

Reviewer:

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Is that Authentic? Towards an Understanding of the Authenticity of Digital Replicas

1. Introduction: It is a 'Weird' Digital World.

It is indisputable that the rapid expansion of digital technologies has transformed our interactions with the world. Directly or indirectly, everyone has been affected by the advance of digital technologies, particularly in accessing and consuming information. The transformative effect of digital technologies is critical to heritage studies (Diaz-Andreu 2017), leading to an explosion of research on digital heritage over the past two decades. Its importance is exemplified by UNESCO's (2003) production of a Charter on the Provision of Digital Heritage, which denotes digital heritage as digital material that has a value to be preserved, often consisting of 'unique resources of human knowledge and expression' (Article 1). [The need for heritage studies to engage with and adapt to digital technologies is becoming even more pressing: despite the digital universe's already incomprehensible size, it is predicted to grow by 40% per year into the next decade (Rogers 2015).]

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Digital heritage is an evocative field that has espoused wide-ranging debates. The production of digital replicas from physical objects creates a fundamentally different interactive experience as it involves the loss of a perceivable materiality (Jeffrey 2015). Digital replicas are celebrated for their ability to open up access to and democratise heritage by lessening its reliance upon traditional, elitist centres of knowledge (e.g. Fresa et al. 2014; Diaz-Andreu 2017). Yet, digital replicas are often depicted negatively by authors who decry digital technology's reinforcement of non-democratic structures and their ability to produce new forms of exclusion from heritage (e.g. Taylor and Gibson 2017). Underpinning these debates is the issue of digital replicas' authenticity.

Though broadly understood as the quality of a thing being what it purports to be, authenticity has long been a source of contention in heritage studies (Rogers 2015; Smith 2003). Replicas

have traditionally held a contested, uncertain place in understandings of authenticity. This is compounded for digital replicas due to the 'weirdness' of digital objects (Jeffrey pp. 1). Digital objects lack a perceivable materiality, substance, location and degradation that heritage consumers are used to in physical objects (Garstki 2017; Jeffrey 2015). Resultantly, digital objects are often 'sanitised and alienating' which heritage consumers can struggle to engage with (Jeffrey 2015 pp. 1). For instance, Maxwell et al. (2015) recently produced a 3D digital replica of a Pictish drinking horn. However, they decided that its lack of perceivable materiality caused it to be inauthentic, unable to transmit heritage values as 'the digital, as yet, cannot satisfactorily replicate this necessary physical and idiosyncratic relationship with material' (pp. 39). In 2003, Abby Smith prophetically identified that discussions of authenticity would be the hardest challenge to grapple within digital heritage. Though 'hardest challenge' may be contentious, 15 years later, the authenticity of digital objects is still a complex and unresolved issue (Manžuch 2017).

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Technological advances and changes in institutional practices are causing an exponential rise in the numbers of digital replicas (Fresa et al. 2014). Thus, it is troubling that the prevailing approaches to authenticity in heritage studies can obscure the wider effect of digital replicas in heritage. For instance, digital replicas are often involved in 'cultural politics of ownership, attachment, place-making, and regeneration' (Jones et al. 2018 pp. 252). Materialist perspectives that have traditionally dominated heritage discourses consider authenticity to result from the originality of tangible objects, landscapes, and monuments, which can be tested through scientific means (Smith 2013; Jones 2010). This perspective is inherently Euro-centric, emerging from the development of western modernity (Jones 2010). The critical turn in heritage studies holds that these materialist perceptions of authenticity are inadequate for contemporary dynamic approaches to heritage (Winter 2013), suggesting that we need a renewed understanding of authenticity.

Indeed, 'each generation views authenticity in a new guise, reflecting its new needs for truth, new standards of evidence, and new faiths in the uses of heritage' (Lowenthal 1999 pp. 8). Therefore, this essay explores an understanding of authenticity that negotiates both materialist and constructivist perspectives. Constructivist approaches conceptualise authenticity as culturally constructed, rejecting the binary objectivist measurements of authenticity (Belhassen et al. 2008; Jones 2010). This essay recognises that completely abandoning the materialist approach to authenticity would impoverish understandings of

authenticity in practice (Jônes 2010). However, it challenges materialist perspectives that dismiss digital replicas as inauthentic. It recognises the migration of authenticity from the original object to the digital replica during its reproduction (Latour and Lowe 2011); and discusses the generation of authenticity through networks of relationships and the subjective experiences of digital replicas (Jônes et al. 2018; Cohen and Cohen 2012). To present this narrative, this essay firstly discusses the prevailing concern with authenticity, given its contested, ambivalent and confusing nature. It further traces debates of authenticity, with a particular focus on physical replicas, and builds upon these debates to discuss the authenticity of digital replicas.

2. Why Authenticity?

Authenticity broadly refers to an object's quality of being real, truthful and genuine; essentially the quality of a thing being what it purports to be (Rogers 2015; Manžuch 2017). Despite this relatively simple broad definition, authenticity's meaning, function, and criteria are ever-changing (Lowenthal 1999). Indeed, the use of the term varies over time, across disciplines, and even within the same article (e.g. Cohen and Cohen 2012). Further, there are contentions that the prevailing understandings of authenticity are obscuring the wider effect of digital objects in heritage (Jônes et al. 2018). Considering these factors makes it logical to question its use as a concept. Indeed, some scholars have called for it to be abandoned (Reisinger and Steiner 2006). Yet, understandings of authenticity are still significant for heritage studies: for instance, they are pivotal in choosing conservation strategies for buildings, places and artefacts (Jônes and Yarrow 2013). Additionally, authenticity is crucial for critical heritage scholars, who attempt to disentangle the underlying power relations that shape understandings of heritage and authenticity. Authenticity has long been associated with power dynamics, often being used by hegemonic groups to push political and economic agendas; from the European Middle Ages to demonstrate political authority to the contemporary era where materialist understandings of authenticity serve as an instrument to advance European ideologies across the world (Winter 2013).

Authenticity has taken a heightened significance in the modern era, due in part to the changing relationships between individuals and society (Jones 2010). Trilling (1972) traces this back to the breakdown of feudalism and of a rigidly defined social order which left people in a state of ontological insecurity. Modernisation has destabilised and redefined

relationships between the past and present (Winter 2013). This is being intensified as neoliberal forms of governance place an increased emphasis on the person as an individual unit that serves to erode senses of stability and identity (Butler 2011). Consequentially, heritage objects are seen as increasingly important in providing both individual and collective identities (Apaydin 2018). Indeed, the Nara Document of Authenticity (1994) that formalised constructivist and relativist approaches to authenticity devotes three articles to authenticity's importance. This includes stating in article 9 that 'our ability to understand these values [referring to heritage values] depends...on the degree to which information sources about these values may be understood as credible or truthful'. Thus, authenticity is vital to heritage as a provider of both individual and collective identities, by allowing the values understood to be trusted. Further, due to fears of digital objects being adapted and manipulated, it is crucial for digital objects to establish their authenticity to ensure their preservation (Rogers 2015). Consequently, despite its complex, ambiguous nature, authenticity cannot be dismissed. However, it is crucial to challenge and adapt understandings of authenticity for contemporary approaches to heritage studies.

3. Materialist Perspectives of Authenticity.

Materialist perspectives of authenticity have traditionally dominated heritage discourses concerning the reproduction of heritage objects. The production of digital replicas is considered to be second break in reproduction technologies, following mechanical reproduction (Müller 2017). Therefore, the authenticity of digital replicas can be cautiously compared to those of physical replicas. Discussions of physical replication invariably return to Walter Benjamin's (1936) celebrated essay, 'The Work of Art in the Age of Mechanical Reproduction'. Benjamin (1936) holds that the authenticity of an original object is an attribute which even 'the most perfect reproduction...is lacking' (pp. 220). For Benjamin (1936 pp. 222), the authenticity of an object is 'the essence of all that is transmissible from its beginning, ranging from its substantive duration to its testimony to the history which it has experienced', which is 'outside... reproducibility'. This sees each object as having its own unique history that provides the original object with its authenticity, enabling it to transmit its 'aura' and values. Benjamin refers to aura as an object's ability to provide an invigorating sensation of being close to the past and to all those involved in the objects production or who have interacted with it over its history.

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Benjamin's fundamental premise underpinned by Marxist and materialist perspectives is that authenticity is lost in reproduction. He holds that reproductions are inauthentic as they only entail a 'time-slice' of the original's history, and therefore do not possess the 'history which [the original] object has experienced' (Barker 2014). Further, Benjamin holds that replication can diminish and destroy the authenticity and aura of the original (Cameron and Kenderdine 2007). Benjamin's theorising has dominated authorised heritage discourses. However, the emergence of postmodernist thought has seen this perspective challenged. Though the challenges have predominantly been penned in relation to physical replicas, their underlying tenets can be applied to digital replicas.

4. The Migration of Authenticity through Reproduction

In contradiction to Benjamin's materialist theorising, Latour and Lowe (2011) argue that aura is not destroyed in replication. They propose that with advanced technologies, replicas can acquire a degree of the aura and authenticity of an original object. For them, the issue is the quality of the replica, particularly the accuracy of the final object that allows it to be understood and respected. Indeed, they argue that replication can even enhance the aura of the original, challenging the concept of authenticity as being intrinsic to the original object. Further, it transcends binary static materialist assumptions of authenticity in positioning the replica as part of the original object's ongoing 'trajectory'. Though focused predominately on physical replicas, Latour and Lowe's (2011) theorising has influenced discussions of the authenticity of digital replicas.

There has recently been an overwhelming focus on digital replicas' authenticity in terms of their accuracy, resolution and aesthetics (Jones et al. 2018; Nwabueze 2017). It is important to produce accurate replicas, however the sole focus upon accurate reproduction can lead to technological fetishism, which situates the claim to authenticity in the technology used to produce and present the digital replica (Jones et al. 2018). This overlooks the construction of authenticity through interactions with heritage consumers and obscures the replicas' wider role in heritage. The issues with appraising the authenticity of digital replicas solely in terms of their accuracy and realism can be illustrated by analysing Havemann's (2012) Plaster Cast Museum project.

The Plaster Cast Museum project involved producing 3D replicas of classical statues in the Karl Franzen University. The collaborators in this project focused solely on producing accurate, realistic digital replicas without much concern for the actual consumption and use of the replicas. This overarching focus saw workers identify that they should only store data that allows the user to assess the accuracy of the replica (Havemann 2012). For instance, the 3D replica of the head of Medusa allows the user to query different parts on its surface to see what source images were used in order to verify its accuracy. They considered accuracy of replication to be the sole factor in determining its authenticity. Indeed Havemann (2012 pp. 160) summarises the project by stating that ‘the aim here is to assess the authenticity of the data which we believe is the most valuable asset of IT in cultural heritage’.

Ensuring the accuracy of digital replicas is crucial but to take it as the sole defining feature of their authenticity is a ‘misplaced venture’ (Jones et al. 2018 pp. 352). It represents a binary approach to authenticity that characterises materialist approaches. Havemann’s project exhibits the dangers of succumbing to a ‘technological fetishism’ (Jeffrey 2015 pp.144). Though accurate realistic 3D replicas have been produced, there is limited public engagement with them, suggesting that heritage consumers do not attribute values to them or consider them as authentic (Jeffrey 2015). 3D digital replicas should focus on the creation of networks of relations through their design and consumption, so as to elicit the production and negotiation of authenticity (Jeffery 2015).

5. Constructing Authenticity:

The challenges to materialist and technocratic perspectives of authenticity are associated with the shift to postmodernity, which challenges modernity’s essentialist ideas of a singular truth (Bemann 1983). Constructivists argue that authenticity is a construct of the present day, a ‘product of particular cultural contexts and specific regimes of meaning’ (Jones and Yarrow 2013 pp. 9). Constructivist accounts particularly contest the binary, static, approaches that consider authenticity to be a fixed property of tangible heritage (Su 2018). They emphasize pluralistic means by which authenticity can be produced and recognised, involving an inherently dynamic, relational approach to authenticity (Belhassen et al. 2008; Jones et al. 2018). Therefore, they consider replicas as being part of complex networks, formed as they are produced and used, in which authenticity is generated by the performance of a wide range of actors (Cohen and Cohen 2012; Foster and Curtis 2016). This destabilises the idea of

authenticity being inherent in an object, instead positing authenticity to be a projection of beliefs and perceptions by heritage users (Zhu 2015).

Taking a constructivist approach to the authenticity of a digital replica requires recognising it as a 'creative work in its own right with a history and provenance' (Cameron and Kenderdine 2007 pp. 67). This is crucial, as until we 'acknowledge our own creativity as digital crafts-people, the digital will remain in the realm of the weird' (Jeffrey 2015 pp. 150). As creative objects, replicas embed stories and past human endeavour; behind their creation lies a series of specific social networks and relationships that determine their values (Foster and Curtis 2016). Thus, rather than linking the authenticity of digital replicas solely to their accuracy and realism as Havemann (2012) suggests, these replicas ought to be understood as being bound up in complex dynamic networks within which authenticity is not fixed as inauthentic, or authentic, but rather is dynamically being made and remade (Rogers 2015; Jones et al. 2018). This aligns with critical perspectives that heritage is being dynamically produced, existing in a state of flux.

The value in recognising the dynamism in authenticity can be demonstrated by the Mobile Museum Project, which aimed to produce digital replicas for the Nalik people, a 5000-person community residing on New Ireland, Papua New Guinea (Were 2014; 2015). As a collaborative project, it involved individuals from the Nalik community, the Queensland Museum, and the University of Queensland. The project aimed to produce digital replicas of Malangans currently held in the Queensland Museum: intricately carved wooden sculptures used in funeral rituals which are understood to arrest, contain, and release the souls of the deceased (Were 2015). They are traditionally carved for funerals by skilled sculptors, and then are either burnt or left to rot to symbolise their death (ibid). Yet, this aspect of the funeral rituals has been in decline in Nalik communities, and there are fears amongst Naliks that this part of their cultural identity could be lost. In this context, the interactions and use of the digital replicas of Malangans demonstrate the value of an integrated approach to authenticity that negotiates both materialist and constructivist perspectives.

Nalik individuals describe the production of 3D replicas as akin to returning the physical originals, as interacting with them brought back stories, traditions, and values of the past (Were 2015). Further, individuals described 3D replicas as providing a 'sense of completeness' that had been lost due to the decline of traditional rituals (Were 2015). Thus, the digital replicas are

transmitting similar heritage values as the original Malangans. Indeed, the digital replicas were providing authentic connections to the past, an emotive sensation of being close to their ancestors who created and interacted with the physical Malangans. This is markedly similar to Benjamin's (1936) description of the aura and authenticity of physical objects, demonstrating a migration of some degree of the original's authenticity to the digital replica (Latour and Lower 2011). The context of declining traditional rituals and a loss of cultural identity gives the production of 3D replicas of Malangans particular importance in transmitting authentic values. Thus, the 3D replicas acquire new forms of authenticity, additional to those acquired from the physical originals (Foster and Curtis 2016).

The digital replicas of Malangans are objects in their own right, rather than just extensions of the physical original (Were 2015). They produce and embed themselves in complex relationships in which their authenticity is constantly made and remade (Jones et al. 2018). These relationships connect heritage consumers and original objects, but also involve novel interactions with the digital replicas. The community collaboration in their production is particularly important in creating networks through the communal ownership, participation and energy in their production (Jeffrey 2015). For instance, for Nalik individuals, their role in producing and interacting with 3D replicas is a sign of their development and engagement with processes of modernisation (Were 2015). Thus, alongside providing a connection to the past, these models are valued as signifiers of progress. In Walter Benjamin's terms this sees them creating a 'new historical testimony'.

Furthermore, the 3D replicas have played a crucial role in both community and individual identity building for Nalik communities (Were 2015). By renewing and co-creating cultural identity, the 3D replicas produce their own authentic values for Nalik individuals as they construct their own meanings and knowledge (Fresa et al. 2014; Mazel 2017). The ability of digital replicas to provide ways of seeing, interacting with and experiencing Malangans is at the forefront of their role in co-constructing cultural identity. For instance, the models incorporate 'hot spots' which can be selected to launch detailed photographs of different parts of the replica (Were 2015). These were valued in their ability to educate modern sculptors, allowing them to reproduce replicas of the physical originals from the digital replicas (Were 2014).

The authenticity of 3D replicas is constructed by Nalik individuals through values being attribute to the replicas during their production and use. Thus, their authenticity is not merely fixed in the technology due to a migration of a degree of the original object's authenticity. Rather, new forms of authenticity are being dynamically generated as the 3D replicas are used and valued in different ways by Nalik individuals. In conjunction with being valued for providing an authentic connection to the past, they are valued for their role in (re)constructing cultural identity, their representation of technological advancement, the new experiences they provide and their ability to impart knowledge to sculptors.

The dynamism of the 3D replicas' authenticity exemplifies the limitations of materialist approaches to authenticity. The binary approach to authenticity that they entail overlooks the role of these 3D replicas as authentic heritage objects and bearers of significant value for their consumers. However, it is important to identify the prevailing influence of materiality and originality in the transmission of values and authenticity. The value of 3D replicas in enabling Nalik sculptors to relearn past patterns is accentuated as Naliks were unwilling to handle original Malangans due to the fear of the ancestral powers they possessed (Were 2015). Resultantly, although they were unable to replicate the designs of the originals, they were willing to replicate and interact with the 3D replicas (Were 2014). It is important to note that this varies across cultures. For instance, digital replicas of Maori artefacts are perceived by Maori communities to have the same ancestral spirits as their physical originals (Brown 2007).

The loss of ancestral powers in the digital reproduction of Malangans indicates that part of the aura and authenticity of the original has not been reproduced. Indeed, that the 3D digital replicas did not transmit ancestral powers evidently represents that they have lost part of the original objects' 'essence of all that is transmissible' (Benjamin 1936 pp. 222), which can be used to support Benjamin's (1936 pp. 221) contention that 'the whole sphere of authenticity is outside technical...reproducibility'. Further, it may be argued that through enabling Nalik individuals to interact with digital replicas, the aura and authenticity of the physical originals are being diminished. This indicates that materialist approaches to authenticity are still necessary. To take a fully constructivist approach would involve ignoring the importance of materiality, thereby failing to fully comprehend the experience of authenticity in practice (Belhassen et al. 2008). Materiality is undoubtedly still important, even research challenging materialist approaches to authenticity recognise its importance in experiencing and negotiating authenticity (Jones et al. 2018). Thus, it is necessary to negotiate both constructivist and

materialist perspectives which involves conceptualising authenticity as a product of the interactions between people, places, and objects (Jones 2010; Jones et al. 2018). Such an approach identifies the role of digital replicas in wider heritage processes, for instance in identity building, education' and providing novel experiences. Further, it provides a dynamic understanding of authenticity that recognises that heritage is not static, but rather is being constantly made and unmade.

6. Conclusion

Digital replicas are being produced at an increasing rate (Borowiecki et al. 2016). This essay has demonstrated that taking a dichotomous materialist approach ignores the wider work of digital objects in heritage, for instance in identity building, repatriation, restoring traditional customs and transmitting heritage values (Jones et al. 2018). Thus, it is vital to move beyond the binary, materialist perceptions that classify digital objects as inauthentic. Indeed, the Mobile Museum Project illustrated that digital replicas can acquire a degree of authenticity and aura from the physical originals during their production as Latour and Lowe (2011) suggest. However, constructivist approaches go beyond this migration, demonstrating that digital replicas are a part of complex 'dynamic networks of relationships between people, places, and things' that generate new forms of authenticity (Jones et al. 2018 pp. 334). These networks are partially extensions of the original object's networks; however, recognising digital replicas as creative objects demonstrates that they produce and embed themselves within new networks.

The constructivist approach allows a recognition of the wider work of digital objects and is more appropriate for contemporary approaches to heritage science. However, materiality remains significant as demonstrated by the differences between Naliks' perceptions of interacting with the original Malangans and with their digital replicas. Thus, materialist perspectives cannot be completely dismissed (Jones and Yallow 2013). An integrated approach that recognises the dynamic construction of digital replicas' authenticity whilst appreciating the importance of materiality is required. However, in developing this understanding, it is important to continually question its appropriateness. With the digital world expanding, new approaches to heritage will undoubtedly emerge, and our interactions with digital replicas will continue to change. Accordingly, conventions of authenticity must be continually questioned to ascertain whether they reflect the contemporary approaches to heritage.

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Reviewer:

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1. Is the subject matter of the article suitable for an interdisciplinary audience?: Yes, the article would appeal to those interested in materiality, digital heritage, authority and ethics.
2. Does the title reflect the subject matter of the article?: Yes, the title reflected the subject matter of the article.
3. Does the article make a contribution to the discussion in its field?: Yes.
4. Is the article clearly written?: Yes, the article is clearly written, easy to read and understand.
5. Is the article well structured?: Yes, the main discussion of the article is well structured and easy to follow. The introduction could be better, if a few sentences could be added to the last paragraph to tell the reader what to expect in each section.
6. Are the references relevant and satisfactory?: Yes, the references are relevant. The article used the Harvard (author-date) style, but both the in-text referencing and the full reference list are inaccurate. For example,
 - a. (Author, date) not (author date), add a comma.
 - b. in the fourth line of the last paragraph on page one, '(Jeffrey pp. 1)' should be '(Jeffrey, DATE, pp.1)'
 - c. All authors should be listed in the bibliography list, instead of 'Bachi, V. et al. (2014)'
 - d. In the list, the reference (book with a single author of instance) should include author's surname and initials, year of publication, title, edition (if it is not the first), place of publication and publisher.
The format is slightly different depends on the type of the source. Take one example from the reference list (which is a chapter in an edited book),

Havemann, S. (2012) Intricacies and Potentials of Gathering Paradata in the 3D Modelling Workflow in Bentkowska-Kafel, A., Denard, D. Baker, D (2012) Paradata and Transparency in Virtual Heritage. Ashgate: Farnham.

It should be:

Havemann, S. (2012) 'Intricacies and Potentials of Gathering Paradata in the 3D Modelling Workflow', in Bentkowska-Kafel, A., Denard, H. and Baker, D. (eds.) *Paradata and Transparency in Virtual Heritage*. Ashgate: Farnham, pp. xx-xx.

7. Do you feel the article appropriately uses figures, tables and appendices?: N/A
8. What is your recommendation?: Minor revision.

Reviewer's comments to the author (this will be made public on acceptance of the article):

This article sets out to explore a range of views of understanding the authenticity of digital replicas. The article discussed two common views in the academic debate around authenticity, the materialist view and the constructivist view; and explained each view with practical examples. In the end, the article drew a conclusion based on the discussion, it pointed out that an integrated approach is required and we should continually develop our understanding of digital replicas' authenticity.

The main area for improvement is the referencing, both the in-text referencing and the list should be checked, to make sure they are in the correct format. Please also address the typographical errors, including:

- p.6: 'JeffREy' not 'Jeffery'
- p. 10 'YaRRow' not 'Yallow'
- p.12: 'TransparEncy', not 'Transparancey'
- p. 12: 'Denard, H.' not 'Denard, D.'

Essay: 'Is that Authentic? Towards an Understanding of the Authenticity of Digital Replicas' by Daniel O' Callaghan for *St Anne's Academic Review*

Reviewer: Sydney Stewart Rose

Recommendation of Reviewer: Accept with Minor Corrections

Date: August 16, 2020

This review recommends that “Is that Authentic? Towards an Understanding of the Authenticity of Digital Replicas” by Daniel O' Callaghan be accepted by *St Anne's Academic Review* with minor corrections.

Overall, this essay provides a detailed overview of both materialist and constructivist approaches to authenticity in heritage studies. I agree with the author's conclusion that the rise of digital heritage technologies necessitates critical re-evaluations of authenticity which require negotiating both materialist and constructivist approaches.

However, the strength of this writing could be greatly improved with a couple of minor additions:

- 1) The discussions of the histories of authenticity may benefit from a deeper reflection on some of the literature in this field:
 - a) This argument would benefit from a discussion of Baudrillard's 1981 *Simulacra and Simulation*. This is a crucial text for this field of study and is especially important as the author has discussed how the existence of an original may influence the construction of authenticity in a reproduction, especially in the given example of Malangan carvings. Generally, the role of the original materials which are being replicated feels left unexamined as there is minimal discussion of restitution or the very physical material Malangan materials in the second example. This Mobile Museum case is a good example to support the author's argument that a hybrid materialist-constructivist perspective illuminates previously obscured processes surrounding identity building and transmitting heritage values by considering heritage authenticity in digital spaces as fully constructivist, and beyond the migration espoused by Latour; however, the critical role of digital restitution in this specific Mobile Museum case study should further inform the author's conclusion, as it has not been fully examined here.

- b) The section of this essay which discusses plaster casts could also be further nuanced by Adam Wallach's 1998 writings in *Exhibiting Contradictions* on plaster casts museums and the development of authenticity in art museums and galleries in the USA since the 1800s. As this essay is situated within the field of critical heritage studies, it follows that it would benefit from an interdisciplinary approach which gathers from a variety of cultural institutions, including natural history museums, commercial art galleries, and ethnographic collections, etc. In this vein I would also suggest considering how a wider selection of heritage institutions (eg: childrens museums, science museums, ecomuseums) have *already* shifted the discourse surrounding heritage authenticity.
- 2) As this essay explores digital heritage, a digital restitution, and authenticity in the global south, an acknowledgement of the concerns about availability or accessibility of technologies and the role of proximity to museological materials in the global south would be helpful. A brief discussion of authenticity during digital restitution projects should acknowledge the technological divide found between the museums in the global north and source communities in the global south. This does not need to be long, as these ideas are a bit outside the scope of this short essay, however, adding acknowledgements to the scholarship in this field which illustrates the inequitable distribution of technologies between the global north and the global south, where this is relevant, would add nuance to the authors discussion of authenticity and digital heritage.
- 3) Finally, I believe two things should be removed:
- a) I question the single use of the term "heritage science" in the final paragraph of this writing and believe it should be removed (Page 10).
- b) The following sentence should be reconsidered: "Further, it may be argued that through enabling Nalik individuals to interact with digital replicas, the aura and authenticity of the physical originals are being diminished" (Page 9). I agree with the author that this perspective can be argued, especially as Benjamin's work aligns with this. However, extending this idea would require further research and arguments which are not in this paper, therefore I suggest it should be removed.

Open Review by Sydney Stewart Rose
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