

# Visiting the Past as a Way to the Future: Virtual Environments for Social Memory Construction

Suzette Worden  
Curtin University of Technology  
GPO Box U1987  
Perth, WA 6845, Australia  
+61 8 9266 1128  
s.worden@curtin.edu.au

## ABSTRACT

In considering the future it is often necessary to re-visit the past. New communication and visualisation technologies have enhanced the ability of individuals and groups to create narratives to portray ideas about the past. Museums in particular have created projects about the past that offer rewarding experiences for their audience in all kinds of contexts. However, in the last few years the results of these activities have moved from being called ‘histories’ to being called accounts of cultural or social memory, where museums and libraries have become memory institutions. This paper will examine how traces of the past can be brought together to inform the future and whether this emphasis on memory denotes a more active and participatory role for those who are involved as visitors or ‘users’ of digital resources.

The first part of this discussion is a theoretical examination of history making and within that process, how ideas about physical environments relate to virtual spaces that are created to support the ‘memory institution.’ Local/global communication and interchange is discussed in detail in the context of migration. This shows how records of the movements of people across continents and between nations are constructed and deconstructed, how far such accounts need to make reference to material objects within the physical landscape, and how constructions of place are layered, destroyed, permanent or transient.

In order to explore migration in detail, a project that explores memory traces between mining heritage in Cornwall, UK and Western Australia is discussed to show what aspects of past mining heritage can meaningfully be connected to aspects of present economic growth. It is proposed that memory institutions need to provide a rich experience for social

memory to be constructed; where ‘history’ might have many ways of telling and is fluid and re-traceable.

## Keywords

Virtual environments, 3D projection, historiography, heritage, mining.

## 1. INTRODUCTION

### 1.1 Social purpose

“All history depends ultimately on its social purpose.” [25 p.1] (Paul Thompson)

“No individual,” wrote Ruth Benedict, “can arrive even at the threshold of his [her] potentialities without a culture,” and “no civilization has in it any element which in the last analysis is not the contribution of an individual.” [15] (Ruth Benedict)

“We need to accommodate things more than they accommodate us.” [14 p.132] (Elizabeth Grosz)

New communication and visualisation technologies have enhanced the ability of individuals and groups to create narratives and to document ideas about the past in virtual form. Museums in particular have created projects about the past that have lasting value for users in all kinds of contexts. However, in the last few years the results of these activities have moved from being called ‘histories’ to become ‘accounts’ of cultural or social memory, where museums and libraries have become memory institutions. This paper will examine how traces of the past can be brought together to

create a platform for community involvement and whether this emphasis on memory, as opposed to history, denotes a more active and participatory role for those who are involved as viewers/users, or if users are becoming producers. The first part of this paper will discuss history, institutions, objects and technology to provide a theoretical overview. The second part of the paper will look at specific projects related to mining and migration and their potential for memory construction. The themes of space and location are common to all the projects. A discussion of the relationships between virtual spaces and physical landscapes, or locations being linked or represented, is an important consideration for users and participants and is relevant for both theory and practice. The focus is primarily on the social aspects of creating virtual environments. However, the virtual aesthetics will be a secondary issue for consideration within the projects discussed.

## 1.2 History

Engaging in new practical ways of constructing and communicating historical ideas is a creative aspect of digital culture, ranging from long-term digitisation of cultural records to individual community contributions. The possibility of doing history ‘digitally’ coincides with the theoretical emergence of the postmodern and the ‘cultural turn.’ Whether one leads to the other has been the subject of discussions based on an understanding derived from technological determinism; on the other hand, recognition of their reciprocal interaction has been a more productive viewpoint. There have also been more political considerations of social purpose, referred to by Paul Thompson as ‘the’ reason for history [3] [4] [15]. Thompson was an early and influential writer on the way oral history expanded the scope and relevance of history, enriching content and attracting a broader audience. In other words, making history more ‘social.’ Many other historians have embraced the social and moved from a focus on politics and power to narratives that include the day-to-day lives of ordinary people. The production of history became more pluralistic and included documentation and interpretation of life experience through the collection of oral history. Then, through this collection historical reconstruction became more collaborative.

In the late 20th century, authorship within history writing has broadened to include many groups of people previously hidden from view; such as workers, women, indigenous peoples, children and minority groups. It has also brought different social structures into this line of vision; with the family and postcolonial structures as visible as parliaments and battles. This inclusive approach is often seen as a feature of postmodern history, which has been characterised as a ‘decentred’ history that goes against grand narratives; a history that stresses the role of ordinary people in constructing social entities and a ‘fiction’ where historians, like scientists, construct facts [4 p.20]. There are many ways

of balancing and combining these concepts and these new approaches are not without controversy.

There are contested viewpoints on facts, interpretation and, from some scholars and politicians, public rejection of the ‘cultural turn’ which has politicised history, particularly in discussions of national identity. In Australia, for example, the centenary celebrations of 1988 brought issues of national identity to the forefront of cultural debates. The history of colonial settlement was re-visited and it was apparent that there was a need to include accounts of the indigenous peoples who were left out of the established national history. Conservative historians and politicians named this call for inclusion the “black armband view of history” due to its reference to shame and mourning. The debate has been revisited on several occasions [9]. On one occasion this was as a response to the stolen generation debate after 1997; and then again in 2003 after a review of the National Museum of Australia, commissioned by the Howard Government [20]. The museum was criticised for its lack of balance and insufficient recognition of European achievements but the Government report from the review concluded that there was no bias. The most recent revival of the debate in 2006 was in the context of discussions of history and facts in the school curriculum [6].

In this politicised context, historiographical concerns are important for digital projects that aim to explore the past. Whose culture? Whose history? - are questions that become potent issues when looking at Thompson’s social purpose. Also, the history is not a given; it has to be continually created, which is not an easy task. It is not at all clear if there is agreement over facts being facts, meaning “patterns that exist in history that are found not made.” [3 p.2]. Beyond that, interpretation, subjectivity and objectivity become central to the historiographical debate. As Martin Bunzl states, “it is just not clear that cutting the world into the factual and the interpretative can do justice to the enterprise of understanding the past - including past historiography.” [3 p.7]. Bunzl brings in another issue which can be illustrated by his reference firstly to Clifford Geertz who “studied culture as embodied in symbols” thus removing “the problem of getting inside people’s heads” [3 p.85], and secondly to Gwendolyn Wright’s historical writing, about the home and nature, where there was attention to how meaning is set and how it is disseminated. In this context, the question is how to measure who is engaged in spinning “webs of significance” or are deferring to those that are. If this means examining lived reality then to do so is “to pursue a route fraught with the danger of ensnarement in the idiosyncrasies of the individual. Still, if our interest is in a full account of how meaning works, we have to bring individuals into the picture - if we are to assess meaning’s reach.” [3 p.104].

Although applicable to all areas of history construction, these contrasts between local knowledge and grand theories have a special relevance for historical projects about migration, where minorities have unique voices and power

structures emphasise centre and periphery, established order and new identity formations. These theoretical contributions, on the significance of the social, cultural formation, and national identity show that this is a potentially challenging area for historical interpretation.

Taking this further, it is also necessary to consider the role of institutions, objects, and technology, as these also have a role to play and show the growing significance of the ‘memory institution.’

### 1.3 Institutions

As a cultural activity, history making also includes the connections between individual contributions through to the institutions that support it. The institutions of the museum, archive and library are end-products or sites for end products of history but they are also part of the networks of the knowledge economy.

The influence of postmodernism on the museum has been to value interpretation as much as artefacts. Furthermore, in the virtual museum there is no longer a difference between primary and secondary objects and sources. Computers can provide the interface to this information either as kiosks in museums or as websites providing access to information from a distance.

Alongside this the archive and library also interact with museums to provide support for a broader view of history. Convergence of the museum and the library and archive is seen as a democratising factor where museums become ‘memory institutions’ [24]. The American Library of Congress have developed their ‘American Memory Website’ for general access [19].

In researching commemorative events, Chris Healy found that ‘history’ was both too narrow and too formal to describe what fascinated him about making ‘the past’ meaningful. He thought that “perhaps historical imagination, historical consciousness, popular memory or social memory were more appropriate terms.” This he termed as “being-in-history” [16 p.4-5]. This change in terminology reflects a move to a new form of agency for the ‘author.’ When institutions facilitate a broader vision of history making, it can also provide a more democratic view of audience, and a change of approach, with historians re-thinking their role as the facilitator of more open-ended narratives.

### 1.4 Objects

Historically museums have gained much of their cultural power as custodians of material artefacts. This was challenged in 20th century by Benjamin’s critique and discussion of ‘aura’ with a further move to de-materialisation in Malraux’s ‘museum without walls.’ The processes of digitisation have led many authors to look at the

relationship between object and representation. As the historian Richard Handler has noted: “All culture has a material dimension and all humanly tooled material has a cultural dimension” [15 para 7].

By emphasising networks, agency and relationships, Bruno Latour provides a way of understanding the relationship of objects in use where making distinctions between the social and non-social is a false dichotomy. He has suggested that: “this contribution would of course be lost immediately, if one was again separating out objects into two pots, one for the fetishes which can and should be accounted for as ‘mere social constructions’ because they are soft, and the other for facts which, by definition, escape all social explanations because they are hard. Hence, I devised the neologism ‘factishes’ to remind us of the uselessness of such a dichotomy.” [18 p.113]

Does this apply to museum objects: what is their agency? In the context of the discussion in this paper it is relevant to consider how the ‘framing’ provided by a museum context might affect how we consider the objects in a collection. For natural objects Latour has noted: “Natural objects are naturally *recalcitrant*; the last thing that one scientist will say about them is that they are fully masterable. On the contrary, they always resist and make a shambles of our pretensions to control.” [18 p.116]

He also mentions the existence of “quasiobjects flowing nowadays through our newspapers from genetically modified organisms to global warming or internet commerce.” These ‘things’ have a hybrid nature so are worthy of attention from science and social scientists. This means that, in terms of the social, it is difficult to effectively distinguish between people and ‘objects’ [18 p.117].

### 1.5 Technology

Latour extends this line of thought into discussions of technology. He does not describe technology as a foreign body inside the humane; it is highly socialised and connected through a long history. Because he also suggests that the social can only be traceable when being modified, it is also necessary to watch for the way a technology can modify and make the social visible. Therefore we need an account of where our sensitivities have been sharpened theoretically, and then practically, by new means of production and communication.

One issue that is part of practice, when working with digital media, is whether the technologies being explored are leading to something entirely new or whether there is some kind of replication of issues and concerns that are part of pre-digital sensibilities. In some cases this latter trend is seen as a positive condition, to be explored and exploited. This means that there are a range of approaches to tradition, history, conventions and pre-existing behaviours. Some of these concerns relate to practical issues and how to make new

users feel comfortable; others to more deeply held beliefs suggesting concern for values and beliefs that rely on continuity of ideas and concepts.

## 2. PROJECTS AND PRACTICE

Concepts of history and memory will now be explored through the discussion of issues arising out of planning for a project called 3diaspora [1]. This project, called 3diaspora, aims to produce a setting for narratives that document the migration of Cornish miners to Australia, from the mid 19th century. 3diaspora aims to use stereoscopic 3D projection technologies, such as Present3D [13], and digital communication technologies to unite communities that have, as part of their histories, Cornish migrants who have been involved in mining and exploration. This would primarily have been hard rock mining for copper, lead, tin and gold. The project combines the global and the local, landscape and materials, and migration networks from one of the first sites of the industrial revolution to the imperialist periphery.

There is a creative tension between the audience's experience of material and virtual cultures. What is new from the use of stereoscopic 3D projection and distributed communication technologies and then having respect for historic artefacts; between a virtual digital space and the physical world. The subjects of history and memory informs the discussion of the more general topics of participation, presence and immersion.

### 2.1 3diaspora and Cornish mining heritage

The project under discussion is at the planning stage. The aim of the project is to provide the infrastructure for a cluster of digital environments to document, explore and expand knowledge of Cornish mining heritage. The connection between Cornwall and Western Australia is one example of many possible connections between historic mining areas in Cornwall and mining activities all over the world. Each of these connections has its own unique stories to tell of people, technology, economic wealth, social change and new beginnings. There are stories of success and failure, riches and poverty, the establishment of new communities, or of moving on for new adventures.

The links between Cornwall and Western Australia are not as well known as those within the copper triangle of South Australia at Moonta, Kadina and Wallaroo (South Australia's 'Little Cornwall') [12]. But from the 1860s there were Cornish migrants in the Northampton area and later connections were made with Kalgoorlie and other areas in the state. The traces of the mining operations and subsequent development are scant on the ground but there are artefacts in museums that provide starting points for archaeological study leading to narratives and virtual reconstructions.

#### 2.1.1 World heritage

In heritage terms the significance of the Cornish mining areas has been recognised, in July 2006, through their inclusion on the list of UNESCO World Heritage sites. In 1972 the World Heritage Convention was adopted by UNESCO to "provide for the identification, protection and conservation of natural and cultural sites of outstanding universal value." [26].

The list includes a mix of cultural, natural and mixed properties in 138 countries. Other mining examples are the Zollverein coal mine industrial complex in Essen, Nordrhein-Westfalen, Germany, which consists of complete installations and 20th century buildings; Guanajuato a silver mining area in Mexico and the mining areas of the Great Copper Mountain in Falun, in the Dalarna region of Sweden, an area that has been mined since the 13th century [26].

The aim of such recognition is to offer protection for sites that are managed and conserved with participation from the local population. UNESCO also encourages international cooperation in the conservation of world cultural and natural heritage.

#### 2.1.2 Cornish mining heritage

There are ten areas within the Cornish Mining Heritage site, from Cornwall and the nearby West Devon mining areas. There are remnants of the mining history from the 1700s onwards marking industrial innovation of fundamental importance to the 19th century mining expansion. The Cornish engine house is one distinctive feature left in these areas that has impact on the landscape as a representation of industry within a rural landscape [2]. This is a symbol and practical manifestation of industrial innovation and scientific knowledge that travelled the globe with the migrating Cornish workforce. The miners and families also took distinctive cultural traditions and religious affiliations with them.

During the period 1861 to 1901 at least 20% of the adult male population left Cornwall in every decade. They often kept a unique identity and were often nicknamed 'Cousin Jack' [22]. The movement of people and resources was never just one way. Money flowed back to Cornwall from overseas miners to support the building of chapels and other municipal landmarks.

There is some documentation of the first Cornish miners working in Western Australia. There was a flourishing copper mining industry at the Gwalla mine near the town of Northampton in the 1850s and 1860s. This settlement of Cornish miners in Northampton is not as well known as the Cornish migration to other areas of Australia. This documentation of the arrival of miners in Northampton depends mostly on archaeological evidence. Martin Gibbs

has provided an account of the settlement through a combination of archaeological and documentary research [11]. The mines were in an isolated area; the most useful documentary evidence is found in reports by Western Australian Government Geologists at the end of the 19th century and some material evidence of this cultural landscape has escaped erasure by later land re-use and development.

The 3diaspora project not only aims to document the story of migration; the project also aims to enhance the flow of information and communication to and from Cornwall to the sites and communities it has touched or contributed to, over the years. The migration of ideas can continue to flow digitally. For this reason the project needs to be formulated as a mix of narrative and communication. But to capture some of the spirit of the Cornish heritage the significance of science, technology and innovation are represented by the use of advanced technologies for visualisation, representation, storage and communication. The visible aspect of this is experimentation with stereoscopic visualisation and projection.

There is potential to use existing communication technologies to unite students in schools, which has been one part of the project under investigation [1]. But there also needs to be an over-arching identity to bring the communication aspects of the project together with the creation of digital archives of historic documents, artefacts and documentation of sites and for the collection of new data. Ownership of history, cultural memory and heritage can be strengthened by those involved selecting and contributing digital assets. However an over-arching theme or concept is proposed to create an identity for the virtual environment that will also attract others to view or participate.

## 2.2 The Virtual Pit

A concept being developed as one part of the 3diaspora project is the 'Virtual Pit'. This takes as inspiration the Eden Project in Cornwall, where an old china clay pit has been developed into a futuristic environment for experiencing a selection of bio-environments in purpose bio-spheres [7]. In 1998 the Bodelva pit, near St Austell in Cornwall, reached the end of its productive life. The 125 acre site was transformed into a series of gardens, some in domed conservatories with tropical and arid environments, to protect endangered species and demonstrate the relationship of people and the environment. The project has become a highly successful tourist attraction and educational facility. The site is constantly changing, with the addition of more planted areas, live events and art installations, and is well documented through websites [7]. The Eden project is not a celebration or documentation of mining history but it serves as a reminder of the potential of reuse and regeneration of mining sites. By drawing visitors to the venue the project

adds another level of meaning and complexity to the wider location which includes the china clay mining industry that still surrounds it.

Although the Virtual Pit can include historical narratives, its main point of reference is to the booming mining industry in Western Australia. Through the use of advanced visualisation techniques the aim is to create a virtual experience, a combination of museum, archive and library, as the backdrop for other virtual communications and activities. It will borrow some of the virtual technologies currently used in the mining industry and re-purpose them for an interactive experience that aims to be culturally rich. There is also the possibility that the current rapidly changing developments will disappear if not recorded in some way. Besides being an environment for information unique to Western Australia, the Virtual Pit could also act as a portal for Western Australian mining heritage and be a node from which links can be made to Cornwall and other parts of the Cornish diaspora.

By exploring innovative visualisation technologies the project represents the spirit of scientific exploration and invention that drove Cornish mining industrial development in the late 18th and early 19th centuries. Additionally the Virtual Pit allows the exploration of virtual aesthetics and concepts of space and scale. By providing opportunities for viewers to navigate the vastness of a virtual pit, which is not confined by geography, and contrasting this with mining techniques to explore the visualisation of the materials being mined at the nano-scale, there is an opportunity to explore scientific and technological visualisation in the context of our understanding of the cultural meaning of space. As Henri Lefebvre has suggested, space is a medium as well as a product. [17 p.212]. The virtual medium has the potential to provide a virtual environment within which the audience can test their sense of, and conception of, scale and what this means for their understanding of location and place.

The 3D technology will be extended to include narratives, as hypermedia links, so the social side of mining can be incorporated into the more exploratory virtual environment dependent on visualisation technologies.

### 2.2.1 Evaluation

Discussion with a group representing the needs of the Cornish Mining World Heritage site has identified some key issues for this project. These are innovative technologies to mirror the scientific innovation of the early Cornish mining industry; socially inclusive ways of exploring industrial mining landscapes; and ways of exploring the specific characteristics of Cornish migration in both global and local contexts. For these expectations to be met, the following issues have been identified, which will be discussed in detail.

1. The viability of the ‘Virtual Pit’ as an overarching concept. How does this concept communicate ‘about’ mining, or incorporate existing digital information about mining into a coherent whole?
2. Connections between the ‘physical’ nature of the subject (resources and assets) and creating an associated virtual environment.
3. How important are artist-led creative projects?

### 3. ISSUES

#### 3.1 The viability of the ‘Virtual Pit’ as an overarching concept

The viability of the metaphor of the virtual pit rests on its potential for exploring scale. As a spatial metaphor it is similar to the familiar kinds of metaphor used in digital projects, such as ‘data mining,’ travelling the ‘information highway’ or ‘surfing the web.’ To succeed it has to capture information as it emerges. It becomes a container for history and narratives that are current; it has to be filled with what is happening now so that there will be a future history. Mining sites often disappear quickly as a consequence of redevelopment. This may also need guarding against for a virtual construction. Rapid obsolescence of technology and with that, the disappearance of contextualised information, suggests this is important.

However, the inspiration - the Eden Project - reuses a china clay pit with inorganic connotations for an exploration of biological and ecological diversity and celebrates organic content. The Virtual Pit creates rather than re-purposes and puts history in the present. The Eden Project heals an old scar through ‘nature,’ which has also regenerated the economy through tourism. The Virtual Pit has to develop a new kind of presence and immersive experience that takes inspiration and meaning from a booming Western Australian mining economy. But it has to be enduring and not disappear if the booming economy disappears.

#### 3.2 Connections between the ‘physical’ nature of the subject (resources and assets) and creating an associated virtual environment

Mining is concerned with materials and matter. Resources are turned into other ‘things’ - a material culture dependent on the use of science and technology to exploit the earth and make manufacturing a possibility. This has supported the growth of capitalism and wealth creation.

There are also enormous elements of physical risk; mining is dangerous. To engage in a study of mining reminds us that

the bodily as well as economic and political realities are always there for consideration.

Connecting resources and ‘things’ suggests the centrality of technology as Elizabeth Grosz has commented: “We find the thing in the world as the resource for making things, and in the process we leave our trace on things, we fabricate things out of what we find. The thing is the resource, in other words, for both subjects and technology.” [14 p.132].

Conceptions of the finite nature of resources, and concern about sustainability have the potential to influence a community’s ability to create narratives for a Virtual Pit. This means that ideas about preservation, conservation and reclamation could make the Virtual Pit the context for environmental concerns. For this reason, how mining communities have considered and worked imaginatively with industrial decline may have a bearing on the usefulness of a Virtual Pit.

##### 3.2.1 Regeneration and preservation of Historical Mining Sites

Mining of all kinds is an integral part of colonial and imperial history. The search for mineral resources was one of the main reasons for Europeans exploring the Americas, Africa and Australia. The legacy of mining is found in town and urban and rural industrial sites. Many of the building and structures are transient. 19th century architecture in mining towns, which is often opulent and decorative, often attracts gentrification. In contrast, industrial mining sites have had more mixed fortunes and have been sites of continued upheaval, where evidence of activities are destroyed by continuous excavation or are abandoned and subject to neglect and vandalism.

Mining landscapes and building have become significant heritage sites that represent important local histories and are significant tourist attractions. These sites have social, cultural and economic value that attracts preservation. In the USA, mining structures and buildings have to meet strict criteria to be included on the American National Register of Historic Places. A mining property must be “significant in American history, architecture, engineering, or culture and possess integrity of location, design, materials, workmanship, feeling, and association.” The authors of the US National Register note: “Integrity is the ability of a property to convey its significance and there are seven aspects or qualities that, in various combinations, define integrity. These seven aspects are: location, design, setting, materials, workmanship, feeling, and association [21].

For digital projects - what happens to these aspects of integrity? Integrity for mining sites is different from integrity in buildings, but is it something that transfers from a physical place to the virtual realm? According to the National Register Guidelines: “Integrity of association will exist in cases where mine structures, machinery, and other

visible features remain to convey a strong sense of connectedness between mining properties and a contemporary observer's ability to discern the historical activity which occurred at the location" [21]

For the Virtual Pit the key issue is therefore the integrity of the whole but not just in the assets but in the ability of a participant in the virtual environment to conceptualise the connectedness within the networks of association.

### 3.3 How important are artist-led creative projects?

European regeneration of mining sites has incorporated landscaping and art installations. Three examples from Germany that illustrate a range of responses to the narratives suggested by these mining sites are discussed below.

The sites where these examples were situated are important locations both for international tourism and for local histories to be created. For example, Dortmund and Duisberg are anchorpoints in the European Route of Industrial Heritage. In this context, "theme Routes take up specific questions relating to European industrial history and reveal potential links between radically different industrial monuments all over Europe. The result is a 'circuit diagram' of the common routes of European industrial heritage [8].

Routes can be personalised from the network of about 60 sites. The route system is a marketing tool for a transnational European brand of industrial heritage [8]. Large sites of de-industrialised land are not often seen as attractive heritage sites and need innovative and imaginative treatment for them to be recognised as culturally significant. By creating the network, the sites support each other and also form the basis of a knowledge network for the exchange of information across the whole network and beyond. Within this there are anchor points which provide support for a regional identity that also links small locations to the most significant location within the region. The virtual network therefore supports a structure that mirrors physical prominence as the primary aim is to support visitors in their engagement with the material culture of the site.

#### 3.3.1 Jeffrey Shaw

Jeffrey Shaw's 'Place - Ruhr' was a computer graphic/video installation installed at Vision Ruhr, Dortmund, Germany in 2000. The work consisted of a circular projection screen depicting a three dimensional virtual environment which was "constituted by an emblematic constellation of panoramic locations and cinematic events" [23] and showed actual and composited scenography of eleven Ruhr sites. The viewer experienced this panorama from a rotating platform in the middle of the circular space and could navigate the 3D space and explore the environment using an underwater video camera as the interface.

The ground surface of the overall landscape was inscribed with a diagram of the Sephirothic 'Tree of Life' in figurative relation to the eleven Ruhr sites. A monitor allowed the viewer to see where they were in the virtual environment. The 'Tree of Life' diagram was linked to a map of existing underground mining tunnels in the Dortmund area.

A microphone on top of the camera picked up sounds made by the viewer. This activated the release of moving three-dimensional words and sentences within the projected scene. These were also controlled by the way the viewer interacted with the virtual environment. The words faded during their lifespan and became transparent over a period of about five minutes. This work was a celebration of the physical and geological history of the Ruhr area, recognising changes in landscape and use. It worked as an extension of traditional cinema, allowing the viewer to become immersed in a location where they could actively select viewpoints. The narrative was unique to each viewer. The work extended cinema projection technologies and introduced interaction and non-linear narratives.

#### 3.3.2 Paul Sermon

'A Body of Water' was an installation devised by Andrea Zapp and Paul Sermon, which linked two locations. The shower room of the Ewald/Schlaegel und Eisen mine in Herten, Germany was linked with the Wilhelm Lehmbruck Museum in Duisburg, Germany. Images of visitors in the shower room were mixed with images of visitors in the museum. The shower room visitors saw the shadows of the museum visitors on one side of a watery surface screen, which also had historical film of miners showering, projected on the other side of the screen. The visitors in the museum saw the visitors in the showers on TV monitors. The installation therefore made reference to past use of the mine location and in doing so, was able to contrast cleanliness with the dirt and grime of past mining operations. It was almost as if the miners were washing away that past and making a break with history.

The installation also suggested water as a metaphor for data transfer. As a metaphor this contrasted the fluidity and constant change of water to the more accepted metaphors of highways and journeys from A to B. With the metaphor of water, it was possible to see greater complexity in movement, as fast or slow within the same 'body.' According to Mathias Fuchs: "The water removes the ideological appearance of longevity and constancy from the images which are exchanged between both sites live via ISDN. It washes the image clean, one could say, and must then immediately continue with a heraclitic conclusion: One can never view the same image twice. (Just as one can never set foot in the same river twice.) Presence and history are in the current of constant change." [10].

This installation questioned the presence of the body in present and past time. It also explored the idea of location, of being in more than one place at a time, as a physical body but also as a representation depicting the physical body and its real-time context. This representation acquired another meaning from its telematic presence.

### 3.3.3 Victoria Vesna

Victoria Vesna's 'Datamining Bodies in Ruhr' included an installation in an old coal mine, the Zeche Zollern II/IV in Dortmund and an online version [27]. In the installation projected tensile structures formed an interface, and along with movement through the physical space, were points of audience interaction for changing the projected data. This data included images from coal mines, medical imaging of the body and sounds in a 'fluidiom' fabric. The deeper a viewer moved within the data the less time there was to mine through it. When participating in the work, 333 seconds were allowed for mining the data. The outcome of this activity was a selection of fragments of words, images and sounds.

The project explored the how the cyberbody is conceived and constructed in virtual space and has similarities to Bodies Incorporated of 1998 where participants constructed bodies in 3D space in a collaborative space. However, 'Datamining Bodies in Ruhr' also examined mining as a metaphor; here used to describe searching for particular pieces of data in a seemingly limitless pool of virtual information. The inversion of spatial metaphors gave a sense of urgency to the experience that was emphasised by the timeout of the activity.

### 3.3.4 Exploring history

These three installations were all exploring the past history of a coal mining location through making use of new technological developments in digital projection and communication networks. Shaw re-worked the panorama, which has a history within imperialist spectacle, as a means of making the Ruhr environment more 'real' and linked this diagrammatically with the below-ground network. Mapping through text and diagram provided a layered understanding of space; through the senses and through calculation. Zapp and Sermon presented a new metaphor for data and allowed the user to mingle in the interchange of the present and past. Vesna provided the opportunity to 'mine' for data and plunged the viewer into a virtual world that was as dark and claustrophobic as any mine shaft, yet the viewer was timed out to emerge and be brought back to the present from the virtual data mine.

## 4. CONCLUSION

This paper has considered some issues arising from the use of digital technologies for a project on the Cornish mining migration and has looked at conventions for history making for physical mining sites and how artists have used the

potential of new media technologies for exploring metaphors relevant to mining history.

There is therefore evidence of a growing critical mass of projects exploring mining heritage internationally, both as physical environments and as virtual projects. Some of the most interesting projects have commissioned artists to interpret the heritage using new visualisation, communication and projection technologies.

One of the key questions, relevant to all these examples, is how to relate what is new in the digital world to other cultural activities in specific physical locations. From a heritage point of view, integrity is an important issue for physical sites. This, as a value, is also important for virtual sites. The discussion of the social uses of new technologies has identified the importance of local knowledge and its place within networks of institutions. The importance of individual agency for the construction of cultural identity can also contribute to the integrity of projects.

These forms of creative production have to embrace the physical, and the virtual 'things' have to be part of the networks constructed and used. To bring people, things and networks together, the work of Bruno Latour offers a useful theoretical approach. His interpretation of the nature 'things' suggests integration of the physical and the digital; there is also a place for hybrid states in between. This might be summarised by his comment that: 'Things', "do not have the unity the modernist believed they had, nor do they have the multiplicity postmodernists would like them to retain. They are lying there, in the new assemblies where they are waiting for the due process that will give them their unity, at the end, not at the beginning" [18 p.119]. Ultimately, it is what the use of the technologies produces 'in action' that will be most important.

## 6. REFERENCES

1. 3diaspora. *3diaspora: Cornish Australian Mining Heritage Project*. Accessed 25 August 2005. <http://www.geopix.net/cornishheritage/>
2. Brown, K., J. H. Morris, A. A. P. Sanchez, and M. Critchley. *Interpreting the Ruins of Cornish Design Engine Houses*. Cowshill, County Durham: Europamines, 2005.
3. Bunzl, M. *Real History*: Routledge, 1997.
4. Burke, P. *New Perspectives on Historical Writing*: Polity Press Second edition, 2001.
5. Cornish Mining World Heritage. *Cornish Mining World Heritage*. Accessed 27 October 2006. <http://www.cornish-mining.org.uk/status/status.htm>
6. Department of Education Science & Technology. *The Australian History Summit*. Accessed 23 August 2006. [http://www.dest.gov.au/sectors/school\\_education/policy\\_initiatives\\_reviews/key\\_issues/Australian\\_History\\_Summit/](http://www.dest.gov.au/sectors/school_education/policy_initiatives_reviews/key_issues/Australian_History_Summit/)
7. *Eden Project*. 2006. Accessed 3 February 2007. <http://www.edenproject.com/>

8. European Route of Industrial Heritage. *European Route of Industrial Heritage: Introduction*. Accessed 5 March 2007. <http://en.erih.net/index.php?pageId=1>
9. Frontier War of Words. *Sydney Morning Herald*, Accessed 15 February 2007. <http://www.smh.com.au/specials/historywars/>
10. Fuchs, M. *A Body of Water: Statement by Mathias Fuchs*. Accessed 19 February 2007. <http://www.hgb-leipzig.de/~sermon/herten/state.html>
11. Gibbs, M. 1997. Landscapes of Meaning: Joseph Lucas Horrocks and the Gwalla Estate, Northampton. *Studies in Western Australian History* 17: (1997), 35-60,
12. Government of South Australia. 2000-2007. *Atlas South Australia: Copper, Grain and Wool*. Accessed 6 March 2007. <http://www.atlas.sa.gov.au/go/resources/atlas-of-south-australia-1986/the-course-of-settlement/copper-grain-and-wool>
13. Greythorn Associates. 2005. *Present3D*. <http://www.greythornassociates.com/stereo.html> (Accessed 18 May 2006).
14. Grosz, E. A. *Time travels: feminism, nature, power*. Crows Nest, N.S.W.: Allen & Unwin, 2005.
15. Handler, R. 2002. Cultural Theory in History Today. *The American Historical Review* 5, (2002) <http://historycooperative.press.uiuc.edu/journals/ahr/107.5/ah0502001512.html>.
16. Healy, C. *From the ruins of colonialism: history as social memory, Studies in Australian history*. Cambridge; Melbourne: Cambridge University Press, 1997.
17. Hubbard, P., R. Kitchen, and G. Valentine, eds. *Key thinkers on space and place*. London: Sage, 2004.
18. Latour, B. When things strike back: a possible contribution of 'science studies' to the social sciences. *The British Journal of Sociology* 51 1: (2000), 107-123.
19. Library of Congress. *Library of Congress: American Memory Home Page*. Accessed 20 February 2007. <http://memory.loc.gov/ammem/index.html>
20. Message, K., and C. Healy. A Symptomatic Museum: The New, the NMA and the Culture Wars. *Borderlands ejournal* 3 (3). Accessed 22 August 2006. [http://www.borderlandsejournal.adelaide.edu.au/vol3no3\\_2004/messagehealy\\_symptom.htm](http://www.borderlandsejournal.adelaide.edu.au/vol3no3_2004/messagehealy_symptom.htm)
21. Noble, B. J., and R. Spude. *National Register Bulletin*. (Accessed 21 February 2007). <http://www.cr.nps.gov/nr/publications/bulletins/nrb42/mi2.HTM>
22. Payton, P. Cousin Jacks and Ancient Britons: Cornish Immigrants and Ethnic Identity. *Journal of Australian Studies* 68: (2001), 54-64.
23. Shaw, J *Place - Ruhr*. Accessed 5 March 2007. [http://www.jeffrey-shaw.net/html\\_main/frameset-works.php3](http://www.jeffrey-shaw.net/html_main/frameset-works.php3)
24. Sheppard, B. *The 21st Century Learner*: Institute of Museums and Library Services, 2000.
25. Thompson, P. R. *The voice of the past: oral history*. 2nd ed. Oxford: Oxford University Press, 1988.
26. UNESCO. *World Heritage*. Accessed 18 February 2007. <http://whc.unesco.org/en/list/>
27. Vesna, V. *Datamining Bodies*. Accessed 5 March 2007. <http://notime.arts.ucla.edu/mining/mine.html>