Using Digital Imaging Technology to Decolonize Education in a Museum Context

Mlungisi Ronald Shangase
Vaal University of Technology
Anneke de Klerk
Vaal University of Technology

Abstract

Museum information and knowledge is persistently understood and communicated according to Eurocentric concepts and provides only a limited account of the experience of the museum environment as place. In this paper we develop a conceptual framework to guide how Digital Imaging Technology (DIT) can change the situation to an inclusive, less hegemonic approach. The purpose of this paper is to explore in theory the potential use of DIT to enhance and facilitate experience and the educational function of the Port Natal Maritime Museum (PNMM). Two relevant tasks of decolonization are discussed which includes to develop access and to develop a non-dualist knowledge system to achieve a more engaged museum experience and to enhance education and learning. The paper describes a potential dynamic from environment through space, to place as activated by human involvement for utilization and experience. The role of technology in this dynamic is one of mediating the potential of experiencing a place on both the microperception level, where individual needs and wants regulate the unlocking of the potential for utilization and experience, and on the macroperception level for contextual dimension of experience.

Keywords:

museums, digital imaging technology, education, technology mediation, experience.

Introduction and background

In this paper we present the a conceptual framework developed in order to guide the installation of digital imaging displays in the Port Natal Maritime Museum (PNMM) with cognizance of the need to decolonise education in South Africa (Mbembe 2016). Towards this end we draw on theories on Experience of place, in relation to a postphenomenological understanding of how technology mediates such experience within the specific case of the PNMM.

The PNMM opened in 1988 in the Durban Harbour on the then Aliwal Street, now Samora Machel Street. The museum's attractions, as shown in Figure 1, consist of floating vessels that museum visitors can board to explore their interiors and engine rooms together with number of small ships and boats with various functions that were in use between 1957 and 1984 and other displays that mainly relate to historical maritime practices. Drawings and historical photographs take the visitors through the history of the development of the Port of Durban over 170 years from Bay to Port. A large number of artefacts are found in the Britannia Room which is the only exhibition hall in which diverse exhibits are displayed that aim to provide the visitors with information on the original context of use of displayed artefacts.
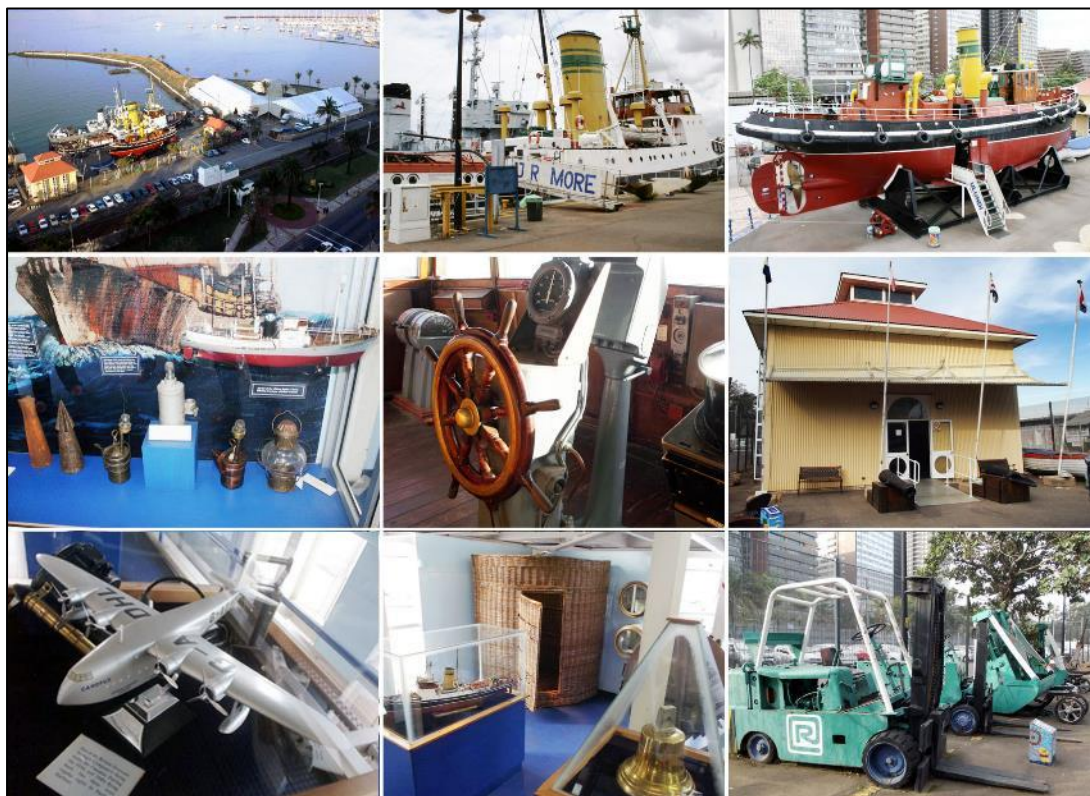
Figure 1. The Port Natal Maritime museum and selected displays.

At the time of writing this paper, visitors to the PNMM are able to board vessels and interact with the displays in a playful manner. Because two of the vessels are floating on the water visitors can therefore feel the movement of the water while exploring cabins and engine rooms. Visitors can also ring bells, fiddle with non-functioning compasses and pretend to 'steer' the ships by turning the wheels, et cetera. In a sense visitors enact a 'sailor' or perhaps a 'captain', or a 'cook'. This interactive experience is supported with written (and in some cases visual) information displayed on tags and boards intended to augment such playful engagement with information that would facilitate learning. For the outside displays of, for

example rope-making machines and smaller boats, there is an audio guide system that can be accessed through a hand-held device. The audio guide is, however, seldom used according to the general assistant at the PNNM and the supporting texts (audio, visual and written) that provide contextual information regarding the artefacts and their original uses (see Figure 2) are seldom engaged with by visitors (Makhanya 2017, personal communication, 7 August). For the purposes of this article, we refer to the original context; in which the various objects and vessels were used, 'place 1'.   The current context of the museum in which the vessels, small ships, boats and various displays are experienced, is termed 'place 2'.

A variety of **by products** were extracted from whales and used for industrial and domestic purposes. Whale products were commonly used in the manufacture of products as widely divergent as petfoods, soaps and industrial lubricants, to mention only a few.

WHALE MEAT EXTRACT

WHALE OIL

WHALE PROTEIN MEAL

Figure 2.   Detail of The History of Whaling display with contextual information displayed on a tag.

According to the International Council of Museums (ICOM) (2014), education and recreation are two of the core functions of a museum. In accordance with the ICOM, the mission statement of Durban Local History Museums, which the PNMM falls under, is given by the museum manual as:

> To provide an effective educational and recreational service in the Durban Metropolitan region, through selective collection, documentation, research, interpretation, conservation and display of materials both past and present; and to promote their use for the benefit of all. (Oberholzer 1996, pp. 12–13)

The manual further proclaims an "urgent" need to keep abreast new technological development in audio-visual media in order to access a wider audience (Oberholzer 1996, pp.12–13). From the description of the museum in relation to core purposes of a museum as outlined by the ICOM, the PNMM falls short on two fronts. Firstly, the displays do not make use of contemporary audio-visual technologies, or digital imaging technologies (DIT), as we will refer to in this paper.   Secondly, while providing entertaining interactive experiences, the displays do not succeed in facilitating an engagement with the original context of use of the various artefacts and vessels on display. The reasons for this failure

could be found in an assessment of the way the supporting educational information is displayed as well as the nature of this information.

Two decolonisation tasks

The way in which the above-mentioned supporting texts present information conforms to Eurocentric norms of knowledge in that it is mostly linear, it presents fixed viewpoints, and separates the knowledge from the embodied subjectivities of knowing subjects. As Lander maintains, Eurocentric knowledge "is based on the construction of multiple and repeated divisions or oppositions. The most characteristic and significant of these—but not the only ones, to be sure—include the basic, hierarchical dualisms of reason and body, subject and object, culture and nature, masculine and feminine" (Lander 2009, pp. 40).

The scenario described above therefore results in inadequate learning and limited visitor experience. The displays therefore fail to facilitate engagement with 'place1'. Dibley (2005) states that the persistence of Eurocentric knowledge structures within museum institutions is part of what motivates the frequent calls for museums to be 'redeemed' from their colonial legacy. For the purposes of this paper we work with a broad definition of decolonization which pronounces the decolonisation project as an effort to expose and redress in public, the "ontological violence authorized by Eurocentric epistemology both in scholarship and everyday life" (Sundberg 2014, p. 34). With this paper we focus on "everyday life" rather than on scholarship. Dibley (2005) is, however, sceptical about such redemption narratives because, he argues, the colonial legacy runs much deeper than racism, classicism, and sexism because it relates to "the violence of the Eurocentric epistemologies" that have subverted other ways of thinking and other ways of doing.

From a recent paper by Mbembe (2016) on decolonization we lift out certain points that relate to museum education and experience. In this paper we engage with only two of the many issues Mbembe mentions in relation to the decolonisation of the university. These issues are equally relevant to the museum as an institution, especially in light of the current mandate of museums to develop their education role (Kotze 2017). Firstly, Mbembe raises the issue of opening up access to various institutions as an essential project of decolonisation. Mbembe maintains that access is more than just being allowed in, it is also about a possibility to inhabit a space to the extent that one could say "this is my home, I am not a foreigner, I belong here, this not hospitality, it's not charity" (2016, p. 30). This first task of decolonization points towards the question of how a museum can become such a place that draws visitors into such a sense of belonging.

The second task, highlighted by Mbembe, that we identify as relating to the museum experience, is to develop a non-dualist knowledge system where the "knowing subject is not enclosed in itself and picks out at a world of objects and produces supposedly objective knowledge of those objects" (Mbembe 2016, p. 32). A non-dualist knowledge system where the knowledge is not independent of knowing subject, implies that knowledge (which includes science and technology) is socially constructed. Ihde maintains that by the end of the 20th century, the general consensus amongst philosophers of science was that science was now seen as "fully acculturated, historical, contingent, fallible, and social, and whatever its results, its knowledge is produced out of practices" (Ihde, 2009, p. 8). Knowledge is not only inseparable from the knowing subject, but also intimately tied to historical and even physical contexts of use and of production (Ihde, 2009, p. 8). The way that knowledge is transferred in educational contexts such as museums, however, does not necessarily acknowledge this.

In a Eurocentric knowledge system, even if the socially constructed and contextually produced nature of knowledge is acknowledged, hegemonic structures would regard knowledge produced in Western societies and through Western practices as superior to

other contexts. In a museum context, a non-dualist, decolonised understanding of knowledge would therefore imply that no two visitors would gain precisely the same knowledge and understanding from a museum visit, but also that one kind of knowledge would not be regarded as superior to another. Now that we have explained the mandate of museums to develop education through the implementation of DIT, within the contemporary need to decolonize educational structures, as argued by Mbembe, we are faced with potentially conflicting aims as DIT could be seen to be colonial technology. In the following section we discuss the nature of DIT and the role it can play in a museum context.

The role of digital imaging technologies

Digital Imaging Technology presents photography and audio-visual media in a digital technology environment. Althaus (2000) clarifies that DIT refers to the ability to digitally capture or scan an image; image processing and editing; computer image display; and sharing images almost instantaneously, thus making digital images a common component of hi-tech communications. In short DIT addresses (a) digital image creation and (b) management, yet considering how the digital image will be (c) accessed and (d) used. These four dynamics are critical in the use of DIT.

Given the above description of DIT, can digital imaging technologies participate in addressing the above-mentioned tasks of the decolonisation project? Schiwy (2003, p. 3) writes that a certain school of thought holds that

> [T]echnology is not neutral […] it produces involuntary effects […] video inscribes a particular logic of production. Having emerged in capitalist, colonial and patriarchal contexts, audiovisual media carry the burden of a colonial geopolitics of knowledge.

In light of such critical perspectives, it would seem as if DIT cannot legitimately participate in the decolonising project. A brief survey of scholarship, however, shows that many researchers and individuals are in fact doing just that (see Stam and Shohat 2014; Souza et al. 2016; Winter 2013).

To treat a technology in a way that it remains forever embedded within the ideology that was responsible for its development is an essentialist universalising approach that denies contexts of use and bodily praxes. According to Don Ihde's (2009) philosophy of technology one should rather ask who is using the technologies, in what way and for what purpose. Instead of formulating universal theories of technology, Ihde holds that technology is constituted through relations that shape by virtue of and around it. Although technological artefacts are seldom neutral, the bodily praxis and context of use shape into a variety of possible relations between human, technology and the world. Peter Paul Verbeek (2005; 2010; Verbeek & Rosenberger 2015), building on Ihde's work, explains that humans, technologies and worlds are simultaneously co-shaped in relation to each other (without being reduced to immaterial relations) and thereby presenting an integrated, non-dualist understanding of subject and object. Various kinds of relations therefore bring about different ways of knowing, experiencing, existing and making meaning.

According to Verbeek (2005, pp.122-123) such ways of knowing occur on two intertwined spheres, the microperceptive and the macroperceptive where microperceptual experience considers the bodily dimension of sensory perception, macroperceptual experience which refers to cultural or hermeneutic perception that he describes as the contextual dimension of experience. The former usually is taken as immediate and bodily focused as in an actual seeing, hearing, smelling, touching, and tasting. The latter is a framework through which sensory perceptions become meaningful. While human experience considers interpreted perceptions the interpretations are informed by cultural context and places of occurrences. Verbeek (2005, pp. 122-123) maintains that microperceptual and macroperceptual

experience cannot be separated from each other as they are closely linked and they are intertwined. In other words, bodily perception cannot exist without being interpreted and the interpretation cannot exist without something to interpret (*Ibid*).

Both of these dimensions of experience belong equally to human life and the world and draw from the three basic kinds of relations between humans, technologies and worlds, which Ihde termed embodiment, hermeneutic, alterity, and background relations, all of which transform human experience and the world in some way or another. Van den Eede (2015, p. 146) emphasises that these various relations often overlap, and one often finds more than one kind of relation formed in the use certain artefacts, in different contexts. Rosenberg and Verbeek (2015, p. 14) explain that, 'when a technology is "embodied," a user's experience is reshaped through the device, with the device itself in some ways taken into the user's bodily awareness'. With hermeneutic relations, aspects of the world are interpreted through the artefact by 'reading' instruments. This therefore involves a "direct experience and interpretation of the technology itself" (Verbeek & Rosenberger 2015, p. 17). With alterity relations, the technological device is fitted with some form of interface that allows it to "mimic the shape of person-to-person interaction" (*Ibid*., p. 18). The result is that the device becomes a quasi-other with which we must interrelate.

These various relations results in microperceptual experience due to bodily dimension of sensory perception and contextual dimension emerge through macroperceptual experience. Inside the J.R. More vessel, for instance, visitor experiences are mediated by technologies through various kinds of relations. The ship itself extends human physical capabilities by allowing visitors to move around on water. This function, however, becomes transparent and is not part of visitors' conscious actions (embodied relation). The air ventilation system which has been recently restored, functions equally in the background, providing a constant droning, interspersed with sounds emanating from the harbour. For current visitors the sound of the ventilation is just that, a droning. Macroperceptual experience is, however, necessary for visitors to understand that for sailors that manned the ship while it was still in use, the air-conditioning system was their oxygen supply without which they could not function inside the ship.

When the vessel was still in use, sailors would navigate by reading data off various instruments, including a nautical compass (hermeneutic relation). At the moment, however, the nautical compass displayed in the museum is not functional, and is displayed in the Britania Room as a mere curiosity, with no contextual information. In this view how can DIT be implemented to allow visitors to also learn about the past (place1), in such a way that they are not required to take an uninvolved step back to access knowledge. How can visitors be drawn in to experience a sense of belonging in place 2, and thereby access an aspect of place 1?

Phenomenology of Place

In order to answer these questions, we turn to a phenomenological understanding of place, based on concepts initially developed by Edward Relph (1976) and later adapted by Tim Ingold (2000) David Seamon (2015) and Jeff Malpas (1999) among many others. A phenomenological approach to place emphasises embodied experience, that takes the bodily, emotional and physical aspects of human interaction with their world into account (Casey 2001, p. 417). Even though the distinction between the terms space, place and environment are not always clear and have been interpreted in different ways , for the purposes of this paper, we work with place as differentiated from space and environment in the following way: *Environment* refers to a set of physical constraints, prior to inscription for use (Ingold 2000, p. 19), where *space* refers to human involvement with the environment for utilization. With *place*, an additional layer of human involvement results in a concept that

combines location, locale, and sense of a place. The concept of place allows for meanings and attachments to be forged in relation to individual, socio-economic, political and environmental factors (Seamon & Sowers 2008, p. 49).

The three terms are intimately interrelated and do not represent a linear progression. As Seamon mentions, "for Relph, the unique quality of place is its power to order and to focus human intentions, experiences, and actions spatially […] our understanding of space is related to the places we inhabit, which in turn derive meaning from their spatial context (Seamon & Sowers, 2008: 44)". What we want to emphasise here is the increasing level of human experiential involvement that results in particular meaning-making as opposed to generalised utilisation purposes characterised by the term 'space'. Place therefore offers an opportunity for interactive meaning making.

The meanings forged could, however, result in either a sense of deep belonging, inclusion and attachment or of alienation and separateness, or anything in-between, depending on the way in which a visitor (in the present case) is involved, and the kind of utilisation the visitor engages in. Seamon and Sowers (2008, p. 46) claim that the crucial phenomenological point that Relph makes is that
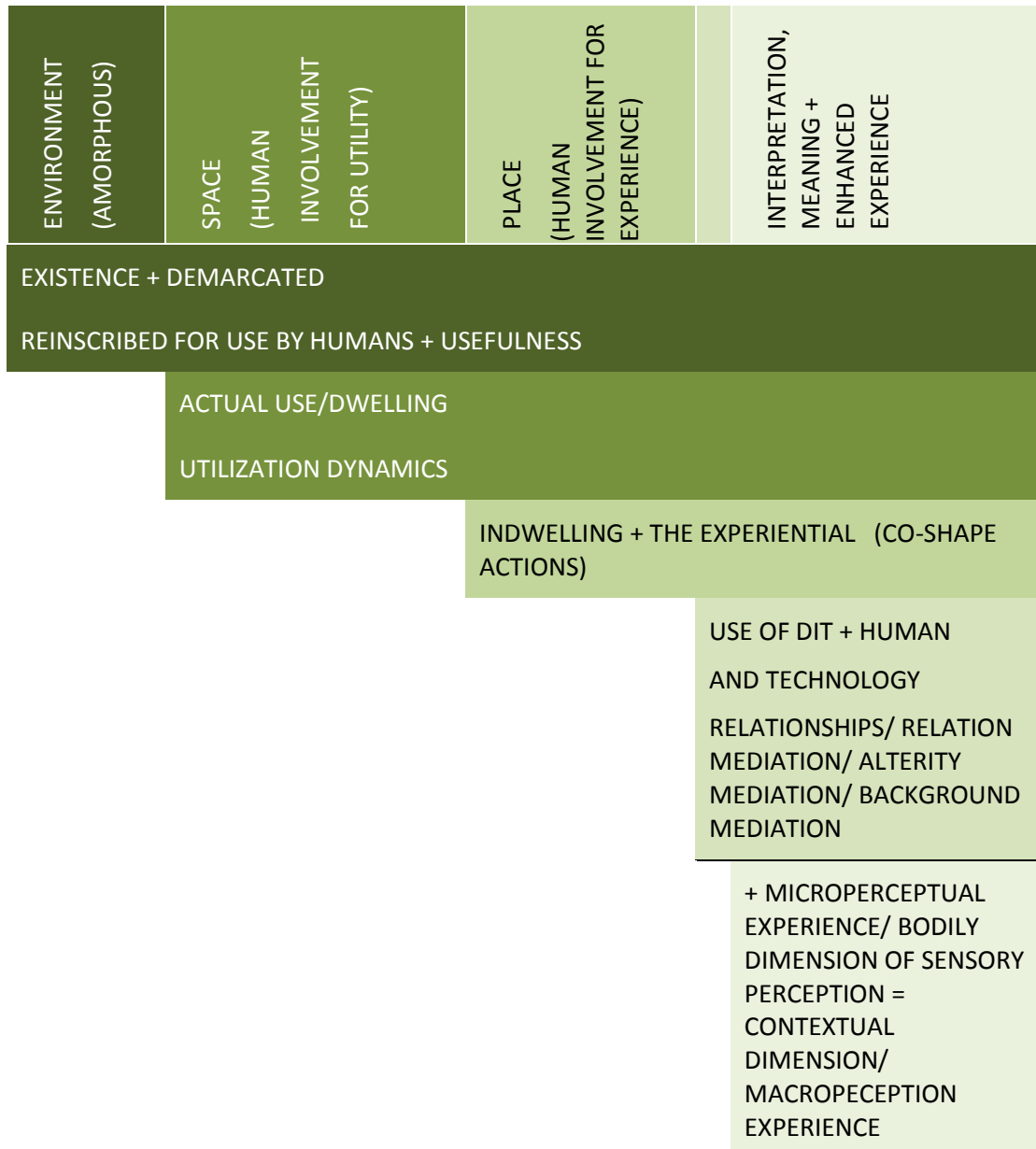
> [O]utsideness and insideness constitute a fundamental dialectic in human life and that, through varying combinations and intensities of outsideness and insideness, different places take on different identities for different individuals and groups, and human experience takes on different qualities of feeling, meaning, ambience, and action.

Relph's concepts of 'insideness' and 'outsideness' relates to Mbembe's (2016, p. 30) understanding of access as an important part of the decolonisation project. Access by virtue of charity, does not grant 'insideness',

In the current situation we could argue that visitors to the PNNM encounter the original context of use as space, rather than the desired 'place1' due to a lack of utilisation, experiential involvement and macroperceptual experience. If we are to achieve the decolonial tasks of facilitating meaning making as education, we therefore need to ensure that the introduction of DIT provides ways to mediate visitors' experiences of both place1 and place2 as insiders, not separate either from the place or from the meaning created and understandings developed.

From the phenomenology of place and postphenomenology of technology briefly outlined above, the following framework was developed in order to guide the eventual development of DIT installations (see Table 1).

Table 1. Conceptual framework for DIT installations at PNNM

ENVIRONMENT (AMORPHOUS)	SPACE (HUMAN INVOLVEMENT FOR UTILITY)	PLACE (HUMAN INVOLVEMENT FOR EXPERIENCE)	INTERPRETATION, MEANING + ENHANCED EXPERIENCE
EXISTENCE + DEMARCATED			
REINSCRIBED FOR USE BY HUMANS + USEFULNESS			
	ACTUAL USE/DWELLING		
	UTILIZATION DYNAMICS		
		INDWELLING + THE EXPERIENTIAL (CO-SHAPE ACTIONS)	
			USE OF DIT + HUMAN AND TECHNOLOGY RELATIONSHIPS/ RELATION MEDIATION/ ALTERITY MEDIATION/ BACKGROUND MEDIATION
			+ MICROPERCEPTUAL EXPERIENCE/ BODILY DIMENSION OF SENSORY PERCEPTION = CONTEXTUAL DIMENSION/ MACROPECEPTION EXPERIENCE

This framework illustrates increasing human involvement that form layers of human experience that deepen from the experience of environment to that of involvement and interaction and the forging of meaning and a sense of place. The framework illustrates that with any environment it comes to existence due to human intervention and would be demarcated for a particular use. Just as is the case with the PNMM it is in the harbour environment. However, the environment can be re-inscribed for any other use by humans, meaning it has a potential to offer humans usefulness to their desire and it becomes useful because of human endeavour.

A second layer is added where human involvement for utility turns the environment to a space. The PNMM is also considered a space because there is utility that humans find with it, the space is utilized as a museum. A third layer turns space into a place due to human involvement for experience which is what museums aim for because visitors through dwelling they find actual use and experience of a place.

To achieve interpretation and meaning of the displays and for enhanced experience, the third layer suggest for technologically mediated experience and use of DIT and current

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technology. To this is added further 'steps' in the form of mediating technologies that co-shape mediatory relations between human, technology and world. An understanding of how these relations are shaped will guide the development of DIT installations that would shape relations of 'insideness' in terms of relations to the places as well as to the technologies encountered and the learning, or development of understanding, that takes place on both micro- and macroperceptual levels.

Conclusions and way forward

Given the arguments that a place should have human involvement for utility and for experience, the framework seeks to demonstrate how to achieve deeper engagement with displays; how to activate enhanced interaction, and how to engage visitors to interpret the displays and to make meaning. The framework suggests that use of human technology mediation and the experience via a technological artefact that visitors bring into experiencing supposedly broaden and extend bodily sensory perception; thereby microperception and macroperception occur, thus facilitating understanding of the historical context as in where the artefacts on display were used, how they were used, and for which purposes, and is the kind of perception that we aim for and that we want to facilitate due to interpretation and meaning making of displays.

Through the combination of a phenomenology of place and postphenomenological perspectives on technology, we have developed a conceptual framework which can guide the implementation of DIT in such a way that is can potentially aid the decolonization project. A greater understanding of how technologies mediate human relations with their environments, and the museum space in particular, in turn informs on how visitor experiences can, through increasing and deepening levels of involvement and utilisation, be guided towards experience of place. The resultant framework potentially provides a way to guide the implementation of DIT in this project by mediating visitors' experiences of the spaces that make up the museum, thereby creating meanings and forming attachments and 'insideness'. Where visitors can inhabit and feel they belong and through involvement for experience they can say this is my home I am not an outsider or a foreigner.

Further refinement of the preliminary framework offers interesting opportunities for local museum environments and spaces to find ways to increase visitor involvement for utility and for experience. And to deepen the experience to that of engagement, interpretation and interaction due to various relations of technology, that can create different ways of interpretation to create meaning, thereby forming attachments for enhanced experience. The next phase of this research is to design and install DIT interventions in the PNMM spaces to demonstrate mediatory relations between human and technology and to create microperceptual experience due to bodily dimension of sensory perception, and to promote macroperceptual experience or contextual dimension. The aim is to broaden access to museum content and to promote enhanced education. We fully acknowledge that these proposed interventions are but a small contribution to the decolonialisation project and that many other issues, such as the neglected representation of the labour that enabled the harbour economy and navy activities, remain to be addressed.

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