

The Proliferation of Aura: Facsimiles, Authenticity and Digital Objects

Sarah Kenderdine and Andrew Yip

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Introduction

When mobilised through augmented and virtual reality platforms, high-fidelity digital facsimiles of cultural artefacts and landscapes present new paradigms for engagement by which museum visitors may access and interpret objects via sensorial and embodied investigation. Technologies of reproduction are able to record objects and sites in sufficiently high resolution to produce visual replicas with a spatial and structural integrity that respects the original's materiality. Spatial modes of interaction with these replicas, where viewers are immersed in navigable virtual worlds, offer affective, user-driven encounters in which viewers experience not only a form of geographical transportation connecting them with the actual site, but a temporal travel linking present day to historical past. These modalities are not merely didactic strategies; the agency and consciousness of the viewer in encounters with virtual objects are mediums through which networks of meaning and understanding are constructed.

The value of object copies to cultural heritage research and conservation is well established. Indeed, in the case of sites and artefacts threatened by destructive forces such as iconoclasm, climate change and mass tourism, reconstructions may be the only way through which "originals" (objects and physical spaces) may be accessed. However, in the context of museum cultures of display, digital reproductions still occupy an uneasy space. The

materialities of digital objects—intangible, reproducible and transmissible—can be perceived of as a threat to traditional institutional claims of the authority of collected objects, as well as to the conventions surrounding their display.

21st century museums undertake sophisticated digitization programmes that document artefacts through high resolution photography, video and analytical scanning. These digital resources initially served as adjuncts to the processes of object collection and conservation. However, as their uses have evolved towards public display and finally as mediums for artistic intervention, it has been argued that digital copies can possess the ability to evoke emotion and memory (Cameron, 2010; Hazan, 2001). These affective responses are often described in similar terms as the sense of the transcendence experienced through a work of art—what Walter Benjamin described as the “aura” of an original (Benjamin, 1936/1968).

This chapter engages with the aura of real, digital and material copies of objects in the context of museum exhibitions to explore the notion of the “proliferation of aura” as digital art works reverberate with the iconic, original (or primary source) objects they reference. Following Bruno Latour and Adam Lowe’s re-evaluation of the discursive relationship between an original work of art and its facsimiles through which the aura is proposed to *migrate* from one to the other (Latour & Lowe, 2010), in the first part of the chapter we consider critical approaches to Benjamin’s conception of aura and authenticity as it has been interpreted and applied in the context of museum and gallery collections and exhibitions. This broader, critical discussion takes place alongside a practice-based case study of an interactive installation.

The second part of the chapter provides a detailed description of *Pure Land Augmented Reality Edition* (Kenderdine & Shaw, 2012/2016; hereafter *Pure Land AR*), a virtual reconstruction of a Tang Dynasty Chinese Buddhist cave installed as part of the antiquities exhibition *Tang: 唐 Treasures from the Silk Road Capital* at the Art Gallery of New South Wales, Australia. Employing augmented reality technology to create interactivity within a virtually reconstructed world, *Pure Land AR* presents a form of embodied immersion in which visitors are able to walk around a life sized cave from the UNESCO World Heritage-listed Mogao Grottoes at Dunhuang, China. This case study presents a unique instance of a high-fidelity digital copy being exhibited in a fine arts museum alongside thematically and historically related cultural antiquities. Through an analysis of visitor perceptions of the installation, we describe the conditions by which the aura of a work of art proliferates in digital materialities through association with the original. In doing so, this chapter builds on emerging models for evaluating affective museum experiences to argue that the authenticity vested in objects is not always solely located in their materiality. In the case of high fidelity digital copies, authenticity is constructed through a combination of material concerns, digital mediation and viewer perceptions.

Re-Siting the Aura of Virtual Encounters

Discussions of auratic affect in media theory inevitably begin with Walter Benjamin's seminal essay, "The Work of Art in the Age of Mechanical Reproduction." Here, he asserted that in spite of the fact that artistic cultures of copying predate mechanical means, what "withers in the age of mechanical reproduction is the aura of the work of art" (Benjamin, 1936/1968, p. 223). For Benjamin, the aura of a work—its unique, sublime presence in the eye of the beholder—is bound to the object's authenticity, located in the projection of a sense of a unique and grounded cultural history. It is rooted in the mystical, ritualistic origins of art

and its essence is “all that is transmissible from its beginning, ranging from its substantive duration to its testimony to the history which it has experienced” (Benjamin, 1936/1968, p. 223). He argues that this authenticity is destabilised by mechanical reproduction through two core processes. Firstly, reproduction substitutes the singular existence of the original for a multitude of identical instances. Secondly, it allows the original to be contacted by the viewer outside the sphere of its site-specific origination or belonging, severing it from its historical and cultural context.

From the standpoint of the museum these conditions present a quandary, for even while the museological mission is well served by the promotion of access to cultural material through digital reproduction and dissemination, the presence of the copy represents a challenge to traditions of object-based curatorial custodianship. The implications, as Andrea Witcomb describes, “are a loss of aura and institutional authority, the loss of the ability to distinguish between the real and the copy, the death of the object and a reduction of knowledge to information” (Witcomb, 2010, p. 35). These ideas will potentially persist until the institution reinvents itself or until new forms of media are subsumed into the historical canon. What Benjamin identified, therefore, was perhaps not the irrevocable loss of aura through reproduction but a point at which rapid technological transformations precipitated a “crisis” that continues to this day “in which the experience of aura is alternately called into question and reaffirmed” (Bolter, Macintyre, Gandy, & Schweitzer, 2006, p. 22). Questions surrounding the authority and aura of objects resurface at the arrival of new forms of media that facilitate novel paradigms of object mediation.

Recent debates have re-configured the interplay between original and copy to be a discursive relationship in which the copy exists as one form of the material “trajectory” of the object’s

cultural career. Philosopher Marcus Boon in his book *In Praise of Copying* offers us a summary of contemporary critical theory in relation to ontologies of the original and its copy—ranging from Gilles Deleuze, who observed that the Platonic Ideal is always accompanied by a swarm of simulacra, fakes, and copies that threaten and distort it, through to Baudrillard’s famous *Simulations*: a world of “copies without originals” (Boon, 2010, p. 24). Within the conventions of exhibition, art theorist Boris Groys questions the validity of “original” aura, arguing that “a museum piece is an object minus its invisible aura” (that is its relationship to time and space). On the contrary, he maintains that digital archiving “ignores the objects and preserves the aura.” The object is absent but its metadata about the here and now of its original inscription is preserved. The museum object has always required interpretation to substitute for its loss of aura and digital metadata creates an aura without an object (Groys, 2016, p.4).

A parallel argument is mounted by Latour and Lowe in a process they describe as the “migration of the aura” (Latour & Lowe, 2010). Rather than causing the aura of an original to wither, the authority and desirability of the original increases with the availability and accessibility of its high-fidelity copies (indeed, the word copy comes from the Latin *copia*, meaning “abundance,” “plenitude” or “multitude”). The copying of the original can benefit from a symbiotic relationship with its replicant, rather than suffer a diminished existence. Thus, “the real phenomenon to be accounted for is not the punctual delineation of one version divorced from the rest of its copies, but the whole assemblage made up of one—or several—original(s) together with the retinue of its continually re-written biography” (Latour & Lowe, 2010, p. 278). The “re-written biography” of an artwork is its evolving cultural trajectory over time and the processes by which it is reproduced, conserved and exhibited in various contexts. In order to describe this state, Latour and Lowe borrow from anthropology the

expression “career.” It is against this career that the value of a particular work and its copies should be determined, regardless of the particular materiality of the original.

A culture of copying is proof of the fecundity of the original—evidence of the ability of the object to evoke continuing engagement. Thus, as Latour and Lowe suggest, the question should not be whether a viewed object is a copy or not, but “Is it *well* or *badly* reproduced?”; a badly-reproduced object risks disappearing while the authenticity of a well-copied original is enhanced (Latour & Lowe, 2010, p. 278). The artistic gesture of copying has also become an interrogative practice, exemplified by works such as Takashi Murakami’s collaboration with Louis Vuitton, whose handbags have been called the most copied object in the world. Infamously, Murakami sold “fake fakes” of handbags to bring attention to the phenomenon of counterfeiting, the production of illegal copies and value (Boon, 2010, p. 13).

Evidently, the criteria by which good reproductions are assessed are not limited to materiality alone. In the domain of archaeology Siân Jones has led arguments about authenticity that have moved away from purely materialistic traditions around which positivist research methods assess and confirm value, towards a constructivist position in which authenticity is culturally construed dependent on the context and viewer (S. Jones, 2010). Jones argues that authenticity is vested when truthful relationships are formed between a network of objects, people and places. Copies can also be vested with authority through the agency and acceptance of the communities in which they were made. To illustrate this, Jones draws on the example of the excavation of the lower section of the 8th century Hilton of Cadboll cross slab in Scotland. While the object was rediscovered outside its primary context, village locals expressed a deep connection the associations it generated with the local environment. Furthermore, Jones suggests that a reconstruction of part of the cross acquired authentic

qualities in locals' eyes because it had been carved in the village, creating a relationship between the object and the community of its creation.

In studies of conservation practice, Jones also demonstrates that authenticity emerges through complex interactions between expert practitioners and material conditions (S. Jones, 2013; Jones & Yarrow, 2013). Critiquing Jones' position, Cornelius Holtorf argues for greater emphasis on object materiality by suggesting that an object might exhibit authenticity through the construction of "pastness"—an evaluation of perceptible material clues such as traces of decay that connect the audience to a plausible historical narrative. Borrowing from Alois Riegl's concept of the affective "age value" of an object, he asserts that what matters is people's perception of pastness in the context of its viewing (Riegl, 1982). Object, buildings and monuments can evince pastness even if they were created recently. Holtorf suggests that regardless of the date of its construction, a church might acquire pastness via allusions to Romanesque or Gothic architecture—tropes that conform to a viewer's stylistic expectations of historicity.

The ability to explore the original by activating its biography is central to the power of the copy to extend aura, rather than dilute it. For an increasing number of cultural heritage sites and objects, the facsimile provides the only means of public access, and may even provide a superior viewing experience due to the necessary constraints on visitors to the original. True-to-scale physically built models (it seems necessary to distinguish these from virtual, rendered models) of caves and subterranean sites, enabled by high fidelity digital registration, include the Lascaux Caves, Altamira Caves and the Tomb of Thutmose III. Replicas of the Arch of Triumph of the Temple of Bel (Baal) in the ancient Syrian city of Palmyra destroyed by Isis in 2015 are copies—real "fakes." In collaboration with UNESCO, the Institute for

Digital Archaeology (IDA), Harvard University, the University of Oxford and Dubai's Museum of the Future developed a 3D computer model of the arch to be rendered in stone and installed in London and New York in 2016. IDA director of technology and founder/executive director Roger Michel stated:

ISIS was hoping to destroy the arch forever, to erase it from the surface of the earth and from our memory. Instead, they made it the best-known piece of ancient architecture in the world. Pictures of it have appeared on television and in countless newspapers and magazines. Thousands of people visited our model arch in London. We'll be sending our 3-D files all over the world so that other arches can be created (*New York Times*, 2016).

Yves Ubelmann, whose images of Palmyra feature in the exhibition *Eternal Sites: From Bamiyan to Palmyra* at the Grand Palais, Paris, echoed this sentiment:

The terrorists were uploading videos with them blowing up monuments and smashing statues to manipulate public opinion. . . . We felt the best response was to magnify the pictures of these places and show their splendour and their importance to the culture. It became a war of images. (As cited in Simons, 2016)

Institutionally proliferated, the images and replicas erected around the world carry something of the auratic experience of the Palmyra site, but are imbued with the significance of loss. The depth of engagement with the site is enhanced by similar projects such as #newpalmyra, a collaborative and interdisciplinary open data project to crowd-source a virtual reconstruction of the site. These instances of heritage art as political intervention or

statement interact with authenticity in particular ways—here, the “migration of aura” is a necessary and conscious collaboration between cultures and heritage workers globally, rather than a result of consumerism and “copy culture.” The context that is crucial to an experience of the Palmyra replicas is, importantly, one that is defined by distance and absence. It is the in-authentic nature of the replica that highlights its removal from the conflict in Syria; the absence of the destroyed arch triggers a palpable relation with loss, resulting in the resurrection of aura.

While such high-fidelity digital copies offer unique opportunities for exploration, they have until recently struggled to escape the stigma of being data-driven, didactic visualisations. Stuart Jeffrey argues, for example, that digital objects have been perceived to possess an inability to inherit aura due to a neglect of creative imagination (Jeffrey, 2015). Digital interaction, he argues, represents a conceptual break from interacting with the world and its history, which unless mitigated alienates the copy from its original. He identifies five key traits that digital objects must overcome: their lack of physical substance compared to real objects, their lack of native location, the ease of their infinite reproducibility, their inability to degrade and the difference between original ownership and digital licensing.

Algorithmic Augmentation and Authenticity

There is another sense in which digital reconstruction may rupture cultural history. That is, by making virtual the agency of the artist in the creation of the original as occurred in the *The Next Rembrandt*. Purportedly devised by advertising executive Bas Korsten as part of an advertising campaign for ING Bank in 2016, *The Next Rembrandt* is the product of a program that utilises data derived from 168,263 Rembrandt painting fragments to compose and 3D-print a textured, “painted” image (Brown, 2016). *The Next Rembrandt* is a new work of “art”

in the sense that it is not a composite of features from Rembrandt originals, but the result of a pattern recognition program that has generated new features. It is, then, authentically *not* a “copy.” In spite of the earlier development of artificially creative software, the arrival of the *The Next Rembrandt* has been polarising. Korsten hoped the project would be “the start of a conversation about art and algorithms,” but there were mixed responses to the images, signifying the depth and prevalence of traditional concepts of fine art, genius and authenticity and, the continued attachment to and reverence for a masterpiece. The inevitable comparison between *The Next Rembrandt* and actual Rembrandts resulted in the accusation of fakery and the presumption that Korsten and his team have been engaged in an attempt to reduce artistic “genius” to a series of imitable features. Jonathan Jones of *The Guardian* wrote:

What a horrible, tasteless, insensitive and soulless travesty of all that is creative in human nature. What a vile product of our strange time when the best brains dedicate themselves to the stupidest “challenges,” when technology is used for things it should never be used for and everybody feels obliged to applaud the heartless results because so revere everything digital. . . . What these silly people have done is to invent a new way to mock art. (J. Jones, 2016)

In spite of Korsten’s insistence that he has “creat[ed] something new” through algorithmic processes and that “only Rembrandt could create a Rembrandt,” Jones resents the perceived implication that “great art can be reduced to a set of mannerisms that can be digitised” (Brown, 2016; J. Jones, 2016). For detractors like Jones, several key structures of high art are at stake in *The Next Rembrandt*: firstly, the aura of the masterpiece, that which is deserving of the “Rembrandt Shudder,” and the intangible impact of the artist’s psyche on the work of art. Secondly, the exclusive rights of the original and authentic art object to be a result of

“genius.” The possibility of artificial processes for creation calls into question which aspects of the context and provenance of a work of art are most important to the category of “art.” Jon McCormack et al. ask, “Why dismiss outright that a machine and a human might share experiences that result in something meaningful and worth communication?” (McCormack et al., 2014, p. 135). Korsten puts this more simply and aptly: “Do you need a soul to touch the soul?” Besides the implication that the creators have attempted to pilfer a portion of the aura of a Rembrandt, the sheer resemblance of the computer-generated piece to that of an actual Rembrandt calls into question the importance of authentic experience. Jones’s outrage is at least in part motivated by the notion that *The Next Rembrandt* is a fake—even though it is not a copy or computer-generated duplicate of an extant composition.

In other instances, the fake or the copy carries with it entirely different attachments. Engineering an artificial experience of the lost original appears to be more universally acceptable as a mode of technological intervention into art and cultural heritage. For example, where a digital reconstructive tool is used to augment an original where some loss has occurred, such as is the case with Mark Rothko’s Harvard Murals in the USA. Significantly damaged, the murals have rarely been exhibited since they were removed from display in 1979 (Khandekar, 2014). In 2014, a digital projector was used to augment five faded paintings by the artist (Stenger et al., 2016). Based on studies of an undamaged original and Ektachrome photographs of the works taken in 1964, projected light digitally “restored,” pixel by pixel, the light-sensitive pigment lithol red which give Rothko’s murals their deep crimson hues. The projectors were switched off every day at 4 pm in order to highlight the effect of the projectors on the faded paintings, allowing visitors to “experience a transformation that took many years in a few seconds” (Menand, 2015).

This passive restoration technique, while expected to incite debate around conservation and restoration methodologies (Sheets, 2014), interacts with the materiality of the original in a referential way that appears to carry none of the controversy of acts such as *The Next Rembrandt*, or even active forms of restoration such as physical in-painting used in conservation. As Thomas Lentz of Harvard Museums asserts, the crucial distinction is that “we are not restoring the paintings, we are restoring the *appearance* [emphasis added] of the paintings. Even in their unconserved state they are really these kinds of magnificent runes. They are very powerful” (as cited in Walsh, 2014). Christopher Rothko, son of Mark Rothko, remarked that “they still felt like real paintings” (Sheets, 2014). This affective response that the paintings still “feel” like paintings is important, and the transformative effect of the projectors being a temporary one seems crucial to the delicate evocation or amplification of the original work. Nothing is removed from the “site” of authenticity (the canvas itself), and nothing is really added—it is an installation that may be considered as a virtual heritage project that powerfully brings the work back into focus, and, with it, some re-invigoration of the auratic experience.

As the Harvard Mural installation demonstrates, the sensorial shortcomings of digital interventions might be mitigated when they are encountered via modes of immersion that stimulate a sense of co-presence with the cultural biography of the original. These encounters are tied to the specific exhibition environments in which they occur as relational exchanges between viewer and object (Dziekan, 2012). This sense of presence, a feeling of being convincingly immersed in an alternate world, has long been a staple measure for researchers of virtual reality (Sheridan 1992; Kenderdine, 2013a, 2013b, 2013c). However, it has been argued that auratic experiences in virtual encounters are contingent on not only maintaining presence, but on creating a sense of “distance-through-proximity” (Bolter et al., 2006). This

is a reparsing of Benjamin's definition of the aura of natural phenomena, which he describes as "the unique phenomenon of a distance, however close it may be . . . [following] with your eyes a mountain range on the horizon or a branch which casts its shadow over you" (Benjamin 1936/1969, pp. 224–225). In virtual encounters, Bolter et al. argue, aura is transmitted when the immediacy of the experience makes the subject appreciate the cultural and historical significance of the site.

Digital, embodied encounters are particularly apt vehicles for enacting historical connection as they require viewers to negotiate meaning within the environment. This negotiation can take place through an individualised immersive experience in the case of head mounted virtual reality platforms, or through social interaction, in the case of augmented reality installations that further emphasise the temporal link between past and present. As Christopher Tilley argues, bodily immersion necessarily introduces time as a contingency: "any moment of lived experience is thus orientated by and towards the past, a fusion of the two" (Tilley, 2004, p. 12). It is this negotiation that remediates one final aspect of Benjamin's construct. In his discussion of the loss of aura between stage and cinema, Benjamin focused on modes of spectatorship. While stage acting involves an interplay between subject and viewer, cinematic viewing predetermines the gaze through the camera's lens and removes both the agency of the viewer and the influence of the actor. Embodied interaction restores this field of negotiation between viewer and subject, and it is through this agency that embodied virtuality emerges as a key medium by which the aura of an original might be vested in its digital copy.

Evaluating Auratic Experience

Relatively few audience studies of auratic experiences in museums have been conducted, let alone on the question of whether copies of objects of historical or cultural significance are perceived differently from originals (Hampp & Schwann, 2014b). The first steps towards formulating a methodology for observing auratic museum experiences were taken by Catherine Cameron and John Gatewood, who hypothesised that not only do people visit museums to seek a form of transcendent experience, but that historic sites and exhibits can conjure emotional responses that link museum visitors to a historical past (Cameron & Gatewood, 2000, 2003). They described a framework for analysing what they termed “numinous experiences” characterised by three traits: deep engagement or transcendence, empathy through affective connection, and awe or reverence akin to spiritual communion.

Kiersten Latham further developed this model with reference to Louise Rosenblatt’s work in literature on transactional theory wherein external texts generate internal associations (Latham, 2007; Rosenblatt, 1978). In 2013, Latham conducted a study of numinous visitor experiences in five museums of various disciplines (art, history, living history, and state history). After phenomenological analysis, she identified four themes essential to numinous experiences: a unity of the moment, a link to the object, a sense of transportation and the formation of a connection beyond the individual. While Latham’s findings supported the formulations of Cameron and Gatewood, she nuanced and developed them, concluding that museum objects held a central role in linking viewers to “other dimensions, perceptions, thoughts and feelings” and that temporal and embodied experiences were essential to establishing this sense of transcendence (Latham, 2013, p. 12). A unique finding of this study was that the numinous experience was dynamic and transactive between visitor and object, employing both the sense and the intellect—a relationship of exchange tested in the case study of *Pure Land AR* that follows.

More recent studies by Constanze Hampp and Stephan Schwan tested perceptions of authentic and inauthentic objects in science museums. In the first study, focused on objects of mundane status in a context where functionality was paramount, they found that the perceived authenticity of an object did not play a prominent role in the visitors' evaluations of them (Hampp & Schwan, 2014a). The second focused on objects with iconic historical significance—a moon rock and a space suit—presented at the Deutsches Museum in Munich in a context that focused on history, myths and uniqueness. Representing each object either as authentic or a replica to participants, Hampp and Schwan found not only that the most important evidence for authenticity was the fact of the objects' presentation in a museum, but that personal responses to the objects depended more on the type of object rather than whether or not it was a replica:

Surprisingly, objects perceived as replicas were able to induce similar thoughts and feelings of excitement as objects perceived as originals. . . . Thus, it seems as if the “aura of the original” indeed is able to devolve upon the replica, as described by Latour and Lowe. (Hampp & Schwan 2014b, p. 363)

These findings corroborate a constructivist view of authenticity as a negotiation between the object and viewer. However, they are contingent on the context of the investigation and its terms. For example, a 2013 study at the Deutsches Museum concerned with the investigation of aura used mobile eye tracking devices to gauge viewer fixation patterns on museum objects in showcases. The results suggested that perceived authenticity was affected by whether an object was exhibited with positive or negative associations (Fantoni et al., 2013).

Hampp, Schwan and Latham acknowledge the particular contexts of their studies and urge continuing research in different contexts with different content and visitor demographics. This is particularly necessary in the context of fine arts museums, where attributions of authorship and provenance carry particular weight and the presence of the copy occupies a more contested space. In the fine arts museum, virtual copies and digital object mediations—or high-fidelity material reconstructions facilitated by advanced digital imaging techniques—have traditionally been evaluated against a culture focused on original materiality.

Pure Land Augmented Reality Edition (2012/2016)

The case study of *Pure Land AR* that follows takes place amongst this constellation of concerns about originals and their copies in fine arts museums. It builds on previous studies by assessing visitor perceptions of a virtual copy of a historically significant cultural site in the context of its exhibition in a fine arts museum alongside historically contemporaneous objects, at a time in which access to the original site is impossible. The principles of numinous, auratic museum experiences remain applicable to this context: transportive, embodied exchanges evoked by the digital object are central to the construction of authenticity and the transmission of aura. In addition, this particular case study allows us to investigate whether it is possible for a high-fidelity digital copy to proliferate a sense of aura through the evocation of affective experiences, and consequently to gain an understand of how viewers evaluate a digital copy in the context of its exhibition alongside real object counterparts.

Pure Land is a virtual reconstruction of Cave 220 at the UNESCO World Heritage-Listed site of the Mogao Grottoes in Gansu Province, China. The grottoes consist of around 750 caves on five levels, hewn into an escarpment in the desert 25km southeast of the town of

Dunhuang. In total, 492 of the caves feature mural paintings totalling more than 45,000 square meters. The grottoes also contain 2,000 painted clay figures of Buddha and bodhisattvas, the largest of which measures 100 feet and dates to the Tang Dynasty (Larmer, 2010).

Since 1999, the Dunhuang Academy has been undertaking an ambitious programme to digitise the grottoes through high-resolution photography and laser scanning. The data from Cave 220 has been transformed into a range of virtual experiences by Sarah Kenderdine and Jeffrey Shaw and their team of visual effects artists at the City University of Hong Kong (Kenderdine, 2013a). These include the augmented reality version of *Pure Land AR*, which uses tracked, tablet-based navigation inside the virtual world to simulate navigating the cave (Figure 4.2.1).

<Figure 4.2.1 HERE>

The structure of the installation consists of a four-walled-room erected to scale corresponding to the real cave. The interior walls are covered with life-size prints of a polygonal mesh derived from the Dunhuang Academy's laser scans of the cave. High-resolution photographs of the cave's paintings and sculptures are digitally rendered onto this polygonal mesh inside a virtual model to create a composite 3D representation of the cave, including its ceiling and floor. The 3D visualisation of the north wall is augmented by four animations, determined from an interpretive script stipulated by the Dunhuang Academy, that emphasise the cultural significance of the painting's iconography for lay viewers.

Viewers interact with the cave by taking a tablet into the installation and holding it up to the walls, guided by visual cues from the polygonal mesh (Figure 4.2.2). As they explore the space, 24 infrared cameras placed atop the walls track the position and orientation of the tablet while computers render the corresponding view of the digital cave and transmit it to the tablet screen in real time via Wi-Fi. The tablet screen acts as a framing device that forms a direct link between the gaze of the viewer and their physical movements in navigating the physical space. It thus moves beyond being a televisual environment to an embodied social performance.

<Figure 4.2.2 HERE>

Pure Land AR was first exhibited at the Hong Kong Art Fair in 2012, followed by the Shanghai Biennale in 2013. The iteration under evaluation in this essay was installed as part of the exhibition *Tang: 唐 Treasures from the Silk Road Capital* (hereafter *Tang*), held at the Art Gallery of New South Wales, Australia (April 9-July 10, 2016). Three key features of this iteration distinguished it from earlier versions. Firstly, this was the only time the installation had visualised all four of the cave walls—previous iterations visualised only three (Figure 4.2.3). The cave entrance served as a threshold between the real and the virtual, conditioning visitors to anticipate an alternate reality by partially obscuring the interior of the cave and by requiring visitors to participate in the architectural fiction by ducking beneath the entrance lintel. Secondly, proximity-triggered animations were added to the installation, drawn from the panoramic virtual reality iteration of *Pure Land*, in order to create a connection to related iconography appearing elsewhere in the exhibition (Figure 4.2.4). Thirdly, for the first time, *Pure Land AR* was shown in conjunction with Tang-era objects.

<Figure 4.2.3 HERE>

<Figure 4.2.4 HERE>

To investigate auratic effects of *Pure Land AR*, the experiences of visitors to the installation were surveyed and data was collected digitally on iPads using the visitor survey app *I Sho U* (Figure 4.2.5), developed to derive quantitative data from qualitative museum experiences (Kocis & Kenderdine, 2014). In designing the survey tool, a key consideration was the development of a vernacular to investigate auratic experience that elicited authentic responses while avoiding specialist jargon. To this end, questions were designed to test sensorial perception and particular attention is given to open ended responses as delivered by participants in the following discussion. Two broad areas formed the basis for our investigation: the question of whether or not the installation was able to convey a transportive sense of historical co-presence, and the manner in which viewers perceived the virtual copy in the exhibition context.

<Figure 4.2.5 HERE>

Spatial Temporal Immersion

When asked to describe their experience of *Pure Land AR*, participants conveyed a pattern of immersive experiences characterised by a sense of physical and temporal transportation, which was evident in 43% of responses. Of the 10% of participants who reported having been to the real Dunhuang Caves, three respondents favourably compared their virtual experience to their memories of their actual journeys. One recalled that “sixteen years ago I went to the Dunhuang Caves and this experience has brought back to life all that I was seeing there at

that time.” Another stated that it was “a wonderful experience. I have been to the caves and this reminds me of what I saw there.” Others who had not been to the Dunhuang Caves also felt transported to and immersed in the site. Both group and individual responses recorded a general sensation of presence in the virtual environment: “we feel as if we're actually visiting the cave”; “it was fascinating and entirely absorbing and it felt like I was really present in the cave.”

An interesting result was that for some people, the installation’s modes of interactivity and the proximity between viewer and object enhanced the experience: “[*Pure Land AR*] transports you to the place and makes it easier to see and imagine how it is like to be there and also you can see everything up close which probably you won't be able to see if you were actually there.” Such responses that refer to the agency of the viewer are particularly interesting in light of the fact that the installation provides public access to a site which is no longer physically accessible. In many ways, viewing the high fidelity model up close provides a technically superior viewing experience to a real-life visit, where most murals are covered by protective glass and during which the only light is provided by the torch of a tour guide. *Pure Land AR*’s tablet interface thus provides a window onto the world that surpasses the viewer’s ability to encounter the original (Kenderdine, 2013a).

Several visitors had a conscious awareness of a “living” history and culture evoked by the experience. A typical response in this category was to feel ‘transported’: “[I] felt like I was actually in the virtual cave and it was an amazing experience to be able to feel and see so much. It’s almost like the living past.” Linked to a development of historical understanding, these findings of a multi-layered experience of physical immersion corroborate the premise of “distance through proximity” that underpins Benjamin’s aura of natural phenomena as

applied to paradigms of virtuality by Bolter et al. (2006). The responses suggest that embodied immersion in the cave allowed viewers to not only appreciate the aesthetics of the artworks, but to make deductions about the cultural significance of the site and the reasons for its preservation.

These responses were consistent with the results of the question, “Did the virtual experience feel like being there?” to which 88% of people responded “yes.” Interestingly, none of the participants who critiqued physical or technical aspects of the installation answered “no” to this question, suggesting that the shortcomings they perceived in the experience did not wholly break their sense of immersion. This was acknowledged by one participant who recorded that “it actually feels like being in the [cave], the only difficulty is getting used to the technology of using the device and also understanding the process of beginning the animations. But the overall effect is really amazing. You do really feel as if you’re there.” Nor did the presence of mediation through the augmented animations on the north wall seem to break immersion or negate the authenticity of the original paintings. They were referenced positively in responses, though one participant found viewing them physically difficult, due to their location low on the wall (corresponding to the appropriate section of the mural in the real cave).

Context

Results to the question, “How does *Pure Land AR* relate to the rest of the exhibition?” reflected a positive perception of the installation’s relationship to the original artefacts and other exhibition materials in the context of their co-exhibition.¹ Participants overwhelmingly found that the installation enhanced and extended the exhibition, with few opining that the digital intervention devalued the artefacts. These results corroborate the argument that it is

possible for real and facsimile objects to function in tandem, each acting as an alibi for the other by maintaining and strengthening historical links (Cameron, 2010).

Some participants expressed the sense of awe or wonder that one associates with the auratic reception of fine art objects, marvelling at both the aesthetics of the cave paintings and the augmented elements of the installation, evidenced in responses such as: “I just felt it was quite overawing, I’ve not ever done anything like that before and I thought it was magical and extraordinary.” These responses lend weight to the notion that digital copies can escape categorisation as didactic strategies to be considered on their aesthetic merits. There was also a general appreciation of the technologies employed. However, in spite of the general acceptance of the installation one participant questioned the value of the particular medium of the installation, questioning whether “it was any better than just seeing a large mural photograph, as per the other mural photographs elsewhere in the exhibition.”

The general positive reception to *Pure Land AR* should of course be read against arguments that museum viewers can accept authenticity based on the institutional authority of the exhibition context (Lowenthal, 1992, 2008). The processes by which objects are selected for digitisation and display by museums naturally ascribe value to those objects. Yet it is also the case that the reverse is true, that museum practices gain currency through the critical approval and acceptance of their audiences. For example, in response to the 2012 exhibition of the 360-degree 3D version of *Pure Land AR* at the Freer Gallery of Art, Smithsonian Institute, *Washington Post* critic Philip Kennicott said:

A decade or more of efforts to use virtual reality to reproduce aesthetic experiences have generally led to unsatisfying, cumbersome and distracting technologies. The

transient buzz of interactivity overwhelms the actual content or educational value. But the ‘Pure Land’ cave is different . . . it points the way forward, demonstrating how the immersion environment can be used to let visitors actively explore and understand complicated cultural objects. . . . At last we have a virtual reality system that is worthy of inclusion in a museum devoted to the real stuff of art. (November 30, 2012)

Kennicott’s remarks suggest that digital mediation without immersion—technology for technology’s sake—results in an unsympathetic union of content and platform. This could perhaps be rephrased as a severing of a work of art from its biography.

Conclusion

It is beyond the scope of this chapter to determine whether visitors to fine arts museums assess virtual copies on equal footing with original objects, or accept the display of virtual reconstructions as a core function of museum interpretive practice or pedagogy. Much broader continuing research on these questions is required in a range of museological contexts, and it may be the case that shifts in museum professional cultures may precipitate changes in viewer perception as readily as the accelerating acceptance of new types of digital media as socially-normative viewing and interactive paradigms. Rather, the perceptions of people who experienced *Pure Land AR* in this context validate a particular model developed by theorists of cultures of the copy: that the proliferation of aura in digital objects is contingent on the presence of transportive and immersive exchanges between viewer and object that connect the viewer to the histories and traditions of the object’s cultural trajectory.

If, as Jeffrey argues, the acceptance of digital copies as authentic objects is dependent on their ability to evoke aura (2015), this description of *Pure Land AR* offers avenues for

museums to reconsider larger questions of how collecting institutions might renegotiate the relationship between real and virtual materialities. Copies, virtual or otherwise, will never supplant the role of museums to collect significant objects and, by doing so, document cultural narratives. However, the deployment of auratic virtual experiences—particularly through augmented reality as opposed to more individualized virtual reality experiences—has the potential to extend the function of museums from being only repositories of material traces to being dialogic social spaces in which identities and histories are explored through transportive encounters between viewers and objects. The museum might be understood more broadly as a place of memory collection and sensorial formation (Gurian, 1999). We might then recast traditional assignments of object value from the binary consideration of whether the substance of the object is material or immaterial to an affect-oriented question: has the object maintained its cultural trajectory in the place and performance of its encounter?

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Figure Captions

Figure 4.2.1: *Pure Land AR* (2012). 9th Shanghai Biennial, Power Art Museum, Shanghai, China, 2013. Photo: Sarah Kenderdine.

Figure 4.2.2: *Pure Land AR* (2016), *Tang: 唐 Treasures from the Silk Road Capital*. Art Gallery of New South Wales, Sydney, 2016. Photo: Jenni Carter/Art Gallery of New South Wales.

Figure 4.2.3: *Pure Land AR* (2016), *Tang: 唐 Treasures from the Silk Road Capital*. Art Gallery of New South Wales, Sydney, 2016. Photo: Sarah Kenderdine.

Figure 4.2.4: *Pure Land AR* (2016), *Tang: 唐 Treasures from the Silk Road Capital*. Art Gallery of New South Wales, Sydney, 2016. Photo: Jenni Carter/Art Gallery of New South Wales.

Figure 4.2.5: *I Sho U* evaluation tool used in *Pure Land AR* (2016), *Tang: 唐 Treasures from the Silk Road Capital*. Art Gallery of New South Wales, Sydney, 2016. Photo: Sarah Kenderdine.

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Note

¹ Allowed to select up to three words from a pool of eight positive and negative words to describe this relationship, 74% of participants recorded that *Pure Land AR enhances* the exhibition, 66% that it *extends*, 50% that it *embodies* and 28% that it *transports*. One participant (0.4%) recorded that it *detracts*, two (0.8%) that it *devalues*, one (0.4%) that it *confuses*. No participants chose the final option, *replaces*.