

Cultural evolution: Protecting “digital cultural property” in armed conflict

Ronald Alcala*

Ronald Alcala is a Lieutenant Colonel in the US Army. He is an Associate Professor and an Academy Professor of Law in the Department of Law at the US Military Academy, West Point, NY, and Managing Editor of the Lieber Institute for Law and Land Warfare’s *Articles of War* online publication.

Abstract

As an emerging and largely unfamiliar form of cultural heritage, digital cultural property remains something of an enigma. Under the law of armed conflict, States are bound to protect cultural property from harm, yet the rules applicable to traditional cultural property do not transfer neatly to digital works. It is unclear, for example, how the twin obligations to safeguard and respect cultural property, as outlined in the 1954 Hague Cultural Property Convention, should apply to digital creations – or even what digital material appropriately qualifies as cultural property. Can only new digital creations, otherwise known as “born-digital” material, be cultural property? What about high-quality copies of existing works, such as an extremely high-resolution image of the Mona Lisa? Does it matter whether a digital work has been reproduced in large quantities? Given the ubiquity of digital media and the growing popularity of digital art and other works, protecting digital cultural property in the event of armed conflict will require States to consider and resolve as-yet undecided questions concerning the nature of digital creations and the reasons why certain works should be preserved.

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It is unclear why humans first daubed pigments on stone or moulded figures from clay. Succeeding generations, however, continued to craft original works and devise new mediums for their creations. Over time, those novel formats shaped not only how we create and express ourselves, but also how we have come to appreciate art and the genius of the human imagination. In some cases, those new mediums also challenged our sense of what is valuable and what we as a society consider culturally meaningful. The desire to protect culturally important works, though, has often come into conflict with another ancient human impulse: the desire to make war.¹

Attempts to moderate the destructive effects of conflict have met with varying degrees of success throughout history. In the early twentieth century, for example, the Covenant of the League of Nations and the Kellogg–Briand Pact sought to restrict or even eliminate recourse to war, yet the world plunged into a world war nevertheless. More limited efforts to regulate aspects of armed conflict such as the treatment of the wounded and sick,² the treatment of prisoners of war³ and the use of certain weapons in war⁴ have had a more lasting impact. The subject of cultural property in armed conflict has also garnered significant attention. As codified in the 1954 Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict (Cultural Property Convention)⁵ and

- 1 See, for example, Margaret MacMillan, *War: How Conflict Shaped Us*, Profile Books, London, 2020, p. 5 (noting that while there is some disagreement among historians, anthropologists and sociobiologists, “the evidence seems to be on the side of those who say that human beings, as far back as we can tell, have had a propensity to attack each other in organized ways – in other words, to make war”); John Keegan, *A History of Warfare*, Vintage Books, New York, 1993, p. 3 (“Warfare is almost as old as man himself, and reaches into the most secret places of the human heart, places where self dissolves rational purpose, where pride reigns, where emotion is paramount, where instinct is king”).
- 2 For example, Geneva Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field of 12 August 1949, 75 UNTS 31 (entered into force 21 October 1950); Geneva Convention (II) for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea of 12 August 1949, 75 UNTS 85 (entered into force 21 October 1950).
- 3 For example, Geneva Convention (III) relative to the Treatment of Prisoners of War of 12 August 1949, 75 UNTS 135 (entered into force 21 October 1950).
- 4 For example, Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, 1342 UNTS 137, 10 October 1980; Protocol (II) on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices, 1342 UNTS 168, 10 October 1980; Protocol (III) on Prohibitions or Restrictions on the Use of Incendiary Weapons, 1342 UNTS 171, 10 October 1980; Protocol (IV) on Blinding Laser Weapons, 1380 UNTS 370, 13 October 1995; Protocol (V) on Explosive Remnants of War, 2399 UNTS 100, 28 November 2003; Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, 1974 UNTS 45, 13 January 1993.
- 5 Convention for the Protection of Cultural Property in the Event of Armed Conflict, 249 UNTS 240, 14 May 1954 (Cultural Property Convention).

addressed in subsequent international agreements,⁶ the law relating to cultural property has helped spare cultural objects from harm in war.⁷

Digital technology, however, has begun to strain our understanding of what constitutes cultural property. In particular, the ability to make digital copies of works with ease and exactness has raised questions about the cultural value of reproduced or reproducible works and the expectation to protect them in armed conflict. Although digital technology may have rekindled these concerns, discomfort over copies predates the invention of digital mediums. In the nineteenth and twentieth centuries, the invention of lithography and photography heralded the beginning of what Walter Benjamin famously called the “Age of Mechanical Reproduction”.⁸ Benjamin argued that a copy of a unique work of art – even “the most perfect reproduction” of it – could never equal the original because copies could not capture the “authenticity” or possess the “aura” of their exemplars.⁹ For Benjamin, “[t]he authenticity of a thing is the essence of all that is transmissible from its beginning, ranging from its substantive duration to its testimony to the history of which it has experienced”.¹⁰ It is a reflection of a work’s existence in time and space.¹¹ The patina of an ancient bronze statue, therefore, is not only a sign, but also a constituent, of its authenticity.¹² “Aura”, meanwhile, refers to the authority possessed by a unique and original work.¹³

The advent of art forms designed for reproducibility, however, unsettled our understanding of authenticity and aura. As Benjamin observed, “[f]rom a photographic negative, ... one can make any number of prints; to ask for the ‘authentic’ print makes no sense”.¹⁴ The questions of authenticity and aura that Benjamin raised in the early twentieth century have only grown more apparent today. The “Age of Digital Reproduction” has virtually obliterated the distinction between originals and copies.¹⁵ Just as the digital revolution forced a

6 See, for example Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978) (AP I), Art. 53; Protocol Additional (II) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts, 1125 UNTS 609, 8 June 1977 (entered into force 7 December 1978) (AP II), Art. 16; Second Protocol to the Hague Convention of 1954 for the Protection of Cultural Property in the Event of Armed Conflict, 2253 UNTS 172, 16 March 1999 (Second Protocol).

7 Roger O’Keefe, *The Protection of Cultural Property in Armed Conflict*, Cambridge University Press, Cambridge, 2006, p. 2 (explaining that “there is a greater possibility than ever before of sparing cultural property from damage and destruction in wartime”).

8 Walter Benjamin, “The Work of Art in the Age of Mechanical Reproduction”, in Walter Benjamin, *Illuminations*, ed. Hannah Arendt, trans. Harry Zohn, Mariner Books, Boston, 2019.

9 *Ibid.*, pp. 170–172.

10 *Ibid.*, p. 171.

11 See Erin Nicholson, “Keywords Glossary: Authenticity”, Chicago School of Media Theory, available at: <https://csmt.uchicago.edu/glossary2004/authenticity.htm> (all internet references were accessed in February 2022).

12 See, for example, W. Benjamin, above note 8, pp. 169–170.

13 Mike Young, “Keywords Glossary: Aura”, Chicago School of Media Theory, available at: <https://csmt.uchicago.edu/glossary2004/aura.htm>.

14 W. Benjamin, above note 8, p. 174.

15 See, for example, Douglas Davis, “The Work of Art in the Age of Digital Reproduction”, *Leonardo*, Vol. 28, No. 5, 1995, p. 381 (“The work of art in the age of digital reproduction is physically and formally

re-evaluation of the law's applicability to other aspects of society, digital means of creation and reproduction have necessitated a re-evaluation of what constitutes a work of art and cultural property more broadly.¹⁶

One source that has addressed the cultural importance of digital works is the *Tallinn Manual 2.0 on the International Law Applicable to Cyber Operations* (Tallinn Manual 2.0).¹⁷ Released in 2017, the Tallinn Manual 2.0 reflects the state of the public international law governing cyber warfare and peacetime cyber operations as understood by a distinguished group of legal experts known collectively as the International Group of Experts.¹⁸ Significantly, the Tallinn Manual 2.0 includes a rule requiring that States respect and protect cultural property, including “digital cultural property”, in armed conflict.¹⁹ Digital cultural property, however, remains an elusive concept, and for military forces obligated to protect cultural property in armed conflict, uncertainty about the character of digital material will affect the planning and execution of military operations. Absent a clearer understanding of digital works, material of great importance to the cultural heritage of the world could be lost. Ultimately, if digital cultural property must be safeguarded and respected like tangible cultural property in the event of armed conflict, how must States discriminate between what is and what is not appropriately digital cultural property?

This article begins by outlining the obligation to protect cultural property in the event of armed conflict as provided in the Cultural Property Convention. Under the Convention, protection consists of both a duty to safeguard and a duty to respect cultural property. Because the nature of digital material differs substantially (literally and figuratively) from that of physical material, traditional approaches to safeguarding and respecting tangible cultural property may be ill-suited to the protection of digital works.

In the second section, the article considers the Cultural Property Convention's definition of cultural property and States' protection obligations under the Convention. Other international instruments – adopted both before and after the Cultural Property Convention – have also sought to define cultural property, but while these definitions feature some overlap, they do not neatly align.²⁰ For purposes of this article, therefore,

chameleon. There is no clear conceptual distinction now between original and reproduction in virtually any medium based in film, electronics, or telecommunications”).

16 See, for example, US Supreme Court, *Carpenter v. United States*, 585 U.S. ____ (2018), 2018 (holding that law enforcement's acquisition of cell-site location information was a search under the Fourth Amendment and required a warrant); US Supreme Court, *South Dakota v. Wayfair, Inc.*, 585 U.S. ____ (2018), 2018 (holding that states may tax internet commerce); Michael N. Schmitt (ed.), *Tallinn Manual on the International Law Applicable to Cyber Warfare*, Cambridge University Press, Cambridge, 2013 (Tallinn Manual) (examining how extant legal norms apply to cyber warfare); Michael N. Schmitt (ed.), *Tallinn Manual 2.0 on the International Law Applicable to Cyber Operations*, Cambridge University Press, Cambridge, 2017 (Tallinn Manual 2.0), Rule 142.

17 Tallinn Manual 2.0, above note 16, Rule 142.

18 *Ibid.*, pp. 1–3. The Tallinn Manual 2.0 expanded on the work of the 2013 Tallinn Manual, above note 16, which focused specifically on cyber operations involving the use of force and those that occurred in armed conflict. The Tallinn Manual 2.0 broadened the scope of the 2013 Manual to include rules related to peacetime cyber activities.

19 Tallinn Manual 2.0, above note 16, Rule 142.

20 See, for example, US Department of War, *Instructions for the Government of Armies of the United States in the Field*, General Order No. 100, 24 April 1863 (Lieber Code), Arts 34–35; Regulations Respecting the

the Cultural Property Convention’s definition will serve as the foundation for analyzing cultural property, whether in physical or digital form.

In the third section, the article explores the nature of digital material and important conceptual differences between digital and physical works. The third section begins by examining how the drafters of the Tallinn Manual 2.0 debated the meaning of terms such as “object” and “property” when considering digital candidates for protection in armed conflict. The article then analyzes differences between species of digital creations. Broadly speaking, digital works can be divided into two general categories of material: (1) “born-digital” material—works originally created in a digital medium, like a work of digital art or cultural data entered and stored electronically; and (2) digital surrogates—digital facsimiles of extant physical works. The section concludes by comparing how concepts such as aura and authenticity apply to original works and reproductions in both physical and digital mediums. The article contends that elements traditionally valued in physical creations—such as aura and authenticity—are arguably inapplicable to digital works, which can be replicated with exactness and in large quantities. Given the ease of digital reproduction, the protection of cultural information rather than the identification of the “original” digital work may be more salient.

The fourth section examines why some digital material deserves consideration as digital cultural property and how digital cultural property may be identified through direct and indirect indicators. This section discusses how our understanding of tangible goods has informed our evaluation of digital works and suggests that digital material requires a new approach to protection.

Lastly, the fifth section warns that States must be purposeful and deliberate about identifying the digital works they consider to be of great importance to their national cultural heritage. Because identifying an adversary’s digital cultural property during armed conflict could be impracticable, States must actively heed their duty to safeguard their own cultural property. This means that they must identify the works they consider digital cultural property, notify other States of the cultural property, and potentially mark the works as digital cultural property. The duty to safeguard cultural property, which States often neglect with respect to physical works, will play an outsize role in the protection of digital forms of cultural property.

Safeguarding and respecting cultural property in the event of armed conflict

Conceived in the aftermath of the Second World War, the Cultural Property Convention sought to protect cultural property against the destructive effects of

Laws and Customs of War on Land, Annexed to Convention No. IV Respecting the Laws and Customs of War on Land, 36 Stat. 2227, TS No. 539, 18 October 1907, Art. 27; Convention No. IX Concerning Bombardments by Naval Forces in Time of War, 36 Stat. 2351, TS No. 542, 18 October 1907, Art. 5; Treaty on the Protection of Artistic and Scientific Institutions and Historic Monuments, 49 Stat. 3267, TS No. 899, 15 April 1935 (Roerich Pact), Art. 1; AP I, Art. 53; AP II, Art. 16.

armed conflict while acknowledging the realities of military operations.²¹ The Convention defined cultural property in purely tangible terms, for when it was signed in 1954, the digital creation and reproduction of works was not yet possible.²² In the decades since, digital technology has transformed society in profound ways, resulting in what has been described as a digital revolution.²³ That transformation has, among other things, introduced new mediums for expression, altered how we conceive of and appreciate art, and revolutionized the organization, storage and retrieval of data.²⁴ Already, digital film and digital audio recording have drastically reshaped the movie and music industries, while digital artwork has become increasingly prized and valued.²⁵ Other digital materials – including texts, databases, still images, graphics, software and web pages – have also emerged as potential sources of culturally important works.²⁶

- 21 See Cultural Property Convention, Art. 4(2) (stating that the obligation to respect cultural property and refrain from any act of hostility against such property “may be waived only in cases where military necessity imperatively requires such a waiver”); see also Second Protocol, Art. 6. But see AP I, Art. 53 (establishing that it is prohibited to commit acts of hostility against cultural objects and places of worship); AP II, Art. 15 (similarly establishing that it is prohibited to commit acts of hostility against cultural objects and places of worship). Both Article 53 of AP I and Article 16 of AP II, however, state explicitly that they apply “[w]ithout prejudice to the provisions of the Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict”. Accordingly, both provisions do not necessarily abrogate the waiver for imperative military necessity outlined in Article 4(2) of the Cultural Property Convention. See, for example, Yoram Dinstein, *The Conduct of Hostilities under the Law of International Armed Conflict*, 3rd ed., Cambridge University Press, Cambridge, 2016, pp. 207–208 (“The ‘without prejudice’ qualification in Article 53 [of AP I] makes it clear that the legal regime established in the [Cultural Property Convention] is not invalidated”); R. O’Keefe, above note 7, p. 208 (noting that the “without prejudice” clause in the *chapeau* of Article 53 was “inserted to make it clear that article 53 is not intended to modify the existing legal obligations of those Parties to [AP I] which are also Parties to the [Cultural Property Convention]”).
- 22 Cultural Property Convention, Art. 1.
- 23 See, for example, Heather Harrison Dinniss, *Cyber Warfare and the Laws of War*, Cambridge University Press, Cambridge, 2012, p. 14 (“It is axiomatic to say that the information revolution is fundamentally changing societies”); June Jamrich Parsons and Dan Oja, *New Perspectives on Computer Concepts*, Cengage, Boston, MA, 2009, p. 4 (“The digital revolution is an ongoing process of social, political, and economic change brought about by digital technology, such as computers and the Internet”). The digital revolution is also sometimes referred to as the third industrial revolution: see H. H. Dinniss, above.
- 24 For example, the introduction of verifiable assets, such non-fungible tokens (NFTs), has revolutionized how digital artwork can be bought and sold. See, for example, Josie Thaddeus-Johns, “What Are NFTs, Anyway? One Just Sold for \$69 Million”, *New York Times*, 12 March 2021, available at: www.nytimes.com/2021/03/11/arts/design/what-is-an-nft.html; Clive Thompson, “The Untold Story of the NFT Boom”, *New York Times*, 12 May 2021, available at: www.nytimes.com/2021/05/12/magazine/nft-art-crypto.html.
- 25 See, for example, Manohla Dargis and A. O. Scott, “Film Is Dead? Long Live Movies”, *New York Times*, 6 September 2012, available at: www.nytimes.com/2012/09/09/movies/how-digital-is-changing-the-nature-of-movies.html; Ian Morris, “Technology is Destroying the Music Industry, Which Is Great for the Next Taylor Swift”, *Forbes*, 17 November 2014, available at: www.forbes.com/sites/ianmorris/2014/11/17/technology-is-destroying-the-music-industry-which-is-great-for-the-next-taylor-swift/?sh=dc6538b236b8; Eileen Kinsella, “An NFT Artwork by Beeple Just Sold for an Unbelievable \$69 Million at Christie’s – Making Him the Third Most Expensive Living Artist”, *Artnet*, 11 March 2021, available at: <https://news.artnet.com/market/christies-nft-beeple-69-million-1951036>; Chistine Paul, “Histories of the Digital Now”, Whitney Museum of American Art, available at: <https://whitney.org/essays/histories-of-the-digital-now>.
- 26 See, for example, Charter on the Preservation of the Digital Heritage, 17 October 2003, Art. 1 (stating that “[d]igital materials include texts, databases, still and moving images, audio, graphics software and web pages, among a wide and growing range of formats”).

The digital revolution has also created an entirely new domain—cyberspace—through which States and non-State actors now vie for advantage, to achieve effects both in the physical world and in the incorporeal realm of bits and bytes.²⁷

Meanwhile, the conditions that compelled States to adopt the Cultural Property Convention in the first place persist; armed conflict remains a grave threat to cultural property around the world. In an age of digital creation and reproduction, determining whether digital material might also constitute cultural property—that is, *digital* cultural property—entitled to the same protections as its physical analogues has emerged as an increasingly relevant consideration.

The first step to determining how the Cultural Property Convention applies to digital material is understanding how the Convention protects traditional forms of cultural property. Works created and duplicated digitally are unlike those devised from tangible materials. They exist in time and space differently than physical objects and, arguably, are valued differently as well. Despite these contrasts, the law of armed conflict appears to protect digital cultural property to the same extent as more conventional, more broadly accepted forms of tangible cultural material.²⁸ Rule 142 of the Tallinn Manual 2.0 states unequivocally: “The parties to an armed conflict must respect and protect cultural property that may be affected by cyber operations or that is located in cyberspace. In particular, they are prohibited from using digital cultural property for military purposes.”²⁹

The Cultural Property Convention envisions the protection of cultural property as comprising two main components: the safeguarding of cultural property by territorial States, and respect for such property by both territorial States and those engaged in armed conflict with them.³⁰ With regard to safeguarding, Article 3 of the Convention provides that States are required to safeguard cultural property located in their territory against the foreseeable effects of an armed conflict.³¹ Article 3, however, does not mandate what measures a State must implement. Rather, it specifies only that States must “tak[e] such measures as they consider appropriate”.³² Article 5 of the 1999 Second Protocol to the Cultural Property Convention (Second Protocol), on the other hand, does define certain preparatory measures to safeguard cultural property, including the “preparation of inventories”.³³ Even for States not party to the 1999 Second Protocol, the illustrative examples outlined in Article 5 can help inform how States safeguard cultural property.

27 See, for example, William J. Lynn III, “Defending a New Domain: The Pentagon’s Cyberstrategy”, *Foreign Affairs*, Vol. 89, No. 5, 2010, p. 101 (“As a doctrinal matter, the Pentagon has formally recognized cyberspace as a new domain of warfare. Although cyberspace is a man-made domain, it has become just as critical to military operations as land, sea, air, and space”).

28 Tallinn Manual 2.0, above note 16, Rule 142.

29 *Ibid.*

30 Cultural Property Convention, Arts 2 (“Protection of Cultural Property”), 3 (“Safeguarding of Cultural Property”), 4 (“Respect for Cultural Property”).

31 *Ibid.*, Art. 3 (requiring that parties “undertake to prepare in time of peace for the safeguarding of cultural property situated within their own territory against the foreseeable effects of an armed conflict”).

32 *Ibid.* art. 3.

33 Second Protocol, Art. 5.

Inherent in the notion of safeguarding – and implied in Article 5 of the Second Protocol – is the identification of relevant cultural property. As Roger O’Keefe has observed, “the measure *sine qua non* that a Party can and should take in pursuance of the obligation laid down in article 3 is the identification of the property in question”.³⁴ Determining what constitutes cultural property is explored in more detail in the following section below.

Notification can also be crucial to safeguarding. Once a State has identified the cultural property located in its territory, effective safeguarding should reasonably include notifying others of the nature and location of the designated property.³⁵ The Cultural Property Convention, however, does not stipulate how States can or should notify other States in advance of armed conflict, and in practice, few States regularly disseminate detailed information about their cultural property.³⁶ As UNESCO’s *Protection of Cultural Property Military Manual* (UNESCO Manual) explains,

[t]he challenge for military planners and forces in the field is that almost no state party to the 1954 Convention indicates explicitly, for the benefit of potential parties to an armed conflict on its territory, all the precise objects, structures and sites that it deems “cultural property”.³⁷

While the UNESCO Manual suggests that an opposing State could consult an adversary’s “register of national cultural heritage or similar domestic legal or administrative inventory” to ascertain what the territorial State considers cultural property, it also recognizes that accessing these registers and inventories “may prove difficult for military planners and impossible for forces in the field”.³⁸ Under Article 7 of the Cultural Property Convention, States are expected to incorporate cultural property “services or specialist personnel” into their armed forces, and access to this expertise could help.³⁹ Nevertheless, a State’s formal communication of its cultural property to others would be more definitive than expecting armed forces to rely on external sources and a degree of conjecture to identify an opposing State’s cultural property.

Alternatively, a State could mark cultural objects to identify them as cultural property. The Cultural Property Convention provides for the physical marking of cultural property with the Convention’s distinctive emblem, but such marking is not obligatory and, in some cases, may be undesirable.⁴⁰ For example, affixing the Convention’s blue and white shield to a work of art or cultural

34 R. O’Keefe, above note 7, p. 114.

35 See Cultural Property Convention, Art. 3; R. O’Keefe, above note 7, p. 114.

36 Roger O’Keefe *et al.*, *Protection of Cultural Property Military Manual*, UNESCO, Paris, 2016 (UNESCO Manual), p. 13.

37 *Ibid.*, p. 13.

38 *Ibid.*, p. 14.

39 Cultural Property Convention, Art. 7(2). Article 7 also provides for the promulgation of military regulations or instructions to “ensure observance” of the convention and to “foster ... a spirit of respect for the culture and cultural property of all peoples”. *Ibid.*, Art. 7(1).

40 *Ibid.*, Arts 6 (“Distinctive Marking of Cultural Property”), 16 (“Emblem of the Convention”), 17 (“Use of the Emblem”). See also R. O’Keefe, above note 7, pp. 116–117 (noting that practicality and aesthetics militate against marking movable cultural property with the distinctive emblem of the Convention).

artifact – a handscroll, painting or sculpture, for instance – could be impractical or aesthetically unappealing.⁴¹ Moreover, relying on visual markings alone to secure the protections of the Convention, rather than on timely and detailed notifications to States, is risky. Modern targeting often occurs outside visual range, increasing the likelihood that cultural property might be inadvertently damaged or destroyed by an opposing force.⁴² Of more immediate consequence, as the UNESCO Manual states, is the reality that “in practice no state affixes the emblem to every item of its cultural property, and most states do not use the emblem at all”.⁴³

In the absence of a declaration by a State attesting to its cultural property – such as a published list – or the marking of all such property with the distinctive emblem of the Convention, it is unlikely that an opposing State could know definitively what moveable and immovable property the territorial State considers cultural property.⁴⁴ States are nevertheless obligated under Article 4 to respect cultural property in armed conflict whether or not it has been previously identified or marked.⁴⁵ Article 4(5) provides:

No High Contracting Party may evade the obligations incumbent upon it under the present Article, in respect of another High Contracting Party, by reason of the fact that the latter has not applied the measures of safeguard referred to in Article 3.⁴⁶

To satisfy its Article 4 obligations, then, an opposing State may be forced to assume by default the responsibility for determining what constitutes cultural property in a territorial State.⁴⁷ Under these circumstances, what must an opposing State and its

41 See R. O’Keefe, above note 7, pp. 116–117. In some cases, the distinctive emblem can be affixed in a way that does not distort or distract from the object; for example, the protective emblem can be placed on the object’s base or pedestal. As the records of the Intergovernmental Conference indicate, however, aesthetic and even psychological considerations had already been flagged as potential areas of concern during the drafting of the Cultural Property Convention. See Jan Hladik, “Marking of Cultural Property with the Distinctive Emblem of the 1954 Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict”, *International Review of the Red Cross*, Vol. 86, No. 854, 2004, p. 381, quoting UNESCO, *Records of the Conference Convened by the United Nations Educational, Scientific and Cultural Organization, Held at The Hague from 21 April to 14 May 1954*, 1961, p. 383 (observing that “such marking, in peace-time, might raise difficulties on aesthetic and even psychological grounds”).

42 See, for example, Alex Leveringhaus, “Distance, Weapons Technology and Humanity in Armed Conflict”, *Humanitarian Law and Policy Blog*, 6 October 2017, available at <https://blogs.icrc.org/law-and-policy/2017/10/06/distance-weapons-technology-and-humanity-in-armed-conflict/> (observing that “the drone operator, safely seated in a cubicle located thousands of miles away from a theatre, has become an enduring symbol of distance in warfare”).

43 UNESCO Manual, above note 36, p. 14.

44 R. O’Keefe, above note 7, p. 111.

45 Cultural Property Convention, Art. 4(5); see also UNESCO Manual, above note 36, p. 111.

46 Cultural Property Convention, Art. 4(5).

47 R. O’Keefe, above note 7, p. 111 (observing that when a territorial State has failed to notify other States in advance of the identify and location of the cultural property on its territory, or has failed to mark such property with the distinctive emblem of the Convention, “the opposing Party must hazard an assessment as to the cultural importance of the property in question”); UNESCO Manual, above note 36, p. 14 (stating that when in doubt, commanders and other military personnel should proceed on the assumption that all “movable and immovable property of historic, artistic or architectural significance” identified on the territory of another State is “of great importance to the cultural heritage of that state”).

military planners and forces in the field do to identify the requisite cultural property?

What is cultural property?

The Cultural Property Convention's definition

Article 1 of the Cultural Property Convention defines “cultural property” to include, irrespective of origin or ownership,

(a) movable or immovable property of great importance to the cultural heritage of every people, such as monuments of architecture, art or history, whether religious or secular; archaeological sites; groups of buildings which, as a whole, are of historical or artistic interest; works of art; manuscripts, books and other objects of artistic, historical or archaeological interest; as well as scientific collections and important collections of books or archives or of reproductions of the property defined above;

(b) buildings whose main and effective purpose is to preserve or exhibit the movable cultural property defined in sub-paragraph (a) such as museums, large libraries and depositories of archives, and refuges intended to shelter, in the event of armed conflict, the movable cultural property defined in sub-paragraph (a);

(c) centres containing a large amount of cultural property as defined in sub-paragraphs (a) and (b), to be known as “centres containing monuments”.⁴⁸

As defined in Article 1, the term “cultural property” bears a legal meaning particular to the Convention and its protocols.⁴⁹ The definition established in Article 1, however, also frequently serves as a starting point for evaluating cultural property more broadly in armed conflict.⁵⁰ The US *Department of Defense Law of War Manual*, for example, provides: “‘Cultural property’ is a term of art that is defined in the 1954 Hague Cultural Property Convention.”⁵¹ The *Air and Missile Warfare Manual* adopts the Cultural Property Convention's definition virtually

48 Cultural Property Convention, Art. 1.

49 *Ibid.* (stating the term “cultural property” is defined “[f]or the purposes of the present Convention”); see also R. O’Keefe, above note 7, p. 102 (“As the chapeau to the provision states, the definition is strictly for the purposes of the Convention. It is not cross-referable to the definitions of cultural property found in subsequent UNESCO standard-setting instruments in the field of cultural heritage”).

50 See, for example, US Department of Defense (DoD), *Department of Defense Law of War Manual*, revised ed., Office of the General Counsel, December 2016, para. 5.18.1; UK Ministry of Defence, *The Manual of the Law of Armed Conflict*, 2004, paras 5.26, 5.26.2; Harvard University Program on Humanitarian Policy and Conflict Research (HPCR), *Manual on International Law Applicable to Air and Missile Warfare*, 2009 (HPCR Manual), Rule 1(o); Tallinn Manual 2.0, above note 16, p. 534.

51 DoD, above note 50, para. 5.18.1.1.

verbatim.⁵² Meanwhile, the Tallinn Manual 2.0 states that the definition in Article 1 “reflects customary international law”.⁵³

Earlier codifications, such as the 1907 Hague Regulations, conceived of cultural property more expansively.⁵⁴ For example, Article 27 of the 1907 Hague Regulations required that

[i]n sieges and bombardments all necessary steps must be taken to spare as far as possible, buildings dedicated to religion, art, science, or charitable purposes, historic monuments, hospitals, and places where the sick and wounded are collected, provided they are not being used at the time for military purposes.⁵⁵

Meanwhile, Article 56 prohibited seizing, damaging or destroying property belonging to “institutions dedicated to religion, charity and education, the arts and sciences”, as well as historic monuments and works of art and science.⁵⁶

In formulating the Cultural Property Convention’s definition, the Convention’s drafters sought to avoid prescribing an over-inclusive and potentially impracticable definition of cultural property.⁵⁷ Accordingly, they abandoned the 1907 Hague Regulations’ broad conception of cultural property for what they believed was something more manageable. O’Keefe writes:

The unchallenged assumption was that it was unrealistic to hope to protect every building dedicated to religion, art, science or charitable purposes, every historic monument, and every work of art in the event of armed conflict. What was wanted was a convention of narrower application, so as to render feasible a higher standard of protection.⁵⁸

As adopted, Article 1(a) of the Cultural Property Convention recognizes “movable or immovable property of great importance to the cultural heritage of every people” to be cultural property.⁵⁹ Significantly, the phrase “of great importance to the cultural heritage of every people” has been interpreted to mean “of great importance to the national cultural heritage of each respective Party” rather than to “all people collectively”.⁶⁰ Therefore, the onus is on individual States to

52 HPCR Manual, above note 50, Rule 1(o). The HPCR Manual purports to “produce a restatement of existing law applicable to air or missile operations in international armed conflict”. *Ibid.*, Rule 2(a).

53 Tallinn Manual 2.0, above note 16, p. 534.

54 Hague Convention (IV) Respecting the Laws and Customs of War on Land, with Annex of Regulations, 36 Stat. 2277, 1 Bevans 631, 18 October 1907, Arts 27, 56.

55 *Ibid.*, Art. 27.

56 *Ibid.*, Art. 56.

57 R. O’Keefe, above note 7, p. 101.

58 *Ibid.*, p. 101.

59 Cultural Property Convention, Art. 1(a–c). The centres described in Article 1(c) are also known as “centres containing monuments”.

60 R. O’Keefe, above note 7, pp. 103–106; see also Y. Dinstein, above note 21, pp. 207–208. O’Keefe explains: “On its face, the phrase ‘of every people’ is capable of two meanings, that is, ‘of all peoples jointly’ or ‘of each respective people’.” R. O’Keefe, above note 7, p. 103. According to O’Keefe, it is clear that “the term ‘cultural property’ in article 1 refers to movable or immovable property of great importance to the cultural heritage of each respective people – in other words, of great importance to the national cultural heritage of each respective Party.” *Ibid.*, p. 104. Dinstein agrees, noting that the Cultural Property Convention’s “universalist message” is “worthy of emphasis, inasmuch as some Belligerent Parties are disposed to

identify the objects located in their territory that constitute national cultural heritage. If done so reasonably and in good faith, consistent with prevailing rules of treaty interpretation,⁶¹ such national heritage can be assumed also to be “of great importance for all peoples of the world” and, consequently, part of the world’s cultural heritage.⁶² The question of what objects are of the *greatest* importance to humanity—and are, therefore, potentially entitled to additional protection under the Second Protocol’s enhanced protection regime—is a separate matter that lies outside the scope of this article.⁶³

It should also be noted that the terms “cultural heritage” and “cultural property” are not synonymous. While the relationship between the two has been historically vague, more recent developments have helped clarify the differences between these related ideas.⁶⁴ In general, cultural heritage is a broader concept that encompasses both cultural property and non-material elements of culture, such as oral traditions, musical traditions, and rituals or ceremonial practices.⁶⁵ Moreover, because cultural heritage epitomizes aspects of culture that a society considers valuable, and because cultural heritage is non-renewable, it has sometimes been described as “a form of inheritance” that must be kept safe and handed down to future generations.⁶⁶

view the enemy’s cultural property from a constricted (even antagonistic) ethnic or religious perspective, attempting to erase alien monuments and other memorabilia”. Y. Dinstein, above note 21, p. 208.

61 Vienna Convention on the Law of Treaties, 1155 UNTS 331, 23 May 1969, Art. 26.

62 Cultural Property Convention, Preamble; see also R. O’Keefe, above note 7, pp. 104 (citing Nagendra Singh, a former president of the International Court of Justice, who stated that “cultural objects and properties which make up [one state’s] national heritage [are], consequently, the world’s heritage”), 109 (noting that a State’s power to evaluate the cultural importance of specific property located in its territory “must be exercised reasonably and in good faith”).

63 Second Protocol, Arts 10–14. Article 10 provides that cultural property may be placed under “enhanced protection” if it meets three conditions, one of which is that the property “is cultural heritage of the *greatest* importance for humanity.” *Ibid.*, Art. 10(a) (emphasis added).

64 See, for example, Janet Blake, “On Defining the Cultural Heritage”, *International and Comparative Law Quarterly*, Vol. 49, No. 1, 2000, pp. 66–67 (“The relationship between ‘cultural property’ or ‘cultural heritage’ is unclear, appearing interchangeable in some cases, while in others, cultural property is a sub-group within ‘cultural heritage’”); UNESCO, *What Is Intangible Cultural Heritage?*, 2011, p. 3, available at: <https://ich.unesco.org/doc/src/01851-EN.pdf> (“The term ‘cultural heritage’ has changed content considerably in recent decades, partially owing to the instruments developed by UNESCO”).

65 See, for instance, Manlio Frigo, “Cultural Property v. Cultural Heritage: A ‘Battle of Concepts’ in International Law?”, *International Review of the Red Cross*, Vol. 86, No. 854, 2004, p. 369; UNESCO, above note 64. The first time the phrase “cultural property” was used in English in a legal instrument was in the Cultural Property Convention. Lyndel V. Prott and Patrick J. O’Keefe, “‘Cultural Heritage’ or ‘Cultural Property’?”, *International Journal of Cultural Property*, Vol. 1, No. 2, 1992, p. 312. In contrast, UNESCO’s Convention Concerning the Protection of the World Cultural and Natural Heritage purposely used the phrase “cultural heritage” instead. The preamble to this convention underscored the distinction by noting its consideration of “the existing international conventions, recommendations and resolutions concerning cultural and natural property”, then exclusively using the phrase “cultural heritage” throughout the remainder of the text. Convention Concerning the Protection of the World Cultural and Natural Heritage, 1037 UNTS 152, 16 November 1972 (World Heritage Convention), Preamble; see also L. V. Prott and P. J. O’Keefe, above, p. 318.

66 J. Blake, above note 64, pp. 68 (noting the “significance of cultural heritage as symbolic of the culture and those aspects of it which a society (or group) views as valuable”), 69 (identifying the characterization of cultural heritage as a “non-renewable resource” as central to the view of cultural heritage as a form of inheritance); 83–84.

A recognition that non-material elements could constitute cultural heritage is evident in Article 2 of the Convention for the Safeguarding of the Intangible Cultural Heritage. Article 2 of the Convention defines “intangible cultural heritage” to mean “the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage.”⁶⁷ Accordingly, cultural property may be considered a subset of material within the broader umbrella of cultural heritage.⁶⁸ Importantly, as defined in Article 1 of the Cultural Property Convention, cultural property is not intended to include all cultural heritage.

States’ obligation to protect cultural property

As discussed above, notification and marking are not specifically required under the Cultural Property Convention, but the absence of notification or marking does not relieve a belligerent State of the obligation to respect cultural property in time of armed conflict. Article 1, however, may serve as a guide to identifying another State’s cultural property – at least with respect to tangible objects. A belligerent State obligated to respect the cultural property of a State that has not notified others of the identity or location of its cultural property, or otherwise marked such property with the Convention’s protective emblem, could discharge its obligations under Article 4 by nevertheless treating all moveable and immoveable property, buildings and centres outlined in Article 1 as “cultural property”. In other words, as O’Keefe has suggested,

the safest course is to err on the side of caution and simply to presume that every example of the sorts of cultural property outlined in [Article 1] ... is of great importance to the cultural heritage of the territorial Party and is therefore protected by the Convention.⁶⁹

In the context of digital cultural property, however, the presumption that O’Keefe proposes would likely prove unworkable. Digital works are so qualitatively different from tangible works that relying on Article 1 by default would be futile. Instead, protecting digital cultural property in time of armed conflict will require a greater emphasis on States’ peacetime obligation to safeguard cultural

67 Convention for the Safeguarding of the Intangible Cultural Heritage, 17 October 2003, Art. 2(1). In contrast, UNESCO’s earlier World Heritage Convention defines “cultural heritage” exclusively in tangible terms. World Heritage Convention, Art. 1.

68 See, for example, J. Blake, above note 64, p. 67 (stating that the Cultural Property Convention’s definition of cultural property “clearly shows it to be one element within the cultural heritage”); M. Frigo, above note 65, p. 369 (observing that cultural property “can and indeed has been conceived as a sub-group within the notion of cultural heritage”).

69 R. O’Keefe, above note 7, p. 111. The UNESCO Manual similarly states that “to ensure their state’s compliance with the law of armed conflict and to avoid their personal responsibility for war crimes, commanders and other military personnel should treat all objects, structures and sites of historic, artistic or architectural significance on foreign territory as ‘cultural property’ protected by the 1954 Hague Convention and its two Protocols and by customary international law”. UNESCO Manual, above note 36, p. 14.

property—through notification and marking—in advance of armed conflict. Expecting a belligerent State’s armed forces to ascertain what digital material comprises its adversary’s national cultural heritage makes little sense given the nature of creation and reproduction in digital mediums.

What is digital property?

Determining what digital material appropriately qualifies as cultural property presupposes that at least some digital material can, as a matter of law, be considered cultural property to begin with. This conclusion is not an immediately obvious one, though the weight of international opinion appears to favour this view.⁷⁰ At present, no State has formally designated digital content to be of great importance to national cultural heritage, but the need to safeguard digital cultural property—however that may be defined—is clearly an emerging concern.⁷¹ As already mentioned, Rule 142 of the Tallinn Manual 2.0 specifically addresses the requirement that States respect and protect cultural property which may be affected by cyber operations or is located in cyberspace.⁷² The commentary to Rule 142 reveals, however, that the International Group of Experts which drafted the Manual was split on the question of whether “intangible items could qualify as ‘property’ for law of armed conflict purposes”.⁷³ This divergence of opinion is indicative of the uncertainty regarding what should and should not qualify as digital cultural property.

Some members of the International Group of Experts believed that cultural property must be tangible and that intangible items, like data, do not qualify.⁷⁴ These experts argued that in formulating the Tallinn Manual 2.0’s Rule 100 on “Civilian Objects and Military Objectives”, the group generally rejected characterizing intangible material as “objects”.⁷⁵ In the commentary to Rule 100, the Tallinn Manual 2.0 states: “The meaning of the term ‘object’ is essential to understanding this and other Rules found in the Manual. An ‘object’ is characterised in the ICRC [International Committee of the Red Cross] Additional Protocols 1987 Commentary as something ‘visible and tangible’.”⁷⁶ Accordingly,

70 See Tallinn Manual 2.0, above note 16, Rule 142. Curiously, the commentary to the Tallinn Manual 2.0 never explicitly states that those who favoured this approach actually constituted a majority of the International Group of Experts.

71 See, for example, Rhian Addison, *Protecting Digital Cultural Assets: A Review of the Export Process and Supporting Mechanisms*, National Archives, London, 2019, p. 4 (“With digital forming such a large part of the world economy and daily activity, policy needs to acknowledge the importance of digital culture as it will soon be an essential part of protecting ‘national treasures’”).

72 Tallinn Manual 2.0, above note 16, Rule 142.

73 *Ibid.*, p. 535.

74 *Ibid.*

75 *Ibid.*

76 *Ibid.*, p. 437. The ICRC’s *Commentary on the Additional Protocols* states: “The English text uses the word ‘objects’, which means ‘something placed before the eyes, or presented to the sight or other sense, an individual thing seen, or perceived, or that may be seen or perceived; a material thing’. The French text uses the word ‘biens’, which means ‘choses tangibles, susceptibles d’appropriation’. It is clear that in

a majority of the International Group of Experts determined that “the law of armed conflict notion of ‘object’ is not to be interpreted as including data, at least in the current state of the law”.⁷⁷ The commentary further explains that “[i]n the view of these Experts, data is intangible and therefore neither falls within the ‘ordinary meaning’ of the term object, nor comports with the explanation of it offered in the ICRC Additional Protocols 1987 Commentary”.⁷⁸ Based on this analysis, some of the International Group of Experts concluded that cultural property must be tangible and therefore does not encompass digital material.⁷⁹

Other members, however, determined that intangible items could be cultural property so long as the items were cultural in nature.⁸⁰ Reasoning by analogy, these experts pointed out that other intangible material, such as intellectual property, has been widely recognized as “property” under international law and many domestic legal systems.⁸¹ Accordingly, cultural heritage need not manifest physically to qualify for protection as cultural property.⁸²

As mentioned above, Rule 142 of the Tallinn Manual 2.0 approaches the duty to safeguard and respect cultural property in the event of armed conflict from the narrower perspective of “cultural property” rather than “cultural heritage”. While this approach may seem reasonable given the Cultural Property Convention’s particular use of the term “cultural property”, some might argue that the Manual’s emphasis on “property” rather than “heritage” is misguided.⁸³ Some scholars have asserted that “the existing legal concept of ‘property’ does not, and should not try to, cover all that evidence of human life that we are trying to preserve”.⁸⁴ Moreover, the concept of ownership implicit in the notion of property is contrary to the goals of preserving and protecting a common or shared heritage.⁸⁵ Others have even suggested that “cultural property” should be considered a fourth category of property law—in addition to real property, personal property and intellectual property—because the existing categories do

both English and French the word means something that is visible and tangible.” Yves Sandoz, Christophe Swinarski and Bruno Zimmermann (eds.), *Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949*, ICRC, Geneva, 1987, paras 2007–2008.

77 Tallinn Manual 2.0, above note 16, p. 437.

78 *Ibid.*

79 *Ibid.*, p. 535. As the commentary suggests, some of these members may have been further convinced by AP I’s use of the term “cultural objects” in Article 53. The UNESCO Manual notes: “Although the relevant provisions of the 1977 Additional Protocols to the Geneva Conventions adopt different terminology, the property of cultural significance protected by them is effectively the same as the ‘cultural property’ protected by the 1954 Hague Convention and its Protocols.” UNESCO Manual, above note 36, p. 14.

80 Tallinn Manual 2.0, above note 16, p. 535 (“For these Experts, the critical question is whether the intangible property is cultural in nature”).

81 *Ibid.*, p. 535.

82 See *ibid.*

83 See, for example, L. V. Prott and P. J. O’Keefe, above note 65; J. Blake, above note 64.

84 L. V. Prott and P. J. O’Keefe, above note 65, p. 307; see also J. Blake, above note 64, pp. 65–66.

85 See, for example, L. V. Prott and P. J. O’Keefe, above note 65, pp. 307, 309–318; J. Blake, above note 64, pp. 65–66 (asserting that the term “cultural property” is a fundamental legal concept which carries “a range of ideological baggage” and is “problematic to apply” because it involves “the rights of the possessor to the protection of cultural resources which may involve a severe curtailment of such rights and the separation of access and control from ownership”).

not account for important types of (intangible) heritage material, such as oral traditions, performing arts, rituals and ceremonies.⁸⁶

As a matter of legal interpretation, treating digital material as a species of intangible “property”, rather than excluding all such material from protection under the Cultural Property Convention because intangible material cannot be “objects”, appears to be the stronger approach. In defining cultural property, Article 1(a) of the Cultural Property Convention provides a non-exclusive list of examples of the types of “movable and immovable property of great importance to the cultural heritage of every people”, leaving open the possibility that at least some intangible material could fall within the ambit of the Convention. While the idea of culture as property may be problematic – because of property’s association with ownership and commercial value, among other things – and perhaps antiquated by contemporary standards, the Tallinn Manual 2.0’s interpretation of property at least expands the concept of cultural property in a manner consistent with the evolving understanding of cultural heritage.⁸⁷ Ultimately, Rule 142’s acknowledgment that non-material culture may be entitled to protection under the *lex specialis* of armed conflict – albeit under the rubric of property – reflects an appreciation for the broader goals of heritage preservation as referred to in the Convention for the Safeguarding of the Intangible Cultural Heritage and other sources.

Types of digital material

The conclusion that digital material may constitute cultural property is legally significant. If some digital material may be considered cultural property, then States must safeguard and respect it to the same extent as tangible cultural property in the event of armed conflict. Applying the Cultural Property Convention’s definition of cultural property to digital material, however, presents a challenge. Because digital material is so fundamentally different from physical objects – in terms of creation, identification and reproducibility, for example – digital items do not fall neatly within the categories of items outlined in Article 1 of the Convention, nor can they be easily analogized to tangible cultural artifacts. How, then, should States determine what digital items constitute cultural property? And how should military commanders treat potential digital cultural property in the absence of notification or marking by the State in which the digital material is situated?⁸⁸

86 See Richard Crewdson, “Cultural Property – A Fourth Estate?”, *Law Society’s Gazette*, Vol. 18, 1984, p. 126, cited in L. V. Prott and P. J. O’Keefe, above note 65, p. 311.

87 See, for example, L. V. Prott and P. J. O’Keefe, above note 65, pp. 309–318 (discussing the problems with the concept of property); J. Blake, above note 64, pp. 65–66 (describing the drawbacks of applying the rights of a possessor to the protection of cultural resources, the commodification of cultural artifacts, and the limited scope of the term “cultural property”).

88 Determining the location of digital cultural property for purposes of the Cultural Property Convention presents another challenge. This article assumes that digital material which a State considers to be part of its national cultural heritage must be located in the State (e.g., on a server physically situated in the territory of the State) in order to be subject to the provisions of the Cultural Property Convention.

The commentary to the Tallinn Manual 2.0 offers some discussion of what material might qualify as digital cultural property, but whether the parameters the commentary establishes appropriately describe how digital cultural property should be understood is open to debate.⁸⁹ An international consensus has yet to coalesce around the nature of digital cultural property, and given the unsettled state of the subject, the commentary to Rule 142 must be read with caution, at least as it pertains to the characterization of digital cultural property.⁹⁰ To date, none of the State expressions on international law and cyberspace have addressed cultural property, and the discussion to Rule 142 further highlights some of the uncertainty surrounding the concept of digital cultural property.⁹¹ As the means to create, reproduce, alter and destroy digital heritage accelerate, a clearer conception of what constitutes digital cultural property is needed to ensure that States fulfil their obligation to safeguard and respect digital material in the event of armed conflict.

The Tallinn Manual 2.0’s discussion of Rule 142 alludes to two general categories of digital material: (1) original digital works and (2) digital copies of original physical works. The commentary suggests that original digital works include both novel creations devised in a digital medium and cultural information generated and stored in digital form. This article will use the terms “born-digital material” and “original digital works” interchangeably to describe both types of new works. By comparison, digital copies of original physical works include photographs as well as encoded information from sources that could be used to replicate physical objects, such as building plans and maps.⁹² This article will refer to these types of copies as “digital surrogates”. The following subsections briefly examine both born-digital material and digital surrogates as distinct species of digital material.

Born-digital material

To distinguish between originals and copies, some sources refer to original digital material of the type contemplated by the Tallinn Manual 2.0 as “born-digital”.⁹³ The *Oxford English Dictionary* defines “born-digital” works as those “created in digital form, rather than converted from print or analogue equivalents”.⁹⁴

89 Tallinn Manual 2.0, above note 16, pp. 535–536.

90 It is important to note that Rule 142 is not concerned exclusively with digital cultural property. The rule also implicates traditional forms of cultural property that may be affected by cyber operations.

91 See, for example, Brian J. Egan, “Remarks on International Law and Stability in Cyberspace”, 10 November 2016, available at: www.law.berkeley.edu/wp-content/uploads/2016/12/egan-talk-transcript-111016.pdf; UN Office for Disarmament Affairs, *Official Compendium of Voluntary Contributions on the Subject of How International Law Applies to the Use of Information and Communications Technology by States*, UN Doc. A/76/136, August 2021. See also Duncan B. Hollis, “A Brief Primer on International Law and Cyber Space”, 14 June 2021, available at: https://carnegiendowment.org/files/Hollis_Law_and_Cyberspace.pdf.

92 See Tallinn Manual 2.0, above note 16, p. 535 n. 1327.

93 See, for example, Jean-Michel Rodes, Geneviève Piejut and Emmanuèle Plas, *Memory of the Information Society*, UNESCO, Paris, 2003, p. 39; H. H. Dinniss, above note 23, pp. 231–232.

94 “P2: To Be Born Digital”, *Oxford English Dictionary*, 3rd ed. 2010, available at: www.oed.com/view/Entry/52611?redirectedFrom=born-digital#eid1262411270. This OED reference cites a 1998 article from

UNESCO similarly states that born-digital heritage “results from an ‘all-digital’ process of initial production, the message being digitally encoded at the moment of its creation”.⁹⁵ What distinguishes “born-digital” from “created-digital” material, therefore, is that born-digital works are new works executed in a digital medium, not copies created digitally to replicate something that already exists. For example, the digital artist Beeple’s work *Everydays – The First 5000 Days* consists of a collage of images generated as a JPG file.⁹⁶ It is a born-digital creation. In contrast, a high-resolution copy of the *Mona Lisa* would be a created-digital work.

As defined, born-digital content could include a wide spectrum of material. The Tallinn Manual 2.0 seems to acknowledge this by providing a range of examples, from works of artistic expression to government bureaucratic records. The commentary to the Manual, however, does not further distinguish between various types of born-digital material. In addition to original creative works, born-digital material could include data recorded and stored digitally – what this article will refer to as “digital data”. Differentiating between these subsets of born-digital material could prove helpful to conceptualizing what digital creations can appropriately be considered digital cultural property, and why they should be regarded as such.

The commentary asserts that intangible property which is cultural in nature could include “objects that are created and stored on a computing device and therefore only exist in digital form, such as musical scores, digital films, documents pertaining to e-government, and scientific data”.⁹⁷ Here, the commentary appears to be referring exclusively to born-digital material rather than created-digital works. Indeed, the commentary specifically rejects the idea that “a single extremely high-resolution image of Leonardo da Vinci’s *Mona Lisa*, comprising a terabyte of information”, could be protected as an original digital work, even if the original painting were later destroyed, leaving only the digital copy.⁹⁸ The commentary’s disinclination to recognize a digital facsimile as an original work, however, does not mean that such material is ineligible for protection as digital cultural property. Instead, the commentary suggests that digital reproductions could be protected under a different category of material – that is, digital surrogates – which is addressed in more detail below.

Business Wire as the earliest known use of the term. The article referred to “[a] vast data resource pulled from the most comprehensive archive of documents ‘born digital’ – that is, electronic at conception and through publication”.

95 J.-M. Rodes, G. Piejut and E. Plas, above note 93, p. 39.

96 Scott Reyburn, “JPG File Sells for \$69 Million, As ‘NFT Mania’ Gathers Pace”, *New York Times*, 11 March 2021, available at: www.nytimes.com/2021/03/11/arts/design/nft-auction-christies-beeple.html; E. Kinsella, above note 25.

97 Tallinn Manual 2.0, above note 16, p. 535. The commentary’s use of the term “object” is interesting here. Earlier in the same discussion, the commentary points out the International Group of Experts’ general rejection of the idea that intangible items could be objects. The commentary then explains how intangible items could be “property” before reverting to the use of the term “object” to describe certain digital material.

98 *Ibid.*, pp. 535–536.

However, the commentary’s recognition that “documents pertaining to e-government” and “scientific data” may be entitled to protection as born-digital cultural property suggests that the significance of born-digital material is not merely a function of uniqueness or the limited production of copies. Digital documents and scientific data may be analogous to the “manuscripts, books and other objects of artistic, historical or archaeological interest” and the “scientific collections and important collections of books or archives” outlined in Article 1(a) of the Cultural Property Convention.⁹⁹ The present article takes an approach similar to the UK National Archives and distinguishes between “digital originals” and “digital data”.¹⁰⁰ While both classes of material are born-digital, they are conceptually different. Understanding why the Cultural Property Convention recognizes the protection of physical books and archives, and why the Tallinn Manual 2.0 acknowledges the need to protect digital data, can help us appreciate why some digital material that has been widely copied might nevertheless be entitled to protection as digital cultural property.

Digital surrogates

In addition to born-digital material (both digital originals and digital data), the commentary to Rule 142 recognizes that digital copies of original physical works – what this article will refer to as “digital surrogates” – could also qualify as digital cultural property. As the commentary explains, some members of the International Group of Experts believed that “[c]ertain copies of objects of which a physical manifestation exists (or has existed) that can be used to create replicas also qualify as cultural property”.¹⁰¹ The commentary states:

No member of the International Group of Experts taking this position asserted that all digital manifestations of cultural property are entitled to protection of this Rule. Protection only applies to digital copies or versions where the original is either inaccessible or has been destroyed, and where the number of digital copies that can be made is limited.¹⁰²

Accordingly, the hypothetical high-resolution copy of the *Mona Lisa* that would not qualify for cultural property protection as a born-digital work could nevertheless be entitled to protection as a digital surrogate.¹⁰³ The Tallinn Manual 2.0 explains, however, that “due to the high speed and low cost of digital reproduction, once

99 Cultural Property Convention, Art. 1(a).

100 See R. Addison, above note 71. Addison’s report, prepared on behalf of the National Archives, divides born-digital material into two forms: (1) “[o]riginal digital art work, such as videos and music”, and (2) “[d]igital data or knowledge, such as databases, spreadsheets and websites” (p. 4).

101 Tallinn Manual 2.0, above note 16, p. 535.

102 *Ibid.*

103 *Ibid.*, pp. 535–536 (commenting that a “single extremely high-resolution image of Leonardo da Vinci’s *Mona Lisa* ... might, and in the event of the destruction of the original *Mona Lisa* would, qualify as cultural property”).

such a digital image has been replicated and widely downloaded, no single digital copy of the artwork would be protected by this Rule”.¹⁰⁴

Notably, the Tallinn Manual 2.0 focuses on the extent of replication rather than the quality of the reproduced material.¹⁰⁵ For some scholars, copy quality is critical to evaluating the importance of digital reproductions. Eugene Ch’ng, for example, distinguishes between what he calls “surrogates” and “true facsimiles”.¹⁰⁶ Ch’ng characterizes “surrogates” as “pointers to the original copy and therefore good only for public appreciation”.¹⁰⁷ He explains that “surrogates” are generally of lower quality, with smaller file sizes, than “true facsimiles”, in order to make them more viewable on the internet.¹⁰⁸ (Note that Ch’ng’s use of the term “surrogates” differs from the term “digital surrogates” as used throughout this article.) For Ch’ng, therefore, the existence of “surrogates” and their widespread replication and dissemination would not necessarily negate the value of a “true facsimile”. Instead, his concern is with preserving the importance of what he calls the “First Original Copy” – that is, “any first true 3D facsimile of a digitally reproduced physical object” – regardless of how many copies exist or might be produced in the future.¹⁰⁹

Unlike Ch’ng, who is comfortable with the digital reproduction of heritage objects and works of art, the Tallinn Manual 2.0’s discussion of both born-digital originals and digital surrogates evinces a strong preference for original works, whether initially created digitally or in a tangible medium. As discussed in the commentary to Rule 142, recognition as digital cultural property is closely tied to a work’s uniqueness as an original or, to a lesser extent, to the ability to limit its reproduction. But why the emphasis on preserving originals over copies? Is the Tallinn Manual 2.0’s preoccupation with originals an anachronism in an Age of Digital Reproduction?

Digital works versus physical works

Physical artifacts have long been valued by human societies.¹¹⁰ Original creations were prized above copies because, as Benjamin argued, originals were believed to

104 *Ibid.*, p. 536.

105 The commentary to the Tallinn Manual 2.0 does hint at the importance of reproductive quality, but it never expressly identifies quality as an essential consideration. The commentary’s *Mona Lisa* example identifies the digital copy as “a single extremely high-resolution image” but never discusses whether or why the resolution is significant. Instead, the commentary states that protection is afforded “based on the value and irreplaceability of the original work of art” as well as “the difficulty, time, and expense involved in reproducing faithful copies”. *Ibid.*, pp. 535–536.

106 Eugene Ch’ng, “The First Original Copy and the Role of Blockchain in the Reproduction of Cultural Heritage”, *Presence*, Vol. 27, No. 1, 2018, pp. 156–157.

107 *Ibid.*, p. 156.

108 *Ibid.* Ch’ng also notes that “surrogates” feature smaller file sizes, and they may be of little use to experts “as their lack of surface details have rendered them noninterpretable”.

109 *Ibid.*, p. 151.

110 See Yuri Smirnov, “Intentional Human Burial: Middle Paleolithic (Last Glaciation) Beginnings”, *Journal of World Prehistory*, Vol. 3, No. 2, 1989, p. 199; Helen Thompson, “The Oldest Stone Tools Yet Discovered Are Unearthed in Kenya”, *SmithsonianMag.com*, 20 May 2015, available at: www.smithsonianmag.com/science-nature/oldest-known-stone-tools-unearthed-kenya-180955341/ (noting that some stone artifacts

possess attributes of aura and authenticity—characteristics associated with a physical existence. Given the traditional allure of aura and authenticity, and the historic predilection for original works, the Tallinn Manual 2.0’s preference for originals over copies may be understandable. However, the Manual’s focus on preserving original examples rather than the cultural information that those works convey is worth reconsidering given the realities of digital technology. Older notions of aura and authenticity and their paramount expression in original physical works do not translate cleanly to works in digital mediums. The primacy of original examples and the significance of aura and authenticity, which already began to be questioned with the development of mechanical reproduction, arguably mean even less with respect to digital creations.

Aura and authenticity of physical creations

The discovery of handmade artifacts in ancient human graves indicates that physical objects could hold great significance to early human societies.¹¹¹ While it is unclear why certain artifacts were interred with the dead, their presence suggests they were meaningful.¹¹² The state of a 28,000-year-old burial site in Sungir, Russia, is illustrative. In it, three bodies were discovered dressed in clothes interwoven with more than 3,000 ivory beads.¹¹³ The bodies were also adorned with carved pendants, bracelets and shell necklaces.¹¹⁴ Two of the bodies—both juveniles—were further flanked by mammoth tusks, each over two yards long, which had been meticulously straightened through a process likely involving boiling.¹¹⁵ The amount of time and effort needed to prepare these bodies for burial would have been considerable; by some estimates, fashioning the ivory beads alone would have consumed nearly 3,000 hours of labour.¹¹⁶ In light of the effort invested in the burials, the sociologists Neil Fligstein and Doug McAdam have argued that the creators of the site must have possessed “an extraordinary capacity for coordinated, meaningful, symbolic, collaborative activity”.¹¹⁷ They contend that “the ritual act encoded in the interment was clearly full of shared meaning for those involved”.¹¹⁸

may be nearly 3.3 million years old, almost 3 million years older than the earliest *Homo sapiens* fossils); Jean-Jacques Hublin *et al.*, “New Fossils from Jebel Irhoud, Morocco and the Pan-African Origin of *Homo Sapiens*”, *Nature*, Vol. 546, No. 7657, 2017, p. 290 (dating the excavations at Irhoud to “315 ± 34 kyr”).

111 See Y. Smirnov, above note 110, p. 214 (“Middle Paleolithic burials are known both with and without associated [grave] goods, which makes it most likely that goods were sometimes deliberately placed in the grave”).

112 See Neil Fligstein and Doug McAdam, *A Theory of Fields*, Oxford University Press, Oxford, 2012, p. 37.

113 Ian Tattersall, *Becoming Human: Evolution and Human Uniqueness*, Oxford University Press, Oxford, 1998, p. 163, cited in N. Fligstein and D. McAdam, above note 112.

114 N. Fligstein and D. McAdam, above note 112, p. 37.

115 *Ibid.*

116 Fligstein and McAdam wonder: “How many people did it take to boil and straighten the mammoth tusks? Who contributed the 3,000 hours required to make then sew the ivory beads on to the burial clothes? ... We will never know, but one can be assured that the members of the group shared an acute and elaborate sense of the event’s significance.” *Ibid.*, pp. 37–38.

117 *Ibid.*, p. 37 (emphasis omitted).

118 *Ibid.* (emphasis omitted).

The world's earliest stories, recorded thousands of years later, confirm how highly prized material objects could be. In the *Epic of Gilgamesh*, the world's oldest extant long poem, the story's eponymous hero mourns the death of his dearest friend Enkidu by ordering the creation of a lavish funeral statue and filling Enkidu's grave with opulent grave goods.¹¹⁹ Ancient Greek epics similarly featured material objects in abundance. For example, Homer dedicates an entire book of the *Iliad* to the tale of the crafting of Achilles' shield.¹²⁰

For Benjamin, original works such as the *Mona Lisa* possess an aura and authenticity that reproductions could never have. Benjamin contends: "Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be."¹²¹ Original physical works may be distinguishable from copies for a variety of reasons; for example, they may be created from particular material, such as a specific metal alloy, stone from a localized area, or unique pigments fashioned into paints. These objective physical characteristics can help to distinguish original works from their copies. Alternatively (or in addition), the aura of original works may set them apart from less authentic reproductions, even those of the highest quality, crafted from identical materials. As Charles Cronin observes:

We revere the Parthenon not only for its aesthetic and historical values but also because the building and its decoration are very old. We cherish, in a manner akin to ancestor worship, the fact that objects we behold today were touched over 2000 years ago by individuals of an ancient civilization that profoundly affected the development of our own.¹²²

Additionally, Cronin notes, an object's aura may be enhanced by the identity of its creator.¹²³ In 2017, for example, a conservator at the Nelson-Atkins Museum of Art in Kansas City discovered a grasshopper embedded in the paint of Vincent van Gogh's 1889 work *Olive Trees*.¹²⁴ The director of the museum

119 See Michael Schmidt, *Gilgamesh: The Life of a Poem*, Princeton University Press, Princeton, NJ, 2019, p. 1 (describing *Gilgamesh* as "the oldest long poem in the world"); *The Epic of Gilgamesh*, trans. Andrew George, Penguin Books, London, 1999. In the poem, Gilgamesh cries out: "O forgemaster! [*Lapidary!*] Coppersmith! Jeweler!" He then commands that Enkidu's statue shall be made with eyebrows of lapis lazuli and a chest of gold. *Ibid.*, p. 65.

120 Homer, *The Iliad*, trans. Robert Fagles, Penguin Books, New York, 1990, pp. 467–487. Virgil similarly describes the shield of another hero, Aeneas, in Book 8 of the *Aeneid*. Virgil, *The Aeneid*, trans. Robert Fagles, Penguin Books, New York, 2006, pp. 241–265. Interestingly, the *Iliad*'s description of the shield is considered the first literary description of a visual work of art—also known as ekphrasis—in Western literature. James A. Francis, "Metal Maidens, Achilles' Shield, and Pandora: The Beginnings of 'Ekphrasis'", *American Journal of Philology*, Vol. 130, No. 1, 2009, p. 6.

121 W. Benjamin, above note 8, p. 169.

122 Charles Cronin, "3D Printing: Cultural Property as Intellectual Property", *Columbia Journal of Law & the Arts*, Vol. 39, No. 1, 2015, p. 21. Cronin further explains that aura "often determines the worth ascribed to an object as much as, if not more than, the combined value of the material of which it is composed and the intellectual effort invested in shaping it".

123 *Ibid.*, p. 22.

124 Katherine McGrath, "Researchers Just Found a Grasshopper in a Van Gogh Painting", *Architectural Digest*, 7 November 2017, available at: www.architecturaldigest.com/story/researchers-just-found-a-grasshopper-in-a-van-gogh-painting.

commented: “Looking at the image of this grasshopper, one can readily imagine Van Gogh struggling with wind, dust, and insects as he created *Olive Trees*.”¹²⁵ Accordingly, an expert copy of a work that perfectly reproduces its form, texture and visual effect could never capture the aura and authenticity of the original because it never endured the same history, nor inhabited the same space, as its archetype.

Benjamin recognized, however, that by enabling the mass production of identical copies, mechanical reproduction threatened to undermine our appreciation of aura and authenticity, and in so doing, radically alter our relationship to original works.¹²⁶ Throughout history, original creations have always been copied—either by students to practice their craft, by artists to disseminate their works, or by opportunists seeking financial gain.¹²⁷ Mechanical reproduction, on the other hand, represented something new and more disruptive.¹²⁸ The philosopher Paul Valéry perceived this as well. In his 1928 essay “The Conquest of Ubiquity”, Valéry observed that “profound changes are impending in the ancient craft of the Beautiful”.¹²⁹ He explained:

In all the arts there is a physical component which can no longer be considered or treated as it used to be, which cannot remain unaffected by our modern knowledge and power. For the last twenty years neither matter nor space nor time has been what it was from time immemorial. We must expect great innovations to transform the entire technique of the arts, thereby affecting artistic invention itself and perhaps even bringing about an amazing change in our very notion of art.¹³⁰

Reproduction degrades the aura and authenticity of originals by displacing them from time and space.¹³¹ Because reproductions do not share the same provenance, nor are they experienced in the same location, as original works, “the technique of reproduction detaches the reproduced object from the domain of tradition”.¹³² Visiting the Parthenon in Athens, for example, is wholly different

125 *Ibid.*

126 See “Mechanical Reproduction”, in Daniel Chandler and Rod Munday (eds), *A Dictionary of Media and Communication*, 2011, available at: <http://tinyurl.com/bdh8vp2u>.

127 See W. Benjamin, above note 8, p. 168.

128 See *ibid.* (“Mechanical reproduction of a work of art, however, represents something new”).

129 Paul Valéry, “La Conquête de l’ubiquité”, *Aesthetics*, trans. Ralph Manheim, Routledge and Kegan Paul, London, 1964, p. 225, quoted in W. Benjamin, above note 8, p. 166.

130 *Ibid.*

131 See, for example, W. Benjamin, above note 8, p. 171; C. Cronin, above note 122, pp. 23–24; M. Young, above note 13. Cronin uses the J. Paul Getty Museum’s *Victorious Athlete* to illustrate this point. He writes: “Imagine the Getty’s bronze Athlete standing among a dozen or more visually and haptically identical copies of it. Each additional copy further undermines the legitimacy of the aura we ascribe to the original; what does it matter that *one* of these ten, twenty, or thirty bronzes was created 2000 years ago if I cannot identify it among the copies?” C. Cronin, above note 122, p. 24 (emphasis in original). Meanwhile, Benjamin further observes that “[t]he uniqueness of a work of art is inseparable from its being imbedded in the fabric of tradition” and that “the unique value of the ‘authentic’ work of art has its basis in ritual, the location of its original use value”. W. Benjamin, above note 8, pp. 173–174.

132 W. Benjamin, above note 8, p. 171.

from visiting its replica in Nashville, Tennessee.¹³³ Every reproduction of the *Mona Lisa* – in art books, on posters and on tote bags – dissipates the aura of the original. Reproduction, however, also emancipates art by removing it from what Benjamin called its “parasitical dependence on ritual”.¹³⁴ The existence of a copy can make art more accessible; the proliferation of copies even more so. As Benjamin remarked, a reproduction “enables the original to meet the beholder halfway”.¹³⁵ Accordingly, the *Mona Lisa* can be enjoyed from the comfort and convenience of one’s home without the need ever to visit the Louvre.¹³⁶

Benjamin also argued that the mechanical reproduction of works – in new formats, such as photography and film – changed how we appreciate the aura and authenticity of original works, and in so doing, transformed how we value art.¹³⁷ When a work of art can be reproduced in identical form and in limitless numbers, authenticity becomes meaningless. No single print from the same photographic negative, for example, is any more “authentic” than another.¹³⁸ Consequently, while the reproduction of original works may make art more accessible, mechanically reproduced works convey no aura and retain no authenticity. In this context, the relevance of originals is lost.

It should be noted that the terms “reproduce” and “reproduction” are often used to mean slightly different things, and the metaphysical – and legal – implications of “reproducing” a work could change depending on which meaning is intended. Sometimes “reproduce” is used to mean “[t]o bring again into material existence; to create or form (a person or thing) again”.¹³⁹ For the purposes of this article, a work reproduced in this sense is produced or created again, like a photograph produced from a negative or a digital work that is executed when its digital file is run. Alternatively, “reproduce” could mean “[t]o produce again in the form of a copy; to replicate (a work of art, picture, drawing, etc.), esp. by means of engraving, photography, scanning, or similar digital or mechanical processes”.¹⁴⁰ Throughout this article, a work “reproduced” in this sense is something that exists as a copy or replica of something else. A photograph or a 3-D digital scan of an extant work, therefore, would be a

133 Metropolitan Government of Nashville and Davidson County, “The Parthenon”, *Nashville.gov*, available at: www.nashville.gov/departments/parks/parthenon.

134 W. Benjamin, above note 8, p. 174. Benjamin explains that art initially served a ritualistic function, first in the service of magic, then of religion.

135 *Ibid.*, p. 170. Benjamin states: “The cathedral leaves its locale to be received in the studio of a lover of art; the choral production, performed in an auditorium or in the open air, resounds in the drawing room.”

136 See, for example, “From the ‘Mona Lisa’ to ‘The Wedding Feast at Cana’: The Salle des États”, *Louvre.fr*, available at: www.louvre.fr/en/explore/the-palace/from-the-mona-lisa-to-the-wedding-feast-at-cana.

137 W. Benjamin, above note 8, pp. 175–176. Benjamin notes that works of art possess both cult value and exhibition value. By enabling works of art to be created or reproduced in quantity, mechanical reproduction freed art from the constraints of ritual, increasing its exhibition value.

138 *Ibid.*, p. 174. Benjamin further asserts that “the instant the criterion of authenticity ceases to be applicable to artistic production, the total function of art is reversed. Instead of being based on ritual, it begins to be based on another practice – politics.” *Ibid.*, pp. 174–175.

139 “Reproduce”, *Oxford English Dictionary*, 3rd ed., 2009, available at: www.oed.com/view/Entry/163098?redirectedFrom=reproduce#eid (definition 2.a.).

140 “Reproduce”, *Oxford English Dictionary*, 3rd ed., 2009, available at: www.oed.com/view/Entry/163098?redirectedFrom=reproduce#eid (definition 1.d.).

reproduction in the sense of a copy, replica or duplicate. Wherever possible, this article will attempt to clarify which meaning is intended.¹⁴¹

Inapplicability of aura and authenticity to digital creations

Like works reproduced through mechanical means—both in the sense of being recreated and being copied—digital creations ostensibly cannot possess aura or authenticity. Stored as code, each version of a digital work is produced in its original form every time its digital file is executed.¹⁴² Consequently, no version (or every version) of a digital work can be easily identified as the original.¹⁴³ As the Tallinn Manual 2.0 anticipates, some digital works will undoubtedly come to be regarded as cultural property.¹⁴⁴ In light of States’ obligation to safeguard and respect cultural property, how will States determine whether a work that may have been recreated constitutes protected digital cultural property?

Before addressing this question, it is important to evaluate the different standards that the Tallinn Manual 2.0 applies to born-digital material and digital surrogates. As discussed in the above subsection on “Types of Digital Property”, several members of the International Group of Experts believed that born-digital material and digital surrogates could be cultural property.¹⁴⁵ With respect to digital surrogates, these experts insisted that not all digital copies of material identified as cultural property are entitled to protection under Rule 142.¹⁴⁶ The commentary to Rule 142 states: “Protection only applies to digital copies or versions where the original is either inaccessible or has been destroyed, and where the number of digital copies that can be made is limited.”¹⁴⁷

This interpretation raises a number of concerns. First, as stated in the aforementioned subsection above, the Tallinn Manual 2.0’s approach seems to preclude the possibility that reproductions of physical objects (a digital photograph, for example, or a 3-D scan of a cultural object) could be protected as

141 For example, “produce again” or “recreate” will be used to indicate the first sense of the definition—to bring again into material existence. “Copy”, “replicate”, or “duplicate” will be used in the second sense—to produce again in the form of a copy.

142 R. Addison, above note 71, p. 15.

143 See E. Ch’ng, above note 106, p. 153 (“There are in fact no mechanisms for authenticating digital copies. Once copied and distributed, there can be no distinction between the first copy and its subsequent copies”). But see Fiona Cameron, “Beyond the Cult of the Replicant: Museums and Historical Digital Objects—Traditional Concerns and New Discourses”, in Fiona Cameron and Sarah Kenderdine (eds), *Theorizing Digital Cultural Heritage*, MIT Press, Cambridge, MA, 2007, pp. 49, 67 (“Like the analog, the materiality of the digital acts as a testimony to its own history and origin, and hence authenticity”). Cameron further notes that the “provenance, chain of origin, and distributive character” of a digital replicant “can be traced, albeit with some difficulty”.

144 Tallinn Manual 2.0, above note 16, Rule 142; see also, for example, H. H. Dinniss, above note 23, p. 232 (noting how some art museums now exhibit digital artworks and some filmmakers now film exclusively in digital mediums); R. Addison, above note 71, p. 4.

145 Interestingly, the Tallinn Manual 2.0 never explicitly states that a majority of the group held this position.

146 Tallinn Manual 2.0, above note 16, p. 535 (“No member of the International Group of Experts taking this position asserted that all digital manifestations of cultural property are entitled to the protection of this Rule”).

147 *Ibid.*

original works themselves – in other words, as born-digital material. Accordingly, the commentary conditions the protection of digital surrogates on the non-existence or inaccessibility of their physical exemplars.

Second, while specifying that protection only applies where the original is either inaccessible or destroyed, the commentary does not explain what “inaccessible” means or even why the inaccessibility or destruction of the physical original is relevant. The commentary’s approach suggests that what is really being protected is the tangible cultural object – the physical creation imbued, as Benjamin asserted, with aura and authenticity – rather than the digital creation.¹⁴⁸ Certainly, a digital surrogate derives its cultural value by reference to a physical analogue, but if virtual objects can convey the same information – and, potentially, evoke the same responses in viewers – as physical objects, arguably they should be protected to the same extent as their referents, whether or not the tangible originals exist or are accessible in the physical world.¹⁴⁹ Moreover, if, as some have argued, objects are only important to the extent that they contain information which can be transmitted in other media, why does the Tallinn Manual 2.0 emphasize the primacy of the physical work over the information that a virtual object encodes?¹⁵⁰

Rule 142 clearly recognizes the cultural importance of digital surrogates; otherwise, the rule would not provide for their protection. However, it is not clear why digital surrogates – and the cultural information they convey – only become meaningful when the original works upon which they were based are lost.¹⁵¹

148 Notably, this approach is consistent with an object-centred view of cultural preservation. As Cameron explains, “[d]iscourses have centered around the status of the digital copy as inferior to its non-digital original, and the potential of the former to subvert the foundational values and meanings attributed to the original. Western concepts of object-centeredness, historical material authenticity, and aura play a central role in upholding this differential relationship.” F. Cameron, above note 143, p. 50.

149 C. Cronin, above note 122, p. 20 (“In the digital age it is increasingly true that the economic and aesthetic value of a cultural artifact is generated more by the information it contains than by the substance in which it is embodied”); Cuseum, *Neurological Perceptions of Art Through Augmented and Virtual Reality*, 2020, available at: <https://tinyurl.com/2p8tn2pw>. See also Sarah Cascone, “Your Brain May Not Be Able to Distinguish a Digital Reproduction of an Artwork from the Real Thing, a New Study Suggests”, *ArtnetNews*, 10 June 2020, available at: <https://news.artnet.com/art-world/brain-digital-art-reproduction-study-1873623>. But see, for example, F. Cameron, above note 143, p. 63. Cuseum’s study on *Neurological Perceptions of Art Through Augmented and Virtual Reality* found that the brains of test subjects did not differentiate between original works of art and digital reproductions. Cuseum, above, p. 1. The study concluded that the electroencephalogram readings of its subjects “would suggest that aesthetic experience is not denigrated by a digital interface representation and, in fact, digital reproductions in the case of augmented reality are shown to improve magnitude of brain activity compared to the viewing of original works of art”. *Ibid.*, p. 5 (emphasis in original). Meanwhile, Cameron argues that real objects carry “deep imaginary power” and hold a “special psychological standing” that virtual objects do not. F. Cameron, above note 143, p. 63.

150 See, for example, F. Cameron, above note 143, p. 51 (citing one museum curator’s belief that objects “are important only in that they contain information that can be communicated through a variety of media”); C. Cronin, above note 122, p. 27 (“The significance of aura to the aesthetic and economic valuations of cultural artifacts can be diminished only if we perceive cultural artifacts as fundamentally works of information rather than tangible relics”).

151 See, for example, F. Cameron, above note 143, p. 54 (explaining that “digital historical objects can potentially be seen as objects in their own right, can play to notions of polysemy, the experiential, and the sensual”).

Possibly, the Tallinn Manual 2.0 does not believe a digital surrogate could be “of great importance to the cultural heritage of every people” when the physical original still exists. Under this approach, “great importance” could only attach to a copy when the original has been compromised – that is, become inaccessible or been destroyed. This interpretation, however, discounts the Cultural Property Convention’s apparent recognition that cultural information, regardless of the medium in which it is encoded, can possess a cultural significance entitling it to protection under the Convention’s legal regime. It also precludes States, which are ultimately responsible for deciding what property in their territory is cultural property, from exercising their discretion to recognize digital surrogates of extant works as digital cultural property.¹⁵² Accordingly, the Tallinn Manual 2.0’s approach to digital surrogates may be more constrictive than the Cultural Property Convention’s protective regime.

Digital material as cultural property

The inapplicability of aura and authenticity to digital works suggests that the preservation of digital cultural property is driven by something other than an interest in preserving original examples of works. By conceptualizing digital cultural property as cultural information, some significant works could be treated as digital data rather than as digital surrogates. These works could then be entitled to cultural property protection as born-digital material.

Protection of cultural information

Notably, the Cultural Property Convention provides for the protection of both culturally significant information and reproductions thereof. The Convention incorporates the protection of cultural information by mandating the protection of manuscripts and books of “artistic, historical or archeological interest”, and of “scientific collections and important collections of books or archives” regardless of their artistic, historical or archaeological interest.¹⁵³ The protection of libraries and archives could be understood as being more broadly related to the preservation of human knowledge.¹⁵⁴ As depositories of learning and experience, these collections serve as records of encoded information.

Arguably, digital surrogates serve a similar function. As Fiona Cameron notes, digital reproductions carry information about an original object’s “form,

152 R. O’Keefe, above note 7, p. 105 (explaining that “article 1 devolves to each Party the discretionary competence to determine the precise property in its territory to which the Convention applies”).

153 Cultural Property Convention, Art. 1(a). The commentary to Rule 142 treats similar digital information – e-government documents and scientific data, for example – as born-digital material and would protect them accordingly. Tallinn Manual 2.0, above note 16, p. 535.

154 Jiří Toman, *The Protection of Cultural Property in the Event of Armed Conflict*, Routledge, London, 1996, p. 52 (remarking that important libraries are protected “probably in the spirit of protecting human knowledge” and that archives offer “irrefutable evidence of the past”).

fabric, shape, aesthetics, and history through interpretation”.¹⁵⁵ Cameron further argues:

In creating a surrogate, the gestures, memories, customs and intentions, and scars of [the original objects’] life histories are faithfully replicated in virtual space taking on the solidity, surfaces, edges, and texture of the real to ensure a more certain recovery of history, time, or aesthetic experience.¹⁵⁶

Digital surrogates, then, could potentially deserve protection as records of cultural information, regardless of the availability or accessibility of the original physical artifact. Instead of being viewed as digital surrogates, they could instead be understood as digital data, a type of born-digital material, entitled to its own protection under Rule 142.

Protection of reproductions

Another argument could be made, however, that digital surrogates merely deserve the same protections already afforded to reproductions under the Cultural Property Convention. The Convention provides that in addition to the examples of movable and immovable property described in Article 1, reproductions of the property outlined in Article 1(a) also constitute cultural property.¹⁵⁷ When the question of reproductions was debated in the Main Commission of the Intergovernmental Conference on the Convention, the French delegate argued that

it was more than ever necessary to preserve reproductions of essential works of art, whether in museums or other places, so that future generations would at least have the opportunity of seeing photographs of such works if the originals had been destroyed.¹⁵⁸

Notably, the protection of these reproductions is not incumbent on the destruction or inaccessibility of the original works. Consistent with this outcome, the protection of digital surrogates arguably should not depend on the existence or availability of their physical counterparts.

It is unclear why the commentary to Rule 142 conditions protection on the ability to limit the number of digital copies that can be made. When the issue of reproductions was debated at the Intergovernmental Conference, photography – a form of mechanical reproduction – was the contemplated method of duplication.¹⁵⁹ Despite the relative ease of producing photographic copies, the Cultural Property Convention contains no limitation on the number of copies that could be

155 F. Cameron, above note 143, p. 55.

156 *Ibid.*

157 Cultural Property Convention, Art. 1(a).

158 Intergovernmental Conference on the Protection of Cultural Property in the Event of Armed Conflict, *Records of the Conference Convened by the United Nations Educational, Scientific and Cultural Organization and Held at The Hague from 21 April to 14 May 1954*, para. 215, cited in J. Toman, above note 154, pp. 53–54.

159 *Ibid.*, para. 215.

produced. Why, then, is the ability to limit the creation of digital copies a consideration for the protection of digital surrogates? The commentary to Rule 142 contends that the reason is related to uniqueness and value. The commentary states:

[D]ue to the high speed and low cost of digital reproduction, once such a digital image has been replicated and widely downloaded, no single digital copy of the artwork would be protected by this Rule. This is because protection of cultural property is afforded based on the value and irreplaceability of the original work of art, and on the difficulty, time, and expense involved in reproducing faithful copies of that original. The logic underlying this Rule does not apply in cases where large numbers of high-quality reproductions can be made.¹⁶⁰

This same logic, however, would seem to preclude the protection of born-digital material, even though the commentary clearly provides for its protection.¹⁶¹ Born-digital creations are, by their nature, capable of being reproduced not just in large numbers, but also in versions of *identical* quality. Furthermore, unlike tangible cultural objects, “original” digital works possess no aura, authenticity or any other intrinsic characteristics capable of distinguishing them from copies. Cronin observes that “aura often determines the worth ascribed to an object as much as, if not more than, the combined value of the material of which it is composed and the intellectual effort invested in shaping it”.¹⁶² Because digital creations possess no aura and comprise no physical material, valuable or otherwise, their worth is largely a reflection of their intellectual achievement. The value and significance that the Tallinn Manual 2.0 attributes to digital originals, then, is largely artificial unless the originals can be readily distinguished. Cronin asserts that “if, using unenhanced perceptive capacities, we cannot distinguish between an original artifact and a copy, it is irrational to prize the unknown original”.¹⁶³ In this context, valuing one digital version over an identical copy seems unwarranted.

Technological options for distinguishing digital cultural property

Direct indicators

One way to distinguish an original work from a copy would be to mark it. In the case of cultural property, the commentary to Rule 142 observes that use of the Cultural

160 Tallinn Manual 2.0, above note 16, p. 536.

161 *Ibid.*, p. 535. It is possible that the International Group of Experts intended to confine the protection of born-digital material to born-digital property in limited circulation. The commentary to Rule 142, however, does not explicitly state this. Moreover, the examples of born-digital property provided in the commentary – i.e., “musical scores, digital films, documents pertaining to e-government, and scientific data” – are not the types of materials that are generally withheld from circulation or guarded against wide distribution.

162 C. Cronin, above note 122, p. 21; see also E. Ch’ng, above note 106, p. 154 (“The value of a certain relic made of stone can potentially outweigh the value of an object made of gold. ... The fact that a historical artifact has value is not a credit to the object itself, but to the intangible properties embedded within the object through past human activities”).

163 C. Cronin, above note 122, p. 26.

Property Convention's distinctive emblem would be appropriate for qualifying digital cultural property.¹⁶⁴ Currently, however, no formal digital marking equivalent of the Convention's distinctive emblem has been established.

In the absence of such an emblem, the commentary suggests that technological solutions such as "file-naming conventions, the use of tagging-data with machine-interpretable encoding schemes, published lists of IP addresses of digital cultural property, or generic top-level domain names" could be used instead.¹⁶⁵ A report produced for the United Kingdom's National Archives suggests that a single form of persistent identifier could be used to verify the authenticity of digital items among galleries, libraries, archives, museums and the commercial sector.¹⁶⁶ A similar form of identifier could conceivably be developed for digital cultural property as well. Alternatively, special digital watermarks could be used to distinguish specific versions of a work as a State's protected copy.

Ch'ng, meanwhile, has proposed that blockchain technology could be employed to identify and validate digital creations.¹⁶⁷ Although Ch'ng's proposal focuses on creating value for digital reproductions of tangible objects, his scheme could potentially be applied to record examples of digital cultural property.¹⁶⁸ Instead of using blockchains to identify the "First Original Copy" of cultural heritage artifacts, States could resort to blockchains to designate certain reproductions as digital cultural property.

Indirect indicators

Additionally, other technologies could be used as indirect indicators of cultural importance. For example, verifiable assets, such as non-fungible tokens (NFTs), are widely advertised as a way to differentiate versions of digital works. In the absence of marking or formal notification of a work's status by a State, verifiable assets could be used as indirect indicators of a digital work's cultural importance.

Created by private actors or institutions rather than States, indirect indicators would not carry the same authority as State-determined designations of digital cultural property, but they could be used to ascertain whether a work might be culturally important. In other words, the existence of indirect indicators, such as NFTs, while not dispositive, could serve as some evidence of a work's significance as digital cultural property. How might verifiable assets be used in this way?

NFTs use blockchain technology to create a unique identifying code that distinguishes a particular digital asset.¹⁶⁹ They essentially function as a certificate

164 Tallinn Manual 2.0, above note 16, p. 536.

165 *Ibid.*

166 R. Addison, above note 71, p. 15. The report proposes that at bit level, hash values or checksums could be used to assess authenticity.

167 E. Ch'ng, above note 106.

168 See *ibid.*, p. 160 ("Through blockchains the instrumental value of digital copies can be greatly increased, as the uniqueness and rarity of copies can be made possible").

169 See, for example, Robyn Conti and John Schmidt, "What You Need To Know about Non-Fungible Tokens (NFTs)", *Forbes*, 14 May 2021, available at: www.forbes.com/advisor/investing/nft-non-fungible-token/;

of authenticity and proof of ownership for a digital work.¹⁷⁰ Ownership of the certificate is recorded on the blockchain, which can be updated to reflect changes in the status of a work.¹⁷¹ Like a physical certificate of authenticity, however, an NFT exists separate and apart from the work it represents. An NFT may contain basic information about the digital work, such as the title and name of the creator, but the work itself typically exists elsewhere on the internet, sometimes on multiple sites simultaneously.¹⁷² To view the work, the owner of the NFT must access its digital file wherever it happens to be hosted online.¹⁷³ Ultimately, ownership of an NFT is nothing more than ownership of the NFT. It does not grant special or exclusive access to its associated work, and the work itself—whether in the form of a JPEG, GIF or other digital format—will generally remain accessible, in identical form, to the multitude of internet users interested in finding it.¹⁷⁴ This arrangement can be somewhat precarious. If, for example, the link to the work becomes broken or the file is removed from the designated domain, access to the work could be lost forever, including for the owner of the NFT.¹⁷⁵

Assigning an NFT to a digital creation can help capture at least some of the mystique and value more commonly associated with original physical works, but

Oscar Gonzalez, “NFTs Explained: These Expensive Tokens Are as Weird as You Think They Are”, *CNET*, 6 April 2021, available at: www.cnet.com/personal-finance/nfts-explained-these-expensive-tokens-are-as-weird-as-you-think-they-are/; J. Thaddeus-Johns, above note 24.

170 See, for example, J. Thaddeus-Johns, above note 24 (“An NFT is an asset verified using blockchain technology, in which a network of computers records transactions and gives buyers proof of authenticity and ownership”); O. Gonzalez, above note 169 (“NFTs offer a blockchain-created certificate of authenticity for a digital asset”).

171 See, for example, Daniel Van Boom, “NFT Bubble: The Craziest Nonfungible Token Sales So Far”, *CNET*, 22 March 2021, available at: www.cnet.com/news/nft-bubble-the-craziest-nonfungible-token-sales-so-far/.

172 See, for example, C. Thompson, above note 24; Jacob Kastrenakes, “Your Million-Dollar NFT Can Break Tomorrow if You’re not Careful”, *The Verge*, 25 March 2021, available at: www.theverge.com/2021/3/25/22349242/nft-metadata-explained-art-crypto-urls-links-ipfs. Sometimes, however, even basic information, such as the title of the work or the name of the artist, isn’t included in the NFT. See J. Kastrenakes, above (explaining that the NFT for Beeple’s *Everydays – The First 5000 Days*, a digital artwork auctioned at Christie’s for a record-setting \$69 million, did not include the name of the artwork or the name of the artist).

173 C. Thompson, above note 24 (“Someone who buys an artwork NFT owns only the NFT”); J. Kastrenakes, above note 172 (“[U]nlike a painting, which can be placed in a buyer’s home, an NFT is more like a piece of paper saying you own something”);

174 See, for example, C. Thompson, above note 24 (explaining that anyone can go to an NFT art site, copy a file, and “then post it to Instagram or Facebook . . . or make it the background on a phone”); J. Kastrenakes, above note 172 (“NFTs use *links* to direct you to somewhere else where the art and any details about it are being stored”) (emphasis in original). See also Emma Bowman, “‘Charlie Bit Me’ Will Remain on YouTube After NFT Auction Switcheroo”, *NPR*, 30 May 2021, available at: www.npr.org/2021/05/30/1001627869/charlie-bit-me-will-remain-on-youtube-after-nft-auction-switcheroo (explaining that a YouTube video which was auctioned off as an NFT would remain on YouTube after initial plans to remove it from the site were reconsidered). The suggestion that “Charlie Bit My Finger” could have been removed from the internet to ensure the auction winner would become “the sole owner of this lovable piece of internet history” indicates not all digital works might remain publicly accessible after the sale of an NFT.

175 See, for example, C. Thompson, above note 24 (explaining that if a site hosting a digital artwork goes down, “the NFT no longer even points to anything”); J. Kastrenakes, above note 172 (commenting that broken links could result in “awfully expensive 404 errors” for buyers of NFTs).

ultimately, NFT technology does not actually solve the conundrum of uniqueness, aura and reproducibility in digital formats. Digital works are essentially generated anew each time their code is run and theoretically can be reproduced (recreated) with exactness *ad infinitum*. This process of regular regeneration essentially shields them from the accretions of time. They are not subject to the vicissitudes of a physical existence in the same way that tangible objects are. They cannot be marked by the effects of weather or contact with human beings. They do not accrue patina. Accordingly, they cannot possess aura and authenticity in the same way as physical works, which exist differently in time and space.

An NFT's ability to signal an individual's special relationship to a work, however, has profoundly changed how the ownership of digital creations is perceived.¹⁷⁶ The minting of NFTs can promote a sense of scarcity for digital works, which in turn has enabled digital creations to be monetized and sold in a way more commonly associated with tangible goods.¹⁷⁷ Accordingly, digital creations that were once cheap or even free can now be bought, sold or exchanged as NFTs, much like physical goods – though, as noted above, an NFT is not synonymous with the work it represents.¹⁷⁸

NFTs have been minted for a broad range of digital creations, including YouTube videos,¹⁷⁹ video clips of NBA basketball games,¹⁸⁰ and internet memes.¹⁸¹ Introduced in 2014, NFTs did not gain widespread attention until relatively recently, and growing interest in them has resulted in extraordinary prices for the assets.¹⁸² In March 2021, for example, Jack Dorsey, the co-founder and CEO of Twitter, sold his very first tweet as an NFT for \$2.9 million,¹⁸³ and Beeple's *Everydays – The First 5000 Days* sold at Christie's for \$69 million, achieving the third-highest auction price for a living artist.¹⁸⁴

176 See, for example, J. Thaddeus-Johns, above note 24; R. Conti and J. Schmidt, above note 169.

177 See, for example, J. Thaddeus-Johns, above note 24; R. Conti and J. Schmidt, above note 169.

178 See, for example, J. Thaddeus-Johns, above note 24 (“Now, artists, musicians, influencers and sports franchises are using NFTs to monetize digital goods that have previously been cheap or free”); R. Conti and J. Schmidt, above note 169 (explaining that NFTs can have only one owner at a time and that their unique data “makes it easy to verify ownership and transfer tokens between owners”).

179 See, for example, Christina Morales, “‘Charlie Bit My Finger’ Is Leaving YouTube After \$760,999 NFT Sale”, *New York Times*, 24 May 2021, available at: www.nytimes.com/2021/05/24/arts/charlie-bit-my-finger-nft-auction.html (reporting that the NFT for a video titled “Charlie Bit My Finger”, one of YouTube's first viral videos, sold for \$760,999 in May 2021).

180 *NBA Top Shot*, available at: <https://nbatopshot.com/>.

181 Erin Griffith, “Why an Animated Flying Cat with a Pop-Tart Body Sold for Almost \$600,000”, *New York Times*, 22 February 2021 (updated 27 May 2021), available at: www.nytimes.com/2021/02/22/business/nft-nba-top-shot-crypto.html (explaining that the internet meme featuring “an animated flying cat with a Pop-Tart body leaving a rainbow trail”, which had been viewed and shared online hundreds of millions of times, was sold on a website dedicated to the sale of digital goods).

182 See, for example, J. Thaddeus-Johns, above note 24; Saniya More, “‘NFT’ Search Volume on Google Hits All-Time High as Platform User Count Nears 400K”, *The Block*, 15 March 2021, available at: www.theblockcrypto.com/linked/98358/nft-search-volume-on-google-hits-all-time-high-as-platform-user-count-nears-400k.

183 Maria Armental, “Jack Dorsey's First Tweet Sells as NFT for \$2.9 Million”, *Wall Street Journal*, 22 March 2021, available at: www.wsj.com/articles/jack-dorseys-first-tweet-sells-as-nft-for-2-9-million-1161645944.

184 S. Reyburn, above note 96; E. Kinsella, above note 25. The two living artists who have achieved higher auction prices for their works are Jeff Koons and David Hockney. S. Reyburn, above note 96.

NFTs, however, can do more than merely transform a fungible item into a saleable non-fungible good. Unique information stored in an NFT’s metadata, by either the work’s creator or its owner, can enhance the perceived value of the asset.¹⁸⁵ A digital artist, for example, can add her signature to the NFT of a digital creation,¹⁸⁶ permanently linking the NFT to the artist in a unique and verifiable way.¹⁸⁷ As one commentator has observed, “[i]n the age of NFTs, downloading a picture is like owning a print. Having the NFT is like owning the original painting.”¹⁸⁸ Others have described ownership of NFTs as granting “digital bragging rights”.¹⁸⁹

Ultimately, however, analogizing the ownership of NFTs to the possession of original physical works is inexact and obscures fundamental questions concerning the nature of digital works and their protection in the event of armed conflict. While the potential to authenticate and record the provenance of digital works may have addressed a lingering concern within the art community, the availability of NFT technology has not necessarily resolved the question of how to treat digital material that may or may not constitute digital cultural property.¹⁹⁰ NFTs, though unique and distinguishable, are not themselves cultural objects that must be protected under the law of armed conflict. Meanwhile, because the digital files they link to remain susceptible to boundless copying, an armed force responsible for respecting and protecting cultural property must still determine how to treat such material. Accordingly, the existence of an NFT may be immaterial to the protection of digital cultural property. On the other hand, NFTs may serve as evidence that a work is considered important and, though perhaps not irreplaceable, that it should be treated as digital cultural property at least as a matter of default.

A proposal to protect digital cultural property in armed conflict

Rule 142 of the Tallinn Manual 2.0 is undoubtedly correct: digital cultural property, like more traditional, tangible forms of cultural property, is entitled to protection in the event of armed conflict. The commentary’s approach to identifying what digital material should be afforded protection, however, reflects an older, perhaps outdated understanding of cultural property that ties priority of protection to economic factors such as scarcity and market value. Laudably, the Tallinn Manual 2.0’s interpretation at least expands the protection of cultural property to some

185 R. Conti and J. Schmidt, above note 169.

186 *Ibid.*

187 J. Thaddeus-Johns, above note 24. See also, for example, R. Conti and J. Schmidt, above note 169.

188 D. Van Boom, above note 171.

189 R. Conti and J. Schmidt, above note 169 (“Collectors value those ‘digital bragging rights’ almost more than the item itself.”). See also E. Griffith, above note 181 (“The buyers are usually not acquiring copyrights, trademarks or even the sole ownership of whatever it is they purchase. They’re buying bragging rights and the knowledge that their copy is the ‘authentic’ one”).

190 See J. Thaddeus-Johns, above note 24 (“The technology also responds to the art world’s need for authentication and provenance in an increasingly digital world”).

non-material forms of heritage, but the suggestion that protection is dependent on “value and irreplaceability”, rather than importance to national heritage, somewhat undercuts the text and purpose of the Cultural Property Convention.¹⁹¹ Moreover, it discounts the impact that digital reproduction has had – or will have – on our conception of cultural property.

Certainly not all digital material – whether new creations or copies of extant works – can or should be protected as cultural property. As with tangible objects, the responsibility for determining, reasonably and in good faith, what constitutes cultural property should be left to States.¹⁹² As discussed above, however, States rarely identify and notify other States of their cultural property prior to armed conflict.¹⁹³ While a territorial State’s failure to identify and notify does not relieve an opposing State of the obligation to respect cultural property in armed conflict, expecting an opposing State to rely on Article 1 of the Cultural Property Convention by default to identify digital cultural property would be a mistake. The nature of digital material is too dissimilar to that of tangible works for Article 1 to serve as a useful and practical guide.

Instead, protecting digital cultural property will require States to clearly identify, possibly mark, and notify other States of the digital material they consider to be part of their national cultural heritage. Blockchain technology or other technological means could be used to record States’ designations of digital cultural property. The process of identification should include both born-digital material and digital surrogates, and identification should not be entirely dependent on the existence or accessibility of originals, or the existence of copies. Finally, if a digital equivalent of the Cultural Property Convention’s distinctive emblem is ever adopted, States should be required to specifically mark their digital cultural property with the emblem so that other States can easily distinguish and respect such property in armed conflict.

Designating born-digital works as cultural property

As Valéry predicted, great innovations have transformed the process and product of artistic invention in the less than a century since his essay on art. Born-digital works, like physical artifacts of the past, have the potential to hold great cultural importance – that is, to be regarded as cultural heritage – for future generations. Accordingly, they deserve to be protected, too, and States should thoughtfully and deliberately identify the digital creations they regard as national cultural heritage.

Because a digital copy of a born-digital original could be indistinguishable from the original, identifying and specifically protecting the “original” work should

191 Tallinn Manual 2.0, above note 16, p. 536.

192 See R. O’Keefe, above note 7, pp. 103–106; Vienna Convention on the Law of Treaties, Art. 26.

193 The identification of cultural property entitled to enhanced protection in accordance with the Second Protocol represents one notable exception. To date, however, a total of only seventeen objects have been granted enhanced protection. UNESCO, “International List of Cultural Property under Enhanced Protection”, 2019, available at: www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CLT/pdf/Enhanced-Protection-List-2019_Eng_04.pdf.

be seen as unnecessary.¹⁹⁴ Instead, retaining a faithful digital reproduction of the work would suffice to preserve it for the future. Issues of materiality, aura and authenticity do not affect our appreciation of digital works in the same way as they do for physical works and therefore should not unduly influence our view of original digital works and their reproductions.

Designating digital surrogates as cultural property

As discussed in the above subsections on “Protection of Cultural Information” and “Protection of Reproductions”, some digital reproductions of physical works, like comparable physical reproductions, also deserve to be recognized as cultural property. Moreover, their protection should not necessarily depend on the existence or accessibility of the physical originals. As records of cultural information, like important collections of books and documents in a library or archive, some copies deserve independent protection as cultural property. Theoretically, copies that can be used to create replicas, on the one hand, and the replicas themselves, on the other, accomplish the same goal: preserving important information about a cultural object. Why, then, the difference in treatment?

Permitting States to designate some digital surrogates as cultural property, regardless of the existence of their physical counterparts, would provide a more coherent and transparent approach to digital cultural heritage preservation. Like the copies of essential works of art discussed at the Intergovernmental Conference on the Cultural Property Convention, these digital surrogates would preserve a simulacrum of the originals in case the originals were destroyed. Consequently, the Tallinn Manual 2.0’s hypothetical one-terabyte, high-resolution image of the *Mona Lisa* might deserve protection as digital cultural property in its own right. Other digital copies of both movable and immovable cultural property, such as the 3-D scan of *David* created by the Digital Michelangelo Project or the data compiled by the Institute for Digital Archaeology to recreate the Triumphal Arch of Palmyra, might similarly be entitled to protection as cultural property.¹⁹⁵

Limitations on which copies qualify as protected cultural property may nonetheless be reasonable. Recognizing a limitation on protection based on the *quality* of the digital surrogate might be a more defensible approach than a

194 See, for example, E. Ch’ng, above note 106, p. 156 (“Copies copied from the First Original Copy are no different in nature and appearance from the original copy and therefore, all copies can be claimed as the First Original Copy”). Ch’ng further explains that while digital watermarking could be used to denote the first copy, digital watermarks easily added to subsequent copies would effectively negate the watermark’s usefulness as an identifier.

195 See, for example, “The Digital Michaelangelo Project”, available at: <http://graphics.stanford.edu/projects/mich/>; Institute for Digital Archaeology, “The History of the Triumphal Arch of Palmyra”, available at: <https://digitalarchaeology.org.uk/history-of-the-arch>. The Institute for Digital Archaeology created a one-third replica of the Triumphal Arch using data from 3-D photographs of the monument and 3-D printing technology. See, for example, Christopher D. Shea, “Palmyra Arch Replica Is Unveiled in Trafalgar Square in London”, *New York Times*, 19 April 2016, available at: www.nytimes.com/2016/04/20/arts/international/replica-of-palmyra-arch-is-unveiled-in-traffic-square.html; Institute for Digital Archaeology, “Building the Arch”, available at: <https://digitalarchaeology.org.uk/building-the-arch>.

limitation based on the availability of the physical archetype. After all, a high-quality “true facsimile” is a better encoder of cultural information than a low-quality copy. The Tallinn Manual 2.0, however, never expressly establishes reproductive quality as a criterion for the protection of digital surrogates. Ultimately, determining which digital surrogates comprise part of a State’s national cultural heritage should be left to individual States to decide, consistent with the process for tangible cultural objects and born-digital material.

Marking of digital cultural property

Intangible, digital material is so fundamentally different from tangible objects that conditioning the protection of digital cultural property on whether it is an “original”, whether it is a copy, or whether many copies of it could be made makes little sense. Rather, attention should be focused on how best to preserve the heritage information encoded by a digital artifact, not how to preserve the “best” – that is, the only or the most authentic – version of the digital artifact. To achieve this, States should clearly designate one example of a digital work to be protected as cultural property, and clearly identify where it is located.¹⁹⁶ One way that States could register State-designated digital cultural property is through the use of blockchain technology; another would be to specifically mark such property. During armed conflict, only the State-designated example, whether a singular example or one of many copies of the work that exist, would be afforded all the protections granted to cultural property. Undesignated copies would not be entitled to the same protections.

Absent reliance on other technologies, the specific marking of protected digital examples could be used to put attackers on notice. Although no digital equivalent of the Cultural Property Convention’s distinctive emblem exists, States could amend the Convention to include a new distinctive digital identifier for digital cultural property or otherwise adopt a special identifier. Article 39 of the Convention outlines the process for revising the treaty.¹⁹⁷ In accordance with Article 39, the new digital identifier could be added to Article 16 as an additional emblem of the Convention, and subsequent articles could be amended to provide for its use.¹⁹⁸

Alternatively, States need not formally amend the Cultural Property Convention to establish a unique digital identifier. For example, when a distinctive emblem for cultural property under enhanced protection was created, States did not resort to amending the 1999 Second Protocol itself. Rather, States established the new emblem and provided for its use by amending the guidelines governing the implementation of the Second Protocol.¹⁹⁹ A similar approach

196 The “technological solutions” described in the Tallinn Manual 2.0 could be used for this purpose. See Tallinn Manual 2.0, above note 16, p. 536.

197 Cultural Property Convention, Art. 39.

198 *Ibid.*, Arts 16, 17.

199 Second Protocol to the Hague Convention of 1954 for the Protection of Cultural Property in the Event of Armed Conflict, Sixth Meeting of the Parties, CLT-15/6.SP/CONF.202/Decisions, 18 January 2016. The

could be taken to designate a special digital identifier for digital cultural property. Absent the adoption of a distinctive digital identifier, other direct indicators, such as digital watermarks and persistent identifiers, could also be used to signify that a State has explicitly identified a digital work to be of great importance to its cultural heritage and, by extension, to the cultural heritage of the world.

Conclusion

The Cultural Property Convention begins by recognizing not only that cultural property has suffered grave damage in armed conflict, but also that “developments in the technique of warfare” have placed cultural property in “increasing danger of destruction”.²⁰⁰ These observations remain applicable today, though perhaps in ways the drafters did not anticipate. The cultural property at risk in armed conflict now includes digital cultural property, and the means of warfare that have made such property vulnerable incorporate the use of cyber capabilities.

As an emerging and largely unfamiliar form of cultural heritage, digital cultural property is something of an enigma. Rule 142 of the Tallinn Manual 2.0 explicitly recognizes that States’ responsibility to respect and protect cultural property extends to digital cultural property, but how—and even to some extent why—States must safeguard digital works remains unsettled. Realizing the protective purpose of the Cultural Property Convention regarding digital cultural property will require States to consider and resolve as-yet undecided questions concerning the nature of digital works and the reasons why certain works should be preserved.

Undoubtedly, digital creations of great importance to the cultural heritage of every people deserve to be protected. These works, whether born-digital or created as digital surrogates, fall within the scheme of protection established by the Cultural Property Convention. The intangible nature of digital creations and their susceptibility to exact and prolific copying, however, demands that States play a more active and decisive role in identifying works they consider digital cultural property. The protection of cultural property requires not only that States respect cultural property, but also that they take measures to safeguard it in times of peace.²⁰¹ Should States fail to safeguard digital cultural property by identifying relevant works, notifying others of those works, and potentially marking them with a special identifier, the consequences for the world’s cultural heritage in the next armed conflict could be grim—and, as the Cultural Property Convention reminds us, entirely foreseeable.

new emblem, created “for the exclusive marking of cultural property under enhanced protection”, would help distinguish cultural property under general and special protection (p. 4).

²⁰⁰ Cultural Property Convention, Preamble.

²⁰¹ *Ibid.*, Arts 2–4.