

## HISTORY IN 3D

### *The Digital Preservation of Cultural Heritage in an Age of Terrorism*

Tangible cultural heritage embodies significant artistic, historical and cultural memory and meaning. It offers a window onto the past - the ancient civilizations that once existed and have long since disappeared. For centuries, societies have sought to “record, preserve and understand”<sup>1</sup> their heritage, by excavating, exploring and examining the tangible records and monuments of the past. Now, in the contexts of war and terrorism, cultural heritage sites across the globe are in danger of both intentional and incidental destruction.

Destruction of cultural property<sup>2</sup> in war is by no means a uniquely contemporary phenomenon or one limited to extremism. Whether the intentional target of destruction or collateral damage in indiscriminate warfare, or the result of looting and trafficking to finance international criminal activities, threats to cultural patrimony are ever more diverse and disastrous. The international community is struggling to cope with the destruction and determine responses - preservation and reconstruction strategies as well as legal and ethical frameworks - to address the threats. Increasingly, cultural institutions and organizations are employing advanced technology to replicate, reconstruct and resurrect damaged or destroyed cultural property, from the Bamiyan Buddhas in Afghanistan, to the ancient Roman ruins at Palmyra. As digital reproductions more accurately resemble the original property, ethical questions arise about the authenticity and integrity of the reconstructed heritage property. Is digital reconstruction of destroyed property always desirable or appropriate? Though widely viewed as an unqualified breakthrough in the context of attacks on and destruction of iconic historic properties of incalculable value, the use of digital media to create facsimiles of lost cultural properties cannot fully restore the ideas, symbolic memory and cultural significance embedded in the original property.

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<sup>1</sup> Affleck, Janice; Kalay, E. Yehunda; Kvan, Thomas. *New Heritage: New Media and Cultural Heritage*. New York, New York: Routledge, 2008. 30

<sup>2</sup> Cultural property has been defined as “a representative of the material traits of a racial, religious, or social group, [that] belongs not only to the cultural heritage of the people most immediately concerned with it, but also to the cultural heritage of all humankind. This dual character of cultural property – national and international – doubles the importance of its

a Historic Bridge in Mostar.” *Museum International* 56.4, 2004. 6-17.

Increasingly, digital imaging solutions are being developed and employed to produce detailed, high-resolution virtual renderings or reconstructions of cultural properties that have been severely damaged or destroyed. One of the most common and successful digital imaging solutions used in the examination and documentation of cultural heritage is 3D laser scanning, a non-contact, non-destructive technology that captures the shape and size of physical objects and renders them in virtual spaces. Scans record fine detail of structures and their surroundings, allowing for targeted and highly accurate digital data collection. The collected data can be used to generate 3D surface models of artifacts, sites and even entire cities. This process is a highly reliable “tool for reconstruction of missing components in a real environment, scaling the original if necessary without the handling of the original artifact.”<sup>3</sup> In addition to 3D laser scanning, other cutting-edge imaging technologies for digital capture and documentation include: polynomial texture mapping (PTM), which relies on the “assemblage of multiple images;”<sup>4</sup> photogrammetry and structured light scanning, both of which help generate 3D renderings. With the rapid advancement of technology, 3D scanning is becoming an increasingly accurate method, capable of capturing “not only ancient artifacts but also the many modifications and adaptations they have undergone through the ages.”<sup>5</sup> This technology is widely viewed as an invaluable new strategy in the protection, preservation and conservation of endangered or destroyed cultural properties, and its use is increasing.

It cannot be denied that digital imaging techniques provide substantial and dramatic solutions to the seemingly unpreventable threats to cultural property posed by war and other armed conflicts. Researchers, museums, universities conservation centers and cultural institutions worldwide have “embraced the modeling and visualization abilities afforded by computers to create re-constructions and databases of threatened or altogether lost cultural heritage.”<sup>6</sup> The technology has the potential to enhance understanding of monuments through creative and refined manipulation of perspective and scale, expanding beyond preservation of “static displays, capturing in cinematic or interactive form the social, cultural, and human aspects of the sites and

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<sup>3</sup> Szczepanowska, Hanna M. *Conservation of Cultural Heritage: Key Principles and Approaches*. New York: Routledge, 2013. 62

<sup>4</sup> Ibid. 63

<sup>5</sup> Affleck, Janice; Kalay, E. Yehuda; Kvan, Thomas. *New Heritage: New Media and Cultural Heritage*. New York, New York: Routledge, 2008. 4

<sup>6</sup> Ibid. 6

the societies who inhabited them.”<sup>7</sup> Through digital technology, entire cities can be digitally rebuilt, “to a level of detail that depends only on the patience of the artists. The reconstructed artifacts can be observed from any point of view, at any degree of abstraction, at any time – past, present or future.”<sup>8</sup>

Additionally, 3D modeling can reproduce, at a relatively low cost, monuments and properties that would otherwise be prohibitively expensive to recreate in the original materials. Depending on the size of the project, the hardware involved may be more or less complex and may or may not require the skills and knowledge of an expert. Once collected, the digital data is relatively easy to disseminate. Often, vast amounts of data are stored in easy-to-access online libraries and archives. Anyone with access to a computer, tablet or smartphone is able to search the data quickly and efficiently, gaining unparalleled access to cultural heritage sites around the world without the expense or exercise of travel. Scholars, historians, educators, students and museum professionals can access historical documentation of these sites, enhanced by the detail of digital imaging.

Ethical issues arise, however, when the reconstruction of the destroyed or damaged cultural property is contemplated, aided by technology that permits a precise replication as a stand-in for the lost property. “[D]igital media is not neutral: It impacts the represented information and the ways society interprets it.”<sup>9</sup> A society’s cultural memories, negotiated and determined collectively, are embodied in memorials and monuments and through this embodiment, they are transmitted through time. Susan Sontag argues that this process of embodiment is what creates historic memory: “What is called remembering is not remembering but a stipulating: That this is important, and this is the story about how it happened.”<sup>10</sup> If buildings and monuments carry this symbolic meaning through generations, can the reconstructed “copy” of the building carry the same meaning? The perspective of the reconstructor will necessarily create new meaning, or alter the original intent through the process of decision-making about which moment to reconstruct, a kind of physical editing of memory.

Digital technology allows for the collection of an abundance of data and information about cultural property and often it is this abundance that can be

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<sup>7</sup> Ibid. 2

<sup>8</sup> Ibid. 4

<sup>9</sup> Ibid. 1

<sup>10</sup> Sontag, Susan. *Regarding the Pain of Others*. London: Penguin, 2004. 85-86

problematic.<sup>11</sup> Laser scanning can capture every minute physical detail of heritage structures, every contour and crevice. 3D modeling software allows for the missing parts or components of physical remains to be “filled in” with a high degree of precision. Any adaptations or modifications that the skeletal structure may have undergone over the centuries can be exacted with multiple versions of highly-accurate renderings. With the abundance of information that digital imaging solutions affords, it is easy to be overwhelmed by conflicting interpretations and understandings of the histories cultural heritage sites represent. Even with the aid of digital media to help, the process of reconstruction can be inexact: “Missing details must be filled in, even when they are no better than guesswork, otherwise the entire model is rendered useless”<sup>12</sup>

What is at stake, then, with the digital restoration of cultural heritage sites is the authenticity of the reconstruction. In her essay “The Components of Engagement in Virtual Heritage Environments,” Maria Roussou explains the paradox of authenticity as it relates to the application of digital media to cultural heritage preservation. In cultural heritage virtual simulations, accuracy is the priority. As viewers, we expect digitally reconstructed structures and sites to be as accurate and as close to their original as possible. The higher the degree of accuracy, the more authentic the simulated environment feels.

Roussou argues that this hyper-accuracy is exactly what compromises authenticity. “Paradoxically,” she suggests, “the virtual rather than simply being a mimetic mirror of reality, redefines it.”<sup>13</sup> She refers to Walter Benjamin’s view that technology in general raises vexing issues about authenticity. In his 1936 essay “The Work of Art in the Age of Mechanical Reproduction,” Benjamin argues that the mechanical reproduction of a cultural object destroys its presence in time and space:

Even the most perfect reproduction of a work of art is lacking in one element: Its presence in time and space, its unique existence at the place where it happens to be. This unique existence of the work of art determined the history to which it was subject throughout the time of its existence. This includes the changes which it may have suffered in physical condition over the years as well as the various changes in its

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<sup>11</sup> Affleck, Janice; Kalay, E. Yehuda; Kvan, Thomas. *New Heritage: New Media and Cultural Heritage*. New York, New York: Routledge, 2008. 4

<sup>12</sup> Ibid. 5

<sup>13</sup> Ibid. 231

ownership...The presence of the original is the prerequisite to the concept of authenticity.<sup>14</sup>

When the object loses its “unique existence at a place,” it also loses its “aura” or character.<sup>15</sup> For Benjamin, the reproduction can only “refer the viewer to the original,”<sup>16</sup> but not attempt to stand in its place.

Roussou brings Benjamin’s view into the current age of digital media. With virtual replicas, “the aura of the authentic is amplified, while the fake may appear more authentic.” As viewers, we find ourselves interrogating the authenticity of both original and replica, as well as the process of authentication in and of itself. Roussou argues that with the original, the distinctive “aura” of the “unique existence at a place”, though intangible, is palpable but unavailable with the digital copy: “Such unmediated engagement creates a palpable connection with the past; viewing the same places and artifacts through the mediation of a computer monitor does not.”<sup>17</sup> On the one hand, the ability to access and freely explore digitally reconstructed cultural heritage sites in online archives and databases may be desirable. On the other hand, it impacts the viewing experience, and thus the viewer’s relationship to the sites and their history. “The problem is further compounded if the technology allows virtual time-travel, as the narrative may become temporally, as well as specially confused.”<sup>18</sup> Without the guidance, signage and contextualization visitors would find on location at physical cultural heritage sites, the viewing experience can become substantially more passive. Digital media “strips away these ‘conditioning’ and ‘contextualizing’ preconditions from the experience,” which in turn may render the event or experience of cultural heritage less authentic in the mind of the viewer.<sup>19</sup>

The problem of authenticity has caused scholars, historians and conservators to speculate about the appropriate usage of digital media in the service of preserving cultural heritage sites. For professor and scholar of philosophy James Janowski, reconstruction, even the accurate reproduction now permitted by digital technology, is

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<sup>14</sup> Benjamin, Walter. “The Work of Art in the Age of Mechanical Reproduction.” New York: Schocken Books, 1969.

<sup>15</sup> Affleck, Janice; Kalay, E. Yehunda; Kvan, Thomas. *New Heritage: New Media and Cultural Heritage*. New York, New York: Routledge, 2008. 14

<sup>16</sup> Ibid. 231

<sup>17</sup> Ibid. 6

<sup>18</sup> Ibid. 7

<sup>19</sup> Ibid. 8

not always appropriate. Whether or not a particular digital reconstruction is appropriate should be determined on a case-by-case basis, “on a careful weighing of the meanings and values that are served by going ahead with the digital project against the meanings and values that would be served were the artifacts left in desecrated state.”<sup>20</sup> Echoing Benjamin’s reflection on the ontology of artworks, Janowski suggests that the object produced via digital restoration is different than what was produced originally. The original had a history, which in his view is integral to its authenticity. “I am inclined to think that an artwork or iconic piece of cultural heritage is an achievement,” he argues. “I am also inclined to think that digital recreations are not achievements - or, better, they are achievements in a very different sense.” While Janowski unequivocally believes that digital reconstruction jeopardizes the authenticity of historic sites and monuments, he notes that there is a role for the employment of digital media technology in response to “horrific actions,” such as the Taliban’s destruction of the Bamiyan Buddhas in 2001 or the Islamic State’s more recent attacks on cultural heritage in Syria and Iraq. These are extreme cases, which demand careful examination of the benefits and limitations of digital imaging solutions. “We should be cautious until we have thought harder and gained clarity about just what, exactly, the technologies produce,” Janowski warns.<sup>21</sup>

The Taliban’s infamous destruction of the Bamiyan Buddhas<sup>22</sup> in March 2001 sparked an ongoing debate among international heritage organizations about the digital reconstruction of cultural heritage sites and monuments. The giant stone statues, which had stood for one and a half millennia, were reduced to a pile of rubble in what is regarded as one of the greatest acts of “cultural terrorism” of the 21<sup>st</sup> century.<sup>23</sup> All over the world, governments and cultural institutions responded to the destruction, declaring the Taliban’s behavior as an unforgivable “crime against culture and history.”<sup>24</sup> Since the demolition, the reconstruction of the statues has been the subject of debate. In May 2002, the Afghan government joined forces with UNESCO to organize an international conference “aimed at agreement concerning the artifacts damaged and looted by the

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<sup>20</sup> Janowski, James. Interview by Gaby Tama. Personal interview. New York, New York. April 27, 2017

<sup>21</sup> Ibid.

<sup>22</sup> See Appendix I

<sup>23</sup> Janowski, James. “Bringing Back Bamiyan’s Buddhas.” *Journal of Applied Philosophy*, Vol. 28, No. 1, 2001. 44

<sup>24</sup> Ibid. 45

Taliban.”<sup>25</sup> At the conference, participants voiced conflicting opinions about whether or not to resurrect the Buddhas, and if so, what the resurrection would entail. Addressing the devastation, UNESCO officials adamantly argued against rebuilding the two Buddhas, since it would be impossible to do so using original materials. Instead, officials contended, the caverns should be left empty, “as a testament to the vandalism inflicted on the world’s patrimony.”<sup>26</sup> By the end of the conference, it had been decided that the priority should be the stabilization of the empty niches and the overall preservation of the site. The reconstruction of the statues would be put on hold. Nearly fifteen years later, the future of the Buddhas has still not been decided, as the world’s “cultural authorities,” including UNESCO and ICOMOS, struggle to establish and agree on “conservation priorities.”<sup>27</sup> While UNESCO continues to speak out against the reconstruction of the Buddhas, ICOMOS argues that reconstruction is necessary in order to honor the history that Buddhas, arguably the most “highly-prized pieces of Afghanistan’s material culture,” represented.<sup>28</sup>

The stance UNESCO officials took at the time of the demolition was grounded in the Venice Charter for the Conservation and Restoration of Monuments and Sites, devised by conservation professionals in 1964. The charter “sets forth principles of conservation based on the concept of authenticity and the importance of maintaining the historical and physical context of a site.”<sup>29</sup> According to the charter, “replacements of missing parts must integrate harmoniously with the whole, but at the same time must be distinguishable from the original so that restoration does not falsify the artistic or historic evidence” (Article 12)<sup>30</sup>. The charter also condemns “all reconstruction work,” explaining that only “the reassembling of existing but dismembered parts” is permitted in order to maintain the integrity and authenticity of the site (Article 15)<sup>31</sup>.

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<sup>25</sup> Ibid. 45

<sup>26</sup> Bevan, Robert. “Ruin or Rebuild? Conserving Heritage in an Age of Terrorism.” *The Art Newspaper*. Jan. 2017. Web. May 1, 2017.

<sup>27</sup> Janowski, James. “Bringing Back Bamiyan’s Buddhas.” *Journal of Applied Philosophy*, Vol. 28, No. 1, 2001. 45

<sup>28</sup> Ibid. 45

<sup>29</sup> “Cultural Heritage Policy Documents: The Venice Charter: International Charter for the Web. May 1, 2017.

<sup>30</sup> International Charter for the Conservation and Restoration of Monuments and Sites (The Venice Charter 1964). *International Council on Monuments and Sites (ICOMOS)*. Web. May 1, 2017

<sup>31</sup> Ibid.

The disturbing rise in the number of cultural heritage sites and monuments destroyed or damaged by war, conflict and intentional acts of destruction since the formulation of the Venice Charter, has caused a reexamination of the consensus reflected in the Charter about the meaning of authenticity. After privileging concerns for historical authenticity in the Venice Charter of 1964, the scope of cultural heritage concerns broadened to address the need for consideration of cultural diversity in determining cultural heritage protection. In 1994, on the urging of the International Council on Monuments and Sites during a meeting of the World Heritage Committee, the Nara Document on Authenticity was adopted. While building on the framework of the Venice Charter, the Nara Document presents a broader framework for understanding and evaluating the value and authenticity of cultural property. The document calls for “the recognition of cultural differences in attitudes to reconstruction, and for sensitivity to the wishes of local communities.”<sup>32</sup> Horrific events in Syria and Iraq have prompted UNESCO and ICOMOS officials to revisit and revise conservation concerns when it comes to rebuilding cultural heritage like the Bamiyan Buddhas.

Even in light of more nuanced and complex arguments about the reconstruction of the Bamiyan Buddhas, authenticity remains a central concern. For Janowski, the debate boils down to the following questions: “Will we feel this sense of rational violation...upon experiencing the restored Bamiyan Buddhas? Will the...quality of authenticity, and our capacity to appreciate the value that presupposes it, be lacking if the sculptures are restored? In short, will restoration effect resurrection?”<sup>33</sup> While there is no facile answer to any of these questions, Janowski argues that restoring and resurrecting the Buddhas is both “metaphysically possible and morally appropriate.”<sup>34</sup> It is a cultural imperative to return the Buddhas in all of their glory to Afghanistan.

While there is still no consensus about the best way to address the reconstruction or resurrection of the Buddhas, one possibility remains to recreate the Buddhas using digital technology. Artists have been among those interested in digitally resurrecting the statues. In 2005, for instance, artist Hiro Yamagata advanced a

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<sup>32</sup> Bevan, Robert. “Ruin or Rebuild? Conserving Heritage in an Age of Terrorism.” *The Art Newspaper*. Jan. 2017. Web. May 1, 2017.

<sup>33</sup> Janowski, James. “Bringing Back Bamiyan’s Buddhas.” *Journal of Applied Philosophy*, Vol. 28, No. 1, 2001. 52

<sup>34</sup> Ibid. 44



proposal to install an on-site multicolored laser projection of the Buddhas,<sup>35</sup> but the project was never realized. Ten years later, in 2015, 3D projection technology was used to create temporary on-site holograms of the statues. The Chinese couple behind the project received approval from UNESCO and Afghan government officials to mount projectors onto scaffolding and cast virtual renderings of the statues. Though the holograms were temporary, the project is indicative of attempts to use digital media technology to bring the Buddhas back to tangible form, but a form that makes clear that the intent is not to reconstruct and replace the original. These experiments in restoration attempt to address ethical concerns about the integrity of the reproduction and to respect the singular authenticity of the original.

It was the destruction of the Buddhas of Bamiyan that prompted engineer Ben Kacyra to establish Cyark, a nonprofit dedicated to the 3D digital preservation of cultural heritage sites worldwide. Based in Oakland, California, Cyark (a name which combines “cyber” and “archive”) operates internationally with the mission of “using new technologies to create a free, 3D online library”<sup>36</sup> of endangered sites and monuments. Established in 2003, the organization works with technology experts to collect and generate 3D data, which can then be converted into realistic visualizations and interactive virtual experiences. The data is stored in Cyark’s fee-to-access online database, where Cyark has archived over 200 sites to date, including Mount Rushmore National Memorial, the Tower of Pompeii, and Babylon. In 2013, the organization launched an initiative called the “Cyark 500 Challenge,” with the goal of digitally preserving 500 at-risk cultural heritage sites over the course of five years. For each mission, Cyark sends a small team of experts to the designated location. There, they work with site managers, local government advisors and civilians to learn about the history and geography of the location. Cyark also provides training to volunteers, students and cultural organizations working in the region so data collection may continue into the future. Depending on the site and the scale of the mission, the team may also consult a council of advisors from UNESCO and ICOMOS. In the field, the team primarily uses 3D laser scanning and photogrammetry to collect digital data, which is then processed, stored and archived online. With the data, Cyark generates resources, including 3D models, infographics, animations, and videos, all of which are

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<sup>35</sup> “Artist to Recreate Afghan Buddhas.” *BBC*. Aug. 9, 2005. Web. May 1, 2017

<sup>36</sup> “Our Mission.” *Cyark & Partners*. 2014. Web. May 1, 2017

intended for public research and education.

The purpose of Cyark's digital restoration efforts is first and foremost educational. The digital resources are intended to aid educational initiatives and guide research about heritage sites that have been damaged or destroyed. "The high quality of the data captured allows the information to be used in everything from simple grad-school tutorials to complex engineering studies at the university level."<sup>37</sup> With a robust archive of digital data well established, now the nonprofit is primarily dedicated to working with historians, scholars and educators "to make this information usable for a classroom."<sup>38</sup> To advance their educational mission, Cyark has also collaborated with museums and cultural institutions worldwide. In 2015, for example, the nonprofit worked with Ars Electronic Center in Linz, Austria, to create a 16-by-9-meter 3D projection of Cyark's archived sites. Visitors to the museum wore 3D glasses to experience a fully immersive journey in time and space, from the pyramids of Tikal in Guatemala to the Tower of Pisa in Italy.

In response to the 2015 terrorist attacks on cultural heritage sites in Syria and Iraq, Cyark teamed up with ICOMOS to launch an initiative called "Project Anqua," designed to document high-risk heritage in the Middle East and North Africa. The goal of the project is to scan data from at-risk sites as quickly and efficiently as possible, while it is still safe to do so. According to Cyark's Managing Director Elizabeth Lee, "the data generated will be instrumental in general risk preparedness for the sites." The work, Lee explains, is beneficial in terms of "providing tools to aide in site management or if needed, reconstruction" as well as training locals and recording the histories of sites for educational purposes.<sup>39</sup> The approach is typical of Cyark: Small teams work on the ground with local partners to document and digitally record sites. Where possible, teams involve and educate local communities on the scope of the project, and the technologies and tools employed. Finally, teams offer day workshops and trainings to mobilize locals with the skills and equipment required to collect data. With the help of Yale's Institute for the Preservation of Cultural Heritage (IPCH), Cyark then publishes the completed scans online along with historical content intended for educational and

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<sup>37</sup> Gregor, Alison. "Cyark is Bringing Historical Architecture Back to Life in Digital." *Architect Magazine*. March 2, 2015. Web. May 1, 2017

<sup>39</sup> "Cyark and ICOMOS Announce Joint Initiative for Emergency Recording and Archiving." *Cyark & Partners*. June 30, 2015. Web. May 1, 2017

interpretive use.

The Anqua initiative continues today in Syria and Iraq, with recent successful completion of digital preservation of the Masrasi al-Jama'iyiyya (Syria) and the Ziggurat of Ur (Iraq). In both cases, Cyark worked directly with government agencies and local heritage groups to ensure safe access to the sites and organize local training sessions. Moving forward, the project aims to continue to build “capacity among local heritage professionals in the Middle East and North Africa” through educational programs. This sort of community engagement is an important part of Cyark’s methodology, since it enables local people to become “caretakers and custodians of their cultural heritage.”<sup>40</sup>

The Islamic State’s recent destruction of ancient Roman ruins at Palmyra,<sup>41</sup> Syria has caused public outcry all over the world and inspired a series of projects aimed at fighting the destruction of archeological sites. A UNESCO world heritage site located 130 miles from Damascus, Palmyra is famous for its well-preserved statues, monuments and tombs. In 2015, ISIS forces stormed the city and desecrated the Arch of Triumph, which had been standing for nearly 2,000 years. Immediately following the destruction, the UK-based Institute of Digital Archaeology (IDA) launched a project to create an exact facsimile of the marble monument. IDA, a joint venture between Harvard University, the University of Oxford and Dubai Future Foundation, is dedicated to promoting the “development and use of digital imaging and 3D printing techniques in archaeology, epigraphy, art history and museum conservation.”<sup>42</sup> Using outsourced marble, advanced digital equipment, 3D technology and archival photographs, the IDA team successfully reconstructed the arc and installed it in London’s Trafalgar Square<sup>43</sup> in 2016. There, the reconstructed arc stood for 3 days, before it moved to New York City, and two years later to Florence and Dubai.

At the time of its unveiling, the 3D replica was highly praised. The Deputy Mayor of New York Alicia Glen described the installation as “an act of solidarity with the people of Syria” and “an expression of our shared history and humanity that transcends

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<sup>40</sup> Doppelhofer, Christoph. “Will Palmyra Rise Again? War Crimes Against Cultural Heritage and Post-War Reconstruction.” May 1, 2017, <http://www.ohchr.org/Documents/Issues/CulturalRights/DestructionHeritage/NGOS/Ch.Doppelhofer.pdf>

<sup>41</sup> See Appendix II

<sup>43</sup> See Appendix III

borders of nations.”<sup>44</sup> While initially hailed as a great achievement and bold “act of defiance”<sup>45</sup> against terrorism and the behavior of the Islamic State, the IDA’s restoration of Palmyra’s monumental Arch has since sparked debate about whether the 3D replica was an appropriate response. Questions have arisen about whether it genuinely “defies the destructive actions of ISIS,” or represents what some are calling “digital colonialism.”<sup>46</sup> Through the use of large-scale 3D printing technology, the IDA claims that it carries out “meticulous and culturally sensitive restorations”<sup>47</sup> of objects, artifacts and architecture ruined by the ravages of time and conflict. Yet, many have found the IDA’s replica to be culturally insensitive.

Attention to a diversity of cultural values is the analysis that the Nara Document on Authenticity required by its formulation of authenticity as a culturally determined value requiring an examination of the diversity of values and tangible and intangible expressions that comprise the heritage of every culture. Since the adoption of the Nara Document, there has been a much greater focus on community involvement in the deliberations concerning conservation and restoration strategies. In conversation with *The Art Newspaper*, UNESCO’s Assistant Director General for Culture Francesco Bandarin points to the importance of “looking at community as much as stones,”<sup>48</sup> to consider the intangible cultural heritage that is impacted by the destruction of physical cultural property. For reconstruction to be authentic, Bandarin argues, “the approach has to be pluralistic,” and community-based.<sup>49</sup>

In the case of the replica of Palmyra’s Arch, the IDA revealed little about its relationship and consultation with Syrian communities in the development and implementation of the project.<sup>50</sup> This apparent failure to consult caused many to challenge the initiative, citing “the lack of control offered to local residents over the creation, dissemination, and interpretation”<sup>51</sup> of the digitized site. Indeed, the project

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<sup>44</sup>Voon, Claire. “Slick Replica of Palmyra’s Triumphal Arch Arrives in New York, Prompting Questions.” *Hyperallergic*. Sept. 20, 2016. Web. May 1, 2017

<sup>45</sup>Ibid.

<sup>46</sup>Bond, Saha. “The Ethics of 3-D Printing Syria’s Cultural Heritage.” *Forbes*. Sept. 22, 2016. Web. May 1, 2017

<sup>47</sup>“Our Purpose.” *The Institute for Digital Archaeology*. Web. May 1, 2017

<sup>48</sup>Bevan, Robert. “Ruin or Rebuild? Conserving Heritage in an Age of Terrorism.” *The Art Newspaper*. Jan. 2017. Web. May 1, 2017

<sup>49</sup>Ibid.

<sup>50</sup>Bond, Saha. “The Ethics of 3-D Printing Syria’s Cultural Heritage.” *Forbes*. Sept. 22, 2016. Web. Accessed: May 1, 2017

gave rise to accusations of “digital colonialism” or cultural fetishizing, the idea that those who parachute in and out of cultural heritage sites following their destruction, without care or consideration of the concerns of the communities for whom the destroyed monuments have cultural meaning, are failing to meet their ethical obligations to those affected communities. Critics argued that IDA’s ethical obligations required that “all 3D models and images should be openly accessible,” and accompanied by adequate historical context and information. Further, it was argued that to safeguard the integrity and authenticity of the cultural property, consideration of humanitarian aid is also critical, and organizations like the IDA should help to secure and maintain the original site. Finally, some suggest the development of “community-based recovery and education projects to ensure cultural continuity for displaced people.”<sup>52</sup>

One year after the 3D replica of Palmyra’s Arc was erected, the Getty Research Institute (GRI) in Los Angeles launched a digital preservation project of its own: The creation of the first online-only exhibition of the city of Palmyra, called “The Legacy of Ancient Palmyra.”<sup>53</sup> The exhibit, announced shortly before ISIS recaptured the ancient ruins,<sup>54</sup> aims to provide an overview of the city’s history and culture, as well as a digital recreation of its geographical landscape and archeological structures. While the IDA’s use of digital media in the resurrection of the Arc was largely contested, the Getty’s web project engendered a more positive public response, no doubt due to the clearly expressed scholarly purpose of the project. The site is designed for students, educators, researchers, analysts and specialists interested in learning about Palmyra and potentially becoming involved in its preservation. Hence, the site serves as a reference or educational tool that “cultivates an appreciation of the area’s historical riches that could help combat their destruction.”<sup>55</sup> In this case, it would be difficult to argue against using digital tools to preserve Syrian cultural property. The exhibit, which features a wealth of visual material from photographs to prints to 3D scans, is readily

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Threatened Cultural Heritage Sites in the Middle East.” *MIT Architecture*. Nov. 2007. Web. May 1, 2017

<sup>52</sup>Bevan, Robert. “Ruin or Rebuild? Conserving Heritage in an Age of Terrorism.” *The Art Newspaper*. Jan. 2017. Web. May 1, 2017

<sup>53</sup> See Appendix IV

<sup>54</sup>Press, Michael. “The Getty’s Online Palmyra Exhibition Falls into Orientalist Traps.”

<sup>55</sup> Finkel, Jori. “Getty Preserves palmyra Online in New Show.” *The Art Newspaper*. Feb. 24, 2017. Web. May 1, 2017

accessible online and therefore does not run the risk of falling into the trap of digital colonialism. The Getty has opted not to assert copyright over its digitally generated resources, but rather has opted to share them with the general public. Users can download images and even repurpose them through a Creative Commons Attribution 4.0 International License.<sup>56</sup> Further, the Getty's effort to translate the site into Arabic is demonstrative of its sensitivity toward the culture and communities affected by the demolition of Palmyra's treasures. In the midst of a flurry of digital archaeology projects, the Getty's online archive stands out because it "doesn't attempt to reconstruct what's lost but rather highlights a history of which we seem to be losing sight or awareness."<sup>57</sup> Unlike the IDA's 3D Arc, the Getty's online survey of Palmyra does not tamper with the "aura" of the site or impact the cultural meaning it embodies. In this particular application, not only is digital media neutral, it is also beneficial, since it makes an extraordinary wealth of accurate visual and historical content available to audiences worldwide.

The range of ethical concerns involved in decisions about the restoration or reconstruction of damaged or destroyed cultural heritage sites had expanded beyond those traditionally thought necessary in conservation decision-making. As the Nara Document posits, a determination of authenticity requires more than an analysis of artistic and historical values. The addition of new considerations, certainly warranted where the destroyed or damaged cultural subject of ethical debates lives or lived in a human community of interests, values and historical meanings, has further complicated an already thorny problem of authenticity. This conundrum is ancient, raised by Plutarch in the late first century in the *Life of Theseus*: Is Theseus' ship authentic if, over time, all of its constituent parts and materials have been incrementally replaced? Plutarch unhelpfully observed that such a ship was "a model for the philosophers with respect to the disputed arguments ... some of them saying it remained the same, some of them saying it did not remain the same."<sup>58</sup> As threats to significant objects of cultural heritage seems to continue unabated, and technology continues to present better and

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<sup>56</sup> Voon, Claire. "Tribute to Palmyra is the Getty's First-Ever Online Exhibition." *Hyperallergic*. Feb. 14, 2017. Web. May 1, 2017

<sup>57</sup> Ibid.

<sup>58</sup> Rea, M. "The Problem of Material Constitution," *The Philosophical Review*, 104: 525-552, cited in Deutsch, Harry, "Relative Identity", *The Stanford Encyclopedia of Philosophy* (Winter 2008 Edition), Edward N. Zalta (ed.). Web. May 1, 2017

more convincing reconstructions, the meaning of authenticity will continue to be disputed.

For now, one way to assess whether digital reconstruction of a particular cultural heritage site is appropriate, both ethically and logistically, is to examine the intended purpose of the project at hand. Where the intent is to educate the public about the history and culture of a given site or structure, the problem of authenticity, in its original formulation, loses potency under the weight of competing, and compelling considerations. Cyark's digital resources and the Getty's online exhibit on Palmyra are both examples of efforts to preserve cultural heritage through the collection, storage and dissemination of knowledge about endangered sites. In this context, the implementation of digital media tools does not impact the "aura" of the cultural heritage treasures themselves, but rather enables for a more comprehensive public understanding and appreciation of them. Instead, when technology is used to create exact replicas of structures like the Arc of Palmyra for the sake of public display, the loss of authenticity is a greater risk. With the absence of methodological transparency, connections to local communities and adequate contextualization on site, organizations invested in digital reconstruction of cultural property run the risk of engaging in digital colonialism, which may ultimately do a disservice to the history, people and culture surrounding the original property.

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Appendix I

*The Bamiyan Buddhas*



General view of the Bamiyan Valley © Graciela Gonzalez Brigas, UNESCO



Cultural landscape and archaeological remains of the Bamiyan Valley © Roland Lin, UNESCO

Appendix II

*The Site of Palmyra*



Site of Palmyra (Syrian Arab Republic) © Ron Van Oers, UNESCO



### Appendix III

#### *The Replica of Palmyra's Arch*



Palmyra arch destroyed by Islamic State recreated in London © IBTimes UK



The Institute for Digital Archaeology's recreation of Palmyra's Arch of Triumph in New York City  
© Claire Voon, Hyperallergic

## Appendix IV

### *The Legacy of Ancient Palmyra*



Temple of Baalshamin, Louis Vignes, 1864 © The Getty Research Institute



City plan of Palmyra, Louis Perrier after Louis-Francois Cassas © The Getty Research Institute