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Editorial: A Special Issue on Digital Cultural Heritage, AI, and Authenticity

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The integration of artificial intelligence (AI) into the field of cultural heritage is rapidly reshaping how heritage representations are produced, interpreted, and experienced. As AI-generated reconstructions and analyses become more prevalent, the concept of authenticity is being redefined in ways that challenge established norms and frameworks. This evolving intersection calls for renewed critical attention to the cultural, technological, regulatory and ethical dimensions of heritage in the digital age. These shifts necessitate not only updated theoretical frameworks but also highlight the need for interdisciplinary collaboration among fields such as communication studies, law, computer science, anthropology, heritage studies, and cultural studies. Understanding how technologies branded as AI alters the ways heritage is interpreted and communicated is essential for reflecting on how cultural meaning is produced and reshaped in the digital age.

At a time when many heritage sites and objects face threats – including from climate change, conflicts, or the loss of cultural continuity – AI offers powerful tools for preservation and regeneration. Yet as these tools can also produce new artifacts, they raise critical questions about authorship, truth, and the potential for misrepresentation, thereby challenging long-standing assumptions about authenticity, authority, sovereignty, and agency in cultural heritage. There is a growing urgency to engage critically with the role of AI in cultural heritage, particularly given the accelerating pace at which these technologies are being developed and implemented – often before appropriate governance and oversight mechanisms are in place.

This special issue of *Culture Unbound* explores the convergence of cultural heritage, AI, and the concept of authenticity, bringing together a collection of interdisciplinary perspectives that engage critically with this emerging field of inquiry. As AI technologies are rapidly evolving and find applications across virtually every domain, their integration into the field of cultural heritage is promising but also challenging. From the analysis of historical documents or classification of artifacts to the simulation or reconstruction of heritage sites, digital restoration of artworks

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and generation of images, various machine learning applications, colloquially known as AI are reshaping the way we engage with the past. The phenomenon of mediated pasts is certainly not new, but the scale at which synthetic images are generated and circulated on social media and search engines is unprecedented (Stjernholm, Eriksson & Mohammadi Norén 2025). As these technologies become more sophisticated, they offer powerful tools for representing and engaging with heritage, especially in cases where physical artifacts, sites or traditional knowledge and memories are damaged, dispersed, evaporating or even lost.

However, these opportunities also give rise to important questions. AI systems, particularly those based on deep learning, do not simply recreate the past. Rather, they reconstruct and potentially reimagine it, often through processes rooted in statistical prediction rather than historical or cultural context. In doing so, AI systems may introduce new forms of representation that appear convincing, yet are shaped by the biases, limitations, and assumptions embedded in their training data, algorithms, and statistical principles. For instance, artistic works or cultural historical artefacts that do not conform to Western canons may be excluded from the data used to train machine learning models (Wasielewski, 2024). Furthermore, text-to-image generation models tend to produce certain styles, such as photorealism, due to the selection of training data and the way these models detect and reduce shapes, colour, and texture (Munster, 2025: 70–71). Importantly, AI operations are embedded in more-than-human dynamics. While humans are involved in choosing and labelling training data and designing machine learning models, the models themselves often operate inductively and independently in opaque, abstract spaces. They learn from data and might become creative. The outcomes of these operations are then perceived, experienced, and evaluated by both humans and machines. These more-than-human agencements (Munster, 2025) or entanglements (Thylstrup et al. 2022) create new types of heritage representations.

Even before the advent of AI and machine learning applications, authenticity was a contested concept. Within cultural studies, for example, authenticity has been criticised for promoting an essentialist view of cultural identity as fixed and unaffected by social and cultural change and interaction. While authenticity cannot be so easily discarded in the heritage sector, a new generation of critical heritage studies scholars have nevertheless begun to question the cult of authenticity surrounding cultural objects in dominant heritage discourses. Both critical scholars and heritage conventions, such as the NARA Document on Authenticity, are increasingly recognising the importance of the values and intangible aspects of heritage in how authenticity is conceived. Gao and Jones (2021) argue that authenticity depends on active interventions, including people's meaningful and emotional relationships with dynamic heritage. The acknowledgement

and incorporation of community values is also crucial for achieving a sense of authenticity in the production of digital representations of objects and heritage sites (see Jones et al. 2018). In the context of digital replicas and reconstructions, the authority and credibility of the institutions and professional experts involved, as well as legal ownership, impact how authenticity is perceived. Furthermore, how authenticity is conceived depends on the replica's quality, and accuracy, as proven by processual transparency and methodological accountability (cf. Di Giuseppantonio, Di Franco, Galeazzi & Vassallo 2018). From a legal-philosophical perspective, authenticity is not a fixed property of an object or subject but a condition of recognition — one that takes shape through interpretive and contextual processes rather than intrinsic qualities. In this view, legal authenticity depends on narrative intelligibility and accountability, raising questions about how AI-generated cultural heritage reconstructions frame and convey cultural belonging and human agency. (Wojciechowski 2024) In this context, it is important to further acknowledge that authenticity also depends on meaningful community participation in the interpretation process. Without such participation, AI-generated, or otherwise externally produced representations risk disconnecting the representation from its cultural meaning or belonging.

This special issue addresses the implications of AI-generated heritage representations in relation to authenticity. It comprises five articles and a featured contribution, highlighting a range of approaches to this topic, which invites insights from various areas of academic enquiry. The contributions in this special issue underscore the need for a deeper understanding of how authenticity and its relation to human agency, is conceptualised and contested across cultural, technological, and disciplinary contexts. They engage with the idea that authenticity may no longer be solely a human concern, as algorithmic systems begin to influence what is preserved, how it is represented, and for whom it holds meaning. Hence, the traditional anthropocentric view of humans as the sole custodians and interpreters of culture and heritage is challenged as more-than-human actors are involved

By approaching authenticity as a contested concept, and considering how AI technologies complicate its interpretation, the contributions in this special issue engage with the conceptual, practical, and ethical challenges of representing heritage in the context of artificial intelligence. In doing so, this issue aims to contribute to a more informed and inclusive dialogue about the role of AI in the future of cultural heritage.

Taken together, the articles suggest that the use of AI amplifies the social aspects of authenticity emphasised in studies of digital representations and replicas. Using AI technologies to curate or generate heritage displays brings the experience-based, relational, and affective aspects of authenticity to the fore. The authority of the institutional framework becomes more central. But it also becomes

more vulnerable. The same is true of the trust that this generates. AI must therefore be implemented in a way that maintains public trust in cultural heritage institutions (Aavaranta et al. 2026). The need for transparency and openness is even more crucial because of the interaction between human and machine agents. Moreover, new power dynamics emerge when heritage institutions rely on commercial models and businesses (Atmadiredja et al. 2026). The articles also emphasise the need for new ethical guidelines and practices, particularly when the heritage of minorities and indigenous communities is involved. Technology must align with source communities' priorities and values, and rights must be upheld (Stuhldreier and Fredriksson 2026). To protect the cultural integrity, effective governance structures must ensure the transparent and respectful application of technology (Ballardini et al. 2026).

Kicking off the issue, "Navigating the Ethical Labyrinth: Artificial Intelligence and the Preservation of Cultural Authenticity in a Post-Truth Era," by Lakshmimol C P critically examines how AI technologies simultaneously enhance and disrupt practices of cultural heritage preservation. Through case studies such as the Dalí Lives project, the article identifies key challenges posed by AI, including the risk of deepfakes, algorithmic bias, and cultural homogenisation. In response, it proposes an ethical framework grounded in explainability, transparency, and collaborative human–AI interaction to guide responsible implementation in heritage contexts. By addressing issues of authority, representation, and global cooperation, this contribution foregrounds the importance of maintaining cultural authenticity and diversity amid accelerating digital transformation.

The article "AI Definitions in Flux: Museum Credibility and Holocaust Testimony in Focus," by Aavaranta et al., examines how shifting institutional understandings of AI shape museum narratives, authenticity, and public trust, using a process study on the Swedish Holocaust Museum's Dimensions in Testimony (DiT) project. Drawing on documentation, observations, and interviews with museum professionals and visitors, the article explores how AI-mediated survivor testimonies are received, interpreted, and emotionally experienced by audiences. While the project is designed to foster empathy, engagement, and relational authenticity, the study also reveals emerging tensions surrounding coherence, institutional uncertainty around AI, and the ethical complexities of 'digital witnessing' in a context marked by Holocaust distortion. By examining how authenticity is negotiated at the intersection of technology, memory, and pedagogy, this contribution offers a critical perspective on AI's role in museums as spaces of historical evidence and moral responsibility.

The article "The Use of Artificial Intelligence in Visualizing Historical and Cultural Objects on Social Media: A Sentiment Analysis of Public Reactions to AI Generated Images of Indonesian Heritage," by Atmadiredja et al. then investigates

how AI-generated reconstructions of historical figures and sites circulate on social media platforms, specifically TikTok, and how audiences respond to them. Using sentiment analysis of comments on AI Nusantara's TikTok posts, the study identifies three primary categories shaping public reactions: accuracy, technology, and common knowledge. The analysis reveals that user responses are shaped by a mix of expectations of historical authenticity, technological curiosity about AI tools, and culturally grounded perceptions of historical authenticity. By highlighting how users draw simultaneously on academic references and local traditions, the article indicates how AI-generated heritage imagery can contribute to emerging forms of digital living heritage.

Addressing issues of cultural continuity and legal complexity, "Back to the Future or Knowledge Reborn – AI Restoration, Traditional Knowledge Protection, and the Dilemma of Authenticity,"- by Stuhldreier and Fredriksson examines the legal and cultural tensions arising from the use of AI in preserving and restoring traditional knowledge (TK). While AI technologies offer potential for revitalising eroded or endangered TK through reconstruction by data-driven techniques, they also raise important questions about authenticity, ownership, and legal recognition. The article analyses current legal frameworks for protecting TK in different forms, highlighting the limitations of conventional intellectual property law and the potential of *sui generis* systems and TK databases. By framing authenticity in terms of living community values rather than fixed historical reference points, the article explores culturally grounded and legally informed perspectives on the challenges of AI-assisted TK preservation.

Turning to questions of representation and participation, the article "Digital Cultural Heritage of Minorities and Indigenous People: Towards a More Participatory Governance Framework for Decision-Making," by Ballardini et al. analyses how current legal and institutional frameworks shape the digital representation of cultural heritage for minority and Indigenous communities. Through a scoping review of scientific literature, the article maps existing governance models and highlights critical gaps related to participation, intellectual property, and the authenticity of digital content. It reveals how unresolved legal and policy issues may hinder equitable involvement in decision-making processes and affect the legitimacy of AI-mediated heritage representations. This contribution calls attention to the need for user-centric, proactive governance frameworks that support more inclusive and authentic engagement with digital cultural heritage.

Concluding the issue, the long essay "Night at the Artificial Museum: Copyright Law and Artificial Intelligence", by Matthew Rimmer examines the complex legal landscape surrounding the use of AI in the protection, preservation, and regeneration of digital cultural heritage. Focusing on copyright litigation linked to AI training data, the piece also touches on related intellectual property

frameworks, including trademark law, publicity rights, and Indigenous intellectual property. Through a comprehensive survey of recent legal developments and disputes, it reflects on what implications the use and regulation of AI has for the Galleries, Libraries, Archives, and Museums (GLAM) sector and broader cultural institutions. This contribution provides a timely legal overview on the rapidly evolving relationship between AI technologies and cultural heritage, highlighting the pressing need for clarity, transparency, and balanced rights in this emerging domain. With its thorough documentation of cases and legal sources this article provides a resource for future legal studies and practices in the fields of copyright and AI in the GLAM-sector, thus complements the issues contributions to the field of cultural and heritage studies.

We would like to thank all contributors to this special issue for their insightful and engaging work, as well as the main editors of *Culture Unbound* for their support throughout the editorial process. We are especially grateful to the peer reviewers who volunteered their time and expertise to help shape the contributions and ensure high standards of academic quality. We now invite readers to explore the diverse perspectives and reflections offered in the articles ahead.

The Editorial Team,
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