CONTEXTUALISING THE CONTESTED: XR AS EXPERIMENTAL MUSEOLOGY

CONTEXTUALIZAÇÃO DOS CONCURSOS: XR COMO MUSEOLOGIA EXPERIMENTAL

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ABSTRACT

Museums are becoming increasingly multimedial experiences and with the emergence of the metaverse (Coates, 2021), immersive technologies (XR) are projected to form an important part of future museum experiences. With options to provide a multiplicity of non-hierarchical information, support individualised paths through exhibitions, and experiential visits, XR has the potential to help keep visitors engaged around complex and nuanced information (Mulcahy, 2017). Working on devices that most museum visitors already own, XR technologies present a promising move towards more inclusivity, accessibility, and active audience engagement. Contributing to research on the multiple uses of XR in UK museums, this paper focuses on how XR can be operationalised to address contested displays in Western museums. Using an external app for the British Museum as an example, this paper discusses the challenges arising from this intersection, including the entrenchment of immersive technologies in colonial power dichotomies, the risks of performative virtual interventions, and the conflicting agencies museums, companies, and individuals must navigate in this context. The author suggests, as a possible experimental approach, wiki-based XR interactions which engage with non-Eurocentric epistemologies and are co-created by communities commonly disenfranchised in Western museum spaces.

Keywords: XR, Immersive Technologies, Critical Museology, British Museum, Repatriation

RESUMO

Os museus estão a tornar-se, cada vez mais, experiências que empregam múltiplos media e, com a emergência do metaverso (Coates, 2021), as tecnologias imersivas (XR) são projetadas para formar uma parte importante das futuras experiências museológicas. Com opções para fornecer uma multiplicidade de informação não necessariamente hierarquizada, apoiar caminhos individualizados através de exposições, e experiências de visitas, as tecnologias imersivas XR têm o potencial de ajudar a manter os visitantes envolvidos em torno de informação complexa e matizada (Mulcahy, 2017). Trabalhando com dispositivos que a maioria dos visitantes de museus já possui, as tecnologias XR apresentam um passo promissor no sentido de uma maior inclusão, acessibilidade, e envolvimento ativo do público. Contribuindo para a investigação sobre as múltiplas utilizações da XR nos museus do Reino Unido, este documento centra-se na forma como a XR pode ser operacionalizada para abordar as exposições constatadas nos museus ocidentais. Utilizando uma aplicação externa para o Museu Britânico como exemplo, este documento discute os desafios decorrentes deste cruzamento, incluindo a consolidação de tecnologias imersivas em dicotomias de poder colonial, os riscos de intervenções virtuais performativas, e os agentes, em conflito museus, empresas e indivíduos, devem navegar neste contexto. O autor sugere, como uma possível abordagem experimental, interações XR baseadas em ambientes wiki que se envolvem com epistemologias não-Eurocêntricas e são cocriadas por comunidades comummente marginalizadas em espaços museológicos ocidentais.

Palavras-Chave: XR, Tecnologias Imersivas, Museologia Crítica, Museu Britânico, Repatriamento

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1. INTRODUCTION

Contemporary UK museums inhabit a dual role of being both a representative space of colonial exploitation and preservation, and subject to a larger narrative of knowledge reproduction and national identity-building. Historical narratives of British nationhood drive the narratives set out by governmentally funded institutions like UK museums, universities, and heritage trusts. This became particularly apparent in the wake of 2020's Black Lives Matters protests, when UK Culture Minister Oliver Dowden threatened museums and heritage institutions with funding cuts, were the institutions to respond to protesters' demands by removing or critically contextualising problematic displays (Syal, 2021). While calls like this have ample historical precedent (Wintle, 2013), the predicament institutions found themselves in exemplified the multifarious positions they navigate between interests of the public, parliament, investors, donors, and foreign stakeholders.

Immersive technologies (XR)[1] offer some possible solutions to this predicament: they provide a broad spectrum of possibilities in addressing contested displays within Western museums at relatively low cost. XR technologies are less unobtrusive to potentially fragile material set ups, they are easy to adapt to new information or curatorial circumstances, their inclusiveness in terms of multiple language access and reader-friendly text-size adjustments, and their use of well-established information languages within museum spaces make them an attractive option for museum curators, commercial enterprises, and activists alike. Joris Weijdom (2022) describes XR as a *hypermedium* which can, much like theatre, incorporate any other medium. Thus, XR offers an experimental range to critical museology which is unparalleled – or at least, it could be. As I will discuss in this text, there is a noticeable gap between the expectation and media-promoted build-up of what XR could be and what current XR experiences deliver. Irani et al. (2010) formulate their agenda for postcolonial computing as including an "attentiveness to the emergence of hybrid practices in information technology design, coupled with sensitivity to how uneven power relations are enacted in design practice" (p. 9). Within these parameters, XR technologies present an array of possible challenges, but also potential for emancipatory practices. Sarah Kenderdine (2021), borrowing from Johanna Drucker (2013), describes this interactive interface as a "locus of interpretive activity, […] distributed reality, performative acts, enunciative dimensions and systemic ecologies" (Kenderdine, 2021, p. 19). Accordingly, XR interfaces can be an interactive space for exchange between users and content creators, the institution, and the individual, presenting a site of experimentation and exploration in the museum.

The challenges arising in this hybrid space are two-fold: there is a virtual dimension which is constituted by its language, information architecture, and networked digital context (such as websites, applications, platforms); and there is a material dimension which needs to mediate between existing museum structures, bodily co-presence, and user agencies. Both share several concerns in terms of their hierarchies of power and access (Ali, 2014) which place inherent limitations on the potential of immersive technologies in relation to decolonial interventions in museums spaces.

In addition, immersive technologies face strong opposition within activist and researcher communities which seek more tangible change in Western institutions. Accordingly, XR carries the risk of engaging with politically divisive content in a purely performative manner which reaffirms rather than undermines existing power dichotomies. Despite their experimental

[1] XR (Extended Reality) is an umbrella term which encompasses Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR) (Doolani et al., 2020). VR is, in this context, a virtual space which alters a user's perceptive experiences across multiple sensory modalities (audio-visual, haptic, somatosensory, etc.) whilst entirely obscuring their material environment (Lanier, 2017), whereas Augmented Reality (AR) overlays physical environments with a virtual layer of information (Furht, 2011). Mixed Reality (MR) denotes a seamless blending of virtual and physical elements in a user's perception (Benford & Giannachi, 2011), which most AR practitioners aim for, but that is currently not fully implementable. Even though my examples in this text are predominantly AR projects, I use the term XR to consider future or alternative versions of immersive technologies as well.

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potential, current immersive technologies tend to imitate established communication languages, thereby asserting the expectations, ramifications, and limitations of established museum spaces. In this text, I use a 2021 initiative by VICE Media, called *The Unfiltered History Tour*, as a starting point to discuss how XR might be operationalised as an experimental medium in the context of criticising coloniality in UK museums.

Given the political nature of the topics centralised in this paper, I wish to address my positionality in relation to the discussed issues: I am a White, European researcher at a Russell Group UK university, and most of my research draws on decolonial and postcolonial theory in relation to digital technologies. Even though this text does not cite many decolonial/postcolonial writers or anti-racism activists, this is the political, ethical, and epistemic position which underpins my arguments. I view my work as accountable to the communities whose marginalisation decolonial activism seeks to challenge. I explicitly engage with decolonial discourse from a perspective of Critical Whiteness (Applebaum, 2016) and do not speak for any community of which I am not myself a part.

2. UK Museums x Coloniality

While Modern museums have a long history of entanglement with various iterations of colonial violence and have been appropriated as tools of justifying Enlightenment notions of Eurocentric superiority (Findlen, 1994), their role in narrating material culture long pre-dates Western colonialism. The first documented museum, presumably founded in 530 BCE by Neo-Babylonian princess Ennigaldi-Nanna (Casey, 2009), functioned as a promotional space for an imperial identity. Mesopotamian artefacts from the third century BCE visually narrated the link between Neo-Babylonian culture and its Sumero-Akkadian roots, labelled with clay cylinders in three official languages. In the context of Neo-Babylonia introducing an official scripture to assert its ancientness to neighbouring empires (Wilkins, 2011), this can be understood as part of a political agenda which sought create an imperial collective identity. This sense of politicised knowledge production was imitated through the following centuries' private collections, eventually being claimed by Enlightenment writing.

While museum culture is not historically European, Enlightenment authors proselytised its local European practice as part of their ideological framework. In this institutionalised function, museums are representative for Enlightenment thought: they provide predominantly visual displays of knowledge which claim to be accessible to all, but reproduce very specific hierarchies of education, class, gender, race, space and time. Thereby, they validate Western[1] understandings of chronology and order, and position them as superior to other ways of knowing (Findlen, 1994). This was operationalised by proponents of Imperialist ideologies in Europe, forging a strong link between Modern museums and colonial narratives. As Sathnam Sanghera (2021, p. 54) phrases it in relation to British museum culture: "Public museums grew as the empire grew."

Beyond continental Europe, museums were used as a means of authoritative knowledge reproduction, "a powerful tool to aid loyalty and good government" (Hendley, 1914, p. 58), whereas in the United Kingdom, they functioned to "provide information about 'exotic' societies" (Carrington, 2003, p. 82) to a

[1] Western, in this context, is a descriptor for originating from the 'West', conceptualised by Stuart Hall (1997) as a set of ideas, historical events, and social relationships which privilege Eurocentric ways of knowing. However, within decolonial and postcolonial discourse, there are well-established challenges to the notion of 'just one Europe or just one Western modernity' (de Sousa Santos, 2016, p. 17). Accordingly, Southern Europe, the early pioneers of Modern colonialism, became a 'periphery, subordinated in economic, political, and cultural terms to Northern Europe and the core that produced the Enlightenment' (ibid.). When positioning Southern Europe as part of an inner-European constellation of oppression (Bernal, 1987; Dietze, 2014; Baker, 2016), scholars commonly distinguish between the South (Portugal, Spain, southern France, Italy) and two Northern Europes (Eastern: Poland, Russia; and Western: Germany, France, England, Scandinavia) (Dussel 1993, p. 71). 'Eurocentric' viewpoints are predominantly rooted in the latter category, and specifically favour privileged, White, male, heteronormative perspectives which claim universal applicability. The term is not representative of the diversity of European thought and cultures but describes a specific local ideological practice which underpins many Modern cultural institutions, including museums (Chakrabarty, 2000).

European public. This led to a close connection between museum culture and British national identity (Hicks, 2022), which, in concordance with a "pervasive presence" (Nabulsi in Packer, 2017, para. 2) of colonial power paradigms in Britain and its former colonies, complicates critical engagement with the country's colonial past and present. In comparison to its European neighbours, the UK seems to struggle particularly against the "unbearable searchlight of complicity" (Tuck & Yang, 2012, p. 9) which calls its imperial glory into question (Gildea, 2019). The resulting prevalence of "nostalgia and amnesia" (Goodfellow, 2019, para. 11) articulates "the formative experience of empire as less profound and less potent in shaping the life of colonizing powers than it actually was" (Gilroy, 2005, p. 2). In UK public museums, this history cannot be ignored or belittled: it builds the very foundation of the structures which constitute these spaces. However, the debate on *how* these issues might be addressed is still raging, its intricate entanglements with the conflicting interests of different actors presenting a complex puzzle of political negotiations to museums and cultural institutions. Immersive technologies have been cast in the role of one of the possible puzzle pieces: a way of connecting virtual and material information languages, of engaging younger audiences, of introducing an experimental and dialogical element to the discussion of some of the most complex issues Modern museums face.

3. XR x UK Museums x Coloniality

Over the last two decades, emerging technologies have been commonly positioned either as a means of neo-colonialism (Simmons, 2015) or as tools of emancipation (Bijker & Bijsterveld, 2000) in relation to social justice issues. It has been less contested, however, that colonial image reproduction in what Arjun Appadurai (2008) labels "mediascapes" – which includes museums as both material and virtual loci – is inherently intertwined with historiography, visual representation, and architecture (De Sousa Santos, 2016; Fanon, 1961; Hall, 1997; Mignolo, 2002). Accordingly, museums participate in a culture of ideological enactment, where the museum space provides "an interface between the imaginary forces it embodies and the real form that it takes" (Jacob, 2012, p.32), thereby both legitimising existing systems of valorisation and lending a tangible form to these belief structures. In other words, it performs "the economic, social and political ideologies of the society that creates it" (ibid.). This is highly relevant in relation to XR interventions in museum spaces, as they present a virtual extension to their existing architectures, engaging with pre-shaped material and virtual spaces. Thus, it is essential to consider the limitations of such an intervention, to ask who it is accountable to, who profits from it, and whose knowledge it reproduces.

In current debates about the uses of XR technologies in heritage and museum contexts, these questions do not sit at the forefront of academic discourse. Stuart Jeffrey (2015) describes the latter as a field which engages with modes of co-production, physical replication and aesthetic quality, authenticity (Jeffrey et al., 2017), and the complex entanglements of its own production (Huvila, 2012). A majority of practice-oriented XR scholarship focuses on user experience (Wither et al., 2010; Herbst et al., 2008; Hussein & Ali, 2022), technological experimentation (Cavallo et al., 2016; Jin et al., 2021; Shin et al., 2021; Hartmann & Vogel, 2021), pedagogical efficacy (Smørdal et al., 2016; Georgiou & Kyza, 2021; Remolar et al., 2021; Ibharim et al., 2021), or the "place-producing dimensions of an experience-driven application" (Engberg, 2017, p.3). As an emerging field, a majority of studies involving XR are experimental but also, as Marcos Llobera (2012) notes, limited by the pixels and soundbites which constitute their virtual presence. This translates to a comparatively conservative and limited use of the potential XR technologies hypothetically offer. Giacomo Landeschi (2019, p. 25) attributes this to an overestimation of "the role of sight among the senses" which builds "a biased past reality" in the context of using XR for critical historical contextualisations. This corresponds to established decolonial critiques of a disproportionate focus on the *visible* in Western epistemologies, as for instance articulated by Oyèrónkẹ́ Oyěwùmí (2005).

Overlaps between decolonial critique and XR studies do not end at aesthetics, however: objectification, a much-debated topic in relation to the repatriation of looted artworks, presents a central challenge to the potential use of immersive technologies in Western museums.

While XR is commonly considered spatially "non-invasive" by Western scholars due to its non-interference with material configurations (Roosevelt et al., 2015), within decolonial contexts, what – or who – is non-invasive or destructive is very much determined by impact, not intent. Bagele Chilisa (2020) raises several ethical issues regarding the consideration of spirituality and human-object relations in Western-framed research, citing instances which are considered ethical by Western standards but violate the boundaries of Indigenous communities. Depending on the agencies considered, XR interventions could be destructive, even if this destruction is not visible. Labelling XR interventions as "non-invasive" reproduces Western conceptualisations of spatial boundaries and their ideological reverberations. Considering spiritual destruction or displacement could, depending on cultural context, be essential to assessing whether the use of this technology is appropriate for a space. The embeddedness of immersive technologies in Western-centric knowledge networks, in addition to the shifting hierarchies of content creation and editing, is thus a significant factor which museums and XR creators should consider in relation to (de)colonial content.

This challenge is further complicated by a distinctive divide between practice-based and academic XR work (although there are exceptions to this generalisation), as well as its inherent interdisciplinarity. Even though the latter is one of XR's main selling points within academia, being scattered across several disciplines which do not readily communicate with one another or use the same methodological frameworks translates to a lack of transferable metadata (Rahaman et al., 2019, p. 4) and knowledge exchange in XR theory and practice. As a result, the majority of current XR projects in museum contexts display stark disconnects between their exploratory, experimental potential and their implementation in relation to divisive or sensitive issues. I will argue in the next sections that in order to operationalise immersive technologies as critical, political, and experimental museology, we need to start utilising interaction and information languages in ways befitting a hypermedium, rather than treating XR as a virtual, three-dimensional clay cylinder.

4. Contested Art x XR

To outline the challenges faced by currently available XR applications which provide critical content to museum spaces, I will introduce an Augmented Reality (AR) experience I recently engaged with alongside a colleague who is not an XR researcher. I will use this example, and our experience of interacting with it, to explore the potential of XR as experimental museology.

The Unfiltered History Tour is a commercially funded, self-lead AR experience which users can access through an Instagram filter. Created by Dentsu Webchutney for VICE Media, it seeks to contextualise contested displays at the British Museum as immersive video and audio episodes "as told by people from the countries they were removed from" (Dentsu Webchutney, 2021). While the podcast elements and transcripts are available online, users need to be physically present at the British Museum in London to engage with the AR animations attached to some of the museum's most heavily debated displays, including the Rosetta Stone and the Benin Bronzes. Once a user has located one of the included artworks, an Instagram filter is supposed to scan its respective shape and apply an audio-visual contextualisation to it. This approach follows several other recent uses of AR in Western museum spaces[1] and exemplifies the shortcomings of potentially unfledged or unreflected uses of immersive technologies in relation to politically divisive

[1] In terms of scanning method, it is more closely related to earlier North American projects like the *ReBlink* experience at the Art Gallery of Ontario (2017) or the Smithsonian's *Skin and Bones* app (2015). UK examples which have similar modes of engagement to *Unfiltered History*, like the *Art of London Augmented Gallery* (2021) or *Untold Stories* at the Tate Britain (2019) use QR codes for scanning.

and sensitive topics. I wish to underline that I will not centralise specific content choices made by the creators of the *Unfiltered History Tour*, or provide an in-depth review of the construction of this particular experience. According to VICE, their team involved restitution advocates from around the world in the content creation (Faloyin, 2021), and was aiming to contribute to repatriation efforts (Shaw, 2021). I do not wish to endorse this project or claim a thorough understanding of their curatorial process. Rather, I will use the *Tour* as a current example of how XR technologies are used to contextualise coloniality in museum spaces and reflect on the potential and challenges of different available options.

5. Navigation x Narration

The Unfiltered History Tour is as unguided as a guided museum experience possibly can be: it is nestled into what could have just as easily been a non-technologically mediated visit to the British Museum, it provides a map which indicates the rooms the ten chosen artworks are placed in. There are no navigational features nor descriptions of where to find each display within a specific room – which presents a significant hurdle in rooms which contain hundreds of artworks and dozens of other visitors.[1] There are roughly 80.000 displays across the museum's 50 galleries, and an average of 15.000 visitors per day, neither of which the designers of the *Tour* seem to have taken much into account.[2] This is hardly unique in current XR practices in museums: labs predominantly develop applications remotely (Wang et al., 2021), without considering local specificities and practical limitations (such as there being a constant flow of visitors crowding the Rosetta Stone, or there being no public WiFi in the basement of the British Museum, where the Benin Bronzes are located). Wither et al. (2010) argue that it is "critical" to design *for* the location "rather than around it" (p. 46). Herbst et al. (2008) similarly state that "placing greater emphasis on where the action takes place and understanding and therefore using the real locale more effectively" (p. 236) is crucial to positive user experience in interactive AR applications. According to Maria Engberg (2017), this may range from "an understanding of how the position of the user device and the site-specific context interact with the digital design" to "the embodied potential frame for each individual user" (p. 4). This is especially relevant in the Western museum, which expresses in its architecture 'the economic, social and political ideologies of the society that creates it' (Jacob, 2012, p. 32). An understanding of spatial specificities on part of the designers and developers is, however, only one side of this equation.

The structures present in a museum space shape user experience regardless of a creator team's awareness or consideration of them. The *Unfiltered History Tour* makes this influence particularly apparent, since much of the sense of placelessness (Arefi, 1999) and disorientation my colleague and I experienced whilst using the app can be attributed to the layout and organisation of the British Museum itself.[3] This presents a contrast to site-specific installations which were built specifically for an AR application, such as the recent *Green Planet AR Experience* (2022), which was a commercially funded AR experience based around Piccadilly Circus. This experience used time-limited pop-up altered a gallery space at

[1] The app relies on the items being numbered, but since there are no numbers on display in several rooms, the app does not facilitate an effective way of navigating the exhibition.

[2] According to the project's chief developer at Dentsu WebChutney, they did not have access to the museum for some of the development process due to COVID-19 (Shaw, 2021). However, this does not explain why corrections in relation to marker functions and navigation were not made later in the process. One must distinguish, in this context, between design flaws and technological errors: connection errors, freezes, or phone cameras failing to scan visual markers are errors which could, potentially, be resolved at device level. Considering one's path through the museum, how many people are in front of the Rosetta Stone on an average day, or the glare on its glass encasing on a sunny day, however, are aspects which could have been mitigated by different design choices.

[3] As a traditional European collection-based museum (Procter, 2021), the British Museum follows the priorities of British collection practices throughout the first two centuries after its inception. Thus, Egyptian displays – particularly revered amongst British collector-explorers (ibid.) – are on the ground floor with Ancient Greek, Roman and Assyrian artworks which they predate by millennia, rather than in the basement, where the rest of 'Africa' is conveniently located. 'East Asia' can be found behind a room containing Indigenous American artworksWhile this mix of geo-spatial configurations, time periods and continents could be attributed to other narratives – Ancient trade routes or civilisational cross-currents – none of them offer as cohesive an explanation for the layout of the galleries as collector traditions do.

Piccadilly Circus to provide physical prompters for an otherwise entirely virtual interaction. Displaying an Apple-store-meets-rainforest aesthetic, this experience provided comparatively austere physical sets and empty rooms which would then be 'filled' with animations through a mobile AR device and contextualised through audio, narrated by broadcasting icon Sir David Attenborough. The *Unfiltered History Tour* enjoys no such luxury: it must navigate what is already present at the British Museum, rather than being able to move artworks or modify spaces to the needs of the app. It needs to confront "the economic, social and political ideologies" enacted by the material architecture of the British Museum and respond to how these spaces modulate visitor movement (Jacob, 2012, p. 33) and enable interaction. While the *Tour* was not commissioned, designed, or sanctioned by the British Museum, its challenges echo barriers which museums using AR applications are likely to face. For an external application which cannot expect to be accommodated by a museum, these challenges are accelerated: as Paul Cegys and Joris Weijdom (2020) argue, immersive experiences extend beyond the interaction with an interface, which means in museum spaces, arriving, entering, navigating, talking to fellow visitors, and eventually exiting, are all part of the experience. The lack of a sense of spatial orientation as one roams between different time periods, continents, and cultures represented in the British Museum is thus a precondition an external app has to factor in, and should, I would argue, potentially compensate for. As Bishop and Perjoyschi (2013, p. 24) ask in *Radical Museology*: "if the past and the present are collapsed into transhistorical and transgeographical clusters, how can the differences between places and periods be understood?"

As my colleague pointed out, AR applications which contextualise displays may very well provide an answer to this question. They said: "If we were not specifically looking for things, we would just be wandering around aimlessly between different cultures, different places, different eras, with no purpose, with no rhyme or reason". The purpose implicated by the agenda articulated through an immersive experience application presents in itself a form of map, a semiotic path which challenges the narrative authority of the building's architecture and the curatorial choices made regarding its exhibits. Beyond this, XR applications may expand the physical boundaries of the museum and narrate a path which leads its users into a secret back garden or to a curious traffic light a few blocks away, tying physical spaces external to the museum into the virtual realm the application interacts with. Considering this potential, *Unfiltered History* does comparatively little to counteract or subvert the spatial narrative articulated through the architecture and curation of the British Museum. This is not entirely surprising in light of the substantial conceptual challenges arising from such an agenda.

While an XR app could, for instance, provide an order which is more respectful to the distinctiveness and localities of the cultures represented at the British Museum than the layout of its physical displays, doing so simultaneously reproduces Western ways of knowing by adhering to Eurocentric geographical and categorical concepts. Therefore, to conceptually challenge the curatorial (dis)order presented by a space like the British Museum, an XR interaction would have to draw on non-Western epistemological approaches. This is where the experiment can serve as a framework for exploring the limitations of existing boundaries, and the options technologies which were conceptually conceived in the West offer to the self-critique of Western institutions. Following my previous criticism about the *Unfiltered Histories Tour* not overtly introducing structure where the British Museum has a lack thereof, this could also be viewed as a challenging of Western notions of structure. While I do suspect this consideration gives the creators of the *Tour* too much credit, there is an argument to be made for intentional chaos and experimental non-hierarchies in XR app development.

6. KNOWLEDGE X AUTHORITY

An arguable advantage of *Unfiltered History*'s loose reigns approach is that one does not necessarily need to engage with the displays in a particular order, or at a particular pace. Moreover, one may revisit artworks at one's leisure, pause or rewind. This is cohesive with

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the promised exploratory nature of the experience, provides more accessibility than linear narratives, and allows for visitors to talk to each other between displays. I point out the latter because a higher level of immersion usually comes at the price of less exchange between visitors in currently used AR exhibition set ups. *Green Planet*, for instance, used overhead headphones and mounted mobile devices to immersive visitors in various biospheres, creating a journey which isolated visitors from one another, thus discouraging discussion or reflection throughout. As Weijdom (2022) points out, it is precisely these exchanges which make XR experiences so potentially enriching: in the in-between of virtual engagement and setting up, navigating, relocating, or the like, visitors are afforded the option of autonomous reflection and re-narration. This potential of XR technologies to transfer narrative authority to a visitor is one of its advantages in subverting or critically contextualising established institutional knowledge reproduction. But as *Unfiltered History* demonstrates, providing space for discussion by creating a disjointed patchwork of navigational challenges is not a particularly effective mode of facilitation.

One option, as Beacham et al. suggest in the 2008 *London Charter (for the use of 3-dimensional visualisation in the research and communication of cultural heritage),* is to offer rigorous transparency in relation to the objectives, processes, and mechanisms underpinning the presented content, layout, and interaction language. This could encompass a rationale, content history toggles, or a layer of metadata which visitors may access for further information. The latter, in particular, could simultaneously function as a basis for more advanced, wiki-based approaches to knowledge dissemination, and potentially facilitate better information exchange between XR researchers and practitioners. In order to bridge this gap, curiosity for experimentation and flexibility should not be restricted to user interaction and design, but guide each aspect of the creation process, including data storage and metadata strategies. Given that most big museums are grappling with data asset management decisions as their collections are becoming increasingly digitised, thinking ahead to more user-facing knowledge reproduction could pave the way for more experimental uses of critical XR interactions in our metaversal future.

Before I elaborate on this option, which would require the museums themselves to be involved in the production of an XR interaction, I will address some of the less complex options available to smaller, external content producers. In this context, development companies can likely learn from the wealth of theory which has emerged from decades of museological discourse. A key point is the shift from an authoritative, conservative model of teaching to more immersive, exploratory ways of learning and critically engaging in the museum, which has been a central topic for researchers and curators alike (Falk & Dierking, 1992; Hooper Greenhill, 1992; Silverman, 1995; Falk & Dierking, 2000; Henderson & Atencio, 2007; Meisner et al., 2007; Roberts et al., 2018). The way the *Tour* presents its information aligns closely with established languages of communication within the museum, such as audio-guides and informative labels: each artwork, once scanned, shows a static, minorly 3-dimensional[1] visualisation which displays the text of the audio like subtitles in a film. The audio is the primary means of informational content transmission and does little a traditional audio-guide cannot. A significant difference, however, is who is controlling the narrative: an audio guide which has been designed and curated by the British Museum, in accordance with its agendas, has a different informational authority than a commercially produced intervention, and ties into the monetary dimension of Modern museum spaces in a different way.

Audio-guides are usually paid add-ons provided by museums which otherwise allow free entry to the public, or part of the ticket price

[1] In the sense that while they appear three-dimensional, one cannot move around the artwork and see different sides of the tableau or interact from different angles. Once scanned, the plane the information is angled around is fixed (albeit sometimes at odd angles). There are no size-adjustment options or responsive elements.

in UK museums which cost entry. *Unfiltered History* is free and available on visitors' mobile devices without necessitating a download. Content-wise, it consciously positions itself as outside of, if not opposed to, the museum space it interacts with. It works with a narrative of telling visitors truths the museum would rather not have them know, thus presenting itself as subversive to the British Museum, rather than being part of its narrative (Liu, 2021). Any intervention which positions itself thus, and which claims to represent the voices of people who lay a claim to displaced art, needs to address the potential of *aiding* the museum's agenda in relation to the retention of contested artefacts. While I will address this challenge, and issues of performative uses of XR in decolonial contexts, in more detail in the subsequent section, it is important to note that by reproducing established means of communication which have been employed by Western museums for centuries, the *Tour* is legitimising the British Museum's role as an authority of knowledge.

One option of translating subversion to an established institution on an *interactional* level is to make use of XR's potential to bend the conventional realm of critical engagement in museum spaces. This means entering an experimental territory with a set of challenges which are, presently, unique to XR. The *Green Planet* experience, for instance, demonstrated some of the difficulties developers face when they actually centre their designs around interaction: there is a notable suspension of spatial social etiquette[1], there is a gamification of issues which might not benefit from being gamified, and the spatial awareness visitors normally adapt in an exhibition space is severely altered. If companies like Google or Meta, as well as museums continue to produce and commission work which stays within the safe realms of established communication languages, there will be no experimentation, and thus no solutions or problematisations of these factors. Moreover, the incredible potential XR technologies present will not be fully tapped, which is a loss for both stakeholders and visitors. Therefore, the courage to experiment and test the limitations of this hypermedium is essential for XR to deliver what has been promised on its behalf, and eventually, to incorporate museums into a metaversal future which will blend the boundaries between physical and virtual spaces.

One of the keys to utilising these elements is, I argue, a focus on interaction over established top-down models of information consumption, such as reading labels or listening to unilateral audio guide narratives. Most current XR experiences in museums advertise this dimension heavily but largely fail to deliver– there are some exceptions, of course, but this predominantly applies to VR experiences and responsive video-mapping installations, which are much less self-directed than AR or MR experiences. Whether this mismatch between potential and implementation in AR/MR is due to design processes which are insufficiently tailored to XR, stakeholder requirements, monetary restrictions, time limitations, or a number of other factors, may vary from case to case. A disconnect between the projection of what an XR experience could be and what is currently implemented in UK museums is therefore a significant factor which connects audience expectation, institutional agendas, and monetary underpinnings. One of the options museums, creators, and developers could explore would be wiki-based approaches to critical knowledge reproduction and interaction in XR.

A wiki is a hypertext publication which is collaboratively edited and overseen by its own audience: users create content, define the relationships, and establish links between the site's pages (Parker & Chao, 2007). Dubbed "social software", wikis are perceived as being especially democratic and interconnected, allowing users to develop digital content collaboratively and open to the public (Alexander, 2006). In practice, wikis are not as hierarchically flat as their conceptualisation suggests: numerous studies on *Wikipedia*, arguably the most famous wiki, have demonstrated stark inequalities in access,

[1] I observed several visitors walking up to others, holding devices much closer to a stranger's face than would ever be socially acceptable outside of the experience.

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authorship, and knowledge authority (Ortega et al., 2008; Graham et al., 2015; Wagner et al., 2021), with more than two thirds of edits being made by a small, homogenously positioned group of people. While wikis are far from a magical potion to solve issues around knowledge gatekeeping and informational authority, in a contained institutional space with a tradition of steep hierarchies and little transparency, they might provide a useful basis for experimentation.

This is not a new idea: in the early 2000s, there were initiatives to encourage visitor-written labels (Nashashibi, 2003) and include non-expert voices in immersive elements such as audio-guides. With the increasing plaformisation of knowledge – from the prevalence of Wikipedia and Quora to Youtube, Twitter and Meta rivalling traditional news sources (Bruckman, 2022; Carwil, 2021; Marchal et al., 2020; von Nordheim et al., 2018) – over the past two decades, however, these approaches have both become more palatable and less romanticised. Katarzyna Murawska-Muthesius (2016, p. 1) frames the critical museum as having potential to be a "forum" which counteracts hierarchies of information, a point which seems especially convincing for future audiences of digital natives who do not delineate between information obtained through a book, a blog, or a TikTok video. However, in the global media sphere, the reckoning of a lack of gatekeepers and a radical subversion of established knowledge authority has come in the form of rampant disinformation and the canonisation of once-fringe conspiracy theories. Thus, one must ask what the flipside to a potential flattening of knowledge hierarchies in a museum space is: if anyone can provide whatever information they want, how can an institution still ensure factuality and valuable learning experiences?

In immersive technologies, this particular risk is not so apparent: while XR apps can encourage engagement, contributions, and discussion, there is necessarily an element of editing which can filter out content that would be inappropriate or detrimental to the agenda of the respective app. However, this is simultaneously a counterargument to their utilisation in a decolonial context: who these editors are, whose agendas they represent, and whose voices they choose to amplify is often determined by who already holds power, authority, and monetary means. In the next section, I will discuss the potentially problematic overlap of conflicting agencies between museums, technologies, and communities which have, historically, been excluded from shaping either.

7. RETAINING X EXPLAINING[1]

Standing in front of the Rosetta Stone, the British Museum's single most popular exhibit, scanning its shape is challenging for several reasons: on a busy Saturday morning, there are numerous excited visitors blocking the view, there is a glare on the famous stone's glass encasing from the spring sun outside, and all my phone is showing me is the beachball of doom. Once my colleague gets the animation to work, the Rosetta stone is surrounded by a black-and-white, slightly abstracted image of a sea battle. Listening to the audio, Egyptian Egyptologist Heba Abd el Gawad[2] narrates the story of the Rosetta stone and why it is so enigmatic of epistemic colonial violence. It performs, as my colleague points out, the colonial encounter virtually, reliving a colonial moment and enhancing a colonial practice. This encapsulates three major issues current XR practice faces in relation to the critical contextualisation of politically divisive topics, such as the repatriation of looted art: firstly, its entrenchment in Imperial practices; secondly, its risk of metaphorical activism; and thirdly, the contentious space between activism and commercialism which institutions, communities and individuals must each navigate in their respective realm.

In the *Unfiltered History* example, the black-and-white images function in a similar fashion to the aforementioned replication of

[1] In reference to the UK Government's Retain and Explain Policy on contested artworks (Dowden et al., 2021).

[2] When listening to the audio, it is not clear whether this is Gawad's own voice. The Unfiltered History Tour website credits three voice actors for this episode, Antoine Morcos, Clement Geiger and Serena Salvadori, but it is not evident what their respective roles are.

established museum tools like audio-guides and labels: it enhances an existing colonial practice rather than undermining it. The *Tour* does not point towards the overtly passive language in the British Museum's labels of these artefacts or corrects 'looting' to 'grave robbing' where appropriate. This formal assimilation to the space it interacts with equals a respectful acceptance of the norms this space narrates. These small ways of conforming translate into every layer of information reproduction: the images are black-and-white, echoing the aesthetic of historical photographs, but they are not real images or depict real people. The comforting distortion black-and-white images provide – blood and ink look the same, dead bodies could just as easily be puppets – allows the audience to dissociate and follows a long tradition of negating the ruthlessness and cruelty of colonial violence. In this context, the directionality of information, and the agendas underpinning this project are highly relevant. This is not a crowd-funded initiative by repatriation advocates or BIPOC (Black, Indigenous, (and) People of Colour) researchers who are trying to overcome established power disparities by inserting themselves into a space the British Museum categorically excludes them from. It is a follow up to VICE Media's *Empires of Dirt* video series (Liu, 2021). Notably, it is not called the *Unfiltered Histories Tour*, as one might expect of an intervention that seeks to recognise a multiplicity of perspectives and historical narratives, though it uses *History* in the singular. While this is odd in the context of decolonial activism, it is entirely predictable from a marketing viewpoint which considers what people are most likely to Google, and which hashtags gather most traction. I would argue that details like this outline the larger issues underpinning repatriation discourse in Western museums, and the potential role of immersive technologies in this context.

Learning nothing about the activists, their projects, or how one might contribute to them means their voices, however well-intended, are relegated to a realm of metaphorical intervention. There is no in-built potential for material change or for monetary benefits for those whose heritage is being withheld at one museum or another. Quite the opposite applies: the structures in place directly correspond to colonial power distribution and allow institutions which have perpetrated colonial violence, or benefited from those who did, to continuously profit from the reverberations of this violence. Currently, this dynamic is breaching into virtual spaces through virtual objects with material monetary value called NFTs (non-fungible tokens). According to UK copyright law, museums control who can take pictures or scans of the exhibits they have, and profit significantly from merchandise based on this form of ownership.[1] While more radical activists have suggested this could be subverted by simply stealing from European museums (Diyabanza, 2020), committing virtual theft through an XR app has significantly fewer tangible repercussions in terms of impact, personal risk and, perhaps, ethical ambiguity. Future 'subversive' XR experiences might encourage people to take illicit pictures in museums and share them, or enable visitors to scan contested exhibits and then access a 3D model which they may 3D-print, as many times as they like, in the comfort of their own home. But these are surface interactions which, whilst having transformative educational potential for individual visitors, do not challenge the structures of the Modern museum or the narratives of its self-justification.

A substantial risk XR interventions carry is that they might mitigate Western museums' pressing need to face their colonial structures and take steps to change them. This is, in my view, a particularly compelling argument because it would mean that creating XR experiences which critically contextualise contested exhibits in immersive, subversive, and engaging ways, would effectively undermine the agendas they try to support. Regardless of how many arguments can be made in favour of XR's ability to address non-tangible aspects of repatriation and spirituality, their accessibility range, or educational

[1] The British Museum made a profit of £4.3 million in 2019 but – largely due to the COVID-19 pandemic –only £300 000 in 2020, indicating that a large proportion of its income is generated through physical visitors and merchandise sales (*British Museum Admissions Income 2020*, 2021).

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capacities, it does appear unlikely that if, for instance, an incredible immersive experience drew more and more visitors to Hoa Hakananai'a, this entity would ever be returned to Rapa Nui. Therefore, one approach to effectively support repatriation efforts could be to produce utterly mediocre or faulty XR interactions. Another would be to not use them at all – I know researchers and activists who would argue that immersive technologies are never appropriate to be used in a critical museum context because any effort to address colonial violence within the museum is to try and dismantle the Master's house with the Master's tools.[1] I personally do not view avoidance of a tool as a productive way of facilitating change – XR technologies will be as integrated into our future lives as the Web is now, whether it is used to critically contextualise contested artefacts or not. My hope is that by broadening its use, by being experimental, daring, and subversive where possible, there will be a wealth of critical content which shapes audience interaction by the time XR interactions become as ubiquitous in museum spaces as audio-guides were pre-pandemic. This content and its dissemination, its platforms and formats can be shaped by artists, activists, and researchers, and build norms which institutions have to adjust to, rather than vice versa.

However, reclaiming what is already being appropriated for commercial interests can only work when the communities whose culture has been displaced and dispersed in museums are involved in the process. As the *Unfiltered History Tour* demonstrates, this involvement cannot stop at content creation but needs to consider the narratives of the spaces content interacts with, the language it communicates in, the interactive possibilities of its knowledge dissemination, and the management and platformisation of its data. This includes considering the material impact of a virtual interaction, and a sincere engagement with the epistemological underpinnings of the presented content. The form this takes will be different for individuals, companies, creators, developers, and museums, respectively. It is the latter who carries the largest burden of responsibility, as they have the largest influence on what the agendas, boundaries and leaps of the future museum might be. Rather than being 'the place where change goes to die' (Procter, 2020, p. 271), museums have the opportunity to invest capital and time into addressing the destruction and violence that has been perpetrated, and which they continue to profit from. Companies have the opportunity to create work which has lasting impact, rather than being performative. This process is necessarily going to be experimental, and will include missteps, negotiation, and prototypes which are less than perfect. There are plenty of activists and artists who have, time and time again, demonstrated that raging against the dying of the light is worth the missteps and failed experiments, because eventually, new norms will emerge.

8. Conclusions

While XR design, research and practice are no longer in their infancy, they are not fully grown yet, either: XR is in its tweens – promising and bright, but also slightly awkward and not quite to be trusted with large amounts of responsibility. Therefore, creators and stakeholders alike should be wary of overburdening it with socio-politically complex content which XR is not quite mature enough for yet. As I have argued in the previous paragraphs, there could very well be a version of future uses of XR which will efficiently support decolonial dialogue in UK museums and provide a genuine challenge to established modes of knowledge reproduction. This does, however, require rigorously transparent, inclusive, and interactive approaches which centralise the claimants of displaced art, empower those marginalised by coloniality, and shift the narrative from being controlled by Western institutions to a genuinely dialogical realm. This transformation cannot happen without a move away from top-down, linear information transmission between an institution-as-gatekeeper-of-knowledge and a visitor-as-passive-consumer. Putting words like 'interactive' or 'exploratory' in one's app

[1] In reference to Audre Lorde's seminal essay 'The Master's Tools Will Never Dismantle the Master's House' (1984).

description or not providing an order to content snippets does not suffice to enable this shift. Rather, immersive technologies need to embrace non-Eurocentric ways of knowing and consciously aim at producing material change for those who Western institutions are designed to disenfranchise. Content creation, replication, and interaction engage in multiple levels of technology-facilitated exchanges and alterations, which is why it is crucial – for transparency, transferability, accessibility, and accountability – to delineate between sources of inherent bias, and treat cultural engagement as a locus of experimental, participatory re-narrations of spaces and objects which have traditionally been reserved for authoritative institutions.

The pandemic has given UK museums a push towards the virtual: their boundaries are being tested by virtual exhibitions, exhibitions in computer games, interactive outdoor exhibition hunts, and virtually mediated solutions to decade-old issues which are slowly reaching a critical majority in the court of public opinion. The challenge, going forward, is to keep the zeitgeist of experimentation and improvisation the past two years have summoned, and use this exploratory potential to shape XR into the critical museology tool it could be.

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