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# Sculpture in the age of the 3D scan

*by* *Charles Cronin*

*On controversies over scans of museum objects.*

In 1998, the late Paul Allen of Microsoft paid a group of students and faculty from Stanford and the University of Washington to travel to Florence to obtain 3D scans of sculptures by Michelangelo. The group's primary focus was David, now housed inside the Galleria dell'Accademia. It obtained scan data occupying sixty gigabytes of digital storage, from which, using a 3D printer, one can create extraordinarily accurate copies of the sculptures.

The question soon became, who controls the project's data? When the work was completed, Marc Levoy, who has since retired from Stanford's Computer Science faculty, appointed himself guardian. Access is now determined by his opinion of both the scholarly bona fides and the planned uses of those seeking it.

Cosmo Wenman, an artist in San Diego, uses 3D scans of well-known sculptural works to create copies and montages in diverse media. Wenman advocates for institutions making their scans available to the public, but he was unable to obtain Stanford's *David* scan data because Levoy had promised Italian officials the exclusive rights to commercial use of Stanford's scan.

When I asked Levoy about the terms of this agreement, he demurred, claiming it was a "sensitive matter." When I subsequently raised the issue with Stanford's Office of Legal Counsel, one of the University's intellectual property attorneys promised to talk with Levoy. But Stanford ultimately made no change to Levoy's control over the project data; nor did it offer legal or ethical basis for this authority. Stanford's restricting of access to information about a public-domain cultural artifact of universal significance is particularly incongruous given that its law school has been an early and vociferous promoter of unfettered access to digital public-domain information and of legitimate "fair use" of works protected by copyright.

Two-dimensional photographs can convey the shapes and colors of a painting or sculpture. But

lacking depth and texture, photographs do not challenge the uniqueness of the original (and its associated economic value) because we can readily distinguish between photographs and the works they record. Three-dimensional scan technologies, however, enable the capture and reproduction of the textures of not only sculptural works, but also media like paintings, mosaics, and tapestries. This additional dimension has the potential to significantly diminish our ability to distinguish between originals and copies.

The only contact between a 3D scanner and the object it "reads" is a beam of light. Accordingly, 3D scanning is an ideal technology to capture the shapes of fragile and precious artifacts such as sculptures and antiquities. The Getty, the Smithsonian, and other institutions both in the United States and overseas have ongoing initiatives to scan major objects in their collections. These scans aid the work of scholars and preservationists, as well as those tasked with retailing gift-shop copies rendered in various sizes and media, including prosaic items like coffee mugs and Christmas tree ornaments.

But government and institutional owners of well-known public-domain works like Michelangelo's *David* have been unsettled by 3D technology, fearing its potential to weaken the value of originals . They realize, for instance, that someone possessing a copy of Stanford's *David* scan, a large block of Cararra marble, and access to subtractive milling machinery, could produce for under one hundred thousand dollars a nearly indistinguishable copy of Michelangelo's "priceless" original.

Apart from collections dedicated to modern and contemporary art, museum inventories are mainly made up of works that were never protected by copyright, or whose protection has long been expired. As such, there is no basis in intellectual property law for prohibiting visitors from copying displayed works.

Owners of artworks that are still under copyright protection—the sculptures of Henry Moore, for instance—are also wary that 3D technology could undermine not only the symbolic value of the original, but also the financial potential of their own protected replicas and those of their licensees. While often cumbersome to enforce, copyright provides owners of protected works a legal basis for their authority over reproductions. Assertions of such authority by owners of public-domain works, however, are more legally and ethically questionable.

Three-dimensional technologies challenge control over the access to, and copying of, public-domain cultural objects. Their application also prompts reflection on the relative significance we ascribe to the ideas behind cultural artifacts, and to the media in which they are fixed. To paraphrase Marshall McLuhan, given 3D-scan technology, to what extent is the medium the message for sculptural works?

An artist's choice of a particular material to create a work of the plastic arts typically has greater significance than does the media one uses to manifest a work of visual arts, and certainly one of the

performing arts. Accordingly, certain aspects of a particular medium, like a block of marble with certain veining, or a piece of driftwood with an unusual shape and texture, might be essential to an artist's conception of a work, or even spark the human imagination and effort that will transform it into a work of art.

All cultural artifacts fall along a spectrum on which, at one end, we attribute most of the work's significance to the tangible medium in which it is rendered (e.g., jewelry) and, at the other, to the incorporeal information it conveys (e.g., choreography). By untethering sculptural works from the tangible media in which they were originally fixed, we can nudge these works towards the latter end of the spectrum and enable more immediate and widespread access to the creative expression of their makers. Museum curators and administrators are aware of this potential, but have been skittish about pursuing it because it implicates ceding some measure of control over objects in their collections.

The Baltimore Museum of Art's recent handling of its own scan of Auguste Rodin's Thinker (1903) nicely illustrates how these competing interests affect institutional policy. In 2014, the bma announced on its blog that it had commissioned a 3D scan of its cast of the famous sculpture. According to the post, the bma planned to put the scan "into the public domain" and "looked forward to seeing how it might be used by scholars and the public all over the world." Three years later, Cosmo Wenman contacted the bma seeking a copy of the scan, which the bma had still not made publicly available. His inquiry resulted in a year-long game of hide the ball, documented in a series of dilatory and impertinent responses to Wenman's requests for information. Ultimately, and oddly, the bma deflected the request to the Musée Rodin in Paris, telling Wenman that it would provide him a copy of the Thinker scan only if he first obtained the Musée's permission to access it.

Rodin died in 1917. Copyright for his works has long been expired—an inconvenient fact for institutional owners who want to control the copying of them. There is no basis in intellectual property law for the bma's requiring Wenman to obtain the Musée's permission. This is apparent from the fact that, for instance, anyone legitimately on the grounds of Columbia University may legally scan, and manufacture and sell, copies of its "original" *Thinker* cast housed on the lawn of Philosophy Hall.

The government-owned Musée, however, asserts control over copying of works in its collection based not on copyright but on "moral rights." These include the perpetual rights to maintain the "integrity" of Rodin's output, and to protect his legacy from potential derogation through spurious works. The Musée claims that it obtained these rights in 1916 when Rodin agreed to give his works to France upon his death. The Musée may have inherited these rights, but Rodin did not "donate" the works in his studio to the French government. Instead, he bartered them for permission, reluctantly granted, to continue to occupy the government-owned Hôtel Biron, now the Musée Rodin.

According to the Musée, only the first twelve casts of Rodin's sculptures are "originals." But bronze

casting produces essentially indistinguishable copies of sculptural works. Discriminating between originals and copies is sophistry; the twelfth cast is no more original than the thirteenth. As for the integrity of Rodin's work, the Musée's gift shop peddles all manner of knickknacks—pencil erasers, cuff links, refrigerator magnets—with replicas of *The Thinker* and other Rodin sculptures.

When Wenman disclosed how he intended to use the bma scan, the Musée also denied his request, despite assurances that he would not market his copies as originals or sell them in France. Neither Clémence Goldberger, the Musée's communications manager who issued the denial, nor Cyril Duchêne, the Musée's business manager, would provide Wenman grounds for the refusal.

In December 2017 I met the Musée's Head of Strategic Affairs, Hugues Herpin. He was unaware of any rapport between the Musée and the bma regarding reproduction rights, and he had not previously heard about Wenman's attempts to obtain the bma's scan. Pursuant to this meeting, Herpin informed Wenman that the French Cultural Ministry was reviewing policies related to use of 3 D scans of cultural objects, and the Musée, a national museum, would comply with the Ministry's recommendations.

Wenman subsequently contacted Catherine Chevillot and Christopher Bedford, the directors of the Musée and the bma, respectively, chronicling his attempts to obtain the scan and seeking to know why the institutions denied him access. Both directors responded in a perfunctory manner. Resorting to the French equivalent of a U.S. foia request, Wenman is now attempting to compel the Musée to provide him a broad range of documentation relating to his request. Today, nearly two years since his first inquiry, Wenman appears to be no closer to obtaining either a copy of the scan or an explanation why the bma reneged on its commitment to make it publicly available.

What motivates owners of public-domain cultural artifacts to attempt to restrict reproductions of these works? As illustrated in the case of the David scan, financial opportunity plays a role: Stanford paid for it, but the Italian authorities demanded exclusive commercial use rights. Owners of similarly preeminent cultural artifacts—such as Berlin's Neues Museum, which holds in its collection the famous Nefertiti Bust (ca. 1345 BC)—have candidly argued that unfettered public access to their scans might undermine sales of their own replicas. But, while 3D scans may make it easier to produce reproductions, one can already easily obtain and copy extant replicas of such works.

The reluctance of the Neues Museum, the Baltimore Museum of Art, the Musée Rodin, the Galleria dell'Accademia, and other institutions to share information and data about their public-domain objects has a subtler motivation grounded in lingering notions that authority over cultural works is based on one's possession of their original reifications. Expressions of such authority are typically couched in rhetoric about protecting the reputation of the artist, and the interests of the (undiscerning) public, from exposure to spurious works and reproductions. But such sentiments have insidious and regrettable consequences, like the obstruction of scholarship in the case of the

protracted refusals by the original guardians of the Dead Sea Scrolls to share photographs of these documents, even among Biblical scholars.

There are dozens of commercial and parodic 2D images, and 3D objects, based on Michelangelo's *David*. These have not compromised the integrity of the work; if anything they have enhanced its prestige and renown by confirming its universally acknowledged relevance and appeal. Likewise, Duchamp's *L.H.O.O.Q.* (1919) mainly prompts a desire to see Leonardo's *Mona Lisa* original, without the twentieth-century artist's puerile grafitto.

Significant literary and musical works share this resiliency. Consider, for instance, Mozart's oeuvre. Thanks to the Packard Humanities Institute, the preeminent complete edition of scores is now available in print and, without charge, digitally online. This extraordinary access will undoubtedly enable both superb and atrocious renditions of Mozart's works, but the bad ones will not affect the integrity of the music, or Mozart's reputation, any more than Duchamp's scribbling diminishes our regard for *Mona Lisa* and Leonardo.

Music, and all creative works, are, fundamentally, records of intangible human intellect. Three-dimensional-scan technology holds the potential to bring to sculpture the same sort of versatility, reproducibility, and digital accessibility available to musical scores or literary works in the public domain. By capturing the essence of the artist's intellectual expression, 3D scans reduce the obstruction that "the physical object" once presented in bringing his ideas to a larger audience. Through these intangible records, might we begin to perceive the digital scans of sculptural work as akin to works of performing arts—tractable to diverse renderings and reinterpretations?

Universal access to copies of Mozart's opera scores has only increased our regard for them, just as it has enlarged their capacity to sustain hundreds of different productions and thousands of interpretations. Unencumbered access to scans of seminal sculptural works like David, The Thinker, and Nefertiti would further a similar appreciation of the universal and timeless significance of such works. As Rodin himself observed, "I invent nothing, I rediscover."

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