designed into the project (think of situations where there are privacy or ethical concerns). We recommend being as clear and explicit about your assumptions and goals from the outset. It is a worthwhile investment of time and expertise.

### Textbox 2: What are regulations?

In addition to cases, we have a variety of other laws called *regulations* that are put forth by the U.S. Copyright Office. These appear in a publication called the *Code of Federal Regulations* (CFR). The regulations implement a more detailed requirement of originality combining interpretation of the Copyright Act and the *Feist* decision. For example, 37 C.F.R. § 202.1(a) prohibits registration of "[w]ords and short phrases such as names, titles, slogans; familiar symbols or designs; [and] mere variations of typographic ornamentation, lettering, or coloring." Later, § 202.10(a) states "to be acceptable as a pictorial, graphic, or sculptural work, the work must embody some creative authorship in its delineation or form." Regulations often provide very practical guidance about the application of the law.

### Textbox 3: Copyright registration

The Copyright Office uses the Compendium of U.S. Copyright Office Practices, Third Edition, their governing administrative manual, to make copyright registration determinations. Ultimately, registration decisions are assigned to copyright examiners who use the Compendium to review the application. The copyright examiners make copyright registration determinations that are unique to each examiner. As a result, there are registration decisions that result in different determinations depending on the examiner.

### Textbox 4: 3D Architectural Models: Further Discussion

[Generalization about how the same issues come up in different contexts. Note the Virtual Reality dispute from HyperAllergic.]

3D models produced during the design of new buildings present different copyright and ownership concerns compared to 3D models of non-copyrighted historic structures,

archaeological sites, or scientific and cultural objects. [Discussion during the 2/27 call -- Perhaps adding a bit about "if an archivist gets one of these packages, what are they likely to run into in terms of files, packages, etc., and how Freedom of Panorama might impact this?]

Architectural records, including 3D models, fall under the class of cultural works afforded protection by copyright law. In most countries, the buildings themselves are also protected under copyright. In the US, the protection afforded to architectural documents was not extended to architectural works themselves until 1990, so only buildings designed or built after this date are protected. Like other cultural objects, copyright law allows the creator of an architectural work the exclusive right to reproduce the work (including to build the work), create derivatives, and display the work publicly. In some countries, including the US, a "Freedom of Panorama" provision of the copyright law allows for photography, video recording, or otherwise capture and reproduction of buildings located in a public place without the permission of the copyright holder. Keep in mind that countries like Argentina, Belgium, France, Greece have a much more limited Freedom of Panorama right, which prevents commercial or other uses. Or, in the case of Italy, there is a highly restrictive law to publish any pictures of artworks which are in public space without explicit permission.

In the context of the contemporary design process, 3D architectural models are fully copyrighted materials produced in the course of an architectural firm's business, and as such are embedded in complex layers of rights, ownership, and licensing issues that govern their access and use. These terms are defined in contractual agreements between the client and architect, between architect and contractor, and between an architect and their sub consultants. Typically, architects maintain both copyright and ownership of the 3D models and other documents they produce when designing a building; these documents are licensed to their clients as "instruments of service" towards the creation of a work of architecture. Subconsultants or subcontracted engineers will in turn license their own documents to the architect in a similar manner. Careful control of access and use of design documents helps protect from loss of fees, damage to reputation, or liability for building safety that an architect might incur if the documents were used to create a building outside of their supervision or permission.

Today's digital design processes introduce additional copyright concerns. 3D architectural models may be authored in proprietary and even custom-built software, with important data that might be lost in translation to open formats. Advanced methods like building information modeling ("BIM") can result in complex documents with multiple authors and contributing disciplines that might have copyright over the material. Architects often develop their 3D model on top of site models and spatial data provided by the client or sourced elsewhere; similarly, vendors of building components are increasingly producing pre-rendered 3D models of their wares for architects to incorporate directly into their 3D model.

Similar copyright and contractual issues govern non-digital architectural material, but since architectural works on paper are typically accessed in the reading room as originals, rights issues often don't arise until a work is selected for traveling exhibition or publication. In contrast, digital architectural practice, and its digital archival practice, require archivists to address copyright and ownership at each step of acquisition, preservation, and access.

## Bibliography



*Feist Publications v. Rural Telephone Service Co.*, 499 U.S. 340 (1991)  
*Rockford Map Publishers, Inc. v. Directory Serv. Co. of Colorado*, 768 F.2d 145 (7th Cir. 1985)  
*Bridgeman Art Library v. Corel*, 36 F. Supp. 2d 191 (S.D.N.Y. 1999)  
Copyright Act of 1976, 17 U.S.C § 102 (1990)

## Endnotes

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<sup>1</sup> 17 U.S.C. § 102

<sup>2</sup> *Feist Publications v. Rural Telephone Service Co.*, 499 U.S. 340 (1991)

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

<sup>4</sup> *Rockford Map Publishers, Inc. v. Directory Serv. Co. of Colorado*, 768 F.2d 145, 148 (7th Cir. 1985)

<sup>5</sup> *Feist Publications v. Rural Telephone Service Co.*, 499 U.S. 340 (1991)

<sup>6</sup> *Feist*, 499 U.S. at 363 (1991).

<sup>7</sup> *Id.* at 359.

<sup>8</sup> *Id.* at 364.

<sup>9</sup> *Bridgeman Art Library v. Corel*, 36 F. Supp. 2d 191 (S.D.N.Y. 1999)

<sup>10</sup> *Id.*