REN YATSUNAMI*

A DISCUSSION OF DIGITAL INFORMATION RELATING TO CULTURAL HERITAGE WITH REGARD TO AUTHENTICITY MANAGEMENT[1]

1. Introduction

The international conference "The Challenges of World Heritage Recovery", which was held at the Royal Castle in Warsaw on 8 May 2018, adopted the document titled "Warsaw Recommendation on Recovery and Reconstruction of Cultural Heritage" (hereinafter: Warsaw Recommendation).[2] There are countless examples of items of cultural heritage being damaged by natural disasters, armed conflicts, and other factors, leaving no room for doubt as to the significance of the principles provided in the Warsaw Recommendation. From the perspective of this article, it is especially noteworthy that para. 10 of the Warsaw Recommendation highlights the need to be conscious of "the new possibilities offered by evolving technologies, in particular for very high-definition 3D digital recording and reproduction of material attributes of cultural heritage properties, and of the ethical challenges that this poses in relation to their possible reconstruction."[3]

The application of evolving technologies for creating, storing, and utilizing digital information on cultural heritage has recently been promoted. The importance of the consciousness of the evolving technologies manifested by the Warsaw Recommendation is not limited to the context of recovery and reconstruction.

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2 UNESCO World Heritage Center, Ministry of Culture and National Heritage of the Republic of Poland, "Warsaw Recommendation on Recovery and Reconstruction of Cultural Heritage", 8 May 2018, available at: https://whc.unesco.org/en/documents/168799 (accessed: 25.04.2024).

3 *Ibidem.*

Members of the Permanent Committee of Emerging Professionals of ICOMOS Japan (hereinafter: EPJP members), including the author, share this concern and have determined to take the themes of authenticity management in the age of digital transformation for academic events. From 2023, EPJP members have organized the "Seminar Series on Authenticity," in which the project's principal investigator is Hiroki Yamada, a senior assistant professor at the Research Institute of Cultural Properties of Teikyo University, Japan.[4] As the fourth seminar in the series events, the principal investigator Yamada, Rumi Okazaki, an associate professor at Shibaura Institute of Technology's School of Architecture, and the author co-organized the webinar titled "Authenticity of Cultural Heritage in the Digital Age" on 18 November 2023. It attracted some attention in the expert networks in the field of cultural heritage,[5] but because of the complexity of the topic, comments expressed in the webinar event showed expectations for follow-up research activities in the medium to long term. In this context, this paper intends to develop a few thoughts on digital information about cultural heritage in relation to the concept of authenticity.

2. Digital information of cultural heritage and authenticity

2.1. Impact on the practices for preserving cultural heritage

Let us suppose there is a historic building, and it has been repaired in the past. As a result of the repair works, the original materials remain in the larger part of the building, but new materials have been installed in a few spots. If sufficient time has passed for aging, it may become difficult for human eyes to distinguish which material has been installed later, in comparison with the original materials. However, documentation of such repair records shall be secured in the conservation practices, as explained in the ICOMOS "Principles for the Recording of Monuments, Groups of Buildings and Sites".[6] Thus, methods for preserving repair records for future

[4] This research project was supported by "Grant for Collaborative Research in Humanities and Social Sciences", a research grant by the Suntory Foundation (Research No.28 of 2023, the principal investigator: Hiroki Yamada).

[5] For example, in the field of cultural tourism, the seminar had an impact on course materials for the capacity building program for tourist site managerial talents that are developed by the Waseda University Academic Solutions Corporation. See: Waseda University Academic Solutions Corporation, *Post Korona Jidai Ni Okeru Kankochi Keiei Jinzai Ikusei Jigyo: Jigyo Jisshi Hokokusho* [Report on the Tourist Site Managerial Talent Development Project in the Post-COVID Era], March 2024, available at: https://www.mlit.go.jp/kankocho/content/001741058.pdf (accessed: 25.04.2024).

[6] ICOMOS, "Principles for the Recording of Monuments, Groups of Buildings and Sites", October 1996, available at: https://www.icomos.org.tr/Dosyalar/ICOMOSTR_en005776200158738018 2.pdf (accessed: 25.04.2024).

generations have been developed over the years, including the use of completion photographs, completion drawings, computer-aided design (CAD), and so on.

As technology advances for creating and managing digital records of cultural property, the amount of available information in repair records will increase, and the accuracy of those records will become better secured.[7] Digital records will also open the door to non-specialist communities being involved in creating, interpreting, and using those records in various sectors.[8] The inclusive discussion forum about heritage conservation is important considering that one of the five strategic objectives, the so-called 5Cs, includes "Communities" in the World Heritage Policy Compendium. The development of digital heritage documentation has the potential to promote inclusive dialogues of heritage conservation by providing versatile data on the conditions of authenticity.

2.2. Digital information concerning the attributes of authenticity

The International Charter for the Conservation and Restoration of Monuments and Sites (hereinafter: the Venice Charter) was adopted by ICOMOS in 1964. The preamble of the Venice Charter underlines the duty to hand on the historic monuments "in the full richness of their authenticity." Although the term "authenticity" appears in the phrase, the rest part of the Venice Charter does not provide any clue on the definition of authenticity.

Afterwards, the concept of authenticity gradually developed in the history of adopting and revising the Operational Guidelines for the Implementation of the World Heritage Convention (hereinafter: Operational Guidelines). The Operational Guidelines are revised periodically, and the latest version was adopted in 2023. In the context of the development of the authenticity concept, the versions of 1978, 1980, and 2005 are considered to be the milestones.[9]

With the first adoption of the Operational Guidelines, the concept of authenticity was introduced in the world heritage evaluation framework in 1978, having been influenced by the American National Register of Historic Places in which the

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[7] A. Noguchi, "Korekara No 3D Kokogaku: Kesoku, Bunseki, Katsuyo" [General Remarks Perspective of 3D Archaeology: Measurement, Analysis and Utylization], *Kokogaku Journal* [Archaeological Journal] 2024, no. 791, pp. 3–4.

[8] S. Nakazono, "3D Kokogaku No Shinjidai Ni Omou" [Thoughts on the New Era of 3D Archaeology], *Kokogaku Journal* [Archaeological Journal] 2024, no. 791, p. 1.

[9] H. Yamada, "'Sekaiisan Joyaku Riko No Tameno Sagyoshishin' Ni Okeru Authenticity Ni Kansuru Kijutsu No Hensen Keii: Authenticity No Zokusei To Sono Atsukai Ni Chumoku Shite" [The Evolution of the Description of Authenticity in 'Operational Guidelines for the Implementation of the World Heritage Convention': Focusing on Attributes of Authenticity and its Use], [in:] *Gakujutsu Koen Kogai Shu 2024* [Summaries of Technical Papers of Annual Meeting 2024], Nippon Kenchiku Gakkai [Architectural Institute of Japan], Tokyo 2024.

integrity concept works as a qualifying condition.[10] Paragraph 9 of the Operational Guidelines of 1978 stipulates, "the property should meet the test of authenticity in design, materials, workmanship and setting."

Under the Operational Guidelines of 1980, in order to prove the outstanding universal value, the nominated monument, group of buildings, or site is required to meet one of the criteria listed in para. 18(a) and evaluated through the test of authenticity stipulated by para. 18(b). Then, para. 18(b) adopts the phrase "the test of authenticity in design, materials, workmanship or setting". Compared to the version of 1978 and that of 1980, the role of four attributes changed from accumulative to selective requirements.

In the development of authenticity, the Nara Document on Authenticity, adopted in 1994, played a significant role. Its impact resulted in the adoption of the Operational Guidelines of 2005. Under the Operational Guidelines of 2005, the nominated property, in order to be deemed to have outstanding universal value, must meet at least one of the criteria listed in para. 77, and pursuant to para. 78, it "must also meet the conditions of integrity and/or authenticity." For the conditions of authenticity, its para. 82 states "properties may be understood to meet the conditions of authenticity if their cultural value (as recognized in the nomination criteria proposed) are truthfully and credibly expressed through a variety of attributes". As the attributes to be considered, the same paragraph enumerates "form and design; materials and substance; use and function; traditions, techniques and management systems; location and setting; language, and other forms of intangible heritage; spirit and feeling; and other internal and external factors". However, the challenges for the State Parties to clarify the concept of authenticity for implementation still remain. Herb Stovel states, "[a]lthough the requirements for authenticity and integrity are spelled out in great detail in the 2005 Operational Guidelines, many States Parties have not well grasped what is being requested".[11]

The conditions of authenticity, including the attributes enumerated above, remain under the Operational Guidelines of 2023. Thus, a question may be raised as to how advanced technologies concerning the digital information of cultural heritage affect heritage management works to preserve the conditions of authenticity.

Recent examples in 3D point cloud documentation of historic sites may be worth noting when examining this question.[12] In the field of geography, the Digital Elevation Model (DEM), or the Digital Terrain Model (DTM), has progressed to

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[10] H. Stovel, "Effective Use of Authenticity and Integrity as World Heritage Qualifying Conditions", *City and Time* 2007, vol. 2, no. 3, p. 23.

[11] *Ibidem*, p. 22.

[12] Y. Takata, R. Nakamura, A. Noguchi, "Koku LiDAR Ni Yoru Shosai Iseki 3D Tengun Kesoku To Bunkazai Digital Twin" [3D Point Cloud Documentation of Archaeological Site with Airborne LiDAR and Cultural Heritage Digital Twin], *Kokogaku Journal* [Archaeological Journal] 2024, no. 791, pp. 5–9.

meet the need for 3D terrain information. In recent years, the methods of mounting Light Detection and Ranging (LiDAR) scanners on Unmanned Aerial Vehicles (UAV), or so-called drones, have been developed, and such remote sensing methods can be used to measure cultural heritage sites at less cost. Accordingly, even in the event that a historic site is located in forests or mountainous areas with steep terrain, surveys to measure the site and its surrounding environment have become possible by applying the UAV-LiDAR measurement.[13] In relation to authenticity, the digital information accumulated by UAV-LiDAR for the purpose of cultural heritage documentation may affect the assessment of "location and setting" and "form and design."

Attention may also be paid to the advanced application of Building Information Modeling (BIM) for managing cultural heritage archives. In BIM data, information about each part of the building's material, use, condition, and any other aspects can be recorded as attribute information. In this sense, BIM provides not only 3D recording of the forms and structure but also archives for multidisciplinary purposes. Since it is possible to add important information from archaeology or architectural history viewpoints, 3D models suitable for cultural heritage archives can be created and recorded. In the case of a 3D model of a building with a tile roof, each partial data on a set of roof tiles can include digital records about the name of its style, the origin of its materials, the year of its production, and so on.[14] Thus, BIM models demonstrate the clear possibility of providing greater information in relation to authenticity assessments, especially concerning "form and design," "materials and substance," "use and function," "traditions," and "location and setting." In this sense, one of the next challenges for cultural heritage law should be how to develop international standards for digital documentation data, including 3D point cloud, BIM models, and so on.

3. Metaverse and authenticity

3.1. Metaverse projects on cultural heritage

On 10 December 2022, Hiroyuki Kimura, a project professor at Kyoto Institute of Technology, and the author as EPJP members co-organized a webinar for the

[13] *Ibidem.*

[14] Y. Kuwayama, "Shiseki Fukugen BIM To Shiseki Metaverse De Miryoku Aru Machizukuri" [H-BIM and H-Metaverse for Attractive Community Development], *Nara Bunkazai Kenkyusho Kenkyu Hokoku 37: Digital Gijutsu Ni Yoru Bunkazai Joho No Kiroku To Rikatsuyo* [Nara National Research Institute for Cultural Properties Research Reports 37: Recording and Utilization of Cultural Property Information via Digital Technologies] 2023, vol. 5, pp. 182–189.

purpose of discussing the effects that the development of metaverse-related technologies will have on the debate over authenticity in cultural heritage.[15] Nowadays, various metaverse projects have been established in relation to activities on cultural heritages.[16] For example, the project Hoian Metaverse, created and operated by the Institute of International Culture at Showa Women's University under the leadership of Hiromich Tomoda, was introduced during the webinar, and its team gave a demonstration there. As another example, J-heritage, a Japanese NPO operating heritage tourism events, organized an exhibition in July 2021, providing a virtual reality experience relating to Japanese industrial heritages in cooperation with Hacosco and Taiyo Kikaku, companies with expertise in metaverse technologies.

In recent years, there has been an increasing number of cases where cultural heritage digital information on the metaverse is used to support activities in the real world. For instance, collaboration between UNESCO and Google Arts and Culture enriches the range of information and services related to cultural heritage on Google's platforms. The interoperability between Google apps is also constantly being updated, so it may be possible in coming years to immerse ourselves seamlessly in digital museums while taking a walk in Street View.[17] The link between activities in the metaverse and the real world can be further strengthened through the function of "share," "like," and so on, which results in higher immersion in heritage digital galleries or digital twins . Users' immersion in digital galleries actually attracts attention in the context of tourism and education.[18]

As the interrelationship between the metaverse and reality grows stronger, a question may be raised as to whether cultural heritage digital twins should also be required to maintain authenticity from the viewpoint of cultural heritage law. In the medium term, it would be possible to discuss how international standards specific to cultural heritage digital data can be established regarding the accuracy of 3D point cloud data and the management of version history for facilitating the implementation of conventions on cultural heritage. In the long term, if buildings or monuments that exist only in the metaverse increase their historical value in

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15 R. Yatsunami, H. Kimura, Y. Nishimura, "Nippon ICOMOS EP Webinar Series 'Ghost in the Heritage 2045: Metaverse To Bunkaisan' " [ICOMOS Japan EP Webinar Series 'Ghost in the Heritage 2045: Metaverse and Cultural Heritage'], *Japan ICOMOS Information* 2023, vol. 12, no. 5, p. 17.

16 Y. Kuwayama, "Shiseki Fukugen BIM…", pp. 182–183.

17 N. Proctor, "The Google Art Project: A New Generation of Museums on the Web?", *Curator: the Museum Journal* 2011, vol. 55, issue 2, pp. 215–221.

18 Y. Zheng *et al.*, "The Development and Performance Evaluation of Digital Museums toward Second Classroom of Primary and Secondary School Taking Zhejiang Education Technology Digital Museum as an Example", *International Journal of Emerging Technologies in Learning* 2019, vol. 14, no. 2, pp. 69–84.

a future society, experts may possibly face the need to discuss whether they should be legally recognized as cultural heritage.

3.2. Authenticity in a society in which humans, post-humans, and AI co-exist

Rodney Harrison critically describes the process that led to the emergence of cultural landscapes and intangible heritage concepts as "the creative 'friction' between the particular set of Euro-American ideas about heritage embodied in the World Heritage Convention and alternative Indigenous and non-Western concepts of heritage."[19] With such an observation, Harrison points out that Cartesian dualisms remain in the cultural heritage instruments "that hold nature and culture, and matter and mind, to be separate."[20]

Harrison's critiques seem to raise even more serious challenges to cultural heritage law in the era of the metaverse, especially an era when post-humans or cyborgs often appear in society. Post-humans with bio-hacking methods in their brains and body parts may enjoy the objects, including the heritage digital twins in the metaverse as real, feeling the smell of space, a gentle breeze caressing their cheeks, and voices echoing in the heritage site. When the amount of digital information exceeds a certain level, the metaverse experience may create an emotional impact appealing to human sensibilities, allowing users to observe or feel the attributes of authenticity as if the digital twins of heritage are real objects. Then, the dichotomy between natural and cultural heritage, tangible and intangible heritage, and integrity and authenticity may need to be reconsidered in the field of cultural heritage law.

Furthermore, in society some robots with AI may be so sophisticated that they are indistinguishable from humans or post-humans. Accordingly, the actors in the communities that enjoy cultural heritage may become more diverse in the future. From this viewpoint, the comprehensiveness of Harrison's dialogical model, which sees "heritage as emerging from the relationship between a range of human and non-human actors and their environments,"[21] would be even more helpful in order to examine the role of heritage communities in the near future.

Edward Tylor elaborates on the concept of animism, seeing it as an idea closely related to the dualism between human and non-human.[22] Harrison explains Tylor's animism as "an ontology in which the Cartesian dualism of mind and matter does

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19 R. Harrison, *Heritage: Critical Approaches*, Routledge, London 2013, p. 204.

20 *Ibidem.*

21 *Ibidem.*

22 Edward Tylor explains he borrowed the term from Georg Ernst Stahl's idea that can be seen as "a revival and development in modern scientific shape of the classic theory identifying vital principle and soul". E. Tylor, *Primitive Culture*, vol. 1, Cambridge University Press, Cambridge 1871, p. 385.

not exist, as there is no separation between the spiritual and material world."[23] Discussions of techno-animism consider how humans and non-humans will interact in the near future,[24] and these have implications for discussing the diversification of cultural heritage communities. In this context, it is also possible to recall Gilbert Ryle's phrase the "ghost in the machine" as a criticism of the Cartesian dualism of mind and body.[25] The phrase the "ghost in the machine" was taken as the title of a book by Author Koestler; in it the concept of the holon, which sees everything both as a whole and a part, also appears.[26] While the dichotomy between natural and cultural heritage and the distinction between tangible and intangible concepts are challenged, the question may also arise as to how the tension between authenticity and integrity should be reconceptualized. If it is essential for both integrity and authenticity to measure the ability of heritage to communicate its value to people, their conditions concerning such ability might be captured with an alternative integrated concept derived from a critical view like that of the "ghost in the heritage" in future heritage conservation framework, in line with overcoming remaining dualisms in cultural heritage law.

4. Conclusions

As digital information on cultural heritage becomes more sophisticated, complex challenges that were not anticipated under the current cultural heritage laws will likely arise. Hence, cultural heritage and digital archive experts are expected to work together to contribute toward standard-setting authorities at the national and international levels.

As an example, policy development on digital archives in Japan shows a clear connection with the work of museums and galleries, although it has not resulted in the establishment or revision process of specific rules within heritage law.[27] In this context, the Japan Society for Digital Archive has played an important role in providing forums of discussion through a series of roundtable meetings and symposiums about the issues of digital archives. On 3 August 2022, it held the first meeting of

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[23] R. Harrison, *Heritage*…, p. 204.

[24] T. Okuno, *Ningen, Dobutsu, Kikai: Techno-animism* [Human, Animal, Machine: Techno-animism], Kadokawa, Tokyo 2002, p. 45.

[25] G. Ryle, *The Concept of Mind, 60th Anniversary Edition*, Routledge, London 2009, p. 11.

[26] A. Koestler, *The Ghost in the Machine*, Hutchinson & Co., 1967, reprinted edition by Lightning Source in 1982, pp. 45–58.

[27] K. Oyama, "'Digital Archive Kensho' To Seisaku Teigen" ['Digital Archive Charter' and Policy Recommendations]," *Digital Archive Gakkaishi* [Journal of the Japan Society for Digital Archive] 2024, vol. 8, no. 1, pp. 36–40.

the "Roundtable for Creating Together the Digital Archives Charter".[28] Following that, the Japan Society for Digital Archive continued its efforts by holding a second roundtable meeting on 11 October 2022 and a third one on 26 November 2022.[29] Afterwards, on 6 June 2023, the Japan Society for Digital Archive adopted the "Digital Archive Charter." These efforts by experts on digital archives were recognized by the Japanese government, resulting in the Basic Policy on Economic and Fiscal Management and Reform 2023 (hereinafter: Basic Policy 2023).[30] According to it, the function of the National Archives of Japan is to be strengthened by a "promotion of digital archiving of official documents and materials held by the National Archives of Japan, museums and art galleries, etc." (footnote 154 of the Basic Policy 2023).

Observing the digital archives experts' attention to cultural heritage management, collaboration between their networks and the networks of cultural heritage experts such as ICOMOS and ICCROM could be enhanced through digital documentation of heritage. According to the 2020 survey, 37 percent of the international ICOMOS Emerging Professionals Working Group members are architects or have expertise in architecture.[31] Twenty-six percent have expertise in cultural heritage, in landscape, or in world heritage, and 13 percent are archaeologists.[32] In order to promote the discussion over the application of emerging technologies to the practice of authenticity management of cultural heritages, collaborative research activities and information sharing among experts from further diverse backgrounds would be desirable.

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[28] The records of roundtable meetings and symposiums organized by the Japan Society for Digital Archive are available at: https://digitalarchivejapan.org/advocacy/charter/kenshoentaku/ (accessed: 25.04.2024).

[29] *Ibidem.*

[30] "Basic Policy on Economic and Fiscal Management and Reform 2023", Cabinet Decision on 16 June 2023, English translation available at: https://www5.cao.go.jp/keizai-shimon/kaigi/cabinet/honebuto/2023/2023_basicpolicies_en.pdf (accessed: 25.04.2024).

[31] ICOMOS Emerging Professionals Working Group, "ICOMOS EPWG Information Package" 2020, p. 33, available at: https://www.icomos.org/images/DOCUMENTS/Working_Groups/EPWG/EPWG_Information_Pack_2020_English.pdf (accessed: 25.04.2024).

[32] *Ibidem.*

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SUMMARY

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The "Warsaw Recommendation on Recovery and Reconstruction of Cultural Heritage" in para. 10 highlights the need to be conscious of "the new possibilities offered by evolving technologies, in particular for very high-definition 3D digital recording and reproduction of material attributes of cultural heritage properties". In fact, increased examples of projects for creating and managing digital information on cultural heritage attract attention. This paper intends to develop a few thoughts on digital information about cultural heritage in relation to the concept of authenticity. For this purpose, it discusses how advanced technologies concerning the digital information of cultural heritage affect heritage management works to preserve the conditions of authenticity, elaborated mainly in the instruments on world heritage conservation. Also, the paper examines possible impacts that the development of metaverse technologies may have on the tension between authenticity and integrity and other dualistic concepts.

Keywords: authenticity, cultural heritage, digital information, metaverse

STRESZCZENIE

Ren Yatsunami

DYSKUSJA NAD INFORMACJĄ CYFROWĄ ZWIĄZANĄ Z DZIEDZICTWEM KULTURY W ODNIESIENIU DO ZARZĄDZANIA AUTENTYCZNOŚCIĄ

Rekomendacja warszawska w sprawie odbudowy i rekonstrukcji dziedzictwa kulturowego w punkcie 10 podkreśla potrzebę bycia świadomym „nowych możliwości, jakie stwarzają rozwijające się technologie, w szczególności w zakresie cyfrowego zapisu 3D i odtwarzania w wysokiej jakości materialnych atrybutów dóbr dziedzictwa kulturowego". W rzeczywistości coraz więcej projektów tworzenia i zarządzania cyfrowymi informacjami na temat dziedzictwa kultury przyciąga uwagę. Niniejszy artykuł ma na celu rozwinięcie kilku przemyśleń na temat cyfrowych informacji o dziedzictwie kulturowym w odniesieniu do koncepcji autentyczności. W tym celu omówiono, w jaki sposób zaawansowane technologie dotyczące cyfrowych informacji o dziedzictwie kulturowym wpływają na zarządzanie tym dziedzictwem w celu zachowania warunków autentyczności, opracowanych głównie w instrumentach ochrony światowego dziedzictwa. W artykule przeanalizowano również możliwy wpływ rozwoju technologii metawersji na napięcie między autentycznością a integralnością i innymi dualistycznymi koncepcjami.

Słowa kluczowe: autentyczność, dziedzictwo kultury, informacja cyfrowa, metawersja