THE DIGITIZATION OF DESTRUCTION:

CRITICAL APPROACHES TO DIGITAL HERITAGE RESCUE

Hannah Elizabeth Wolfe

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School of Architecture
Department of Architectural History
University of Virginia
Charlottesville, Virginia

Thesis Advisor:

Lisa Reilly

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INTRODUCTION

The Digitization of Destruction

In Gavin Hamilton's 1758 painting, *James Dawkins and Robert Wood Discovering the Ruins of Palmyra*, the artist portrayed Dawkins and Wood seven years after their expedition to the ancient city in present-day Syria (Figure 0.1). Hamilton represents the two eighteenth-century British men cloaked in Roman attire, as though they are inhabitants of the city during its golden age in the second century CE.[1] The title itself is indicative of the colonial narrative, as these men "discover" Palmyra.

Yet Palmyra flourished long before Dawkins and Wood arrived. As one of the few oases in the Syrian desert, Palmyra, known in Arabic as *Tadmur*, thrived as a crucial stop on the Silk Road. Monumental building construction enhanced the splendor of the city through distinctive art and architectural styles, reflecting a unique combination of Greek, Roman, Armean, and Arab traditions.[2] Palmyra was a popular tourist destination, and became a World Heritage site in 1980. The ancient city acted as a source of pride for the Syrian people, who affectionately referred to the site as "the bride of the desert."[3] The so-

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[1] Erin L. Thompson, "Legal and Ethical Considerations for Digital Recreations of Cultural Heritage," *Chapman Law Review* 20, no. 1 (2017): 163.

[2] Nour A. Munawar, "Reconstructing Cultural Heritage in Conflict Zones: Should Palmyra Be Rebuilt?," *EX NOVO Journal of Archaeology* 2 (December 2017): 38, https://pure.uva.nl/ws/files/21012399/Reconstructing_Cultural_Heritage_in_Conflict_Zones.pdf.

[3] Munawar, "Reconstructing Cultural," 33.

called Islamic State in Syria (ISIS) captured Palmyra in May of 2015, and proceeded to systematically decimate the city's ancient ruins. Palmyra's destruction was widely publicized by Western media outlets, and a profusion of projects emerged that sought to resolve this loss through digital technologies. While it is simple to see the problematic assumptions in Hamilton's painting of Palmyra, it is more difficult to recognize similarly problematic assumptions in today's digital representations.[4] In this paper, I trace the various ways in which the very same assumptions so clearly present in Hamilton's overt representation of colonialism are pervasive in some digital heritage projects at Palmyra and elsewhere.

The rise of the digital age brought with it new technologies that promised to radically improve preservation practices, paving the way for the relatively new, and rapidly expanding fields of digital heritage and digital archeology. When universally significant monuments are threatened, destroyed, or damaged, specialists increasingly look to find new ways to preserve these monuments through digital methods. For the purposes of this project, I will classify these monuments as cultural heritage, which has been defined by UNESCO as monuments that have "outstanding universal value from the

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[4] "Thompson," Legal and Ethical," 166.

point of view of history, art or science."[5] Groundbreaking heritage technologies—particularly laser scanning and 3D modeling technologies—have inspired the rapid growth of digital and cyber rescue archaeology, a new field which has increasingly focused on endangered and destroyed heritage.[6] Universities, archaeological faculties, and scholars have launched digital labs and non-profit organizations that are dedicated to protecting threatened and destroyed heritage through digital archaeology.[7] In 2003, the UNESCO Charter on the Preservation of Digital Heritage codified these practices, defining digital heritage broadly as "[t]hose digital materials which are valued

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[5] UNESCO defines cultural heritage as "monuments: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science; groups of buildings: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science; sites: works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view." (UNESCO, 1972).

[6] Monika Stobiecka, "Archaeological Heritage in the Age of Digital Colonialism," *Archaeological Dialogues* 27, no. 2 (November 13, 2020), 114: https://doi.org/10.1017/S1380203820000239.

[7] Stobiecka, "Archaeological Heritage," 114.

sufficiently to be retained for future access and use."[8] Yet until very recently, these new approaches have prompted little, if any, critical reflection. The most comprehensive critical analysis of digital heritage, *Theorizing Digital Cultural Heritage: A Critical Discourse*, was published in 2007, and does not consider digital heritage within the context of destruction.[9]

Recent criticisms of digital heritage launched by Erin L. Thompson, Monika Stobiecka, and Roshni Khunti, and others illuminate the layered meanings of digital heritage and destruction through ontological, epistemological, and ethical dimensions.[10] As Stobiecka outlines, digital heritage is often the product of an emphasis on the universal value of world heritage, which is an onto-epistemology.[11] Following Karen Barad, I consider digital heritage through a framework of the ethico-onto-epistemology, which reveals the inseparability of the ethical, ontological, and epistemological

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[8] UNESCO, *Charter on the Preservation of Digital Heritage,* 2003, 157: https://unesdoc.unesco.org/ark:/48223/pf0000130071. UNESCO's definition of digital heritage is expansive as "[r]esources of human knowledge or expression…created digitally, or converted into digital form from existing analogue resources," and includes "texts, databases, still and moving images, audio, graphics, software, and web pages." For the purposes of this project, I use the term 'digital heritage' to discuss digitally-conceived data, replicas, and models of historical monuments/sites that have been considered universally significant.

[9] Fiona Cameron and Sarah Kenderdine, eds., *Theorizing Digital Cultural Heritage: A Critical Discourse* (Cambridge, MA: MIT Press, 2007).

[10] Thompson, "Legal and Ethical"; Stobiecka, "Archaeological Heritage," 113; Roshni Khunti, "The Problem with Printing Palmyra: Exploring the Ethics of Using 3D Printing Technology to Reconstruct Heritage," *Studies in Digital Heritage* 2, no. 1 (September 26, 2018): https://doi.org/10.14434/sdh.v2i1.24590.

[11] Stobiecka, "Archaeological Heritage," 113.

dimensions of digital artifacts.[12] The various ethical dimensions of digital heritage will be explored further throughout this paper, but central to the present study is how digital heritage has the potential to reinforce entrenched colonial narratives and power dynamics. The use of information technologies to reinforce colonial power dynamics (such as through wifi access or language barriers) has been labeled by digital scholars such as Caroline Schroeder and artist Azra Aksamija as *digital colonialism*.[13] Understanding the relationship between digital heritage and digital colonialism is paramount to developing an ethical future for digital projects.

This paper investigates how digital heritage reveals key ethical issues of our time. It also proposes the creation of better practices as one way to address these issues. I argue that the very nature of the digitally-rendered heritage object—its digital object-hood, role within heritage politics, and expression of identity—infuses the object with a particular significance. This process and the accompanying significance are not neutral, as sometimes implied, and require reflection in order to understand the ethics of this

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[12] Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham: Durham University Press, 2007), 90. Barad was the first to introduce the term "ethico-onto-epistemology" to argue that ethics, ontologies, and epistemologies are inseparable in the production of knowledge.

[13] For more information on Digital Colonialism (occasionally referred to as Electronic Colonialism), see Herbert Shiller, *Communication and Cultural Domination,* (International Arts and Sciences Press: 1976); Caroline T. Schroeder, "On Palmyra and 3D Modeling Cultural Heritage in the Middle East," Early Christian Monasticism in the Digital Age (blog), entry posted June 12, 2016, https://earlymonasticism.org/dh/on-palmyra-and-3d-modeling-cultural-heritage-in-the-middle-east/; Azra Aksamija, "Memory Matrix," *Future Anterior* 14, no. 1 (Summer 2017): 145, https://muse-jhu-edu.proxy01.its.virginia.edu/article/704776/pdf.

approach. In this paper I present the case studies of three destroyed and/or damaged cultural heritage sites that have been the focus of such digital heritage initiatives: the Arch of Triumph in the Syrian city of Palmyra, the Buddhas of Bamiyan from Afghanistan, and the Cathedral of Notre-Dame in Paris. These case studies include heritage sites that have been devastated as the result of completely different circumstances. While the circumstances responsible for the intentional destruction of Palmyra's Arch of Triumph and Bamiyan's Buddhas are not comparable with the accidental destruction of the Cathedral of Notre-Dame, taken together, these case studies raise questions about the relationship between digital heritage and heritage politics. Who owns heritage? Can digital models or reconstructions ever be considered authentic? Most importantly, in what ways does Western interest in digital reconstruction harm the agency of local populations? The study of digital heritage through the lens of post-colonial discourse provides an opportunity to reassess the field. It also introduces the positive potential of digital and cyber rescue archaeology.

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Recent studies of digital heritage have shown that digital heritage projects should be re-examined through legal and ethical perspectives.[14] Digital heritage is not conceived within a void, but is a product of histories of colonialism, heritage preservation practices, and the circumstances of destruction. Any response to heritage destruction is not, and cannot be neutral, for digital models are deeply connected to the layered history of the

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[14] Thompson, "Legal and Ethical," 166.

original structure. Thus, to understand the ideological layers of digital heritage requires not just examining the ethical issues within various initiatives, but also grappling with the constitutive histories of colonialism and intentional destruction. It requires uncovering how digital heritage is inextricably linked to the history of the original site. Doing so requires situating digital heritage within the relevant histories and theories. First, the study of iconoclasm is integral to the examination of intentional destruction, for the long history of iconoclasts provides a basis for understanding that intent. Next, the charge of digital colonialism must be understood within the greater context of European colonial expansion, particularly pertaining to its lasting impact on the disciplines of art and architectural history that are reflected in the development of the Western museum. Finally, interpreting digital heritage requires positioning it within the context of traditional preservation principles. These histories are extensive and nuanced, and I will not attempt to present all of them here; rather, I will briefly address the literature that is most relevant to this project. This varied body of scholarship informs the following chapters by contextualizing the ethical concerns raised by the case studies.

Iconoclasm

The case studies presented in chapters one and two, Palmyra's Arch of Triumph and Bamiyan's Buddhas (respectively), have been discussed in scholarship as acts of iconoclasm. Therefore, I would like to address here how the idea of iconoclasm has been discussed in scholarship, and how I think that these case studies can participate in this

conversation. The study of iconoclasm has shifted from condemnation to sociological understanding to the problematic nature of 'Islamic Iconoclasm.' Until recently, few scholars had undertaken thorough investigations of iconoclasm, and those projects that did exist focused primarily on its condemnation.[15] The condemnation of iconoclasm can be traced through both literature and imagery.[16] Iconoclasts in the periods of Byzantium and the Protestant Reformation were commonly denounced, and these iconoclasts were portrayed in imagery that exposed them as blasphemous. This attitude toward iconoclasts is depicted through an image from the *Chludov Psalter* (mid-ninth century) that visually compares the destruction of an image of Christ to the Crucifixion (Figure 0.2).[17] During the French Revolution, the term 'vandalism' was created to describe the barbaric nature of iconoclasm.[18] Louis Réau's 1959 *Histoire du Vandalism* further contributed to the trope of the condemnation of iconoclasm as he denounced destruction. The first general history of iconoclasm was published in 1915 by Hungarian historian Julius von Végh.[19] Through this text, Végh argued that art existed within culture generally, suggesting that the destruction of art was relevant not only to the study of art, but of culture.[20] Yet until

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[15] Dario Gamboni, *The Destruction of Art: Iconoclasm and Vandalism since the French Revolution* (New Haven: Yale University Press, 1997), 32.

[16] Gamboni, *The Destruction,* 13.

[17] Gamboni, *The Destruction*, 32.

[18] Gamboni, The Destruction, 36.

[19] Julius von Végh, *Die Bilderstürmer: Eine kulturgeschichtliche Studie* (Strasbourg, 1915).

[20] Gamboni, *The Destruction*, 40.

the late twentieth century, iconoclasm's historiography was a meager one. Recent scholarship takes a diachronic view of iconoclasm, considering the subject from a cross-cultural perspective that reflects upon iconoclastic episodes such as the French Revolution, Byzantine Iconoclasm Era, Protestant Reformation, and most recently, strategic destruction by ISIS.

Most of these recent studies of iconoclasm are essentially social histories of art, for these investigations examine violence against material culture as signifiers of meaning and human response.[21] David Freedberg's examination of iconoclasm within the framework of a history of response is particularly useful for its discussion of the relationship between iconoclasm and broader issues of physical and psychological responses to images. Through *The Power of Images: Studies in the History and Theory of Response* (published in 1989), Freedberg argues that the response to images is what catalyzes the power that images inherently hold.[22] To explain why some images incur emotional responses, Freedberg draws on an unconventional body of evidence, reaching beyond canonical artworks to also include objects such as pilgrimage souvenirs and votive offerings. Through this anti-elitist approach, Freedberg reveals how society approaches images with emotion as though there is something alive in the image.

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[21] Gamboni, *The Destruction,* 17.

[22] David Freedberg, *The Power of Images: Studies in the History and Theory of Response* (Chicago: University of Chicago Press, 1989).

The lasting impact of *The Power of Images* lies within its prevailing relevance; current events highlight the ways in which Freedberg's ideas remain applicable. Thus it is crucial to consider how Freedberg's work on iconoclasm, image-agency, and religion has influenced more recent scholarship on iconoclasm. Through this project, Freedberg reveals "some of the ways in which the God is in the image, in other words, how the image becomes charged with presence."[23] Freedberg includes religion in his investigation, and the ways in which religious figuration serves to charge images with emotion. When Freedberg first began to work on the topic of iconoclasm, the body of literature on the subject was slim, and iconoclasm was largely ignored by art historians; furthermore, it is crucial to understand that, when Freedberg was working during the 1970s and 1980s, modern iconoclastic terrorism had not yet emerged as an issue.

Scholarly responses to *The Power of Images* argue that while Freedberg's text is significant for its discussion of the role of images in cult and folklore, his argument surrounding the psychological response to images is forced.[24] In 1990, art historian Ernst Gombrich (under whom Freedberg studied at Oxford) criticized Freedberg's "reluctance to consider inconvenient facts," such as the relationship between "public behavior and private response."[25] Yet Gombrich asserts that the book should be included in any collection of art history texts. Other critics would likely disagree with this, for

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[23] Freedberg, *The Power of Images*, xxiii.

[24] Ernst Hans Gombrich, "The Edge of Delusion," *New York Review of Books* 15 (1990): https://gombricharchive.files.wordpress.com/2011/04/showrev40.pdf.

[25] Gombrich, "The Edge."

Freedberg's argument largely questions the legitimacy of the fields of art and architectural history as he rejects notions of aesthetics. Dario Gamboni takes issue with Freedberg's treatment of iconoclasm as detrimental to narratives of formalist canonical art. Gamboni asserts that Freedberg uses his discussion of iconoclasm to further his larger argument that undermines formalist notions of the history of art. Freedberg writes that iconoclasm "sears away any lingering notion that we may still have of the possibility of an idealistic or internally formalist basis of the history of art."[26] Gamboni problematizes this statement, alternatively arguing that the history of art benefited from iconoclasm.[27]The widespread criticism of this work forces one to question the legitimacy of Freedberg's argument.

While Freedberg's project was groundbreaking as a history of images in the contexts of psychology, history, and anthropology, a history of modern iconoclasm did not yet exist when his work was first published.[28] In 1997, Gamboni published *The Destruction of Art: Iconoclasm and Vandalism since the French Revolution*, a book that is known as the first thorough analysis of modern iconoclasm. This text explores the destruction of art through censorship, iconoclasm, and vandalism. Gamboni's investigation primarily focuses on American and European destruction in the nineteenth and twentieth centuries. However, he takes a chronological approach to the history of

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[26] David Freedberg, *Iconoclasts and Their Motives* (Maarssen, 1985), 7.

[27] Gamboni, *The Destruction*, 32.

[28] Freedberg, *Iconoclasts and Their*, 8.

destruction that reaches to the past in order to inform his investigation into the destruction of modern art. Gamboni's project on the destruction of modern art combines an analysis of literature on iconoclasm and vandalism as well as case studies on notable incidents of the destruction of modern art. Gamboni includes places of worship, public monuments, painting, sculpture, and installation work. Despite the broad scope of the study, Gamboni insists that it is not meant to serve as a comprehensive history of iconoclasm. While this assertion thwarted inevitable criticism, the sheer quantity of information provided in its 416 pages insured this text's prominence within the field.

The vast body of scholarship on iconoclasm that has emerged since the publication of these texts demonstrates the influence of these projects, for Gamboni and Freedberg's theories and arguments are consistently called upon throughout the wide range of research on iconoclasm. Despite the clear influence of these texts, Gamboni and Freedberg are not entirely responsible for the growth in scholarship surrounding iconoclasm. Political, environmental, and technological shifts since the turn of the century have provided the subject with an acute sense of urgency absent from earlier literature. In his 2018 essay *Iconoclasm*, Freedberg revises his ideas, arguing that iconoclasm has become one of the "urgent and most discussed topics of our time."[29]

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[29] David Freedberg, "Iconoclasm," in *23 Manifeste zu Bildakt und Verkörperung*, ed. Marion Lauschke and Paulo Schneider (Berlin: De Gruyter, 2018), 92.

Iconoclasm as Terrorism

The rise of terrorist-led iconoclastic acts as a digitally-disseminated tool of propaganda has had an inevitable impact on scholarship in recent years. The latest reprint of Gamboni's book, *The Destruction of Art,* in 2018, includes a preface that situates the original text within the context of iconoclastic events that have occurred since the book was first published.[30] Through this preface, Gamboni discusses how iconoclastic events such as the bombing of the Bamiyan Buddhas, destruction under the Islamic State, and the events of September 11th, 2001 on the twin towers in New York (among other events) have placed "the intentional targeting of art and architecture on the stage of world politics."[31] Gamboni highlights the rise of Islamic political extremism and digital technology.

When *The Power of Images* was reprinted in Polish in 2007, Freedberg similarly embraced the opportunity to defend and amend his 1989 text through a new preface. This essay addresses current societal shifts and events since the book was first published, focusing on the rise of iconoclasm in the digital age.[32] Specifically, Freedberg discusses iconoclastic acts relating to terrorism. Through this discussion, Freedberg applies arguments from his 1989 text to terrorist iconoclasm by challenging religious motives.

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[30] Dario Gamboni, "Preface to the New Edition," in *The Destruction of Art: Iconoclasm and Vandalism since the French Revolution* (London, UK: Reaktion Books, 2018).

[31] Gamboni, "Preface to the New," 12.

[32] David Freedberg, "Preface to the Polish Edition," in *The Power of Images: Studies in the History and Theory of Response* (Kraków: Jagellonian University, 2007), http://www.columbia.edu/cu/arthistory/faculty/Freedberg/Power-Images-Polish-Preface.pdf.

Freedberg argues that through events such as the Taliban destruction of the Bamiyan Buddhas in Afghanistan, terrorist commitments to the destruction of "infidel religion" serve to obscure reality– a deep-rooted "fear of the sensuality of art."[33] Yet it is unclear why these two motivations must be mutually exclusive, for religious commitment to destruction could exist alongside, and be informed by, more psychological motivations.

This religiously motivated, terrorist-led iconoclasm has wrongly been tied to Islam as a religion. The term 'Islamic Iconoclasm' has a long and problematic history. It is a common misconception that terrorist-led destruction of cultural heritage in the Middle East is part of a long tradition of a theologically based iconoclasm, rooted in the medieval Muslim world. In fact, radical groups like ISIS are committed to destruction based upon an extremist interpretation of Sunni thought that is unrepresentative of the vast majority of Islamic people. Recent scholarship on iconoclasm addresses these issues. Historian Elliott Colla problematizes the notion of Islamic iconoclasm by specifying that ISIS attacks are not uniquely Islamic, but part of a global (and particularly Western) tradition of vandalism and iconoclasm.[34] Furthermore, evidence suggests that the

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[33] Freedberg, "Preface to the Polish."

[34] Elliott Colla, "On the Iconoclasm of ISIS," *Elliott Colla*, last modified March 5, 2015, http://www.elliottcolla.com/blog/2015/3/5/on-the-iconoclasm-of-isis. For more by Colla, see his book, *Conflict Antiquities: Egyptology, Egyptomania, Egyptian Modernity* (Durham, NC: Duke University Press, 2008).

medieval Muslims were more tolerant of other cultures' heritage than many Christians.[35] Through his essay "Islam and Iconoclasm*,"* historian Oleg Grabar asserts that early Muslims were "indifferent" to imagery. Grabar employs coins created by early Muslims as evidence, revealing that through these coins early Muslims sought to create uniquely Muslim imagery, but failed.[36] Historian Ján Eisner's essay on discourse takes on a similar approach to evidence.[37] While the focus of this study is primarily Constantinople, Eisner's essay (like Grabar's) underscores misinterpretations of the Christian history of iconoclasm, and the importance of evidence in this conversation. Employing a *long durée* approach, Eisner problematizes previous research on the Byzantine Iconoclasm Era as unclear, instead suggesting an exploration of the evidence as a discourse. Through this methodology, Eisner argues that it is less important to understand what actually happened than to explore how and why these events were created, articulated, and mythologized.

Through Freedberg's analysis of iconoclasm and ISIS, he highlights the shifting forms and meaning of iconoclasm in light of recent terrorist-led destruction. Through the digital dissemination of photographs of acts of iconoclasm, ISIS uses destructive acts as

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[35] Pamela Karimi and Nasser Rabbat, "The Demise and Afterlife of Artifacts," in *The Destruction of Cultural Heritage: From Napoléon to ISIS* (Aggregate Architectural History Collaborative, 2016), https://architecture.mit.edu/publication/destruction-cultural-heritage-napoléon-isis.

[36] Oleg Grabar, "Islam and Iconoclasm," in *Iconoclasm: Papers from the Ninth Spring Symposium of Byzantine Studies at the Center for Byzantine Studies*, ed. Anthony Bryer and Judith Herrin (Birmingham: Centre for Byzantine Studies, University of Birmingham, 1977).

[37] Ján Eisner, "Iconoclasm as Discourse: From Antiquity to Byzantium," *The Art Bulletin* 94, no. 3 (January 30, 2014): https://doi.org/10.1080/00043079.2012.10786048.

propaganda. Though not pioneers in the publicity of heritage destruction as propaganda, the group is the first to instigate 'socially mediated terrorism,' which uses social media as a means through which to publicize terrorist activities.[38] Freedberg argues that the enduring emotional power of these images negates Benjaminian theories of reproduction, for reproduction can never remove the aura and shock-value of these images. If, for terrorist iconoclasm it is the images of iconoclastic acts that we react to with horror, sadness, or fear, it is evident that reproductions (in this case photographs) maintain the power to elicit emotional response. While a digital reproduction will never carry the same emotional power as an image of destruction, digital reproductions of these sites do hold a certain emotional power as symbols of identity, loss, and memory. In the following section, I will explore the negotiations of symbolic identity and power through the colonial lens.

Colonization of Art, Architecture, and Digital Heritage

The destruction of art and architecture is closely linked to its colonization through Western narratives of art history. As a Western construct, art history has traditionally promulgated a Western-centric tradition; attempts to explore the art and architecture of non-Western cultures was crafted within the Western tradition of art history. The fields of art and architectural history first emerged from surveys of art that drew upon Euro-centric

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[38] Claire Smith et al., "The Islamic State's Symbolic War: Da'esh's Socially Mediated Terrorism as a Threat to Cultural Heritage," *Journal of Social Archaeology* 16, no. 2 (2016): https://doi.org/10.1177/1469605315617048.

theoretical frameworks, which were themselves the products of colonial power and expansion.[39] Indeed, the earliest example of the modern museum, the Louvre, was built upon the Napoleonic collection of art, a collection that glorified its stolen cultural property from conquered territories as an expression of imperial strength.[40]

Recent literature argues that the West fetishizes other cultures and casts misleading narratives through the museum. Through their essay "The Demise and Afterlife of Artifacts," Pamela Karimi and Nasser Rabbat reveal that, through supposedly protecting cultural heritage of the Middle East by placing ancient objects in museums, the West has recast its narratives in misleading ways.[41] In some cases, destruction may be driven by the fetishization of culture within the Western museum. Finbarr Barry Flood's discussion of the Taliban destruction of the Bamiyan Buddhas illuminates the relationship

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[39] For more information on the colonization (and decolonization) of art and architectural history, see Catherine Grant and Dorothy Price, "Decolonizing Art History," *Art History* 43, no. 1 (January 22, 2020): https://doi.org/10.1111/1467-8365.12490. See also Vimalin Rujivacharakul, "Asia in World Architecture and World Cartography," in *Architecturalized Asia*, ed. Vimalin Rujivacharakul, et al. (Honolulu: University of Hawai'i Press, 2013), 17-34; Gulsum Baydar Nalbantoglu, "Toward Postcolonial Openings: Re-reading Sir Banister Fletcher's History of Architecture," *Assemblage* 35: 6 (April 1998): 6–17.

[40] Andrew McClellan, "Restitution and Repatriation," in *The Art Museum from Boullée to Bilbao* (Berkeley: University of California Press, 2008), Chapter 6.

[41] Karimi and Rabbat, "The Demise."

between destruction and fetishization.[42] I return to this relationship and Flood's argument in chapter three.

The legacy of Western imperialism-imposed asymmetrical power relations has been intensified through the development of Western technologies. In this way, the problematic nature of colonialism within museums extends itself to the digital space, where it manifests as digital colonialism. Digital heritage intervention, particularly when undertaken by Western institutions, risks engaging in post-colonial patterns of Western manipulation of the 'Other' through digital culture.[43] Alexander I. Stingl has outlined this phenomenon through his study, *The Digital Coloniality of Power: Epistemic Disobedience in the Social Sciences and the Legitimacy of the Digital Age,* writing that "Digital Culture is the extension of the very bourgeois civil society that has constituted the Global North … [it] is … merely the extension of *the coloniality of power and Being."*[44] Stingl highlights how globalization and digitization expanded after the Second World War in a way that strengthened the dominance of the 'West.'[45] The technologies

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[42] Finbarr Barry Flood, "Between Cult and Culture: Bamiyan, Islamic Iconoclasm, and the Museum," *The Art Bulletin* 84, no. 4 (December 2002): http://links.jstor.org/sici?sici=0004-3079%28200212%2984%3A4%3C641%3ABCACBI%3E2.0.CO%3B2-D.

[43] Stobiecka, "Archaeological Heritage," 120.

[44] Alexander I. Stingl, *The Digital Coloniality of Power: Epistemic Disobedience in the Social Sciences and the Legitimacy of the Digital Age* (London: Lexington Books, 2016), xvii, quoted in Monika Stobiecka, "Archaeological Heritage in the Age of Digital Colonialism," *Archaeological Dialogues* 27, no. 2 (November 13, 2020): https://doi.org/10.1017/S1380203820000239.

[45] Stobiecka, "Archaeological Heritage."

developed by Western powers allowed them to exercise further power over those nations without such resources.

The development of the technocracy that Stingl outlines is reflected in the development of the field of digital humanities, which is the overarching academic discipline within which digital heritage initiatives typically reside. The "coloniality of power" inherent in digital humanities can be most clearly visualized through Melissa Terras's 2012 infographic, *Quantifying the Digital Humanities* (Figure 0.3).[46] This map depicts the locations of digital humanities centers worldwide, as defined by the Alliance of Digital Humanities Organizations.[47] The distribution of centers illustrates the conglomeration of the field within high-income economies in the Global North.[48] One can imagine that this asymmetry has only grown more pronounced in the nine years since this data was aggregated. Understanding the concerns central to digital colonialism is paramount to outlining an ethical future for digital projects. These pursuits need not be at odds, but can inform one another.

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[46] Melissa M. Terras, "Infographic: Quantifying Digital Humanities," *UCL Centre for Digital Humanities* (blog), entry posted January 20, 2012, https://blogs.ucl.ac.uk/dh/2012/01/20/infographic-quantifying-digital-humanities/.

[47] Daniel Paul O'Donnell et al., *Only Connect,* A New Companion to Digital Humanities (John Wiley & Sons, 2015), https://doi.org/10.1002/9781118680605.ch34.

[48] O'Donnell et al., *Only Connect.*

Questions of Authenticity in Digital Heritage Practices

Digital heritage technologies (such as laser-scanning) provide reconstructions with unprecedented precision, creating the perception that all digital reconstructions are exact reproductions of the original structure/object; however, this is not always the case, thus promoting misinformed notions of reality. Each of the three case studies presented in this paper ask questions surrounding the evaluation of authenticity in digital heritage. What is authenticity, and how does digital heritage impact our understanding of authenticity? Can digital models or reconstructions ever be considered authentic? Answering these questions requires situating digital heritage within the ideas and practices that have governed historic preservation since the second half of the twentieth century.

Beginning in the late 1960's, *authenticity* became increasingly central to the field of historic preservation as debates surrounding heritage intensified. The Venice Charter of 1964 and the 1994 Nara Document on Authenticity formalized the importance of authenticity in heritage practices. Traditional heritage conservation practice reflects the importance of authenticity in restoration, first defined as honesty to the original structure's materials and building methods through the 1964 Charter of Venice and the 1994 Nara Document on Authenticity.[49] Yet in the period since the publication of these documents, there have been a number of societal shifts and developments that have

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[49] Robert Bevan, "Should We Celebrate a Replica of the Destroyed Palmyra Arch?," *Evening Standard*, April 25, 2016, https://www.standard.co.uk/lifestyle/design/should-we-celebrate-a-replica-of-the-destroyed-palmyra-arch-a3233496.html.

permanently changed the field. While the expansion of digital heritage practices has been central to these changes, digital heritage practices have yet to be codified pertaining to authenticity. UNESCO's Charter on the Preservation of Digital Heritage focuses on the preservation of digital materials, and does not sufficiently dictate standards of authenticity for these materials.

The 1964 Charter of Venice first formally outlined the priority of authenticity in the field. The first paragraph of the Venice Charter preamble declares, "it is our duty to hand them on the full richness of their authenticity."[50] Significantly, this document dictates that culturally significant monuments cannot be reconstructed. Pamela Jerome has defined reconstruction (as the term is used in the Venice Charter) as using primarily new materials, or restoration based on conjecture.[51] The 1964 document allows only *anastylosis*, or reassembling original parts.[52] Following this document, UNESCO adopted the World Heritage Convention in 1972, which led to the World Heritage Committee's 1977 criteria for preservation of World Heritage List properties. The original World Heritage Convention Operational Guidelines continued to emphasize authenticity, stating

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[50] *International Charter for the Conservation and Restoration of Monuments and Sites* (The Venice Charter 1964) (Venice: ICOMOS - International Council on Monuments and Sites, 1964), "Preamble," https://www.icomos.org/charters/venice_e.pdf.

[51] Pamela Jerome, "An Introduction to Authenticity in Preservation," *APT Bulletin: The Journal of Preservation Technology* 39, no. 2/3 (2008): 3, http://www.jstor.org/stable/25433945.

[52] Jerome, "An Introduction," 3.

that sites must "meet the test of authenticity in design, materials, workmanship, and setting."[53]

The emphasis on authenticity and anastylosis as defined by the Charter of Venice (and by extension the Operational Guidelines for the World Heritage Convention) proved to be problematic for a number of reasons. First, the documents identified cultural heritage as monumental architecture, which is an inherently Western concept of heritage. Ancient Chinese and Japanese timber structures served as a challenge to this, for these structures had been continuously reconstructed for generations, a process which rendered the reconstruction itself as part of the timber buildings' heritage.[54] Further, post-modern preservation began to understand cultural heritage as a broader subject including tangible and intangible heritage.

As a response to these challenges in defining authenticity, the Japanese Government and ICOMOS, with the World Heritage Committee, held a conference in 1994 in Nara, Japan. The result of this conference, the 1994 Nara Document on Authenticity, examines how authenticity is viewed within different cultures.[55] The Nara Document recognizes "progressive authenticities" as "recognizing the legitimacy of

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[53] Operational Guidelines for the World Heritage Convention (1977), Article 24b.i. Quoted in Jerome, "An Introduction," 4.

[54] Yujie Zhu, "Authenticity and Heritage Conservation in China: Translation, Interpretation, Practices," *Authenticity in Architectural Heritage Conservation*, July 2, 2016, https://doi.org/10.1007/978-3-319-30523-3_8.

[55] Jerome, "An Introduction," 4.

layered authenticity, evoking successive adaptations of historic places over time."[56] This document re-defined authenticity toward a more porous understanding. Indeed, in one of the Nara conference papers, David Lowenthal wrote, "[a]uthenticity is in practice never absolute, always relative."[57]

In light of shifting perceptions of authenticity, the question persists—is it possible for a digital replica to be authentic? Stobiecka outlines how the digital replica defies the standard ways we describe heritage.[58] The replica is not 'real' (for it is not the original building), nor is it facsimile (a virtual scan or record). The replica, Stobiecka points out, shares parts of both the 'real' and the facsi\mile, but is not either. Instead, the digital replica is *hybrid.* Maurizio Forte suggests that the real and the facsimile are not opposed, but are parallel ontologies, which merge through the digital copy.[59] The replica has experienced several transformations, from the authentic material object to a digital model, and finally to a material copy.[60] In this way, Stobiecka determines that the digital replica is inauthentic, writing that "the replica is material and tangible; however, it is not

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[56] *The Nara Document on Authenticity* (Nara: ICOMOS - International Council on Monuments and Sites, 1994), xxi-xxiii, https://www.icomos.org/charters/nara-e.pdf.

[57] David Lowenthal, "Changing Criteria of Authenticity," in *Nara Conference on Authenticity,* 123. Quoted in Jerome, "An Introduction to Authenticity," 4.

[58] Stobiecka, "Archaeological Heritage."

[59] Maurizio Forte, "Ecological Cybernetics, Virtual Reality, and Virtual Heritage," in *Theorizing Digital Cultural Heritage: A Critical Discourse*, ed. Fiona Cameron and Sarah Kenderdine (Cambridge, MA: MIT Press, 2007), 391-392.

[60] Stobiecka, "Archaeological Heritage."

original and authentic."[61] Yet while the digital model may not be authentic, can digital heritage elicit emotional response and aura?

In 1935, German philosopher Walter Benjamin published his profound essay, "The Work of Art in the Age of Mechanical Reproduction." Through this essay, Benjamin presents the concept of aura through its intrinsic connection to the authenticity of artworks, for uniqueness and history provide aura. Without history and unique meaning, objects are simply commodities. He writes, "the situations into which the product of mechanical reproduction can be brought may not touch the actual work of art, yet the quality of its presence is always depreciated."[62] Benjamin argues that mechanical reproduction is revolutionary, for it allows the work of art to become freed from its dependence on ritual, so that the reproduced work is able to become a work that has been created to be reproduced. However, once the idea of authenticity is no longer applicable to artistic production, the role of art is shifted so that instead of being tied to ritual, it is tied to politics.

Yet how does "The Work of Art in the Age of Mechanical Reproduction" apply to digital reconstructions of buildings? Though Benjamin's essay is focused on a discussion of art, Benjamin situates architecture within the broader context of art, writing that "[a]rchitecture has always represented the prototype of a work of art…"[63] Therefore,

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[61] Stobiecka, "Archaeological Heritage."

[62] Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," trans. Harry Zohn, in Illuminations, ed. Hannah Arendt (New York: Schoken Books, 1969).

[63] Benjamin, "The Work."

Benjamin's argument extends to include buildings and monuments. While Freedberg asserts that Benjamin's work is undermined by ISIS's media dissemination of iconoclastic acts, any serious consideration of digital reconstruction or reproduction is strengthened by reflecting upon Benjamin's theories.

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In the following chapters, I consider the importance of critical engagement with digital heritage by investigating how the digital heritage of destruction reveals significant ethical issues. In order to limit the scope of my investigation, I focus my argument on three case studies: Palmyra's Arch of Triumph, Bamiyan's Buddhas, and Paris's Cathedral of Notre-Dame. Chapter one discusses the ancient Syrian city of Palmyra, which was destroyed by ISIS militants between 2015 and 2017, and has been the subject of many different digital heritage initiatives. I focus on a digitally-rendered replica of Palmyra's Arch of Triumph that was unveiled in London's Trafalgar Square in 2016 for World Heritage Week. Palmyra and the replica of the Arch of Triumph are crucial to understanding this project in its entirety, for the destruction of this site and its digitized reconstruction have received (by far) the most attention of any digital heritage project in both the media and scholarship.

Chapter two investigates the colonization of heritage in art and architectural history through the museum context. In this chapter, I focus on the destruction in Bamiyan, Afghanistan, where Taliban militants destroyed the colossal Buddhas of Bamiyan. The reverberations of this destruction around the world illuminates the Western

fetishization of cultural heritage. Like destroyed heritage sites in Palmyra, the Bamiyan Buddhas have been the focus of many high-profile digital projects. One such project, an on-site laser projection, serves as a fascinating foil to the Trafalgar Square replica of Palmyra's Arch of Triumph. In both cases, the circumstances of destruction are acts of terrorism, and are deeply connected to lasting colonial power structures. Yet while the replica of the Arch of Triumph was harshly (and rightly) criticized, the laser projection of the Bamiyan Buddha was only praised. I investigate the reasons for such contrasting treatments of these digital heritage projects in the media and scholarship.

In the third chapter, I examine the controversy surrounding the reconstruction of Notre-Dame. In April of 2019, a fire devastated the Cathedral, destroying the building's spire, roof, and upper walls. In the aftermath of this tragedy, scholars, politicians, and the public debated how to reconstruct the building. The late Professor Andrew Tallon's 2015 laser scans of the Cathedral were central to this debate. In July of 2020, President Emmanuel Macron announced that despite modernist proposals for reconstruction, Notre-Dame will be restored as precisely as possible to its condition before the fire. This case study is pertinent to this investigation, for it illuminates how destroyed sites ought to be reconstructed when it is possible and 3D data of the original site exists. In introducing this case study, I do not intend to compare its accidental context of destruction with the intentional destruction of Palmyra or Bamiyan; violence and accidental destruction are completely different circumstances that are not comparable. However, the way that the conversation was shaped in the reconstruction of Notre-Dame revealed another way of

thinking about digital reconstructions and the kinds of questions and problems that emerge from digital reconstructions, providing ways that these questions and problems can be solved. Even in a situation where there is no violence or human lives lost, the case of Notre-Dame highlights the many aspects of identity and memory that emerge.

Finally, I use the case studies examined in the previous chapters to propose better practices for digital heritage initiatives and heritage restoration. Through an examination of the digitization of destroyed heritage, this project investigates the ethics of digital heritage and suggests the creation of better practices.

CHAPTER I

Palmyra: Whose City?

In 2016, a digitally rendered and reduced scale copy of the Syrian Arch of Triumph, which was destroyed in 2015, was displayed in London's Trafalgar Square, a site rife with imperial and colonial associations, for World Heritage Week (Figure 1.1). The arch then travelled to an array of Western cities, but never to Syria. As a result, the replica reinforced entrenched colonial narratives and power dynamics. This replica raises a number of ethical concerns, and has been the focus of most critical investigations of digital heritage due to its high profile nature, structural inaccuracies, and cultural significance. Critics contend that the copy of the arch was a missed opportunity to honor the loss of both human life and the loss of cultural heritage.[64] This chapter considers the various ideological layers of the Syrian Arch of Triumph, its destruction, and its replica. By investigating the replica through the theoretical frameworks of digital colonialism, historic preservation, and heritage politics, I argue that digital heritage is cultural heritage, and should be recognized as such by those using digital tools for its preservation.

During the Syrian Civil War (2011-present), the Islamic State in Syria (ISIS) captured the ancient city of Palmyra and systematically destroyed the city between 2015

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[64] Roshni Khunti, "The Problem with Printing Palmyra: Exploring the Ethics of Using 3D Printing Technology to Reconstruct Heritage," *Studies in Digital Heritage* 2, no. 1 (September 26, 2018): https://doi.org/10.14434/sdh.v2i1.24590.

and 2017. On August 23rd, 2015, ISIS razed the temple of Baal-Shamin. Less than two weeks later, on August 31st, militants decimated the Temple of Bel. In October of 2015, ISIS destroyed Palmyra's Arch of Triumph (also known as the Arch of Septimius Severus) which was built in the third century CE during the reign of Roman emperor Septimius Severus (Figure 1.2). This ornamental archway was constructed as one of hundreds of such archways throughout the Roman provinces to represent the power of Roman imperialism.[65] ISIS released multiple videos and images of destruction in Palmyra (Figure 1.3), which promoted their view that the buildings were used to "promote infidelity and should therefore be demolished."[66] The group aims to establish a religious Islamic State in order to return the Islamic world to the time immediately after the death of the prophet Muhammed (632 CE). In order to achieve this goal, ISIS has attempted to destroy anything representative of non-Islamic thought. This includes religions and sects that do not adhere to ISIS's extremist interpretation of Sunni thought, as well as buildings and artifacts that are pre-Islamic, including palaces, tombs, temples, and cities.[67] ISIS

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[65] Stobiecka, "Archaeological Heritage," 115.

[66] Nour A. Munawar, "Reconstructing Cultural Heritage in Conflict Zones: Should Palmyra Be Rebuilt?," *EX NOVO Journal of Archaeology* 2 (December 2017): 39, https://pure.uva.nl/ws/files/21012399/Reconstructing_Cultural_Heritage_in_Conflict_Zones.pdf.

[67] Bridey Heing, *Cultural Destruction by ISIS* (New York: Enslow Publishing, 2018).

employs intentional destruction as both an expression of the group's intolerance of diversity, and as a means to publicize its power—especially over the West.[68]

Immediately following its destruction, specialists, the media, and the general public began to question if, how, and when to restore Palmyra, and these questions continue to be highly contentious ones. The media frenzy surrounding Palmyra's destruction led to a proliferation of digital projects seeking to virtually reconstruct the city.[69] Palmyra has generated what is a more intense debate about the use of technology to document and restore cultural damage than any other historic site in the past decade. Much of this debate concerns the reduced-scale replica of Palmyra's Arch of Triumph that was first displayed in Trafalgar Square in April of 2016. The replica was created by the UK-based Institute for Digital Archaeology (IDA), an organization that seeks to draw attention to the destruction of cultural heritage worldwide through digital archaeology.[70] The IDA was founded in 2012 by its current Executive Director, Roger Michel, a

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[68] Christopher J. Jones, "Understanding ISIS's Destruction of Antiquities as a Rejection of Nationalism," *Journal of Eastern Mediterranean Archaeology and Heritage Studies* 6, nos. 1-2 (2018): 31, https://doi.org/10.5325/jeasmedarcherstu.6.1-2.003.

[69] A wide range of digital projects were established, such as NewPalmyra (newpalmyra.org), the Institute for Digital Archaeology's Million Images Database (http://digitalarchaeology.org.uk/our-purpose), ICONEM (http://iconem.com/en/), and ASOR (http://www.asor.org).

[70] For more information on the Institute of Digital Archaeology and the Million Images Database, see http://digitalarchaeology.org.uk

practicing lawyer from the United States.[71] The IDA's team includes a magnetician, analyst, historians, and classical archaeologists.[72] The replica of the Syrian Arch of Triumph emerged from the IDA's Million Images Database project, an open-source site that includes two-dimensional and three-dimensional images of cultural heritage sites. In an effort to document cultural heritage sites before they are destroyed, IDA distributed 3D cameras throughout the Middle East, and relies upon thousands of local volunteers who are willing to risk their lives by participating.[73] Yet the organization is best known for its Arch of Triumph replica, which was a collaborative initiative between the IDA, Oxford University, the Museum of the Future in Dubai, and Harvard University. The project used pre-destruction images from its Million Images Database to create a 3D model of the arch through photogrammetry. This model was then sent to TorArt, an Italian robotic sculpting company, that used a computer-guided seven-axis mechanical

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[71] Stuart Burch, "A Virtual Oasis: Trafalgar Square's Arch of Palmyra," *Archnet-I JAR: International Journal of Architectural Research* 11, no. 3 (November 2017): 68, https://dx.doi.org/10.26687/archnet-ijar.v11i3.1401.

[72] "About," The Institute for Digital Archaeology, http://digitalarchaeology.org.uk/people.

[73] Jana Fredricks, "Digital Tools and How We Use Them: The Destruction and Reconstruction of Tangible Cultural Heritage in Syria," *Museums of the Web*, 2018, https://mw18.mwconf.org/paper/digital-tools-and-how-we-use-them-the-destruction-and-reconstruction-of-tangible-cultural-heritage/.

arm to produce the replica using Egyptian marble (Figure 1.4).[74] The resulting two-thirds scale 3D model was unveiled in Trafalgar Square for World Heritage Week before it travelled on a 'Grand Tour' of major international urban centers such as New York, Washington D.C., Geneva, Dubai, Arona, and Florence.[75]

The IDA posits this project as a noble pursuit by drawing attention to the atrocities committed during the Syrian War. Before the arch was unveiled, Roger Michel stated, "[m]y intention is to show the Islamic State that anything they can blow up, we can rebuild exactly as it was before, and rebuild again and again. We will use technology to disempower ISIS."[76] When the IDA's Arch of Triumph was put on display in Trafalgar Square, it was met with mixed reactions from the preservationist community, the press, and the general public. Everyone involved with the IDA emphasizes solidarity with Syrian people as their primary motivation, but the opposing sides view the use of technology differently. While the organization promotes technology as a key tool for preservation that denies ISIS the power of erasure, critics argue that the IDA arch is

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[74] The exact source of the marble is quite unclear, and the Institute of Digital Archaeology does not provide information on the subject, except that the arch was carved from "pure Egyptian marble." While Roshni Khunti (and others) write that the marble that the IDA used came from Italy, Monika Stobiecka (and others) write that the marble came from Egypt. For the purposes of this paper, I will operate under the assumption that the marble was indeed sourced from Egypt, as Stobiecka's paper was written most recently. Chad Elias, "Whose Digital Heritage?," *Third Text* 33, no. 6 (October 4, 2019): 13, https://doi.org/10.1080/09528822.2019.1667629; Fredricks, "Digital Tools."

[75] Stobiecka, "Archaeological Heritage," 115.

[76] Deborah Amos, "Palmyra's Ancient Arch, Destroyed by ISIS, to Rise Again in London," *NPR,* April 18, 2016, https://www.npr.org/sections/parallels/2016/04/18/474686269/palmyras-ancient-arch-destroyed-by-isis-to-rise-again-in-london.

problematic in terms of authenticity, and also in terms of the colonial, political, and economic implications of the reproduction. Much of this criticism seems to emerge from the general lack of information provided by the IDA regarding the technology, its makers, funders, or cost.[77] This discourse has opened a Pandora's box surrounding the use of technology within the context of cultural erasure, thus providing a framework through which to better understand a more ethical future for digital heritage practices. Examining the IDA's Arch of Triumph urges us to ask questions, such as why Palmyra (as opposed to other destroyed sites) has been privileged in such efforts, and what are the implications of reconstructing Palmyra's Arch of Triumph within the urban landscape of cities like London, New York, or Dubai.

Palmyra's significance is complicated by what it means to different groups—to ISIS, to the West, and to the local population—and it is this multifaceted significance that prompted both the destruction and reconstruction of the site. For the local population (many of which are now refugees) Palmyra's ancient history is integral to their proud Syrian identity. For example, Syrian artist Ahmad Hariri, founder of Art From Za'atari, said in an interview that his work is important to him because it serves as an opportunity

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[77] Zena Kamash, "'Postcard to Palmyra': Bringing the Public into Debates over Post-conflict Reconstruction in the Middle East," *World Archaeology* 49, no. 5 (October 20, 2017): 9, https://doi.org/10.1080/00438243.2017.1406399; Stobiecka, "Archaeological Heritage," 116.

for displaced Syrians to reclaim their Syrian heritage.[78] This message stands in stark contrast to that of the IDA, which promotes a shared, global heritage. This concept of a "global heritage" reflects the importance of Palmyra to those engaged in the Western canon of art history, for whom Palmyra's significance lies within its Greco-Roman history. In this way, Palmyra exemplifies the problematic "fluidity of architectural history" as described by Dell Upton.[79] Despite its dense and multicultural history, the Western imagination retains a sense that, as a product of Roman culture, Palmyra's history is fundamentally European history.[80] While on the surface, ISIS objects to the pre-Islamic nature of the site, Palmyra's destruction cannot only be simplified to religious iconoclasm. The significance of the site to the West, particularly as a Western tourist destination, contributed to Palmyra's destruction. Furthermore, Palmyra represents an earlier period of imperial domination by outsiders followed by colonial appropriation of it throughout art history. The disparity between these intentions highlights the dilemma at the core of debates surrounding these projects: to whom does this heritage truly belong?

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[78] Art from Za'atari is a collaboration between eight Syrian artists living in Jordan's Za'atari Refugee Camp. The artists use found materials to build miniature models of Syria's threatened and destroyed landmarks. Corinne Segal, "Using Only Materials from a Refugee Camp, Artists Recreate Syria's Lost Treasures," *PBS News Hour*, February 3, 2016, https://www.pbs.org/newshour/arts/using-only-materials-from-a-refugee-camp-artists-recreate-syrias-lost-treasures.

[79] Dell Upton, "Starting from Baalbek: Noah, Solomon, Saladin, and the Fluidity of Architectural History," *Journal of the Society of Architectural Historians* 68, no. 4 (December 1, 2009): 458, https://doi.org/10.1525/jsah.2009.68.4.457.

[80] Upton, "Starting from," 459.

Perhaps, as global citizens, this is truly a shared heritage. I return to this question at the end of this chapter.

Trafalgar Square as a Colonial Space

It is first essential to question the implications of Palmyra's Arch of Triumph standing within the imperial context of Trafalgar Square and in front of London's National Gallery (Figure 1.5). Trafalgar Square was built in the nineteenth century and is bordered by the National Gallery at its northern perimeter, which sits next to South Africa House and Canada House. As the heart of London, Trafalgar Square is the center of England—so much so that when distances are measured from London, they are measured from the spot in the square where the seventeenth-century statue of King Charles I now stands.[81] This statue faces Whitehall, the street leading to the Houses of Parliament and Westminster Abbey. This urban landscape is a politicized one, symbolic of England's power as a nation. Monuments throughout Trafalgar Square depict monarchs, generals, and naval officers, most notably the statue of Vice Admiral Horatio Lord Nelson (1758-1805).[82]

When the 1,800-year-old Arch of Palmyra was destroyed, Roger Michel sought to assemble a replacement near the original site. This goal was impossible due to ongoing violence in the region, so Michel needed to find an alternate location that was highly

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[81] Burch, "A Virtual," 60.

[82] Burch, "A Virtual," 60.

conspicuous in an effort to draw attention to both the destruction in Palmyra and to the IDA.[83] Michel explained that Trafalgar Square was most suitable for the Arch, for it acts as "the crossroads of humanity, and that was what Palmyra was."[84] Interestingly, in a different interview, Michel further elaborated: "The reason we're doing this on Trafalgar Square is that when you set the arch against the neoclassical columns of the National Gallery and Nelson's Column, there's a reason why they all look the same: our past is their past."[85] Yet the neoclassical vocabulary that Michel refers to in this statement is intrinsically one of colonial expansion, and the stylistic similarities of classicism shared between Trafalgar Square and the Syrian Arch of Triumph establish an astounding expression of colonial oppression. As Nigel Richardson questions, does the display of the Syrian Arch within Trafalgar Square actually reference a shared past, or does it reference how "our present is their present?"[86] Trafalgar Square remains a symbol of imperialism, and the meaning of the arch shifts with each of its new locations throughout its 'Grand Tour.' We must ask, what are the implications of the arch standing in centers of power and finance like New York or Dubai? Through this lens, it can be argued that the replica

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[83] Burch, "A Virtual," 65.

[84] Kate Murphy, "Roger Michel," *New York Times* (New York), April 23, 2016, https://www.nytimes.com/2016/04/24/opinion/sunday/roger-michel.html.

[85] Nigel Richardson, "The Arch of Triumph of Palmyra is recreated in London-–1,800 Years After it Was Built," *The Telegraph,* April 18, 2016. Quoted in Andrew Scheinman, "Palmyra, or the Construction of Ruin," *Thresholds* 48 (April 2020): 62, https://doi.org/10.1162/thld_a_00711.

[86] Richardson, "The Arch," 62.

of Palmyra's Arch of Triumph is indicative of the authority of Western institutions within the world's preservation movement.[87] This authority suggests that Western institutions do not truly consider local issues and expertise within Syria and Iraq.

Assessment: Ethical Considerations

Critical scholarship on digital reproductions of ISIS-destroyed heritage has overwhelmingly focused on this project, signaling the urgency of ethical guidelines for digital heritage through the project's shortcomings. Following Roshni Khunti, the weaknesses of this project can be examined through a framework of four ethical considerations that are implicit in traditional conservation: context, authenticity, accessibility, and site selection.[88] First, the IDA's Arch of Triumph failed to contextualize the human condition and political implications of the project. Defined here as the human history of monuments, context is essential to digital reconstruction because monuments symbolize layers of meaning beyond physical form. The IDA claimed that the Arch was sending a "message to ISIS," but this goal was shortsighted in light of both its belittlement of human suffering and potential to have negative political implications. The project would have benefitted by incorporating the message that the destruction conveys beyond ISIS's intentions. Second, the IDA's Arch of Triumph fails to be accurate in scale, materials, structure, and building methods. While Michel claimed that the replica was

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[87] Aksamija, "Memory Matrix," 145.

[88] Khunti, "The Problem," 2.

"completely indistinguishable from the original," it was actually a two-thirds scale model with extremely different features. I will further explore the issues with accuracy later in this chapter. Third, the project engages in digital colonialism through its failure to be globally accessible. Finally, we must question site selection. Why rebuild the Arch of Triumph in Palmyra? Is this because the Arch of Triumph is something that is easily comprehended or valued by Western audiences? World heritage demarcation largely determines media attention in periods of violence and destruction, which in turn often determines which sites are the focus of digital projects. Digital heritage organizations must consider site selection in an effort to be as representative as possible.

Context

During the ten-month ISIS occupation of Palmyra, the organization beheaded approximately 400 citizens and displaced countless others.[89] Yet the IDA's replication of the Arch of Palmyra failed to represent these atrocities, instead emphasizing lost monuments. Critics expressed concern that the attention placed on Palmyra's destruction could take precedence over the plight of the Syrian people. Joseph Willits from the Council for Arab-British Understanding highlights the problematic nature of heritage projects amidst human violence, stating that "[w]hile the digitally created replica of Palmyra's Arch of Triumph looked glorious in the London sunshine, I cannot help but feel this project plays a role in cementing the idea that Syria's monuments and heritage

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[89] Khunti, "The Problem," 2.

are far more important than its people."[90] The publicity garnered by large-scale digital projects has been criticized as overshadowing the reality of human suffering. Thompson questions the implications of devoting time and resources to cultural heritage as opposed to more directly helping refugees and conflict victims.[91] I argue that both should be possible; however, when a very public display honors heritage destroyed in a place where human lives are lost and in peril, it should somehow acknowledge the human suffering and human lives. When it fails to do so, digital heritage acts as an expression of colonialism.

This phenomenon is best illustrated by disparities between the international reception of Syria's cultural heritage and its people. For example, the IDA replica was accepted into the United States in September 2016, just one month before President Donald Trump signed Executive Order 13769, which banned Syrian refugees from the country.[92] The hasty nature of the project has significant political implications. It is essential that organizations appropriately address the context of destruction, taking into account all potential ramifications. For example, some critics argue that the IDA replica could have had the potential to help the Assad's Syrian regime. When Assad captured Palmyra from ISIS, Assad said that "the liberation of the historic city of Palmyra today is

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[90] Karimi and Rabbat, "The Demise."

[91] Thompson, "Legal and Ethical," 155; Emma Cunliffe, "Should We 3D Print a New Palmyra?," *Conversation*, March 31, 2016, https://theconversation.com/should-we-3d-print-a-new-palmyra-57014.

[92] Burch, "A Virtual," 70.

an important achievement and another indication of the success of the strategy pursued by the Syrian army and its allies in the war against terrorism."[93] Capturing Palmyra was not only significant for Assad as a symbol of military strength (particularly now that the Syrian military had Russian air support), but also as a demonstration that only Syrians could protect Syria. Soon after Assad captured Palmyra, the Syrian regime took Western journalists to the site to publicize the violence inflicted by ISIS and what the Syrian forces had saved. An expert on Syrian heritage that works with UNESCO, Annie Sartre-Fauriat said that this publicity stunt was a strategic ploy through which the Syrian regime could deflect from its own destruction at Palmyra, which included firing shells and rockets into ancient sites and looting graves.[94]

Yet Assad was praised for saving the site. The mayor of London at the time, Boris Johnson, even wrote a column in the Telegraph praising Assad for capturing Palmyra, stating "Bravo for Assad."[95] Johnson also said that the reconstruction was giving "two fingers to Daesh."[96] Sartre-Fauriat further highlights Assad's hypocrisy given that Assad has never been interested in heritage, protected heritage sites, or respected resolutions of

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[93] Adam Taylor, "The Problem with Rebuilding a Palmyra Ruin Destroyed by ISIS: Does It Simply Help Assad?," *Washington Post,* April 20, 2016, https://www.washingtonpost.com/news/worldviews/wp/2016/04/20/the-problem-with-rebuilding-a-roman-ruin-destroyed-by-isis-does-it-simply-help-assad/.

[94] Taylor, "The Problem."

[95] Taylor, "The Problem."

[96] Paul Clammer, "Erasing ISIS: How 3D Technology Now Lets Us Copy and Rebuild Entire Cities," *Guardian*, May 27, 2016, https://www.theguardian.com/cities/2016/may/27/isis-palmyra-3d-technology-copy-rebuild-city-venice-biennale.

UNESCO.[97] It is evident from this complicated history that reconstructions of a site like Palmyra cannot be understood separately from their political contexts, for Palmyra has become increasingly politicized. The politicization of Palmyra implies that any replica of Palmyra's monuments is similarly political in nature.

Authenticity

As defined by the 1964 Charter of Venice and the 1994 Nara Document on Authenticity, traditional heritage conservation practice requires restorations to honor the original structure's materials and building methods.[98] While this aspect of the 1964 charter and 1994 document is problematic given changes in technology (digital reproduction was not even possible at the time), questions of authenticity remain central to the discourse surrounding the IDA's replica, and digital heritage more broadly. Critics generally argue that the IDA's replica was materially and structurally inaccurate. While these concerns are absolutely valid, I argue that assessing authenticity extends beyond materiality, for authenticity involves the natural and built environment for which the structure was originally designed. While digital tools offer the promise of authenticity of detail that was not as easily attainable before, digitally-reconstructed heritage can only begin to approach authenticity when built in the original location. I will first examine the

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[97] Taylor, "The Problem."

[98] Bevan, "Should We Celebrate."

issues of the IDA replica's physical (in)authenticity, and then will further discuss the implications of authentic spatiality.

It is well documented that the IDA's replica lacked authenticity of scale, materials, and structural details. The Factum Foundation, a Madrid-based organization that creates 3D printing facsimiles of art and artifacts, published an account of the inauthentic nature of the Palmyra Arch reconstruction (Figure 1.6).[99] Factum illustrated the inaccuracies of the IDA's arch by comparing photographs of the original (Figure 1.7) and the reconstruction to highlight how the stonework and capitals were simplified, thus problematizing IDA director Michel's claims that the reconstruction was "completely indistinguishable from the original."[100] The reconstruction was ultimately markedly different from the original. For example, despite original renderings that intended for the arch replica to be true to scale, it was ultimately reduced to a two-thirds scale model.[101] The materials used to construct the replica further emphasize its inauthenticity. The IDA used marble that was quarried in Egypt, and had a distinctly yellow color.[102] The marble's color and shine clearly distinguish the original from the replica, prompting accusations

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[99] Khunti, "The Problem," 4; Daniel Zalewski, "The Factory of Fakes: How a Workshop Uses Digital Technology to Craft Perfect Copies of Imperilled Art," *New Yorker*, November 21, 2016, https://www.newyorker.com/magazine/2016/11/28/the-factory-of-fakes.

[100] Khunti, "The Problem," 4.

[101] Burch, "A Virtual," 67.

[102] Khunti, "The Problem," 6.

that the replica appeared to be 'disneyficated,' 'sanitized,' and 'a grotesque Duchampian readymade.'[103]

While the material and structural inaccuracies of the replica have been considered extensively by the academic community, less attention has been paid to authenticity in terms of the spatiality of digital heritage. Central to the Syrian Arch of Triumph's identity was its conversation with surrounding buildings and the surrounding landscape. Monuments, including the arch, are not designed in isolation from the surrounding landscape. Set in its original location along the colonnaded street in Palmyra, the Arch of Triumph created a dialogue with its surrounding Roman monuments as an expression of *imperium Romanum* (Figure 1.8). Taken out of this layered, interpretive context, the meaning of the monumental arch is lost. I argue that for a digitally-rendered replica to even approach authenticity, it would have to be placed in its original location.

Of course, a truly authentic experience with the Syrian Arch of Triumph was lost when it was destroyed, and ongoing violence in the region prevented the possibility for the IDA to display the replica in its original location. Still, the IDA could have taken steps to be more transparent by clearly delineating between the aspects of the replica that were true to the original, and those that were not. This transparency could have been accomplished visually, or could even have been explained on the project's website (which would also perpetuate digital colonialism as discussed in the next section, but would still

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[103] Khunti, "The Problem," 6; Stobiecka, "Archaeological Heritage," 118; Burch, "A Virtual," 72.

be preferable to the misleading replica that was displayed). A recent Smithsonian Institute exhibition exemplifies a visual approach to transparency. In January of 2020, the Smithsonian Institute launched *Age Old Cities: A Virtual Journey from Palmyra to Mosul* in Washington DC, an exhibition that provides visitors with the opportunity to travel to Palmyra, Mosul, and Aleppo through virtual reality.[104] The models displayed clearly delineate between exact data and conjecture through dotted spaces and faded overlays (Figure 1.9). This exhibition is not without its own set of issues, but is useful for its ability to express transparency in its digital displays. A digitally-rendered reconstruction of Palmyra will never be truly authentic, but it can be transparent by indicating what aspects are not true to the original site. Perhaps it is less important for digital heritage projects to strive for absolute authenticity than for these projects to maintain transparency.

Accessibility

Western digital heritage organizations legitimize their projects through claims of our global, shared heritage. Yet if this is truly a shared heritage, digital renderings should be accessible to all. Accessibility is an essential ethical responsibility for all conservation projects. All 3D models and images should be open-source, and easily accessible to all.

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[104] *Age Old Cities* was created through a collaboration between UNESCO, the Arab World Institute, and Iconem. For more information on this exhibition and the other institutions involved: https://www.si.edu/exhibitions/age-old-cities-virtual-journey-palmyra-mosul-event-event-exhib-6482

Otherwise, organizations are taking part in digital colonialism by usurping control of the object or site.[105] While some projects (such as NewPalmyra, a non-profit project that was founded in 2005 by Syrian software developer Bassel Khartabil) have started to make their data open-source, most organizations, like the IDA, do not.[106] Interim director of NewPalmyra, Barry Threw, problematized the IDA's approach, saying, "[i]nstead of spending resources constructing the ruins in Trafalgar Square, we make our 3D models downloadable, so that anyone can print them."[107] Here, Threw is certainly promoting his own organization, NewPalmyra, but still makes a valid argument that it is more important for data to be open-access than to produce a spectacle like that of Trafalgar Square. Stobiecka similarly points out that the "unspoken rules of the digital revolution" are "open-access, open-source, and transparency," which the IDA violated by copyrighting the replica of the arch.[108] Limiting access through copyright undermined the IDA's message of a shared, global heritage. An interesting point of comparison is scholarship, which is typically open-access for scholars and students. As more organizations expand their 3D printing capacities, when will technology be considered "scholarship" and be open-access to scholars and students?

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[105] Khunti, "The Problem," 7.

[106] To learn more about #NewPalmyra, visit the project's website: https://newpalmyra.org

[107] Clammer, "Erasing ISIS."

[108] Stobiecka, "Archaeological Heritage," 116.

By restricting accessibility, the IDA's replica engages in digital colonialism, a wide range of inequalities relating to the internet and other digital technologies. One example of these inequalities is language, for English as the primary language of the internet excludes the societies from which data is harvested.[109] Internet access further reinforces these inequities, for 88.5 percent of United States citizens use the internet compared to approximately thirty percent of the Syrian population, thirteen percent of the Iraqi population, and less than seven percent of the Afghani population.[110] These limitations undermine the value of digitization, for when accessible, data has immense value to the global community. Accessible data presents a unique contribution to preservation as a result of its immortality among other things.

Site Selection

The idea of a *global* heritage or a *shared* heritage can be seen as a Western construct, promulgated by UNESCO and its power to mark a historic site with the golden badge of World Heritage. The concept of world heritage is uniquely Western, for it is based upon a Western relationship with material culture.[111] Western tourism is deeply connected to World Heritage demarcation, thus shifting the way we view, protect, promote, and learn about certain cities, sites, and even cultures. Why did the IDA choose

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[109] Thompson, "Recreating the Past," 50.

[110] Thompson, "Recreating the Past," 50.

[111] Dario Gamboni, "World Heritage: Shield or Target?," *The Getty Conservation Institute Newsletter* 16, no. 2 (2001).

Palmyra as its site? Perhaps this choice was reflective of media attention, for Palmyra's destruction received far more media attention than the destruction of any other site—even more than any other World Heritage site.[112] Azra Aksamija argues that this attention is the result of "selective empathy," a term that explains why we are more empathetic towards the loss of heritage that we consider our own.[113] Images of Palmyra such as drawings of the eighteenth-century French painter Louis-Francois Cassas (Figure 1.10) and nineteenth-century photographs from European expeditions to the Middle East (Figure 1.11) created a space for Palmyra to become a Western tourist destination. It is this history of Western interest in Palmyra, created through these images, that allowed ISIS's destruction of the site to have such a profound global effect.

Rabbat and Nasser assert that Western tourism and museums dictate what "destroyed or threatened sites, monuments, and artifacts receive more attention than others…"[114] It is within this framework that world heritage sites are listed, thus placing greater global attention on these sites than other sites that are just as important to ancient and pre-Islamic history, but may be less "touristically desirable."[115] Aleppo exemplifies this asymmetry. It could be argued that Aleppo is a far more historically significant site than Palmyra, yet its destruction has received far less attention in both the media and

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[112] Aksamija, "Memory Matrix," 144.

[113] Aksamija, "Memory Matrix," 144.

[114] Karimi and Rabbat, "The Demise."

[115] Karimi and Rabbat, "The Demise."

digital heritage efforts, perhaps because as an Arabic structure, the Citadel it is not part of the Western canon like ancient Greco-Roman sites. Most of the digital projects that have been undertaken thus far focus on pre-Islamic sites, even though the majority of sites destroyed by ISIS are more recent.[116]

To what extent must digital visualizations represent the history of the site, and what history is most important to restore? Here it is crucial to clarify the project's objective. Is this about fighting ISIS, Ruskinian theories of ruin appreciation, or reclaiming Western heritage?[117] Before its destruction, Palmyra stood as a ruin—what does it mean to restore a site to another state of ruin? The IDA's reconstruction presents the Arch idealistically, for it does not represent the structure as it was originally built, nor the ruin at the moment of destruction. Indeed, digital reconstructions that ignore the site's "scarring by time" and their multiple life stories ultimately misrepresent the site's history.[118] The history of monuments shifts and builds throughout their lifespan, creating layers of history through various uses, decay, and origination. What history should be privileged for its restoration? Should the monument be depicted as it was first built in the third century as a celebration of the Roman victories over the Parthians, or as it was depicted by colonial explorers, or as it was restored in the 1930s? Furthermore, there was a history of the site before the arch was erected in the third century—should this history

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[116] Thompson, "Legal and Ethical," 169.

[117] Aksamija, "Memory Matrix," 145.

[118] Fredricks, "Digital Tools."

be involved? And finally—should the 2015 destruction of the Arch be involved in preserving its memory?

Through his 2016 essay, "Should We Celebrate a Replica of the Destroyed Palmyra Arch*,"* architecture critic Robert Bevan criticizes Trafalgar Square's Arch of Palmyra, arguing that rebuilding is ultimately denial, for it "can conceal the reality of the present."[119] Yet Bevan acknowledges that arguments against rebuilding allow victory for the perpetrators.[120] He alternatively proposes 'critical reconstruction,' a rebuilding approach that acknowledges the object's complicated history through incorporating features of its damage.[121]

Whose Heritage?

To return to my earlier question, I ask once more: to whom does Palmyra's heritage belong? The location of Palmyra within Syria means that it is, technically, Syrian heritage. However, a monument like the Arch of Triumph is also part of a Western heritage of art and architecture, for it is a Roman form that was commissioned by a Roman emperor. Are we perpetuating imperial narratives by selecting a Roman structure at Palmyra, and is that narrative reinforced through its placement within the imperial landscape of Trafalgar Square? The Institute for Digital Archaeology's Arch of Triumph

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[119] Bevan, "Should We Celebrate."

[120] Bevan, "Should We Celebrate."

[121] Bevan, "Should We Celebrate."

problematizes the ownership and responsibility of Palmyra's heritage—who should be responsible for answering these questions?

Some might argue that these responsibilities should fall to humanitarian associations instead of scholars and archaeologists. Why do the archaeologists and scholars involved in digital projects need to play a role in acknowledging human suffering through their work? It may seem reasonable that archaeologists focus directly on the materiality of conflict. If archaeologists were working on a project for purely archaeological purposes, a focus on materiality would be reasonable. However, the institutional backgrounds and affiliations connected to many large-scale digital projects provides these types of projects with a profound responsibility to address the complete history of a monument and the potential implications of its digitization. This chapter has problematized the value that we, as a society, place on certain cities and monuments, revealing that material identity is deeply connected to human identity.

CHAPTER II

The Buddhas of Bamiyan: "Presence in Absence"[122]

Located between the Indian subcontinent and Central Asia, the Bamiyan Valley is set in the Hindu Kush mountain region of Afghanistan (Figure 2.1). The fertile plains of the Bamiyan Valley made it an ideal stop along the Silk Road for Buddhist merchants and missionaries, allowing for a flourishing trade economy (Figure 2.2). Buddhism was first introduced to the region during the Kushan period, and by the sixth century the Bamiyan Valley had become a major center of both Buddhist worship and commerce.[123]

During the seventh and eighth centuries, two colossal Buddhas were cut into the rock of the mountains (Figure 2.3). Known collectively as the Bamiyan Buddhas, the larger of the two Buddhas stood to the west at 55 meters tall, while the smaller Buddha, 800 meters to the east, stood at 38 meters tall.[124] Three smaller niches for seated Buddhas sat in between. The surrounding cliffs hold over 700 caves, which were once spaces of

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[122] Helaine Silverman, "Learning from Ground Zero: The Presence of Absence at Two Sites of Destruction," in *The Future of the Bamiyan Buddha Statues: Heritage Reconstruction in Theory and Practice*, ed. Masanori Nagaoka (n.p.: Springer, 2020), 197.

[123] Deborah Klimburg-Salter, *The Kingdom of Bamiyan: Buddhist Art and Culture of the Hindu Kush* (Naples, Rome: Istituto universitario orientale, Dipartimento di studi asiatici, Istituto italiano per il medio ed estremo oriente, 1989), 10.

[124] Llewelyn Morgan, *The Buddhas of Bamiyan* (Cambridge, MA: Harvard University Press, 2012), 4.

Buddhist worship and covered in religious painting.[125] While the Buddhist kingdom that is responsible for the Buddhas remains unknown, it has been surmised that the Western Turks may have held power in the region from the sixth century on, which has inscribed Bamiyan's history within the canon of Western history.[126] The existence of these Buddhas points to the importance of the Buddhist faith in the Bamiyan Valley during the period when they were built.

While it was once believed that both Buddhas were built simultaneously, recent radiocarbon dating of fragments from the Buddhas confirmed that the larger Buddha was constructed around 615 CE, while the smaller Buddha was constructed half a century earlier, around 550 CE.[127] Historians have argued that the larger Buddha represented the Buddha Vairochana, while the smaller Buddha is known through the Chinese traveller Xuanzang's accounts to have depicted the Buddha Shakyamuni. The Buddhas were carved into niches of the cliff in deep relief, such that they were partially attached to the mountain, leaving their feet detached. This is significant, for the negative space around the feet allowed for circumambulation rituals (Figure 2.4).[128] Stylistically, both Buddhas

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[125] Morgan, *The Buddhas,* 8. The Buddhist wall paintings are significant, though beyond the purview of this paper. For more information on these paintings, see Klimburg-Salter, *The Kingdom*.

[126] Morgan, *The Buddhas,* 10; Upton, "Starting from," 459.

[127] Morgan, *The Buddhas,* 4.

[128] Morgan, *The Buddhas,* 4.

wore draped robes, and once had curled hair. The hairstyle and draped robes have led scholars to characterize these Buddhas as part of early Gandharan Buddhist traditions.[129]

Much of what is known about the Bamiyan Buddhas comes from Xuanzang's accounts from his travels to Bamiyan in 629.[130] Through Xuanzang's descriptions in *The Great Tang Records of the Western Regions*, it is possible to better understand what the Buddhas looked like in the seventh century, adorned with metal, color, and gems, as well as their importance within the surrounding community. Xuanzang observed:

> To the north-east of the royal city, on the side of the mountain, there is a stone statue of the standing Buddha. It is 140– 50 feet high, of a dazzling gold colour and resplendent with ornamentation of precious substances. To the east of it is a monastery built by an earlier king of the country. East of this is a standing image of Shakyamuni Buddha, more than 100 feet high, made of brass, the pieces of which have been cast separately and then assembled to make up the statue.[131]

However, there is considerable debate surrounding the original appearance of the Buddhas' faces, and most scholars agree that the faces were not entirely copper, as suggested by Xuanzang. While some scholars such as Deborah Klimburg-Salter argue that both of the faces were constructed of masks made of wood and covered in a layer of brass, Finbarr Barry Flood argues that the absence of faces was the result of early

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[129] Madeleine Hallade and Hans Hinz, *The Gandhara Style and the Evolution of Buddhist Art*, trans. Diana Imber (London, UK: Thames & Hudson, 1968), 155.

[130] Klimburg-Salter, *The Kingdom;* Morgan, *The Buddhas,* 55.

[131] Xuanzang, *The Great Tang Dynasty Record of the Western Regions*, trans. Li Rongxi (Berkeley, CA: Numata Center for Buddhist Translation and Research, 1996), quoted in Morgan, *The Buddhas*, 55.

iconoclasm.[132] Regardless, the Bamiyan Buddhas stood proudly in their respective niches for nearly fourteen centuries.

Destruction and an Uncertain Future

In February of 2001, Taliban leader Mullah Mohammad Omar ordered the destruction of the Bamiyan Buddhas on the grounds that as non-Islamic monuments, they were antithetical to the Taliban's principals. Omar issued the following edict:

> On the basis of consultations between the religious leaders of the Islamic Emirate of Afghanistan, religious judgements of the ulema and rulings of the Supreme Court of the Islamic Emirate of Afghanistan must be destroyed. These statues have been and remain shrines of unbelievers and these unbelievers continue to worship and respect them. God almighty is the only real shrine and all fake idols must be destroyed.[133]

Following this edict, Taliban militants initiated an extensive attack against the Buddhas until they were finally decimated (Figure 2.5). The world watched the devastation in horror, and seemingly overnight, the Bamiyan Buddhas became part of a 'global' heritage. In the aftermath of destruction, a debate surrounding reconstruction ensued, and continues to this day as historians, archaeologists, and policy-makers consider the reconstruction and memory of the monumental Buddhas. A wide range of projects has

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[132] Klimburg-Salter, *The Kingdom*, 88; Flood, "Between Cult."

[133] Mullah Muhammed Omar, 2001. Quoted in Gil Stein, "The War-Ravaged Cultural Heritage of Afghanistan: An Overview of Projects of Assessment, Mitigation, and Preservation," *Near Eastern Archaeology* 78, no. 3 (2015): 189, https://eds-a-ebscohost-com.proxy01.its.virginia.edu/eds/pdfviewer/pdfviewer?vid=1&sid=2082fa6b-2a63-48c3-a560-7a0919285765%40sessionmgr4006.

already been established that create digital models of the Bamiyan Buddhas. The tragic loss of heritage at Bamiyan catalyzed the digitization of threatened heritage, providing remote sensing methods with unprecedented value and attention.

In the years since the destruction of the Bamiyan Buddhas, scholarship on the Buddhas and their destruction has focused on iconoclasm, contested world heritage, and the possibilities for digitally rendered reconstruction. These three modes of inquiry provide the framework for the central argument of this chapter, which proposes that the recent use of digital methods ethically and effectively reconstructs the memory of these Buddhas. An on-site laser projection of the Bamiyan Buddhas, first launched in 2015, serves as an interesting example of a contrasting way to think about digital heritage. The laser projection is entirely different from the IDA's replica of the Palmyra Arch of Triumph through its medium, location, and interactions with the local community. I argue that amidst ethical concerns (particularly pertaining to Western appropriation of Eastern heritage) surrounding digitally reconstructed heritage, the laser projection of the Bamiyan Buddhas has adopted a critical reconstruction approach that has illuminated a successful and ethical standard for digital heritage projects.

'World' Heritage and UNESCO

While scholars such as Llewyn Morgan have argued that it is misguided to re-direct blame for the destruction of the Bamiyan Buddhas, the loss of this site is deeply

connected to Western-centric notions of the museum and heritage.[134] Despite the extensive history and significance of the Bamiyan Valley and its Buddhas, the Western world has been criticized for largely disregarding the importance of the site until the Taliban began to threaten destruction. Filmmaker Mohsen Makhmalbaf wrote, "I am now convinced that the Buddha statues were not demolished. They crumbled to pieces out of shame, because of the West's ignorance towards Afghanistan."[135] Indeed, Bamiyan was not added to the UNESCO World Heritage list until 2003, and then was added simultaneously to the List of World Heritage in Danger.[136] Seemingly overnight, the Western world was horrified, and the Bamiyan Buddhas were identified as common human cultural heritage.[137]

The idea of a common, global heritage was first codified through UNESCO's Hague Convention of 1954, which states that "damage to cultural property belonging to any people whatsoever means damage to the cultural heritage of mankind."[138] While this notion of preserving a shared heritage appears to be a noble cause, critics argue that its

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[134] Morgan, *The Buddhas,* 26.

[135] Christian Frei, dir., *The Giant Buddhas*, 2005.

[136] Morgan, *The Buddhas*, 26.

[137] Helaine Silverman, "Contested Cultural Heritage: A Selective Historiography," in *Contested Cultural Heritage: Religion, Nationalism, Erasure, and Exclusion in a Global World* (New York, NY: Springer, 2011), 15.

[138] UNESCO, *Convention for the Protection of Cultural Property in the Event of Armed Conflict with Regulations for the Execution of the Convention,* May 14, 1954, http://portal.unesco.org/en/ev.php-URL_ID=13637&URL_DO=DO_TOPIC&URL_SECTION=201.html.

consequences at Bamiyan were blatantly misguided, for it seemed that the global community did not value Afghanistan's most important archaeological site until it was threatened. At the 1983 session of UNESCO's Bureau of World Heritage Committee, the organization deferred the Afghan government's nomination of the Bamiyan Buddhas to the World Heritage list.[139] The addition of the site in 2003 was actually a "reactivation" of the 1983 deferral "at the request of the Committee."[140]

The concept of world heritage first emerged as a uniquely Western idea, for its conception is based upon a Western relationship with material culture.[141] Yet at present, many countries such as China and Southeast Asian nations constantly work toward nominating potential World Heritage sites. The impact of UNESCO's world heritage status has shifted as countries across the globe have recognized the potential to advance national interests through cultural heritage sites. Yujie Zhu discusses the politicization of UNESCO's world heritage policies by the Chinese government, illuminating how the Chinese government uses its cultural heritage sites as mechanisms for nation building and

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[139] The report justified this action through the following statement: "On the condition that the authorities define a large perimeter of protection which would include the cliffs and the valley, and provide a map indicating the delimitation of this zone." UNESCO, *Convention Concerning the Protection of the World Cultural and Natural Heritage,* December, 1981, https://whc.unesco.org/archive/1983/sc-83-conf009-2e.pdf.

[140] UNESCO, *Convention Concerning the Protection of the World Cultural and Natural Heritage,* July, 2003, https://whc.unesco.org/archive/2003/whc03-27com-08ce.pdf.

[141] Gamboni, "World Heritage."

economic development.[142] Zhu argues that the Chinese government has capitalized on the relationship between tourism and World Heritage status. As I discussed in the previous chapter, Western tourism and museums most directly influence World Heritage status. The delayed addition of the Bamiyan Buddhas to the World Heritage list exemplifies this asymmetry.

Colonization, the Western Museum, and Questions of Motive

Finbarr Barry Flood's essay, "Between Cult and Culture: Bamiyan, Islamic Iconoclasm, and the Museum" draws on Freedberg's earlier discussions of fetishization to argue that destruction was driven, in part, by the fetishization of culture within the context of the Western museum.[143] Flood provides support for Freedberg's argument by recalling one report that "the Bamiyan episode was initiated after Taliban officials, horrified at being confronted by a semi-naked bodhisattva in the Kabul Museum, slapped it across the chest and face."[144] If this report is, in fact accurate, Freedberg's argument holds credence. However, while Freedberg's 2007 essay insists on the destruction at Bamiyan as a psychological response to a fear of the "affective" power held by the Buddhas, akin to the Taliban's insistence that women may not reveal their faces and eyes

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[142] Yujie Zhu, "Uses of the Past: Negotiating Heritage in Xi'an," *International Journal of Heritage Studies* 24, no. 2 (2018). Also see Yujie Zhu, "Cultural Effects of Authenticity: Contested Heritage Practices in China," *International Journal of Heritage Studies* 21, no. 6 (2015), 594-601.

[143] Flood, "Between Cult."

[144] Flood, "Between Cult."

in public, Flood argues that the Bamiyan Buddhas were fetishized within the context of the Western museum and marketplace.[145] While both Freedberg and Flood consider the Bamiyan Buddhas as subjects of fetishization, Freedberg understands this fetishization as the product of the Buddhas themselves; contrastingly, Flood points to external heritage politics. When the Taliban first threatened to destroy the Buddhas, an array of Western institutions, including the Metropolitan Museum of Art, promptly offered to purchase the Buddhas, appealing to the preservation of a common cultural heritage that must be saved. In response, Mullah Omar asked followers on Radio Shari'a: "Do you prefer to be a breaker of idols or a seller of idols?" Flood argues that the actions taken by Western museums and Omar's response reflects the misguided Western-centric thought processes that prompted the destruction of the Buddhas.

The Taliban's motivations for targeting the Bamiyan Buddhas have been explored extensively, and perhaps true motivations will never be understood. Yet the loss—and global response to the loss—of these incredible statues is now closely connected to the painful history of centuries of Western colonization of art and architecture. Recovery requires acknowledging these wounds, and moving forward in a more thoughtful manner.

Digital Bamiyan

In May of 2002, the interim Afghan government, UNESCO, and other relevant institutions held an international conference with the purpose of determining the future of

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[145] Freedberg, "Preface to the Polish," 7; Flood, "Between Cult," 654.

the artifacts damaged and looted by the Taliban. The future of the Bamiyan Buddhas was central to this conference, and two opposing viewpoints emerged.[146] While one view, for which Afghanistan's cultural minister argued, holds that the statues should be completely reconstructed to erase the Taliban's actions, the opposing view advocates that the niches should be left empty to honor the loss endured.[147] The conference ultimately decided to put reconstruction on hold, leaving the Bamiyan Valley's future uncertain (Figures 2.6–2.7).[148] The debate continues to this day, even as recent initiatives work toward removing the site from the List of World Heritage in Danger.[149]

Bamiyan's Present, Digitally

In the aftermath of the destruction of the Bamiyan Buddhas and other heritage sites such as the Syrian city of Palmyra, what is the informed approach to heritage preservation in the twenty-first century?[150] The recent critical discussions of heritage technologies, first ignited by the IDA's replica of Palmyra's Arch, have also considered

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[146] James Janowski, "Bringing Back Bamiyan's Buddhas," *Journal of Applied Philosophy,* 28, no. 1, (2011), 45.

[147] Stein, "The War-Ravaged," 45.

[148] Janowski, "Bringing Back," 45.

[149] "UNESCO and Japan Support Afghanistan's Efforts towards Removing the Bamiyan Valley from the List of World Heritage in Danger," UNESCO, last modified March 3, 2020, https://whc.unesco.org/en/news/2088/.

[150] Trinidad Rico, "The Second Coming of Palmyra. a Technological Prison," *Archaeological Dialogues* 27, no. 2 (November 13, 2020): 125, https://doi.org/10.1017/S1380203820000240.

the application of these technologies to the Bamiyan Buddhas. The digitally-rendered laser model of the Bamiyan Buddhas has emerged from this discussion as exemplary of an ethical approach to digitization.

Amidst the uncertainty of Bamiyan's future, an array of digital heritage projects have explored various digital approaches to reconstructing, visualizing, and preserving the Bamiyan Buddhas through methods such as photogrammetry, virtual reality, and laser projection.[151] Most significant to this discussion is the privately funded Chinese laser projection project at the original site in the Bamiyan Valley (Figure 2.8). In 2015 a Chinese couple, Janson Hu and Liyan Yu, financed a 3D laser projection rendering of the larger Buddha as it might have once appeared.[152] Chinese scholars used 3D laser light projection technology at the original site of the Buddhas, projecting a holographic image of original Buddhas into the now empty niche.[153] The concept was not exactly novel. In 2005, Japanese artist Hiro Yamagata proposed a similar project, an elaborate laser-show system that would project images of the Buddhas on-site, but Yamagata's project was

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[151] The value of these projects is reflected through Remondino's essay, "Heritage Recording and 3D Modeling with Photogrammetry and 3D Scanning." Through this paper, Remondino asserts the urgency of digital documentation in light of threatened heritage. Yet Remondino warns that the absence of a standardized approach to applications of digital documentation can become problematic.

[152] Janson Hu and Liyan Yu's names have been reported differently by various sources. While sources such as the New York Times refer to the duo as Janson Hu and Liyan Yu, other sources use the names Zhang Kinyu and Liang Hong. For the purposes of this paper, I use the names Janson Hu and Liyan Yu.

[153] Khunti, "The Problem," 8.

never realized.[154] Yamagata's proposal used solar and wind power to project 140 images across four miles for four hours each Sunday evening (Figure 2.9).[155] This idea was later rejected, for it was too costly and impractical.[156]

Ten years later, the Bamiyan Buddhas were finally realized through laser projections. Janson Hu and Liang Yu were reportedly deeply moved by the destruction of the Bamiyan Buddhas, which motivated them to create a 3D model of the Buddhas and fund the construction of the projector at a cost of $120,000.[157] When the project was first developed, Hu and Yu were touring the world a filming a documentary.[158] The couple first tested and adjusted the projections on a Chinese mountainside, and brought the display to Afghanistan after they received approval from UNESCO and the Afghan government.[159] Through this project, Hu and Yu aimed to "remind the people of Bamiyan

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[154] Edward Delman, "Afghanistan's Buddhas Rise Again," *The Atlantic*, June 10, 2015, https://www.theatlantic.com/international/archive/2015/06/3d-buddhas-afghanistan/395576/.

[155] "Artist to Recreate Afghan Buddhas," *BBC News* (UK), August 2005, http://news.bbc.co.uk/2/hi/entertainment/4134252.stm.

[156] Joshua Hammer, "Searching for Buddha in Afghanistan," *Smithsonian Magazine*, December 2010, https://www.smithsonianmag.com/travel/searching-for-buddha-in-afghanistan-70733578/.

[157] Delman, "Afghanistan's Buddhas;" Mirwais Adeel, "Return of Bamiyan Buddhas with Help of Image Display," *Khaama Press* (Afghanistan), June 7, 2015, https://www.khaama.com/return-of-bamyan-buddhas-with-help-of-3d-image-display-9468.

[158] Delman, "Afghanistan's Buddhas."

[159] Delman, "Afghanistan's Buddhas."

of their priceless cultural heritage and once splendid civilization."[160] Since the project was first launched in 2015, Hu and Yu donated the digital file and projector to the local Afghan cultural ministry, which has continued to display the work on special occasions.[161]

Throughout recent critical discussions of digital heritage, this laser projection has emerged as one of the most effective examples of an initiative that has taken an ethical approach to digital heritage practices. What is it about this project that has rendered it successful, and what can be learned from this effort for the future of digital heritage practices?

Critical Reconstruction

The success of the Chinese holographic image can be attributed, in part, to its depiction of an authentic and transparent representation of the site and its complicated, layered history. Through a 2015 assessment of assessment, mitigation, and preservation projects to manage Afghanistan's cultural heritage, Gil Stein identified this laser projection as the most successful attempt at mitigation so far, for the projection "…at least maintains the haunted emptiness of the giant niches, but also affords the potential to

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160 "Chinese Couple Helps Bamiyan's Giant Buddhas 'Reappear,'" *China Daily*, June 12, 2015, https://www.chinadaily.com.cn/culture/2015-06/12/content_20988202.htm.

161 Rod Norland, "2 Giant Buddhas Survived 1,500 Years. Fragments, Graffiti and a Hologram Remain.," *New York Times*, June 18, 2019, https://www.nytimes.com/2019/06/18/world/asia/afghanistan-bamiyan-buddhas.html.

visualize the monumental sculptures by night."[162] Stein is among various heritage scholars who have praised this project for effectively acknowledging the site's history. Most recently, Helaine Silverman has argued for a digital hologram as the best approach to reconstructing the Bamiyan Buddhas. Silverman suggests a digital projection that depicts the Buddhas as they appeared just before their destruction, alternating with a projection of their imagined original, colorful appearance. Silverman notes that laser projection "would remember the void and the cause of absence: the Taliban's iconoclasm would be incorporated into the history of Bamiyan — *presence in absence* — rather than reconstructed over."[163] The transparency of the projections communicates the negative space, thus presenting a holistic representation of the history of the space.[164] In this way, the hologram exemplifies the "critical reconstruction" approach as outlined in the previous chapter.[165]

The Buddhas of Bamiyan perfectly encapsulate the idea of critical reconstruction, for even before destruction, they existed in a state of mystifying ruin, stripped of facial features, bright colors, and adornments. The Buddhas were completely different as observed by Xuanzang in the first century, Alfred Foucher and other Europeans in the early twentieth century, and Taliban militants most recently. What history should be

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[162] Stein, "The War-Ravaged," 192.

[163] Silverman, "Learning from," 197.

[164] Khunti, "The Problem," 8.

[165] Bevan, "Should We Celebrate."

privileged? In developing the 3D model used for this hologram projection, the Chinese artists and scholars layered original features of the Buddha as described by Xuanzang onto detailed structural data as it existed before its most recent destruction in an effort to present an imagined depiction of the statue in its prime (Figures 2.10–2.11).[166] Yet the transparency and ambiguity of the hologram format intrinsically avoids prioritizing a single moment in history, as the viewer is acutely aware of the destruction while simultaneously honoring the Buddha statue that once existed.

Towards A Digital Decolonialism

Viewed within the context of recent critical heritage discussions, the hologram project seems to avoid engaging in the unethical practices that other digital heritage projects have been accused of. Examining the laser hologram projection at Bamiyan within the framework of digital colonialism yields promising results through authenticity, accessibility, and general Western-centric technocratic imperialism. Through its use of the critical reconstruction approach described above, the laser projection avoids issues of authenticity, for it does not attempt to present an authentic reconstruction of the destroyed Buddha. While both the IDA's Arch of Triumph replica and Hu and Yu's Bamiyan

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[166] Norland, "2 Giant."

Buddhas laser projection used photogrammetry to create the 3D models, the approaches to presentation were markedly different.[167]

Furthermore, issues of accessibility are negligible here, because the project exists at its original location. While the replica of the Syrian Arch of Triumph was criticized for its grand tour of Western cities that never reached its original site in Palmyra, the Bamiyan hologram projection is displayed exclusively within the empty niche of Bamiyan's larger Buddha. In this way, local people are included in the project, a facet reenforced through the forty cent ticket price for locals, compared to the four dollar price paid by tourists.[168] While the project was conceived through foreign (Chinese) interests, the couple that funded the display worked with local officials to create sustainable advantages for the local tourist economy. The project and its ticket sales support the local economy in a way that other digital heritage projects have not. By shifting the focus of digital heritage from the universal value of cultural heritage and toward supporting local communities, digital heritage can be used in positive ways.

The Chinese hologram projection serves as a testament to the efficacy of the critical reconstruction approach, providing evidence that there are comprehensive ways in which to reimagine history through technology. Through local investment and collaboration, this projection includes the local population in the project in a way that

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[167] Karluk Halgal, "Bamiyan Buddhas Return as Holographic Projections," *Buddhistdoor Global News*, June 15, 2015, https://www.buddhistdoor.net/news/bamiyan-buddhas-return-as-holographic-projections.

[168] Norland, “2 Giant.”

other projects have not. More work will surely need to be done, and this project is not perfect. There are complex ideological layers to the laser projections at Bamiyan, some of which is outside the scope of this project. However, it is important to note that when there is private money supporting such a cause, there are questions that must be asked. How does this project connect with Chinese-Afghan politics, and what is the role of private funding within discussions of colonialism? According to Afghan news sources, Hu and Yu gave the projector and 3D image data to the Afghan people as a "gift from the people of China."[169] The political implications of this donation and project require further investigation. Yet while the Bamiyan Valley continues to await a decision from UNESCO's Bamiyan Task Force, the laser projection honors the region's difficult past and present. This hologram provides a glimpse of a promising future for digital heritage projects.

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The tragic loss of heritage at Bamiyan catalyzed the digitization of threatened heritage, providing remote sensing methods with unprecedented value and attention. This site is fraught with a complex history, exacerbated by the perpetuation of colonial tendencies by Western museums and institutions. This context problematizes digital reconstructions of the Bamiyan Buddhas, which risk engaging in forms of digital colonialism. In light of these issues, what is the role of digital heritage? As Stobiecka has pointed out, "If heritage is the interaction between people and the world, and between

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[169] Adeel, "Return of Bamiyan."

people themselves, then it is better to resign from the digital armoury and focus on meaning-making through socially situated practices."[170] It seems that the laser projection at Bamiyan has accomplished the "socially situated" digital heritage for which Stobiecka argues. Through this critical reconstruction approach, projects like the laser projections at Bamiyan have illuminated an ethical and promising future for the Bamiyan Buddhas, the local community, and the digital heritage field more generally.

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[170] Stobiecka, "Archaeological Heritage," 124.

CHAPTER III

Notre-Dame: Our Lady, Destroyed

In the aftermath of the fire that devastated the spire, roof, and upper walls of the Notre-Dame Cathedral in Paris on April 15th, 2019, scholars, politicians, the media, and the public began to debate how the historic building ought to be repaired. In the fifteen month period leading up to President Emmanuel Macron's decision to rebuild the structure as it existed just before the fire, this debate opened a significant conversation surrounding principles of authenticity, preservation, and restoration. This discourse reveals the need to reassess traditional preservation principles in light of the recent availability of digital technologies, and emphasizes the extent to which digital tools have changed the field of preservation. In the case of Notre-Dame, it is possible to replicate a destroyed building in a more precise way than was ever previously possible, largely as a result of the late Professor Andrew Tallon's laser scanning work. This chapter will examine the proposed reconstruction of Notre-Dame and discuss how destroyed sites can be reconstructed when 3D data of the original site is available, and the issues surrounding such reconstructions. I argue that even in situations of accidental destruction, digital heritage technologies reveal key ethical issues, and ultimately shape the impact and legacy of heritage destruction.

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Set on the eastern end of Paris's Île de la Cité, the Notre-Dame Cathedral appears to rise from the Seine River. Today, more than fourteen million tourists, worshippers, and pilgrims come to marvel at the Gothic masterpiece each year.[171] The visitor arrives from the west, and is first confronted by the ornamental and highly textured western façade's three stories, complete with its two looming towers, each 223 feet high (Figure 3.1). The immensity of the structure is immediately evident and overwhelming to the visitor through this vertical emphasis. Three portals welcome the visitor and set the tone of the religious space through reliefs adorning the tympana. The colossal doors are richly decorated with carvings depicting religious iconography. The three portals are topped with a row of twenty-eight imposing statues of Old Testament kings, suggesting a strong visual link between sovereignty and the ecclesiastical. Above this gallery of monumental kings, a large rose window sits in the center of the façade. The Cathedral extends from the western façade along the Seine, featuring large clerestory windows and flying buttresses.

By the time that the fire was extinguished after nearly thirteen hours, the city of Paris, and people around the word, mourned the devastation of this esteemed monument (Figure 3.2). Yet despite the collapse of the roof and spire, due to the heroism and skill of the Parisian firefighters during those thirteen hours, much of the Cathedral's structure

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[171] Dany Sandron and Andrew Tallon, *Notre Dame Cathedral: Nine Centuries of History* (University Park, PA: Penn State University Press, 2020), 17.

remains intact (Figure 3.3).[172] Almost immediately, scholars, politicians, the media, and the public began to debate how the historic building ought to be repaired.[173] While popular opinion favored some type of repair, the response was complicated by the building's rich and composite history, for though Notre-Dame is often understood as a Gothic structure, much of what was destroyed (such as the spire) was actually built in the mid-nineteenth century.[174] Given the building's many iterations scholars began to question what an authentic restoration would look like.

The day after the fire, French President Emmanuel Macron appeared on national television, promising that the reconstruction would be complete within five years.[175] Just two days later, President Macron's close ally Prime Minister Édouard Philippe announced an international architecture competition for the reconstruction, prompting an array of radical proposals.[176] While this competition was ultimately abandoned, the competition and the politicization of Notre-Dame's reconstruction prompted a voracious and

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[172] Elian Peltier et al., "Notre-Dame Came Far Closer to Collapsing than People Knew. This Is How It Was Saved.," *New York Times*, July 18, 2019, https://www.nytimes.com/interactive/2019/07/16/world/europe/notre-dame.html.

[173] Paul Binski, "Should Notre-Dame Be Reconstructed Faithfully?," *Apollo–The International Art Magazine,* May 28, 2019, https://www.apollo-magazine.com/should-notre-dame-be-reconstructed-faithfully/.

[174] Kevin D. Murphy, *The Cathedral of Notre-Dame of Paris: A Quick Immersion* (New York: Tibidabo Publishing, 2020), 5.

[175] Binski, "Should Notre-Dame."

[176] Vivienne Walt, "Inside the Fight over How Notre Dame Should Rise from the Ashes," *Time Magazine*, July 25, 2019, https://time.com/5634240/notre-dame-fire-france-battle/.

significant debate surrounding preservation and reconstruction.[177] Despite the call for new interventions, in July of 2020, President Macron effectively ended this debate when he announced that Notre-Dame would be restored as precisely as possible to its condition before the fire. Yet the questions that emerged from this conversation remain relevant to our understanding of preservation, revealing how the field has changed in regard to authenticity and digital tools.

In order to address these issues, I first briefly describe the many iterations and restorations of Notre-Dame to contextualize the actual building that was destroyed. I then investigate recent shifts in preservation and restoration practices through discussions of authenticity and laser scanning methods.

Notre-Dame: A Brief Historical Overview

The significance of the Île de la Cité site extends back far before Notre-Dame's construction. As early as the second century BCE, Gallic *Parisii* settlers inhabited the site.[178] It was during the Roman occupation that the Île de la Cité first gained its status as a sacred space, for archaeological evidence suggests that there was an altar dedicated to Jupiter. Yet it was not until the Frankish King Clovis invaded and declared Paris to be the

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[177] Aurelian Breeden, "Macron Drops Idea of a Modern Spire for Notre-Dame," *New York Times,* July 9, 2020, https://www.nytimes.com/2020/07/09/world/europe/Notre-Dame-spire-Macron.html.

[178] Lisa Reilly, "Notre Dame: Rebirth or Reconstruction?," lecture, video, *Youtube*, posted October 6, 2020, https://www.youtube.com/watch?v=y-KcvJv2a6I.

capital of his new kingdom that the Île de la Cité (and the city of Paris) began to slowly gain the prominence that it holds today. In 508 CE, Clovis converted to Christianity and launched a building campaign to construct churches across Paris.[179] The little archaeological evidence that remains of these churches reveals that the most important Clovis-era church was on the exact site that would become Notre-Dame. This church was eventually destroyed by Norman invaders, and rebuilt to become the most important church in the city, known as the "Cathedral of Paris" in the ninth century.

Around 1160, Bishop Maurice de Sully commissioned a new cathedral to replace the existing structure, and in 1163 Pope Alexander III laid the foundation stone of a recognizably Gothic structure. The choir, western facade, and the nave were completed by 1250—though construction continued through the middle of the thirteenth century. The Notre-Dame of the late twelfth and early thirteenth century was a true Gothic masterpiece, exhibiting features such as stained glass, flying buttresses, and clerestorys. Yet the building was never truly finished, as it was periodically modified, restored, and altered throughout its lifespan.

The Cathedral of Notre-Dame was closely connected to the monarchy throughout its history.[180] The Cathedral's proximity to the royal palace, located just at the opposite end of the Île de la Cité, served as a clearly visible indicator of the close association between the monarchy and Notre-Dame. The political nature of the Cathedral was further

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[179] Murphy, *The Cathedral*, 27.

[180] Murphy, *The Cathedral,* 92.

emphasized during the reign of King Louis XIV (1643-1715), who sought to update the existing structure to accommodate modern design.[181] Interventions under Louis XIV were extensive, for the Gothic style of architecture was no longer appealing in the late seventeenth and early eighteenth century, while neoclassicism was the preferred architectural style.[182] As a result, Notre-Dame was modified extensively under Louis XIV's reign in order to undermine the Gothic aesthetic of the Cathedral and transform the space to appear more neoclassical and thus current. Gothic elements such as the stained glass windows, tombs, and statues were removed, and the Gothic interior was effectively encased in a neoclassical layer (Figure 3.4). These alterations are indicative of role of the Cathedral as a significant political and religious space, necessitating alterations to promote a current image of the monarchy.[183]

By the time of the French Revolution, Notre-Dame functioned as a powerful symbol of the connection between the church and monarchy, thereby antithetical to the ideals of revolutionaries. During the French Revolution, the Cathedral became a target of violence and iconoclasm. In the aftermath, Notre-Dame was converted to a secular, national space. Its spire was taken down, and the building was rededicated as a temple of reason, symbolic of enlightenment thinking.[184] Official directives ordered the removal of

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[181] Murphy, *The Cathedral,* 115.

[182] Reilly, "Notre Dame," video.

[183] Reilly, "Notre Dame," video.

[184] Murphy, *The Cathedral,* 98.

royal imagery from all buildings, resulting in the removal of the Gallery of Kings from the west façade.

Emperor Napoleon's coronation at Notre-Dame marked the reestablishment of the church in France. Napoleon established a fund to restore the building, and intended to repair the destruction from the Revolution. The architect Alexandre-Théodore Brongniart (1739-1813) led an extensive restoration process beginning in 1812, highlighting Napoleon's understanding of Gothic cathedrals as integral to the history of France.[185]

By the mid-nineteenth century, a growing interest emerged in understanding these medieval monuments. Gothic cathedrals came to be viewed as physical evidence of French identity prompting a new focus on historic preservation in France. Jean-Baptist Lassus and Eugène Emmanuel Viollet-le-Duc worked to restore many of France's significant Gothic monuments. Their restoration of Notre-Dame was central to this new historic preservation movement. Through the restoration of Notre-Dame, Lassus and Viollet-le-Duc did not attempt to restore the building to its original appearance, but instead created an idealization of what the Gothic building should be as an image of French innovation. In this way, the restoration functioned as an implicitly political tool by transforming Notre-Dame into a secular monument for France. This imagined Gothic style prompted the addition of features such as 'gargoyles' and the spire, and the erasure

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[185] Murphy, *The Cathedral*, 120.

of the evidence of violence against the building throughout its history by replacing features removed during the Revolutionary period such as the Gallery of Kings.[186]

It is this mid-nineteenth century idealization of Notre-Dame that we are familiar with today, and much of what was destroyed by the fire was a product of this mid-nineteenth century restoration. The multilayered history of Notre-Dame complicates the question of how to repair the damage caused by the fire. In considering President Macron's decision, we must ask which Notre-Dame should be rebuilt? Should Notre-Dame be returned to its twelfth century condition? Or to its most recent, albeit heavily modified state? As art historian Paul Binski has asked, what would it even mean to reconstruct this building faithfully?[187] The debate surrounding the reconstruction of Notre-Dame in the aftermath of this fire highlights the need to reassess traditional heritage preservation and restoration practices. As construction begins, using Professor Tallon's laser scans to restore Notre-Dame to its pre-fire glory, what are the implications of this debate to the future of historic preservation? Through examinations of authenticity and digital tools, I argue that this tragic incident will redefine the future of heritage restoration standards.

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[186] Murphy, *The Cathedral,* 142.

[187] Binski, "Should Notre-Dame."

The Problem of an "Authentic" Notre-Dame

Central to the debate surrounding how to restore Notre-Dame is the question of what it would look like to return Notre-Dame to its original form in light of the building's many alterations throughout its history. While the solution may be informed by standard international conservation guidelines, the application of these guidelines in the case of Notre-Dame is certainly not straightforward, and requires further investigation.

The 1964 Charter of Venice and the 1994 Nara Document on Authenticity have dictated heritage conservation practices in the twenty-first century.[188] These documents emphasize authenticity as the guiding principle in the restoration and reconstruction of heritage sites, and define authenticity as honesty to the original structure's materials and building methods. In the case of Notre-Dame, what is the original structure? Is "original" the thirteenth century structure, the mid-nineteenth century building, or even something entirely new? These guidelines would render Viollet-le-Duc's imagined Gothic building inauthentic, but the "original" structure could certainly be interpreted as the condition of the building immediately before the fire. If the primary commitment is to authenticity, what does an authentic reconstruction of Notre-Dame mean given that its most recent, mid-nineteenth restoration did not adhere to twenty-first century preservation principles?

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[188] *International Charter for the Conservation and Restoration of Monuments and Sites (The Venice Charter 1964)* (Venice: ICOMOS - International Council on Monuments and Sites, 1964), https://www.icomos.org/charters/venice_e.pdf; *The Nara Document on Authenticity* (Nara: ICOMOS - International Council on Monuments and Sites, 1994), https://www.icomos.org/charters/nara-e.pdf.

Recent approaches to conservation practices, guided by the Charter of Venice and Nara Document, are quite different from Viollet-le-Duc's approaches. The relationship between these two schools of thought is integral to understanding the future of Notre-Dame. Viollet-le-Duc approached the Gothic in an analytical and secular manner, promoting the Gothic as the French national style of architecture. During a period when the restoration of decaying buildings from medieval times was increasingly important, architectural theorists including Viollet-le-Duc formed specific opinions as to the extent of change to the original structure in such projects. Yet Viollet-le-Duc's progressive approach to restoration stood apart from other more traditional approaches and ideas.[189] Like other nineteenth-century architects, Viollet-le-Duc was interested in Gothic revival architecture, but was radical in his desire to use modern materials and building methods to execute this "Gothic" vision.[190] Viollet-le-Duc altered buildings to how he thought they should have looked upon construction, rather than restoring them exactly as they were originally built. In the eighth volume of *Dictionnaire Raisonné de l'Architecture Française, du XIe au XVIe Siècle (Dictionary of French Architecture, from the XIth to the XVIth Centuries)*, Viollet-le-Duc discussed his approach to restoration, writing "[t]o restore an edifice means neither to maintain it, nor to repair it, nor to rebuild it; it means to reestablish it in a finished state which may in fact have never actually existed at any

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[189] Kevin D. Murphy, *Memory and Modernity: Viollet-le-Duc at Vézelay* (University Park, PA: Pennsylvania State University Press, 2000), 9.

[190] Murphy, *Memory and Modernity,* 8.

given time."[191] Of course, this imagined approach to restoration would violate the rules set by the Charter of Venice and Nara Document.

Yet Viollet-le-Duc was interested in honesty from a structural perspective. Through the first volume of his treatise *Entriens,* or "Discussions," published in two volumes between 1863 and 1872, Viollet-le-Duc argued that "stone appear really as stone, iron as iron, wood as wood.."[192] Viollet-le-Duc understood Medieval architecture to be structurally honest, and thought that modern architecture should similarly be honest to its structure. The mid-nineteenth century restoration is indicative of this desire for structural honesty, as Viollet-le-Duc stripped the building of its neoclassical additions, removing the classically rendered encasings from around the columns to expose the true structure of the building. While current approaches to restoration stand in opposition to those of Viollet-le-Duc, there is something inherently paradoxical about returning Notre-Dame to Viollet-le-Duc's imagined "Gothic" appearance.

In the absence of a clear "original" structure, perhaps an authentic Notre-Dame is one which honors the evolution of the building over time. If the reconstruction is meant to honor the architectural legacy of Notre-Dame, should the design not honor Viollet-le-

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[191] Eugéne-Emmanuel Viollet-le-Duc, *The Foundations of Architecture. Selections from the Dictionnaire Raisonné*, trans. Kenneth Whitehead (New York: George Brazziler, 1990), quoted in Murphy, *The Cathedral,* 133.

[192] Eugène-Emmanuel Viollet-le-Duc, *Discourses on Architecture*, trans. Henry Van Brunt (Boston: James R. Osgood and Company, 1875), 1:472, from David Anton Spurr, *Architecture and Modern Literature* (Ann Arbor: University of Michigan Press, 2012), 147.

Duc's commitment to modernism, and to the legacy of the structure as an evolving form? Binski's discussion of what it means to reconstruct Notre-Dame, a building that has forever been a work in progress, 'faithfully,' sheds light on this matter.[193] Binski warns that new interventions are dangerous, as the result could easily tarnish the history and legacy of the building. Binski argues that the building must be restored to its most recent condition as "an act of basic respect for the accomplishment and heritage of a radical building."[194] Yet since its initial construction in the twelfth century, Notre-Dame has always been at the forefront of architectural innovation. Its initial construction was an unprecedented feat of engineering and master stonemasonry which allowed the Cathedral to be lighter, taller, and with larger rose windows than ever before.[195] Notre-Dame was a site of architectural experimentation even in the mid-thirteenth century, when interventions such as the forms of the transept roses contributed to the creation of the Rayonnant style of Gothic architecture.[196]

If considered through this legacy of an ever-evolving physical form, an argument could be made for a radically different approach to restoration as proposed by Prime Minister Édouard Philippe's international architecture competition. Proposals submitted included a rooftop garden and pool, while British architect Norman Foster called for a

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[193] Binski, "Should Notre-Dame," 26.

[194] Binski, "Should Notre-Dame," 26.

[195] Sandron and Tallon, *Notre Dame,* 310.

[196] Sandron and Tallon, *Notre Dame,* 310-311.

"modern, fireproof, lightweight" roof (Figure 3.5).[197] The contemporary roof proposals recall debates during the nineteenth and twentieth centuries when architects considered using concrete and iron instead of wood when repairing or rebuilding cathedral roofs, such as in Reims after the first World War.[198]

Despite these various arguments, Notre-Dame's reconstruction will (fortunately) not be radical. If considered primarily as the reconstruction of a mid-nineteenth-century structure, the reconstruction of Notre-Dame will ultimately adhere to the ideals of traditional heritage conservation practice. The oak rafters will be replaced by oak rafters; the lead roof will be replaced with a lead roof. When completed, the materials, design, and scale will be honest to the structure's most recent form.[199] While the restoration taken on by Viollet-le-Duc and Lassus was inauthentically produced, it seemed to mark an endpoint for the building's history of construction.[200] Yet it is now evident that the physical fabric of Notre-Dame will change further, albeit in a way that will adhere to the nineteenth-century restoration. In this way, reconstructing Notre-Dame as conceived by Viollet-le-Duc will allow Notre-Dame to be reconstructed authentically as the emblem of the French nation. While I believe that this approach is the best outcome, there remain

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[197] Walt, "Inside the Fight."

[198] Murphy, *The Cathedral,* 199.

[199] Robert Zaretsky, "To Rebuild or Restore Notre Dame: France Gets the Spire It Seems to Want," *Foreign Affairs*, August 31, 2020, https://www.foreignaffairs.com/articles/europe/2020-08-31/rebuild-or-restore-notre-dame.

[200] Sandron and Tallon, *Notre Dame,* 313.

questions to be asked regarding the extent to which 3D data and politics influenced this decision. In the following sections, I examine the impact of politics and digital heritage technologies on the decision to restore Notre-Dame faithfully. I argue that Notre-Dame's restoration illuminates how digital heritage reframes the trajectory of heritage politics.

Impacts of 3D Data on Restoration

> "It allows one really for the first time in the history of writing about Gothic architecture to say things, I would say, with relative certainty."[201]
>
> - Andrew Tallon

In the days and weeks following the fire, media attention shifted to the promising possibilities provided by the existence of precise 3D data. Television broadcasts and newspaper headlines instilled the public with a sense of solace and excitement for the future of the beloved Cathedral. Indeed, the precision of Notre-Dame's restoration will be made possible through the existing 3D data of the Cathedral. However, the media attention given to the data also overshadowed an important discussion of the role of digital heritage technology in preservation. The existence of this 3D data and its role in Notre-Dame's restoration highlights the significance of digital technologies to the preservation of historic monuments. The role of digital tools in this widely publicized tragedy and restoration will inevitably impact the future of digital preservation, while the

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[201] "Laser Scanning Reveals Cathedral's Mysteries," video, Youtube, posted by National Geographic, June 23, 2015, https://www.youtube.com/watch?v=jAi29udFMKw.

highly contentious questions of how to reconstruct Notre-Dame calls for an examination of the value and role of this type of data.

Two Columbia University researchers, computer scientist Peter Allen and art historian Stephen Murray attempted one of the earliest laser scans of a Gothic building in 2001 at the Cathedral in Beauvais to the north of Paris.[202] Yet the attempt failed, as the scanner combusted—the technology and knowledge was not yet advanced enough.[203] It was Murray's student, architectural historian and professor of art history at Vassar College, Andrew Tallon, who figured out how to create a model from the scans.[204] In January of 2010, Tallon completed a 3D model of Notre-Dame (Figure 3.6). Tallon conducted laser scans from more than fifty locations throughout the interior and exterior of the Cathedral, and then used spherical panoramic cameras in the same exact location as the laser scanner. These panoramic photographs allowed increased precision in the model created from the scans, for Tallon was able to connect each laser point to a pixel from the panoramic photographs.[205] Furthermore, Tallon used drone technology and 360-

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[202] Rachel Shea, "Historian Uses Lasers to Unlock Mysteries of Gothic Cathedrals," *National Geographic*, June 22, 2015, https://www.nationalgeographic.com/news/2015/06/150622-andrew-tallon-notre-dame-cathedral-laser-scan-art-history-medieval-Gothic/.

[203] Shea, "Historian Uses."

[204] Shea, "Historian Uses."

[205] Trevor Nace, "We Have Beautiful 3D Laser Maps of Every Detail of Notre Dame," *Forbes*, April 16, 2019, https://www.forbes.com/sites/trevornace/2019/04/16/we-have-beautiful-3d-laser-maps-of-every-detail-of-notre-dame/#218c322e26e6.

degree spherical cameras to capture data.[206] His resulting model is composed of more than a billion data points, and its margin of error is less than five millimeters.[207] Tallon was interested in the structure and building methods of Gothic buildings.[208] Due to a lack of primary source material that could answer his questions, he sought alternative approaches to understanding these buildings.[209] Tallon ultimately found the laser-scanner to be the best tool for understanding the structure of Gothic buildings.[210] Through scans of Notre-Dame, Tallon discovered previously unknown aspects of the structure and construction of the Cathedral. For example, Tallon found that the interior columns at the western end of the nave and aisles are not perfectly aligned.[211] This was an important discovery, for these columns are original to the twelfth century, and are uneven because original builders constructed the columns around existing structures. Knowledge of these structural flaws is crucial to reconstruction efforts.

Just one year after his 2018 death, Tallon's legacy became, perhaps, greater than he ever may have imagined, for his work has become invaluable in the aftermath of the

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[206] Larry Hertz, "Restoration of Notre Dame May Be Part of Professor Andrew Tallon's Legacy," *Vassar,* last modified April 17, 2019, https://stories.vassar.edu/2019/190417-notre-dame-andrew-tallon.html.

[207] Sandron and Tallon, *Notre Dame*, 17.

[208] "Laser Scanning," video.

[209] "Laser Scanning," video.

[210] "Laser Scanning," video.

[211] Andrew Tallon, Stephen Murray, and Rory O'Neill, "Paris, Cathédrale Notre-Dame," Mapping Gothic France, http://mappinggothic.org/building/1164; "Laser Scanning," video.

2019 catastrophe. As architectural historian Dany Sandron predicted in the 2020 edition of *Notre Dame Cathedral: Nine Centuries of History,* laser scanning is integral to the building's eventual restoration. Assessing the structural damage of the building post-fire requires a study of the structure, made possible through Tallon's laser scans.[212] Laser scans provide unprecedented precision. Drawings, both historic and modern, are only accurate to a certain extent, while laser scans provide accuracy up to the millimeter.[213] Tallon most likely never anticipated that his data would be used to rebuild a damaged Notre-Dame, for his goal was to learn more about the building's structure. In an interview with National Geographic, he remarked, "[w]hen you're working on medieval buildings, it's difficult to have the impression you can say anything new. They've been looked at and written about for ages. So I've been using more sophisticated technology these days to try to get new answers from the buildings."[214] Tallon's data certainly succeeds in producing "new answers," though the questions are now entirely different.

What does it mean to have this data? With the availability of a literal copy of the building pre-fire, the data will (and already has) inevitably impact every stage of restoration, from fire assessment to construction. On April 20th, 2019 (just five days after the fire), French officials worked with digital heritage firm Art Graphique Patrimoine to

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[212] Sandron and Tallon, *Notre Dame*, 313.

[213] Alexis C. Madrigal, "The Images That Could Help Rebuild Notre-Dame Cathedral," *The Atlantic*, April 16, 2019, https://www.theatlantic.com/technology/archive/2019/04/laser-scans-could-help-rebuild-notre-dame-cathedral/587230/.

[214] "Laser Scanning," video.

conduct a new 3D laser scanning survey of Notre-Dame in its post-fire condition.[215] Officials were able to compare this additional fifty billion data points with Tallon's pre-fire data to inform the damage assessment, reconstruction process, and investigation. Before beginning construction, it was essential to process the data to produce a complete Building Information Model (BIM), which maps a 3D model of the damage and can simulate reconstructions (Figure 3.7).[216] The BIM will act as a blueprint for the restoration project, significant for its ability to remove a level of human error from the construction process. Livio de Luca, a cyber-architect who leads the coalition responsible for Notre-Dame's restoration, explains this approach as "virtual-to-physical."[217] De Luca emphasizes the centrality of Tallon's laser scanning work and point cloud data in this process, and explains the value of digital approaches to this process: "The point cloud represents the main source to rebuild something, using geometrical information in a precise and accurate way. If by other kinds of restoration we were able to approximate

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[215] FARO, "The First Step in the Reconstruction of Notre-Dame," news release, May 13, 2019, https://www.faro.com/en-gb/news/the-first-step-in-the-reconstruction-of-notre-dame/.

[216] Pauline Bock, "How Notre Dame Is Being Rebuilt from 50 Billion Scraps of Data," *Wired*, October 14, 2019, https://www.wired.co.uk/article/notre-dame.

[217] Kevin Holden Platt, "A Futuristic Simulation of Notre-Dame to Power Its Real-World Resurrection," *Domus,* April 10, 2021, https://www.domusweb.it/en/architecture/2021/04/08/a-futuristic-simulation-of-notre-dame-to-power-its-real-world-resurrection.html.

shapes in the past, now we're able to reproduce shapes millimeter by millimeter."[218] In the past, a person would have to decide how to reproduce each wooden beam lost, leaving room for error. With laser scan data, a perfect copy of the lost wooden beam can be reproduced. As CyArk CEO John Ristevski commented, "before laser scanning, you relied on the decision that someone made in the past about record keeping and what they thought was important. With this, there's no bias."[219] The value of data in Notre-Dame's restoration is further evident throughout the construction process. Data allows conservators to experiment in ways that would be otherwise impossible. Before each phase of the reconstruction begins, the team can rebuild the sections virtually, which allows conservators to "test" their plan virtually, ensuring that they will not cause further damage to the existing structure.[220] However, as a literal copy of the building, a laser scan cannot in itself replicate the aura of a lost tangible history. While these scans can allow a more precise restoration than what was previously possible, pieces of history will inevitably be lost amidst destruction. While similar materials and building techniques may be used, they will not be the exact same.

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[218] Alissa Greenberg, "3D Models Help Preserve Landmarks like Notre Dame," *NOVA Next*, November 25, 2020, https://www.pbs.org/wgbh/nova/article/3d-model-point-cloud-notre-dame/.

[219] Patrick Sisson, "Anchored in the Cloud: Lasers, Digital Mockups, and the Future of Landmark Preservation," *Curbed*, May 3, 2019, https://archive.curbed.com/2019/5/3/18528077/castle-temple-restoration-historic-preservation-notre-dame.

[220] Greenberg, "3D Models."

To what extent does the technology dictate the decision-making process? Specifically, does the existence of 3D data imply that the building ought to be restored as recorded by Tallon? It was only five days after the fire that Art Graphique Patrimoine digitally surveyed the damage, thereby placing an onus on digital approaches from the beginning of the reconstruction process. At the time of Art Graphique Patrimoine's survey, Notre-Dame's future appearance was still unclear, as radical proposals circulated. As the debate grew contentious, the availability of data streamlined the decision to rebuild the pre-fire version of Notre-Dame. Prioritizing the digital approach removes a degree of criticism from the public and simplifies the design and construction process. The questions of whether a scanned building is necessarily authentic and how to both understand and apply that demand further reflection and formal guidelines.

Perhaps one of the most significant aspects of the value of these scans lies in their emotional and mental impact. In the aftermath of the fire, Tallon's laser scans captured media attention, providing many around the world with a sense of solace amidst such tragedy and loss. Ultimately, the existence of this data provides a degree of comfort; no matter what Notre-Dame looks like in the future, its past, as conceived by Viollet-le-Duc will continue to be the emblem of France.

Heritage Politics as National Politics

Notre-Dame has always been deeply connected to politics, and its history—both physical and lived—reveals the scars of the politicization of this monument. Political

events changed the appearance of Notre-Dame fundamentally throughout its history. Legislature during the twentieth century reinforced this political status, first through the establishment of the separation of church and state in France, and then through legal designation as *monument historique.*[221] This legislation reaffirmed the status of Notre-Dame as a secular symbol of the French nation, an idea promoted by Viollet-le-Duc and his collaborators.[222]

While scholars and journalists expressed an array of opinions surrounding Notre-Dame's future in the months following the fire, most agreed upon the importance of a thoughtful approach—that the greatest tragedy of all would be to politicize this process. On the day after the fire, President Macron acknowledged these fears as he stated, "I believe very deeply that we can transform this catastrophe into an occasion to come together. Politics will take over again, but it is not the moment now."[223] Yet perhaps unavoidably (Notre-Dame has been state property since 1905), the moment became deeply political. Radical proposals for the reconstruction of Notre-Dame alarmed traditionalists and conservatives, who took the debate to the Républicains-dominated senate.[224] Further, President Macron was quick to promise that the reconstruction would

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[221] Murphy, *The Cathedral,* 178.

[222] Murphy, *The Cathedral,* 178.

[223] Walt, "Inside the Fight."

[224] Walt, "Inside the Fight."

be complete within five years, in time for the 2024 Olympics.[225] This timeline was alarming to many critics, who contend that President Macron is exploiting the fire for political purposes, rushing the reconstruction to gain public support before the 2022 presidential elections.[226] Jacques Grosperrin, a Républicains member of the French senate, says that Macron "did this to correspond exactly to his re-election."[227]

The decision to rebuild Notre-Dame faithfully demands further investigation, for it exposes (perhaps for the first time) the close connections between cultural heritage, politics, and digital heritage technologies. The politicization of Notre-Dame's restoration process has, by now, been well documented by the French press. Despite Macron's statements ensuring the public that the restoration not be politicized, the fire was inevitably used to promote political agendas—by both Macron and his political opponents.

On the evening that the fire first struck Notre-Dame, Macron was scheduled to make a speech about the Gilets Jaunes crisis in France; instead, Macron made a short

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[225] Most recently, this timeline has become unrealistic. In April 2021, Rector Patrick Chauvet of Notre-Dame spoke to the press following Good Friday ceremonies, and stated that the cathedral could remain a construction site for "15 or 20 years." Associated Press, "Notre Dame's Rector: '15 or 20 Years' Needed for Restoration," *Washington Post*, April 2, 2021, https://www.washingtonpost.com/world/europe/notre-dames-rector-15-or-20-years-needed-for-restoration/2021/04/02/ac5c7e20-93b4-11eb-aadc-af78701a30ca_story.html.

[226] Walt, "Inside the Fight."

[227] Walt, "Inside the Fight."

speech in front of the Cathedral.[228] Macron's comments about unity during that speech (and during another, more lengthy speech delivered the following day) indicate how the President used the fire as an opportunity to stress French unity amidst months of Gilets Jaunes protests and expanding divides within French society.[229] These speeches were only the beginning of a restoration process that would, unsurprisingly, come to be defined by political agendas.

In May of 2019, the French senate approved the Notre-Dame restoration bill proposed by Macron's government (which included the 2024 deadline), but added a stipulation that the restoration be faithful to the "last known visual state" of the Cathedral.[230] In 2020, the bill was finally passed into law. When Macron's idea of an international design competition was first announced, it became clear that French popular opinion was overwhelmingly opposed to new interventions, and instead favored a faithful restoration. Popular opinion surely played a role in the bill passed by the French senate, and in Macron's ultimate decision. What should also be considered here is the role of

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[228] Valeria Costa-Kostritsky, "Trial by Fire: The Pledge to Rebuild Notre-Dame in Just Five Years Raised More than a Few Eyebrows When It Was Made Immediately after the Devastating Fire Last Year. Was It a Reasonable Commitment, or a Rash Promise?," *Apollo* 191, no. 686 (May 2020): 23.

[229] *Gilets Jaunes*, or the "Yellow Vest" movement, culminated in intense street demonstrations that protested President Macron's plans to reconstruct France's economic model. The Gilets Jaunes movement was sparked by the connection between President Macron and the elite class in France. Costa-Kostritsky, "Trial by Fire," 23; Walt, "Inside the Fight."

[230] "French Senate Says Notre-Dame Must Be Restored Exactly How It Was," *The Local* (France), May 28, 2019, https://www.thelocal.fr/20190528/french-senate-says-notre-dame-must-be-restored-exactly-to-how-it-was/.

digital heritage technologies in the decision-making process. With so many strong (and opposing) opinions circulating, one can surmise that the existence of objective, 3D data presented a reasonable resolution. Interestingly, Livio De Luca proposed the "virtual-to-physical" approach during an emergency meeting of the French senate that led to the success of the proposed bill.[231] The exact, scientific nature of this data creates the perception that the data lends itself to objectivity in the restoration process. De Luca's proposal and the relative objectivity of existing data surely impacted the decision to restore Notre-Dame to its condition before the fire. This decision cannot be fully evaluated nor comprehended at present, as the restoration work is still in its early stages. Yet each stage of Notre-Dame's restoration, from initial debates through the ongoing restoration process, reveals the significance of digital heritage technologies to the present and future of heritage restoration. The restoration of Notre-Dame is significant as the largest scale heritage restoration project ever executed through digital heritage approaches, and will redefine future notions of heritage restoration.

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[231] Kevin Holden Platt, "Notre-Dame Rescue Is Buttressed by Digital Wizardry," *Financial Times*, February 16, 2021, https://www.ft.com/content/3ed013f9-4f01-4a34-a05d-e117b9797ce6.

CONCLUSION

Best Practices for Digital Heritage Rescue

When faced with the destruction of a significant historical site, how do we approach its reconstruction, and to what extent to digital technologies play a role in this discussion? Technology is extremely useful as historic sites are continuously destroyed, for laser scanning and photogrammetry allow for rapid and effective documentation. When used sensitively and effectively, these tools can have positive outcomes. The absence of sufficient guidelines has allowed some projects to misrepresent heritage, and engage in a form of digital colonialism. It is crucial that digital heritage initiatives strive to be transparent, accessible, and ultimately thoughtful. As I have attempted to illustrate through the previous chapters, digitally-conceived heritage projects have the potential to be enormously impactful in both positive and negative ways. The complex ethical problems of the digital replica are often rooted in the ambiguous nature of digital object-hood. Following Stobiecka, the digital replica can be best understood as nomadic heritage that exists across cultural borders, and is therefore planetary heritage.[232] Stobiecka (following Gayatri Chakravorty Spivak) defines planetary heritage as a mindset that transcends individual cultures while opposing the imperial status-quo of the global.[233] Yet

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[232] Stobiecka, "Archaeological Heritage," 122.

[233] Stobiecka, "Archaeological Heritage," 122; Gayatri Chakravorty Spivak, *An Aesthetic Education in the Era of Globalization* (London: Harvard University Press, 2012), 451.

the benefits of planetary features only exist when the object "is a result of a profoundly reflexive practice, sensibility, engagement with local knowledge, subaltern agency and cultural protocols."[234] In the absence of such considerations, digital heritage risks engaging in various forms of digital colonialism. Considered thoughtfully, this heritage could have the ability to unite as the Bamiyan laser projection did, rather than reinforce imperial divisions as in the case of the IDA's Trafalgar Square project. As the Notre-Dame restoration illuminates, digital heritage is immensely powerful as a transformative agent that will define how historical monuments are restored (and therefore understood) in the future. Through critical engagement with digital heritage practices, this power can be harnessed to preserve, restore, and recover from disaster.

The three digital heritage case studies examined in the previous chapters lend themselves to identifying a set of key areas of consideration and parameters of operation. Two crucial sets of issues emerged throughout this paper: previously established best practices for the preservation of heritage, and new issues that are unique to digital approaches. While the set of recommendations outlined below is not intended to be exhaustive but is meant to provoke further investigation, these guidelines suggest an approach to digital heritage that is ethical and yields the positive outcomes of planetary heritage.

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[234] Stobiecka, "Archaeological Heritage," 122-123.

I. Previously Established Best Practices

While digital heritage practices have yet to be sufficiently codified, it is crucial that digital heritage initiatives adhere to the ethics of traditional conservation principles which emphasize contextualization and authenticity. First, projects must fully address context, particularly in light of a long history of Western-centric museumification of other cultures. Context, defined here as the human history of monuments, extends to encompass digital heritage organizations' ethical responsibilities to address the human condition and political implications of digital projects. The UNESCO Declaration concerning the Intentional Destruction of Cultural Heritage (drafted in 2003) requires that "states [must] recognize the need to respect international rules related to the criminalization of gross violations of human rights… in particular, when intentional destruction of cultural heritage is linked to those violations."[235] Digital heritage should be held to the standards set forth by this UNESCO declaration by recognizing violations of human rights. Azra Aksamija suggests that this can be accomplished through "preservation as tenacity," an approach to preservation in and after the context of war that uses '"creative tenacity' against the destructive powers of war."[236]

Second, digitally-rendered heritage projects must aim to be as authentic as possible through scale, materials, and building methods, and acknowledge the limitations

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[235] UNESCO, "Declaration concerning the Intentional Destruction of Cultural Heritage," October 17, 2003, http://portal.unesco.org/en/ev.php-URL_ID=17718&URL_DO=DO_TOPIC&URL_SECTION=201.html.

[236] Aksamija, "Memory Matrix," 148.

of authenticity when necessary. As I have discussed throughout this paper, authenticity is a central tenet of established preservation practice, and was codified through the 1964 Charter of Venice and the 1994 Nara Document on Authenticity. However, as we have seen, the hybrid nature of digitally-produced heritage prevents it from attaining true authenticity, which is especially impossible to achieve when the digital heritage is not presented in its original location. Authenticity itself is quite difficult to define, having been described by a Nara conference paper as "relative," and by Kamash as "a slippery concept."[237] The complexities of authenticity are exemplified by debates surrounding Notre-Dame's restoration. While it may be impossible for digital heritage to be truly authentic, it should uphold authenticity as its goal, and acknowledge the limitations of these efforts. Misleading the public regarding the authenticity of digital heritage is vastly unethical. While both the IDA's Arch of Triumph replica and the laser projection of the Bamiyan Buddhas were inauthentic reconstructions, the messaging used to communicate with the public distinguishes the ethics of the two projects. Michel's claim that the IDA's replica was "completely indistinguishable from the original" was misleading and unethical, for as I explained in chapter one, the replica was entirely different from the original in its scale, materials, and location. In contrast, the laser projection of the Bamiyan Buddhas did not attempt to assert authenticity, and in this way avoided such issues. While efforts should be made to achieve authenticity in digital heritage, transparency can be used to address shortcomings and avoid deceptive messaging.

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[237] Lowenthal, "Changing Criteria," 123; Kamash "Postcard to Palmyra," 5.

II. New Issues Raised by Digital Heritage

While established practices for heritage preservation are useful guidelines for digital heritage, there are also a number of new issues raised by digital technologies that should be addressed. Digital heritage data has transformed notions of heritage restoration, and its impact and deployment demands further consideration. The framework of digital colonialism explored throughout this paper demonstrates ethical concerns such as accessibility and local agency that are unique to digital heritage practices. As I have shown, the asymmetrical geographic growth of digital culture and digital humanities has created a post-colonial technocracy. Therefore, Western intervention in heritage politics through digital heritage risks reenforcing colonial narratives and inequities.

First, the impact of digital heritage data on heritage restoration decisions and execution should be examined. Notre-Dame's restoration reveals how digital tools can be of great value to the restoration process by removing a degree of human error, creating nearly exact precision, and safeguarding the remaining structure. Yet as chapter three highlights, digital heritage data also can be weaponized to promote political agendas and influence restoration decisions. This point lends itself less to a best practice as it does to a crucial ethical dimension of the role of digital heritage within the restoration process. Digital heritage data is best used to assist with restoration, and is misused when this data becomes a tool for political motives.

Second, digital heritage projects have an ethical responsibility to be globally accessible. Free data flow is typically considered as a best practice in the digital space,

where open-access and open-source data have become the "unspoken rules of the digital revolution."[238] Heritage data should always be open-source. When digital heritage data is not open-source, the organization responsible engages in digital colonialism by seizing ownership of the heritage data.[239] However, it must be acknowledged that even open-source data can be considered as an expression of digital colonialism due to the global inequities of internet access.

The complex layers of digital colonialism appear insurmountable. What does decolonized digital heritage look like, and how can it be carried out? Art historian Pamela Corey's distinction between the decolonial and post-colonial as it applies to art history is helpful in theorizing a decolonial digital heritage:

> "What distinguishes the decolonial from the postcolonial is the recognition that today's structures of inequity and suppression have complex relationships to historical projects of empire (beyond 'the West and the rest' paradigm), and that new hierarchies of power have been compounded through autocratic forms of the postcolonial state in tandem with vested interests in the movement of global capital."[240]

Within the context of digital heritage, the "new hierarchies of power" to which Corey refers are expressed through the colonial technocracy. Decolonizing digital heritage is an incredibly difficult task, but the most important starting point is acknowledging the

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[238] Stobiecka, "Archaeological Heritage," 116.

[239] Khunti, "The Problem," 7.

[240] Pamela N. Corey, interview by Grant and Price, "Decolonizing Art History," 19.

necessity of involving local stakeholders in every aspect of the process. Only through engagement with local communities can this digital heritage have positive outcomes.[241]

The debates surrounding the IDA's Arch of Triumph, the Bamiyan Buddhas, and the Cathedral of Notre-Dame have begun to awaken the preservation community to the power of digital heritage—in both positive and negative ways—signaling the need for future research to directly address better practices for this emerging field. The destruction of each of these sites has publicized the ways in which the unprecedented precision offered by digital tools has transformed the field, shedding light on the growing relevance of digital heritage.

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[241] Stobiecka, "Archaeological Heritage," 123; Roopika Risam, "Decolonizing the Digital Humanities in Theory and Practice," in *The Routledge Companion to Media Studies and Digital Humanities*, ed. Jentery Sayers (New York: Routledge, 2018), 81, https://doi.org/10.4324/9781315730479.

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ILLUSTRATIONS

Introduction:

Figure 0.1. Gavin Hamilton, *James Dawkins and Robert Wood Discovering Palmyra.* 1758. Oil on canvas, 309.90 x 388.60 cm. Scottish National Gallery, Edinburgh. https://www.nationalgalleries.org/art-and-artists/48550/james-dawkins-and-robert-wood-discovering-ruins-palmyra.

Figure 0.2. Crucifixion with iconoclasts, from the *Chludov Psalter,* mid-9th century. State Historical Museum, Moscow. Reproduced from Wikimedia Commons.

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Chapter I:

Figure 1.1. *Reconstruction of Palmyra's Arch of Triumph*, Trafalgar Square, London, April 19, 2016. Reproduced from Justin Tallis/AFP/Getty Images via *The Observer*, https://observer.com/2016/04/palmyra-arch-rebuilt-in-london-presidential-candidates-arts-guide-and-more/.

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Figure 1.3. *Islamic State militants disseminated this image of the destruction of Palmyra's Roman temple through social media,* August 25, 2015. Reproduced from Reuters via Pamela Karimi and Nasser Rabbat, "The Demise and Afterlife of Artifacts," in *The Destruction of Cultural Heritage: From Napoléon to ISIS* (Aggregate Architectural History Collaborative, 2016), https://architecture.mit.edu/publication/destruction-cultural-heritage-napoléon-isis.

Figure 1.4. *TorArt's carving robots at work on the reconstruction of the Arch of Palmyra,* Carrara, Italy, 2016. Reproduced from Chad Elias, "Whose Digital Heritage?," *Third Text* 33, no. 6 (October 4, 2019): 12, https://doi.org/10.1080/09528822.2019.1667629.

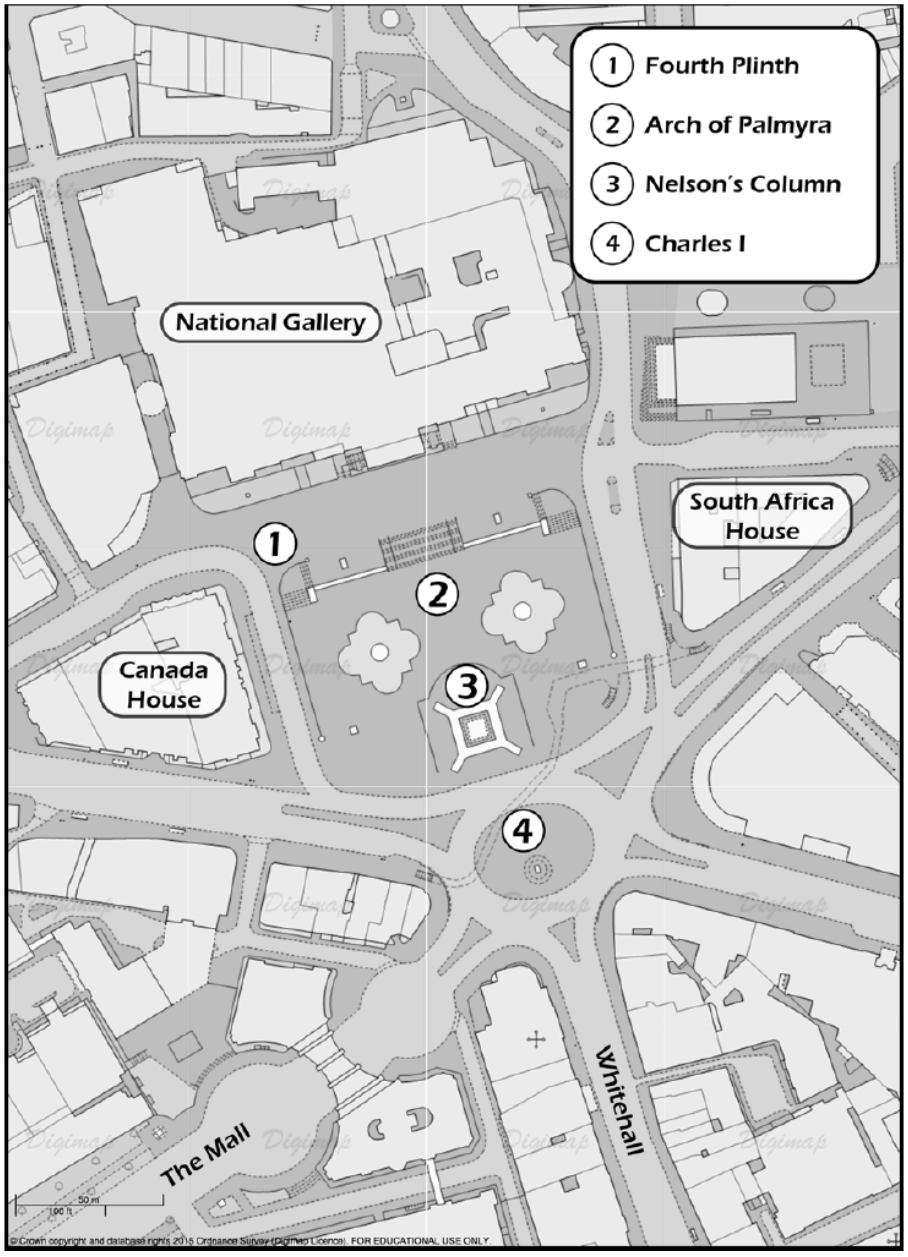

Figure 1.5. *Map of Trafalgar Square.* Reproduced from Stuart Burch, "A Virtual Oasis: Trafalgar Square's Arch of Palmyra," *Archnet-I JAR: International Journal of Architectural Research* 11, no. 3 (November 2017): 60, https://dx.doi.org/10.26687/archnet-ijar.v11i3.1401.

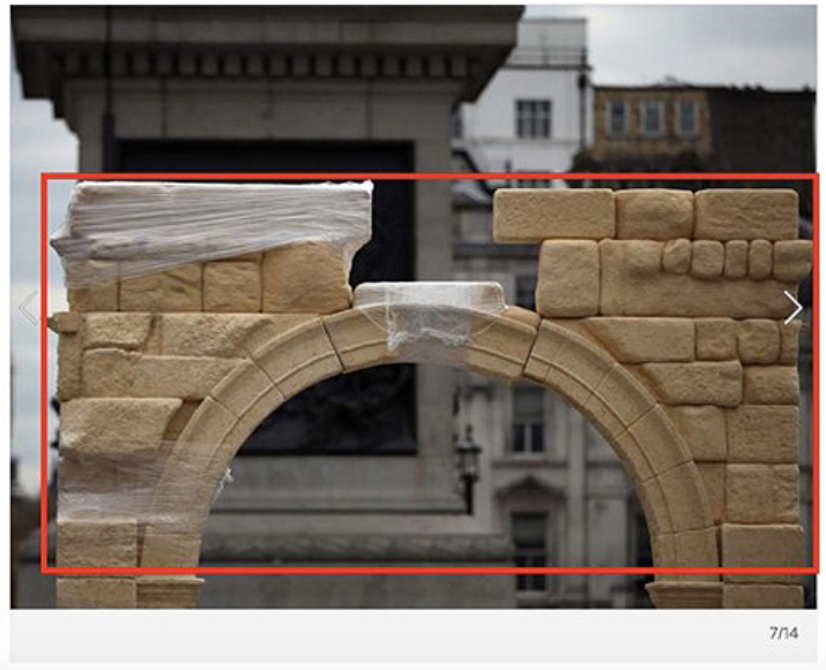

Figure 1.6. *Back of the IDA copy of Trafalgar Square's Arch of Triumph,* London, 2016. Reproduced from Factum Foundation, http://www.factumfoundation.org/pag/236/.

Figure 1.7. *Back of the original Arch of Triumph,* Palmyra, Syria. Reproduced from Factum Foundation, http://www.factumfoundation.org/pag/236/.

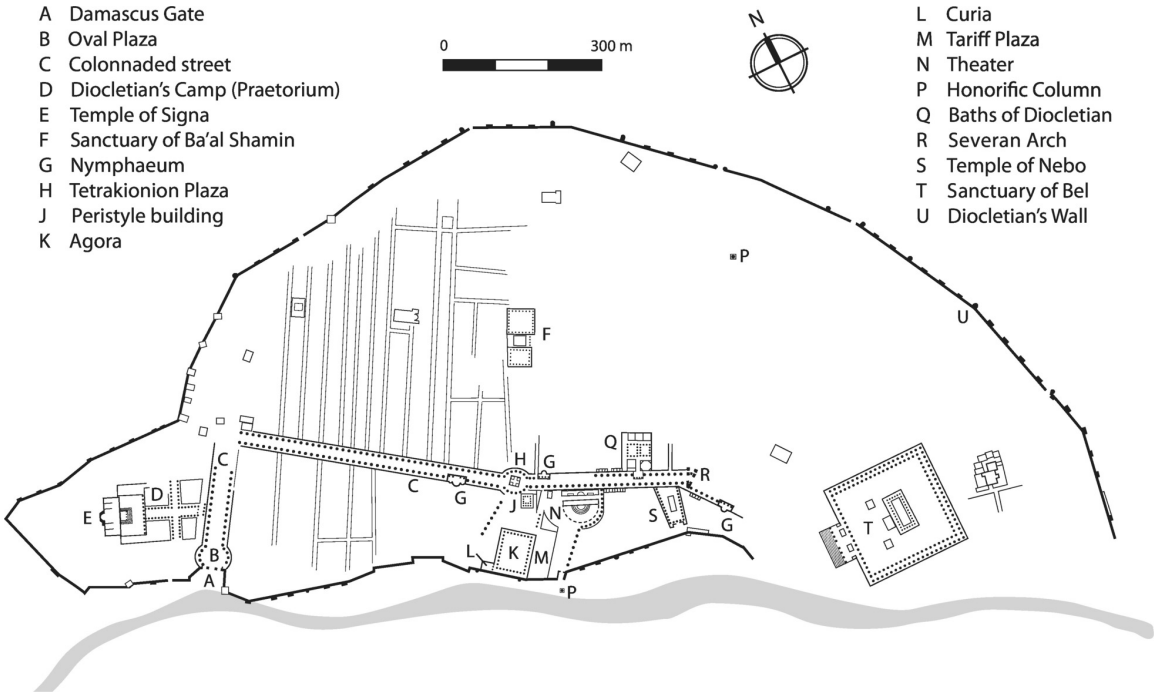

Figure 1.8. *Map of the Roman City of Palmyra.* Reproduced from Yegül, F., & Favro, D. (2019). The Roman Near East. In *Roman Architecture and Urbanism: From the Origins to Late Antiquity* (pp. 707-799). Cambridge: Cambridge University Press. doi: 10.1017/9780511979743.012

Figure 1.9. *Virtual model of Palmyra,* Smithsonian Institute, Washington DC, 2020. Image taken by Hannah Wolfe.

Figure 1.10. Monumental Arch of Palmyra, Desmaisons and Pierre-Gabriel Berthault after Louis-François Cassas. Etching. Plate mark: 16.3 x 22.4 in. (41.5 x 57 cm). From *Voyage pittoresque de la Syrie, de la Phoénicie, de la Palestine, et de la Basse Egypte* (Paris, ca. 1799), vol. 1, pl. 71. Reproduced from Frances Terpak and Peter Louis Bonfitto, *The Legacy of Ancient Palmyra*, City Plan & Monuments, Monumental Arch and Tetrapylon, https://www.getty.edu/research/exhibitions_events/exhibitions/palmyra/city_plan.html via Getty Research Institute, 840011**.**

Figure 1.11. Monumental Arch of Palmyra, Louis Vignes, 1864. Albumen print. 8.8 x 11.4 in. (22.5 x 29 cm). Reproduced from Frances Terpak and Peter Louis Bonfitto, *The Legacy of Ancient Palmyra*, City Plan & Monuments, Monumental Arch and Tetrapylon, https://www.getty.edu/research/exhibitions_events/exhibitions/palmyra/city_plan.html via Getty Research Institute, 2015.R.15**.**

Chapter II:

Figure 2.1. *Map of Afghanistan locating Bamiyan,* Reproduced from Guilbert Gates via Smithsonian Magazine, 2010. https://www.smithsonianmag.com/

Figure 2.2. *Empty niches where the colossal Buddhas stood prior to their destruction by the Taliban,* Bamiyan, Afghanistan. Reproduced from Torsten Pursche/Fotolia via Encyclopedia Britannica. https://www.britannica.com/place/Bamiyan.

Figure 2.3. Left: *Larger Buddha*, Reproduced from Wikimedia commons.
Right: *Smaller Buddha,* Reproduced from Wikimedia commons.

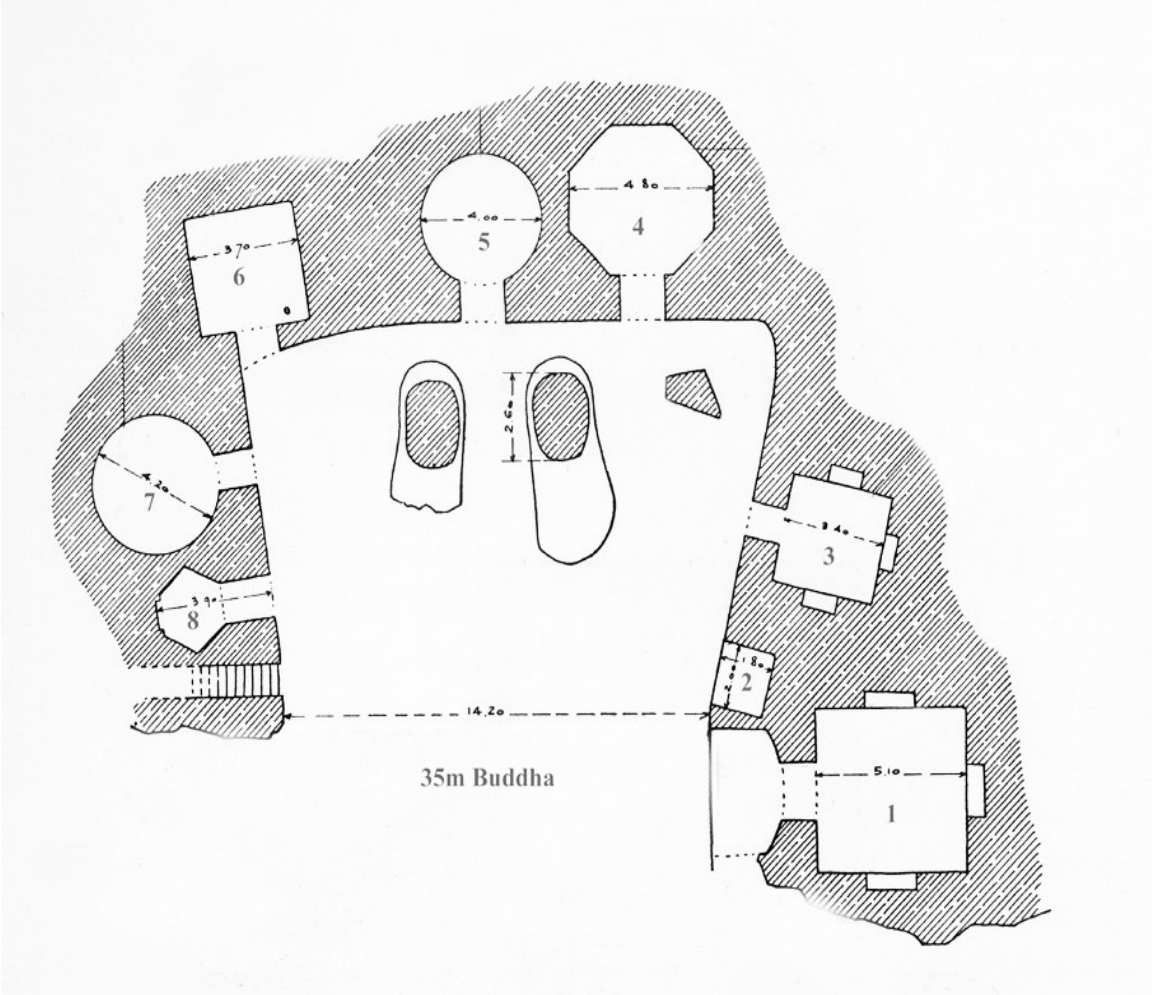

Figure 2.4. *Plan of larger Buddha showing feet carved in the round and smaller cave chapels.* Reproduced from Godard, Godard, and Hackin, Les Antiquites Bouddhiques de Bamiyan, Paris and Brussels: *les Editions G. Van Oest*, 1928, fig. 18.

Figure 2.5. I*mage of explosive destruction of Bamyan buddhas by the Taliban*, March 21, 2001. Reproduced from Wikipedia.

Figure 2.6. *Taller Buddha in 1963 and in 2008 after destruction.* Reproduced from Wikimedia Commons.

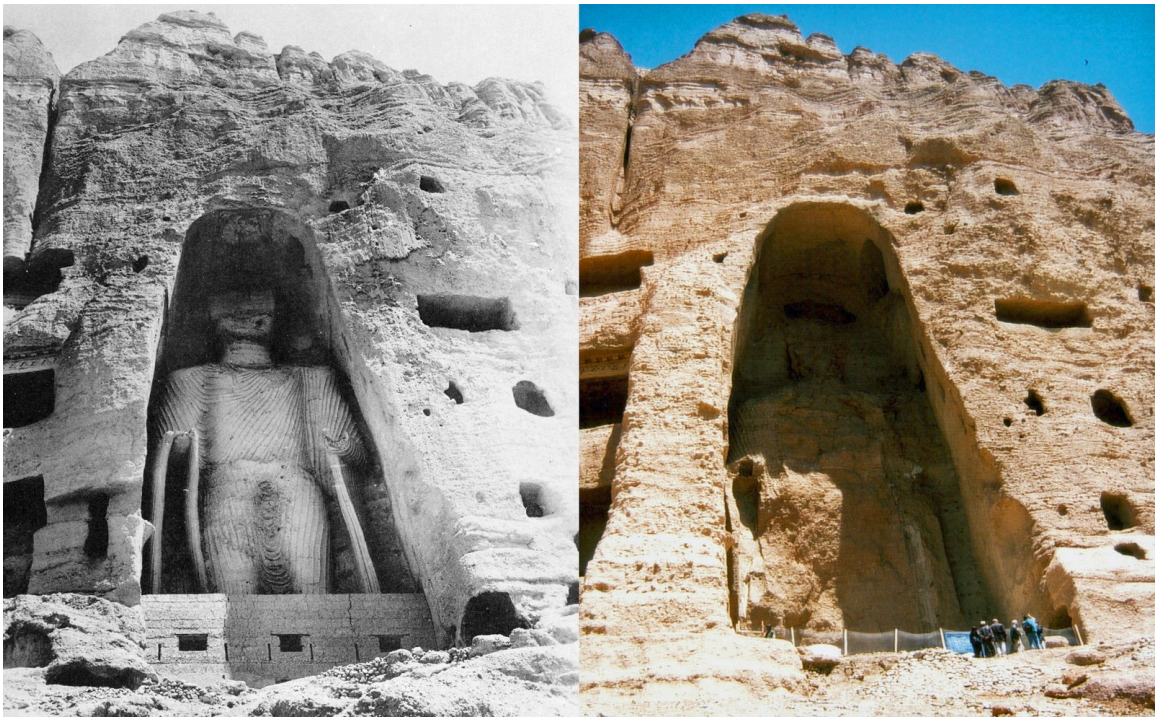

Figure 2.7. *Smaller Buddha before and after destruction.* Reproduced from Wikimedia Commons.

Figure 2.8. *A Bamiyan Buddha monument projected into the niche where the stone one once stood,* Bamiyan, Afghanistan, 2015. Reproduced from @zheelaj via Twitter. https://news.artnet.com/art-world/buddhas-bamiyan-resurrected-projections-307538.

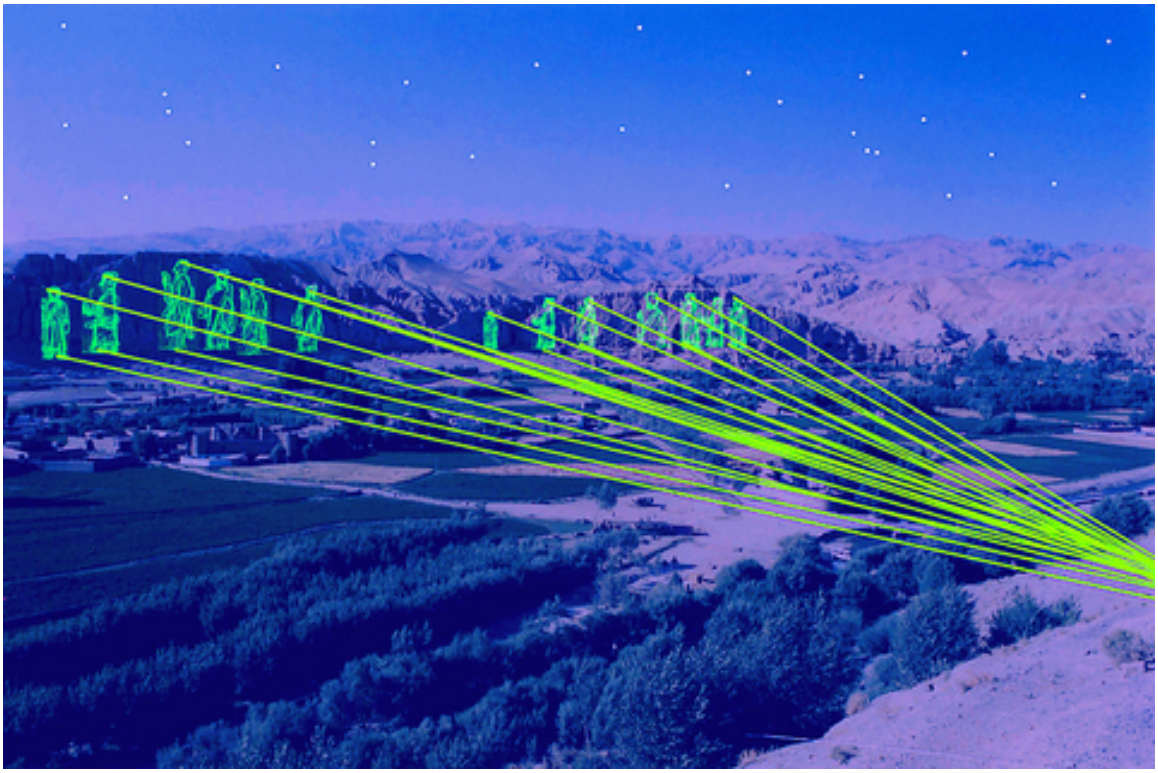

Figure 2.9. Hiro Yamagata, *Proposal for Laser Projection of Bamiyan Buddhas,* 2005. Reproduced from AFP via Taipei Times. http://www.taipeitimes.com/News/feat/archives/2005/11/03/2003278588.

Figure 2.10. *Laser Hologram Projection,* Bamiyan, Afghanistan, June 7, 2015. Reproduced from Kamran Shafayee/AFP via Getty Images. https://www.gettyimages.es/detail/fotograf%C3%ADa-de-noticias/this-photo-taken-on-june-7-2015-shows-the-fotograf%C3%ADa-de-noticias/476426216.

Figure 2.11. *A 3D Light Projection*, Bamiyan, Afghanistan, 2019. Reproduced from Jim Huylebroek via *New York Times.* https://www.nytimes.com/2019/06/18/world/asia/afghanistan-bamiyan-buddhas.html.

Chapter III:

Figure 3.1. *Notre-Dame de Paris.* Reproduced from Encyclopaedia Brittanica, Inc. https://www.britannica.com/topic/Notre-Dame-de-Paris.

Figure 3.2. *Notre-Dame on Fire,* Paris, April 15, 2019. Reproduced from Hubert Hitier/Agence France-Press via the New York Times, https://www.nytimes.com/2019/04/16/world/europe/photos-of-notre-dame-fire.html.

Figure 3.3. *Damage from the Fire Visible from Above,* Paris, April 16 2019. Reproduced from Gigarama via the New York Times, https://www.nytimes.com/2019/04/16/world/europe/photos-of-notre-dame-fire.html.

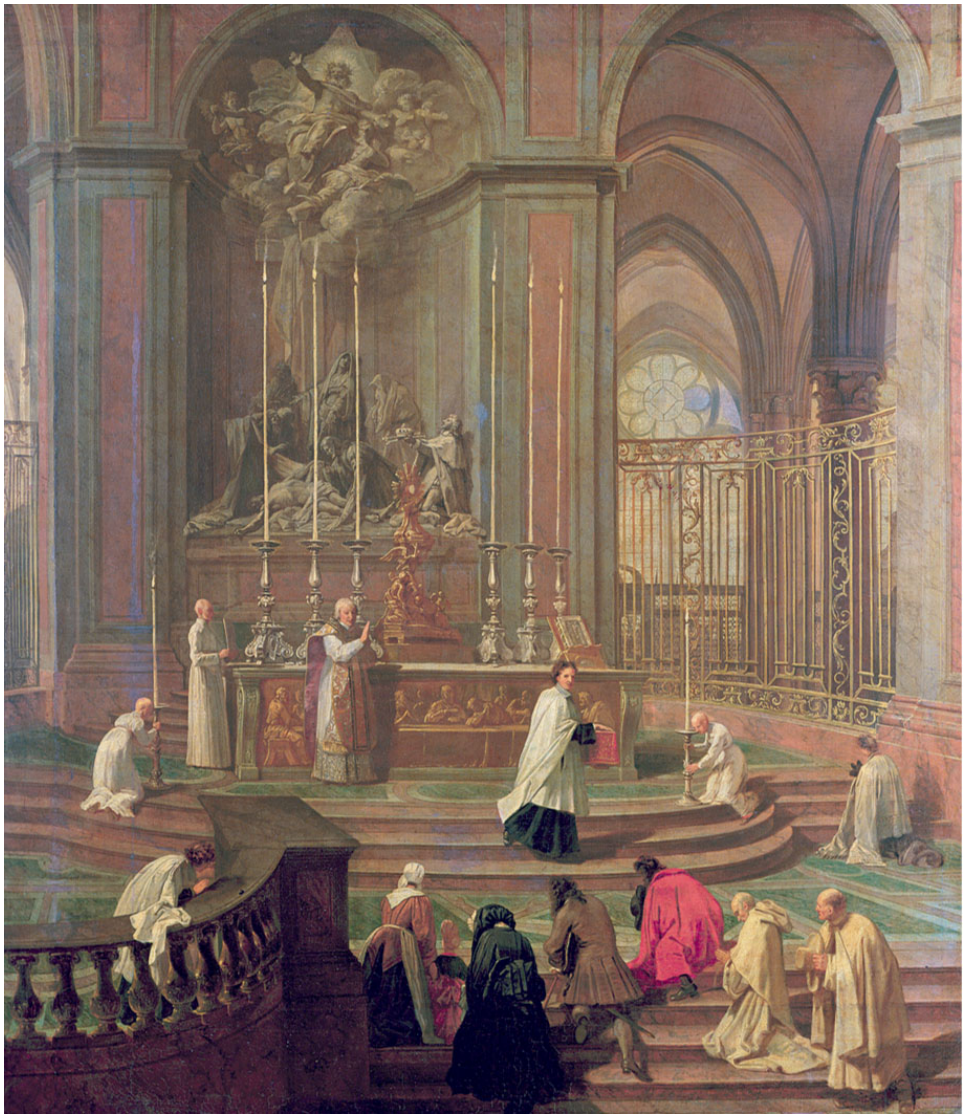

Figure 3.4. Jean-Baptiste Jouvenet, *The Mass of Canon de La Porte,* 1709, Musée du Louvre. Reproduced from Louvre Museum.

Figure 3.5. *Proposals for rebuilding the roof and spire of Notre-Dame de Paris,* Clockwise from top left: Vizum Atelier; Nicolas Abdelkader/Studio NAB; Alexandre Chassang/ABH Architectes; Alexandre Fantozzi/AJ6; Mathieu Lehanneur; Dakis Panayiotou/Kiss the Architect, Reproduced from Alex Marshall, "Glass, Golden Flames or a Beam of Light: What Should Replace Notre-Dame's Spire?" *New York Times,* May 10, 2019, https://www.nytimes.com/2019/05/10/arts/design/notre-dame-spire-designs.html?smid=url-share.

Figure 3.6. *Laser Survey of Notre Dame.* Reproduced from Dany Sandron and Andrew Tallon, *Notre Dame Cathedral: Nine Centuries of History* (University Park, PA: Penn State University Press, 2020), 18.

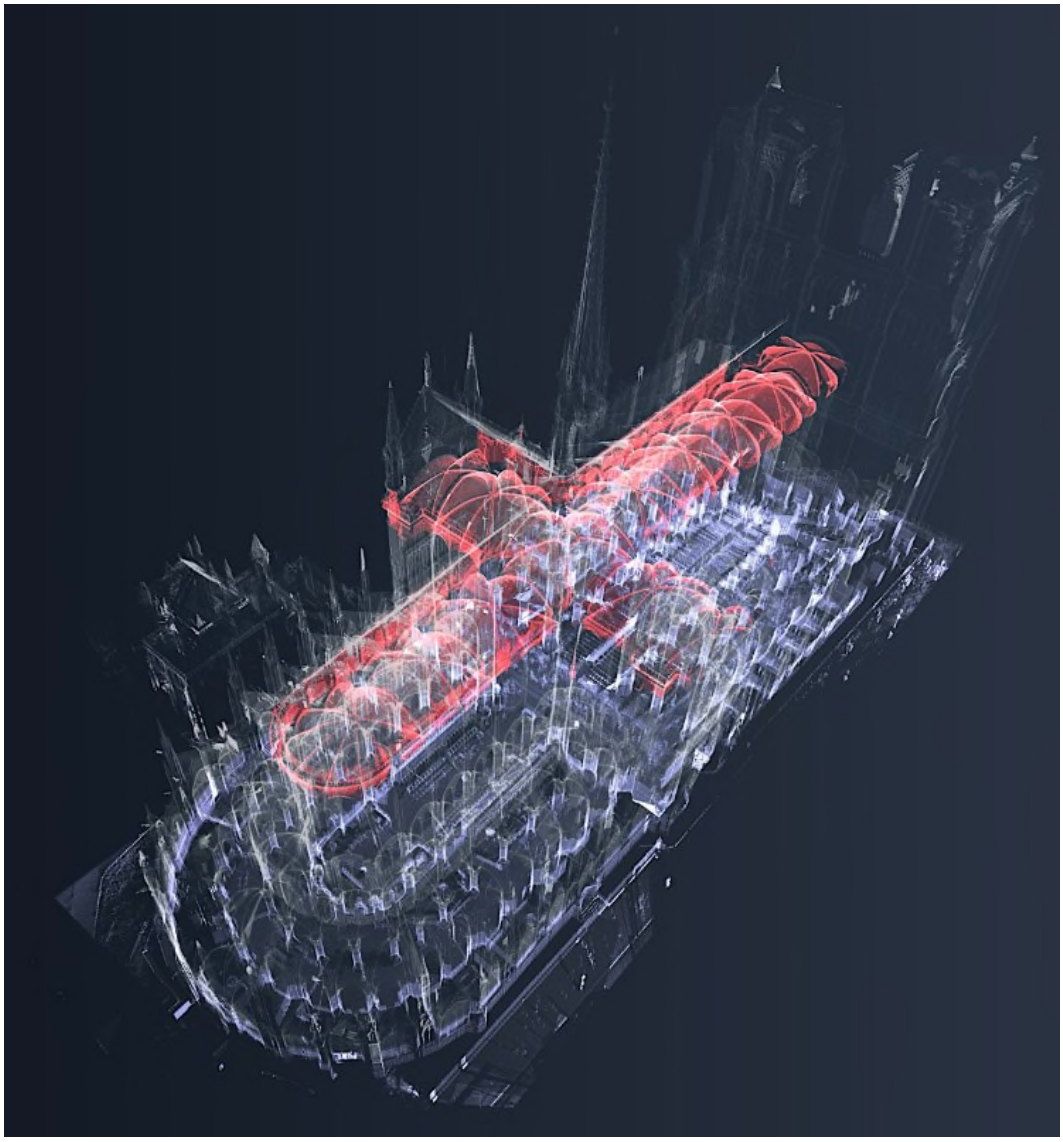

Figure 3.7. *The matrix like, real time 3D Notre Dame based on laser scans and photo modeling.* Reproduced from Violette Abergel, Livio De Luca - MAP - Vassar College - GEA - Life 3D - Chantier scientifique Notre Dame de Paris Ministère de la Culture - CNRS 2021.