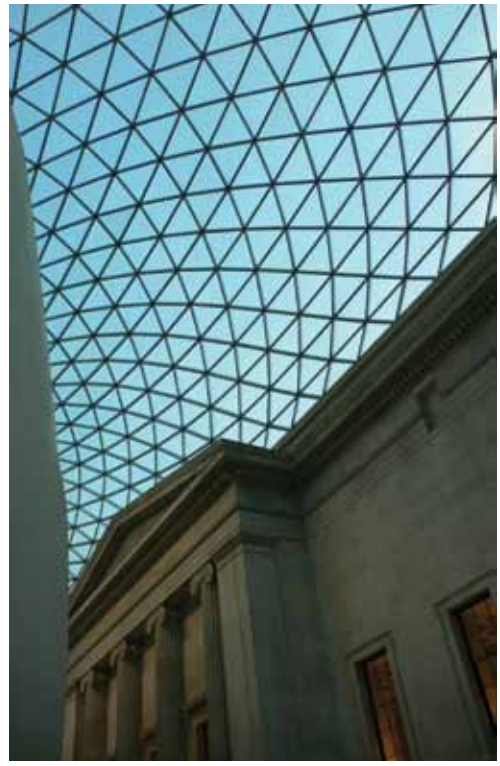


British Museum
photograph by Paul Arthur

Exhibiting history

The digital future

by Paul Arthur

Abstract

This paper surveys the digital history field, highlighting trends across historical, cultural and literary studies, heritage, archaeology and geography, as well as library information, screen and media studies, multimedia production and interaction design. This broad field is increasingly relevant to museum practice as museums experiment with digital modes of presentation and communication, including virtual exhibitions and other online extensions of the physical visitor experience.

Introduction

> Ultimate history we cannot have in this generation; but we can dispose of conventional history, and show the point we have reached from one to the other, now that all information is within reach, and every problem has become capable of solution. (Lord Acton, from his 1896 report to the Syndics of Cambridge University Press, in *The Cambridge Modern History: Its Origin, Authorship and Production*, 1907)[1]

Readers of Lord Acton's words in *The Cambridge Modern History* at the time of its publication were living at the end of an era of great optimism and confidence in the power of new ways of understanding the world in all its grandeur and complexity. The 'great exhibitions' of the late nineteenth century offered the promise of rendering the world fully knowable through large-scale systems for cataloguing, classifying and displaying information based on the discoveries of science and exploration — providing a moving spectacle that aimed to showcase the sum of accumulated human knowledge of the world and its people.[2] Like the major history texts, museums were also key agents for presenting and disseminating information in ways that created a sense of universal connectedness and order.[3]

Now, one hundred years later, with the rise of the internet, information is again being displayed in ways that are new and spectacular, but without any suggestion that this might eventually lead to complete knowledge or final answers. Nevertheless, for history, heritage, museum studies and related disciplines, the new capacity to display and organise material digitally has clear parallels with the great exhibitions, whose power to attract the wider public, capture the imagination and inspire wonder came not only from the exotic nature of their content, but also from their use of new technologies of preservation, simulation and representation.[4]

While technology has always influenced how the past is studied and portrayed, the technological revolution of interactive, networked digital media represents a massive change — greater than any other since the invention of the printing press. The effects of this have only been felt for the most part over the last decade. In the arena of historical studies, a major effect has been to dramatically enhance public access to, and appreciation of, stories of the past. We live in an age when there is far less confidence than there was a century ago in our ability to know the world and its history or our capacity to record any historical events 'completely', even though (or perhaps because) we have access to such vast stores of information. Faced with such a wide choice of information we can plainly see the contradictions, inconsistencies, silences and gaps, which have been long the subject of critical and cultural theories including, for example, poststructuralist and postcolonial approaches.[5] In the last decades of the twentieth century these new critical perspectives had a major impact on how history was written in books or shown on film. They also influenced how history would be displayed in museums and galleries and, more broadly, the role it now plays in society.

'Digital history' is a term used to delineate all aspects of the study and appreciation of history, heritage and material culture that involve digital rather than conventional media in its presentation, storage and access. It can also refer to a stand-alone text, in the sense of 'a digital history of' a particular topic. In this sense it does not refer to a genre but to the digital means of delivery itself. Digital history can be found in physical settings, including in museums or galleries as interactive displays.

Digital history can also be found on fixed media such as CD-ROM or DVD or online via the internet, most commonly in the form of databases of historical information and digitised material. Digital history comes in different sizes, from large institutional projects aimed at giving worldwide access to resources for the study of history, for example, right down to personal histories, self-published on *YouTube*.[6]

This paper surveys the digital history field, highlighting trends across diverse areas of specialised activity that are increasingly relevant to museum practice as museums experiment with digital modes of presentation and communication including virtual exhibitions and other online extensions of the physical visitor experience. The increasingly visual, dynamic and multi-textual character of history in the digital history environment is aligning it more closely with the idea of the museum as a place of 'visual technology' where objects are exhibited in such a way that they can tell stories that transport the viewer into other worlds, and into the past.[7]

Two key trends are particularly relevant. The first is the growing spatial emphasis across all manner of digital history projects. The second and related trend is the new emphasis on the framing context in digital environments, providing a 'situation' for reception and interpretation. Space and context, respectively, are basic organisational and conceptual considerations in museum environments. While both can be translated into the physical setting of the museum, they are also increasingly impacting upon the virtual world as components of interface design for digital environments. As Luigina and Liam J Bannon Ciolfi explain, 'Bringing technologies beyond the desktop and into the world requires an ever-increasing interest in the physical environment where interaction occurs'.[8]

Museums and interactive media

> The museum offers the viewer a particular spacialization of knowledge — a storage device — that stems from the ancient art of memory. Since classical times … the art of memory depended on developing a mental construction that formed a series of places or 'topoi' in which a set of images were stored: images that made striking impressions on the mind. Using this device, an orator trying to remember a speech, for example, located specific images as cues to parts of his speech in the rooms of his imaginary place system … By the nineteenth century, the museum had become such a memory device: its rooms or 'topoi' were places to stop or look around, to visually observe the contrasting features, the arbitrary analogical relationships that arranged the history … into self-enclosed periods, schools, and styles. The path through the sequence of rooms narrated the evolutionary development of history, and simultaneously walled in the heterogeneity of time.[9]

It is well-known that museums were quick to take up the opportunities presented by digital technology and were pioneers and innovators in developing interactive installations to engage visitors. Today, in the digital environment, museums arguably stand out as more relevant and important than ever. There are various reasons for this. Firstly, museums continue to be innovators, embracing new modes of digital delivery and display (both in the physical settings of museums and online). They are the only setting for digital history that provides a dedicated physical context for public reception and interpretation.[10] As museum practice continues to evolve and formats for digital display of history in museum settings change, the core responsibility for ensuring accuracy, relevance, clarity and quality remains. Secondly, museum historians and curators tend to have a better

understanding of the creative potential of multimedia than do other historians, both because of the visual emphasis of museums, and due to their experience with presenting history through interactive installations and increasingly through online offerings. Thirdly, the physical setting of museums and their core role of providing public access to material culture is becoming increasingly relevant in the design of digital environments for exhibiting history in other settings. As I will show in the next section, there is a trend towards an increased emphasis on spatialisation of digital environments for historical information.

Many of the principles underlying the processes of designing exhibits for displaying history in physical settings are being applied in the virtual arena. A spatial theme runs across the digital history field in a variety of ways: it may be through linking historical information directly with places on maps; in other cases the user is required to investigate an interactive information space by choosing pathways through links rather than by using search queries; or the user may be 'placed' in a simulated physical environment to roam free and explore the space, as in a computer game. In fact, the World Wide Web itself is a spatialised concept, where users discover information in ways that require them to depart from the habits and expectations instilled by traditional, linear, uni-directional narrative structures. Taking an even broader view, many of the decisions and strategies used by museum professionals to engage and lead the visitor (aiming at discovery, accessibility, usability, education, and appreciation of a story about the past that reaches across generations) are the same principles as those being embraced for digital history.

As museums began to experiment with digital technologies there was an accompanying change of emphasis and policy. Museums aimed to more consciously connect themselves with popular culture by experimenting with the presentation of their collections in ways that would result in increased public appreciation and accessibility.[11] There was a general shift from privileging the display of objects in collections to a new expectation that museums would also provide contextual information about museum objects. In this way museum practice started to be linked closely with the goals of practitioners in the broader digital history field even though this connection was rarely articulated at the time.[12] In a pattern mirrored in the wider digital history field, the new emphasis on interactivity and engagement as a way of reaching and sustaining the interest of audiences brought with it an uneasy sense that the traditional role of museums was being unsettled. However, other aspects of the new digital approaches were so clearly positive that 'museum policy and marketing rhetoric in many parts of the globe began to trade heavily on the arrival of new media as a sign of museum democratisation, accessibility and excitement'.[13]

Nevertheless, many continue to feel a sense of loss of control as a result — that technology is exerting too heavy a hand on museum policy and practice. Certainly it is true that the new duality — of museums being physical as well as virtual environments — has posed challenges as well as presenting new opportunities. The physical and virtual were once thought of as very separate spaces, with different and even opposite concerns. The traditional view is that museums should primarily be physical places to display material culture, fostering a direct engagement between visitors and history. According to this view, the online digital environment at best offers a simulation, and at worst, an unordered and uncontextualised mish-mash of information fragments.

However, it is precisely through the move towards offering online services as extensions of their physical environments that museums are now making the most significant contribution to the broader field of digital history. A decade and more after the beginnings of widespread public access to the internet, the physical museum environment certainly shows no signs of being left behind in favour of the online presence. If museums feared that online visitation would discourage actual visitors through the door, this has not proved to be the case. Far from discouraging 'through the door' visitation, research is showing that online visitation is actually increasing interest in physical collections. In the most successful cases the online presence is building a cyclical relationship, with visitors going online before and after the physical visit and so extending their contact and engagement.[14] The time is coming when virtual visitors can no longer be thought of as secondary to visitors through the door.[15]

In the fast-evolving Web 2.0 environment — by way of which social media applications allow for dynamic user participation, information exchange and other sorts of user-generated content and collaborative authorship — arguably the most important factor in designing a successful online strategy and presence is to respond directly to the needs and wants of target communities.[16] For museum practice, Web 2.0 is enabling new communities to be formed around, and also contribute to, museum identity and collections. Museums are trialling various strategies, ranging from 'colonising' existing social networking applications such as *Face Book* and *MySpace* or starting *Flickr* collections to encourage public input, through to designing applications for dedicated online communities around museum content through their websites. Users are now commenting on museum holdings, including through tagging, and this is starting to influence the way museums think about their own cataloguing systems. People's patterns of searching online are offering museums new insights into what visitors perceive as most important and interesting and it can also show that visitors see connections existing between material that are not recognised in the more rigid formal classification schemes.[17] In the digital history field more broadly there are also other uses of Web 2.0 and these are referred to later in this paper.

The experience of museums in building online communities, and the rationale and logistics of extending their services beyond established goals, were discussed in-depth at the conference, Social Media and Cultural Communication, held at the Museum of Sydney in February 2008. There was a strong message from representatives of various organisations including the Powerhouse Museum (Sydney), the Cooper Hewitt National Design Museum (USA) and the Ontario Science Centre, that it is a mistake to use online materials to initially attempt to reach audiences who are not already engaged and interested in aspects of a museum even though this would appear to offer the obvious benefit of expanding an online community. Because these potential audiences are difficult to identify and 'capture' through random, scatter-gun online contact, this approach does not tend to form long-lasting communities of interest.[18]

The case of the Cooper Hewitt National Design Museum is a lesson in how to turn the challenge of a lack of digitised content into an opportunity to expand the remit of the museum in entirely new directions. This museum has undertaken very limited digitisation of its collection and so was not able to offer a virtual experience that mirrored the physical holdings. Instead, through its online strategy, it has focused on

being an institution that foregrounds design as a process, with various activities such as online competitions and public voting for the best submitted design work taking the place of access to digitised material online. This museum has also tailored its online offerings to meet directly the needs of the secondary education community, including working with teachers to develop and make freely available lesson plans mapped to the national school curriculum. This has resulted in an ongoing program whereby teachers are even paid a small stipend to attend the museum for workshops with the requirement that they in turn develop related lesson plan content and also blog regularly on the Cooper Hewitt Museum website. This program has been so successful that there is now a community of teachers across all the states of the United States that utilises the website as a resource and point of collaboration and communication. Partly because of this strategy, online visitors now account for 12 times the number of through the door visitors.[19]

Underlying all recent innovations in the online presentation of historical material and information is the fact that the enabling technology has greatly improved, allowing new sorts of collaboration and communication through the Web 2.0 environment. Until very recently, the technology itself tended to limit and so direct the kinds of user experience and digital structures that were possible. Computers used to have very clunky interfaces, especially in the era of the early internet and CD-ROM. The user also needed to put up with the frustration of taking many wrong turns leading to dead ends, simply because of software or network bugs and faults. There was simply not the same creative freedom to design for the visitor as was possible in the physical setting of a museum. Web 2.0 has dramatically increased the range of possibilities for how network media can be used, and this in turn is freeing up interface design and expanding the conceptual horizons of new media designers and producers. The days have gone when all you could expect from websites was a frustratingly slow and unreliable one-way experience to worlds locked away behind glass screens in beige boxes.

Even so, it is important to recognise that some museums have been criticised for relying upon new technologies simply because they are available.[20] This has been referred to as the 'technology trap' — that is, technological possibilities directing museum practice and so tending to supplant core priorities and policies.[21] There is no doubt that while interactivity can encourage engagement and learning, it can also become an end in itself, where the activity eclipses the goal of using the technology. Those accessing information in the online environment want the very same things that people have always expected of museums: imaginative presentation and creatively contextualised materials that inspire and invite interpretation and learning.

The scope of the field of digital history

> The machine, said Ruskin, could only make inauthentic things, dead things. And the dead things communicated their deadness to those who used them.[22]

The digital presentation of history has become a growing area of activity in academic disciplines ranging from those traditionally concerned with the study of the past (such as history and archaeology) through to disciplines concerned less with history than with creative reflections on the past (such as literary studies, media arts, and

even portraiture). With its dependence on diverse kinds of information and evidence, history — in its broadest interdisciplinary sense — is perfectly positioned to be a major beneficiary of advances in the networked media environment. That is because history's own progression over two centuries from authoritarian to democratic approaches, from a focus on 'big' history (Carlyle's 'history is the biography of great men') to multiple and partial histories, and from trusted high authority to participant and processor, has attuned history to the multiple, fragmentary and deterritorialised world of digital media.[23] Against the vision of Ruskin's 'dead machines' communicating their deadness, computer technology is ensuring that people's appreciation of and participation in creating history is alive and well — but it is taking shape in new and sometimes unforeseen forms. In the digital history field, the promise of digital media for the presentation of history is twofold: it offers greater access to information (for specialists and non-specialists); and it offers newly flexible structures to present the plurality of voices and historical experiences.

There is no doubt that some of the most important work in the digital history field has been in the digitisation of primary sources, allowing worldwide access to collections that would otherwise have been hidden and inaccessible except through physical visits. This generic activity of preservation and migration to new formats crosses disciplinary and institutional boundaries and is forming a growing digital information commons that will be the basis of learning for future generations. We are only just starting to see the benefits of long-term, large-scale digitisation projects, particularly those that have been supported for more than a decade.

Alongside the worldwide effort to create easily accessible collections of digital publications and resources is a plethora of experimental formats for recording, interpreting, communicating and sharing history in digital forms. At this stage they do not represent a coherent set of genres and formats and cross multiple disciplinary boundaries. Before the widespread uptake of digital media, the representation of history took a variety of discrete forms such as the book, documentary, photographic archive, oral history interview and museum exhibition or display. Individually, each of these modes of delivery has been understood as a specific format for displaying and communicating historical information and interpretation, with its own conventions and expectations. Multimedia allows these formats to be brought together in various combinations, with differing degrees of emphasis, within a single framework. This convergence is allowing new scope for experimentation in ways of narrating history. It is also complicating the reception of the resultant hybrid texts because this is no longer a simple matter of understanding and evaluating them within an established critical trajectory related to a given mode of delivery or genre.[24] Indeed, the situation is further complicated by the fact that these digital forms cannot be seen in isolation; they are intimately connected with the earlier genres and media from which they developed, and need to be considered in terms of their own relationship with former modes of representation.

With this come various risks, including that readers or audiences will be uncertain about how to respond to established genres, or even that the quality of historical research may be compromised because the conventional benchmarks are no longer applicable. One of the related general criticisms of digital publication forms is that 'deep' reading is being abandoned because

digital textuality privileges 'chunking' and summarising. The sheer variety of new forms of expression presents these and other challenges for history. But the potential benefits arguably far outweigh the difficulties and losses.

It is very difficult to draw a line around the range of work that constitutes the digital history field because it spans so many disciplines and also because new opportunities are opening up all the time. Digital history utilises and embraces the flexibility and open-endedness of digital textuality in a variety of ways and to varying degrees. If we look back to the late nineteenth century, to the 'grand narratives' and the dream of 'ultimate history' that was still pursued by some historians, then what we can see in digital history is the antithesis of that model. The goal of closure and completeness has long been replaced by a concept of history as open, unfinished, and unfixed. As Victor Burgin wrote, in 1996, 'the 'grand narrative' of human existence … is now encountered in a very different way … Today's puzzle pieces … could never be reunited in a coherent picture'.[25] Fredric Jameson, writing in the 1980s, believed that history, as it entered the last quarter of the twentieth century, 'had crumbled into a rubble of distinct and unrelated signifiers'.[26]

There are at least four areas of major, institutionally funded digital history. These are discussed below. In practice, many projects in the field combine elements of some or all of these areas. I refer to a range of Australian and international examples. While the focus here is on institutionally funded projects, another paper could equally sketch the field of digital history from the perspective of 'ordinary' people contributing their stories to non-institutional, community-based websites and using digital tools to share their histories as digital stories, on blogs, and through social networking sites. All are part of the expanding field of digital history.[27]

(1) Virtual heritage, spatial representation and GIS

Virtual heritage includes reconstructions and visualisations of cultural heritage, using 3-D rendering, modelling and animation. It also includes digital restoration of objects. Quickly recognised by museums as having remarkable potential, 3-D visualisation has had one of the greatest impacts on the broad field of historical enquiry over the past decade. An example of a major United States-based project is the digital model of the Roman Forum (as it may have appeared in late antiquity) created by the UCLA Cultural Virtual Reality Laboratory from 1997 to 2003.[28] The promise of historical simulation is that it can produce alternative visions of the past, based on and extrapolating possible scenarios from existing evidence. It also clearly expands the possibilities for historical re-enactment.

A related area of digital history involves advanced spatial representation and layering of historical information on maps using GIS (geographical information systems) technology. This is another kind of visualisation but it goes further than 3-D rendering (it often includes 3-D modelling) by allowing links between spatial information to be traced and represented graphically. The recently launched *Texas Slavery Project* (based at the Virginia Center for Digital History) is an example of how GIS can be incorporated into a multifaceted database resource aimed at encouraging a richer understanding of the history of slavery. The user can view layers of a map of Texas that show total populations of slaves and slaveholders in any or all the Texas counties over time at any point

from 1837 to 1845.[29] As a research and educational tool this has the capacity to quickly show historical patterns and correlations that would otherwise have been extremely difficult to identify and illustrate.

At the heart of the drive towards embracing digital media for history is the power of the database, the aesthetic and functional form of our era. The database in its very basic form is open-ended, unlike a book. The database can change, update and shift. Most crucially for historical information, as for any information, it can be corrected — new editions no longer need be published. The database is endlessly open to revision and renewal, and as micro adjustments are made within the system databases tend to keep on growing — especially if they store a record of adjustments and improvements rather than only preserving the latest version. The database has had a profound effect on how information is presented and collected, even for the old media in their digitised forms.

The magic of database forms is precisely that they offer a way of making links and relationships between disparate pieces of information, creating new kinds of order within a system, at the request of a user. They provide a remarkable vehicle for history to capture some of the fragmentariness and multiplicity of the world in which we live without seeking to fit all the pieces of the jigsaw together. Digital history is more about creating pathways through information and interpretation than about achieving a whole picture or a final product. Database-driven history can reflect both the impossibility of historical 'completeness' and also be true to the fragmentation that is the mark of our own time in history.[30]

While the database is commonly valued for its capacity to store and organise information, database-driven history projects range from being purely informational (such as compilations of digitised material) to highly interpretative, combining a mixture of primary sources, historical outlines and critical commentary. Historians have kept a fairly clear-cut distinction between the evidence — in the form of primary sources, the bits and pieces that make up the historical record — and the process of interpretation. With print media there were clearer distinctions between primary and secondary sources, that is, between the evidence or documentation, and the activity of interpretation by a writer or editor. In the digital environment this is being increasingly muddled by the combinatory impulses of multimedia. This is not because the idea of evidence has changed but rather because multimedia allows the evidence in its rawest form (interviews, photographs, digitised document extracts, location points on maps, oral histories) to be presented alongside the expert framing of that material. The compilation of information is an increasingly creative activity that involves contextual framing that itself performs a quasi-interpretative function. This is especially the case in thematic collections of digitised materials. Although arrangement into themes may not be as complex a form of interpretation as that required for writing a critical study in the shape of a book, it is nevertheless a process that requires expert guidance to ensure scholarly value and an appropriate reading context, as museum curators know through their long experience of thematic approaches to collections. We are at a stage now where we need to start to have a more sophisticated discussion about these various forms so that different genres can be identified and start their own traditions.

(2) Online encyclopaedias, atlases and dictionaries

The large-scale online information resources that are widely known as online encyclopaedias, atlases or dictionaries represent a suite of hybrid forms that are entirely reliant on the database but are much more than simple collections or collations of information. *TeAra: Encyclopaedia of New Zealand* (sponsored by the New Zealand Ministry for Culture and Heritage) is a world-leading example of this emerging genre.[31] These resources bear some resemblance to their nineteenth-century counterparts, which gestured towards the possibility of universal knowledge, and yet they are very different. Their databases are open, extendible and changeable. They do not claim complete or indisputable knowledge. In fact, the impossibility of completeness is reflected and expressed in their infinitely open structure.

Even the most respected print-based reference works are moving to digital form and experimenting with the use of hypermedia formats for presenting information in more creative ways. The *Australian Dictionary of Biography* and the *Oxford Dictionary of National Biography* have launched their online versions in recent years.[32] It is remarkable that in such a short time, the online versions of works such as these have become the most authoritative and up-to-date versions of the information, even in cases where print counterparts continue to be published. Many online institutional resources, conscious of the need to protect their status as *authoritative* resources, are interlinking their websites and even their databases with other trustworthy sites with which they are building data sharing agreements. The *Oxford DNB* has recently begun to experiment with creative interfaces for interlinking the holdings of the *Oxford DNB* and the *American National Biography*.[33] In one special project, part of a celebration of the 40-year anniversary of the 'Summer of Love', the iconic *Sergeant Pepper's* Beatles' album cover is reconceived in online form as a hypermedia mosaic.[34] By clicking on the 'heads' of celebrities of the era, that are featured on the album cover, the user is taken to relevant biographical entries on each database. *TeAra: Encyclopaedia of New Zealand* similarly has links to relevant holdings and entries at related New Zealand cultural institutions. In the museum sector a bold and ambitious British project, to be launched in 2009 — the National Museums Online Learning Project — is creating a portal, set of blogs and federated search facilities across nine British museums ranging from large institutions such as the Victoria & Albert and the Tate to very small institutions.[35]

By the interlinking of websites, age-old institutional barriers are being deliberately breached. While each institution retains control over its material, the links provide new 'back roads' to verified information. This represents a backlash and also a solution to the 'free-for-all' of search engines. For users, it is certainly valuable to be presented with seven million links relevant to a search, but being faced with too many alternatives is also a problem that can dilute serious study of a topic. Increasingly, institutional databases will be able to link and communicate with one another in much more sophisticated ways than this so that the user will not need to effectively leave the domain of one resource to be able to search and import information from another. With this improved access will also come other challenges, including the need to protect the identity and sometimes the reputation of individual resources.

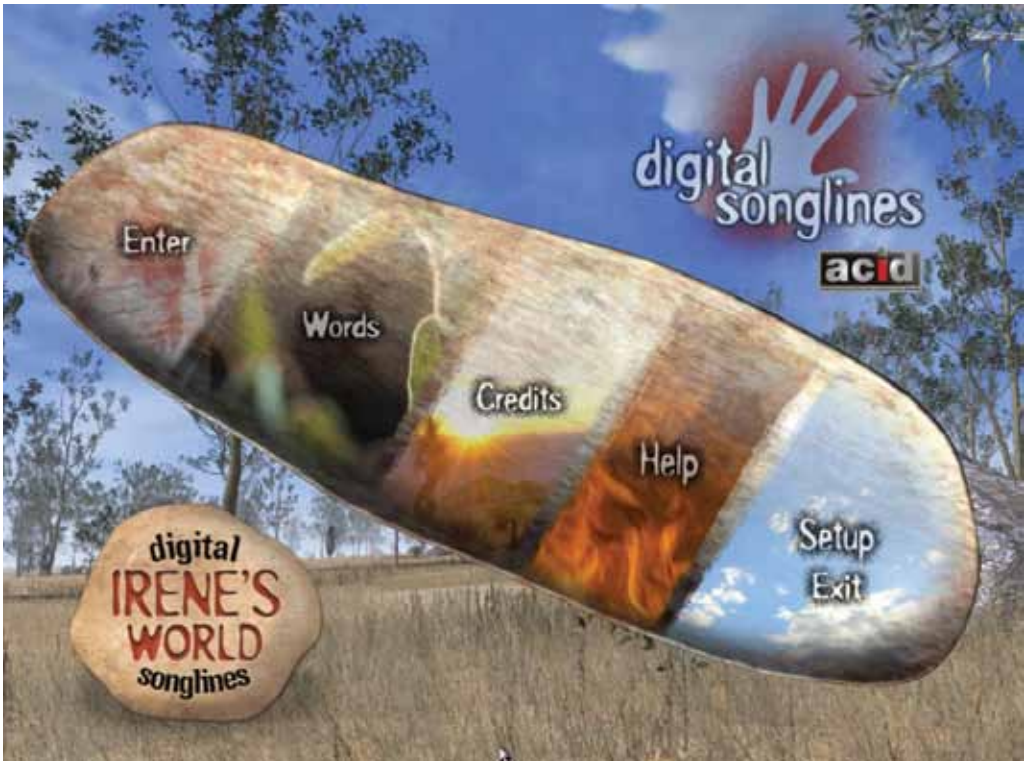
(3) Interactive narrative formats

A third, large category of digital history includes a full range of experimental formats for presenting history in new ways that require user interaction to piece together the historical story or creatively test alternative formats. Apart from enabling greater access to historical information, one of the main motivations for experimenting with digital formats for history is to investigate whether knowledge of the past can be recorded and passed on in richer ways than through the linear narratives of books or films. The term 'narrate' continues to be used with reference to interactive narrative texts and yet, used in the context of digital history, this is not the traditional narrating that may have led a reader through a work.

What identifies these kinds of experimental interactive narrative works is that rather than being designed for greatest *usability* in terms of facilitating free-flowing information access, they require investigative user participation and *navigation*. The user is guided more strictly down certain routes than they are when seeking information through online encyclopaedias, atlases or dictionaries. It is one of the celebrated powers that come with the democratisation of digital media that the activity of putting together meaning to be drawn from the text is now far more in the hands of the user. Using the same principle as educational software, by seeking out information and putting together the information piece by piece, the user has the chance to learn more than they would by having access to all the information at once. One of the foundational tools for the range of experimental, interactive narrative forms is hypertext narrative, where the traditional linear form of narration was challenged, initially in a textual format, and then increasingly in hypermedia formats (combining audio, video and images).[36]

In the broad area of interactive narrative, one of the most recognised forms of digital history is the multimedia documentary. While these experimental histories have developed out of genres of hypertext narrative, they have become increasingly visual, rather than only textual. In their most sophisticated form, multimedia documentaries are highly filmic. In other instances they take the form of well researched informational websites. Major national broadcasters such as the ABC and BBC, for example, have produced some excellent websites that have been referred to as multimedia documentaries. Until recently, however, multimedia documentaries have tended to be presented on CD-ROM and DVD. With fast broadband they will increasingly be designed for online delivery.[37] The highly visual multimedia documentaries can be seen as a continuation of the film documentary tradition, married with the best of hypermedia navigation structures.

The *Labyrinth Project* at the Annenberg Center for Communication, University of Southern California, is a recognised leader in the multimedia documentary and 'database narrative' genre.[38] Over more than a decade this project has produced a series of documentary works, many of them biographical. They are visually rich, navigable environments that include 3D rendering as well as map interfaces. In all these, the database features as the underlying mechanism for information retrieval, but this time as a structure that allows for a non-linear exploration of historical material determined by the user as they navigate through the work. As in other similar examples of multimedia documentaries, the virtual environment is designed to give the user the impression that they are navigating through a simulated space with familiar spatial coordinates and relationships, and that the space is extensive.



Screenshot of the Digital Songlines project
songlines.interactiondesign.com.au

These kinds of experimental texts are particularly interesting because of their hybridity. While they are not information resources, they include information and are sometimes archives in their own right. We may not want to call these works history, since they come out of areas as diverse as interactive cinema and media arts, and yet they are undoubtedly important to history because they are presenting historical experience and information in new creative formats.[39] Similarly, while they are often focused on individual lives, these works are not adequately described by the term 'biography'.

The user participation and navigation required in multimedia documentaries is closely related to games. Games make particularly good use of the possibilities offered by virtual reality technology and are an essential element in any discussion of digital narrative. Many games contain historical content as a background to a game narrative, and the use of historical context as a background for games is worthy of a study in its own right. Importantly, interactive narrative has been explored with the greatest sophistication in a dialogue between literary studies and game studies.[40] This is an indication of the new and unexpected interdisciplinary alliances that the digital media environment is encouraging. The Digital Songlines project of the Australian Centre for Interaction Design, Queensland University of Technology, is a remarkable example of computer game design brought together with virtual heritage. The project is intended as an educational tool,

developed in partnership with Indigenous communities and other collaborators including the Queensland Museum. The user navigates a virtual environment in which Aboriginal traditions and objects are depicted in lifelike high-resolution scenes. Photographed objects from the Queensland Museum, including spears and other tools, are embedded seamlessly in the 3-D rendered world.[41] This approach to creating immersive, engaging and educational experiences has clear potential for museums as they move into virtual worlds such as Second Life.

(4) Social media, collaborative authorship, mashups and Web 2.0

The final category of digital history includes various kinds of information sharing, collaborative authorship and what are known as 'mashups'. These diverse activities and formats are enabled by the Web 2.0 environment, discussed in the museum context earlier in this paper. This new environment is having an impact across the digital history field. Web 2.0 represents not so much another form of digital history as an environment that allows for new combinations of existing resources and for user input into those resources.

User-generated content can make a valuable contribution to collections across the cultural sector. The National Library of Australia, for example, is encouraging public input into its collections through the *PictureAustralia* portal, the long-established database of visual material that already aggregates material from a range of institutions.[42] For the past two years *Picture Australia* has featured the popular *Flickr* photo-sharing service to invite the public to contribute directly to the collection. Public input can have obvious benefits. Although not all the photographs posted will make it into the collection, some will be very important additions. Moreover, since introducing this service *Picture Australia* has recorded a 43 per cent increase in use of the web portal.[43]

At the other extreme, public input can lead to misinformation and misattribution, as is regularly reported in the case of *Wikipedia*, a fascinating resource that also gravely worries many historians because of its inaccuracies and routine illegal borrowings from more authoritative works.[44] Much like the old-fashioned history texts that had no identified authors and presented an apparently indisputable version of world events, *Wikipedia* is open to the danger of being accepted as authoritative, when in fact it is written by people who are not necessarily qualified to speak about the material they are posting. In other words, it represents the full democratisation of telling about the world and its history: we once complained about the experts not even lending their names to the great works they produced, and manipulating knowledge to fit their own vision of the world. Now that power is being devolved to ordinary people whose identity can never be known, in some cases not even through legal mechanisms.[45] It may be that in the future historians and museum professionals will see it as their professional obligation to add their input to resources such as *Wikipedia* in an attempt to make them as accurate as possible. However, for many this is seen as a further layer of responsibility that takes up valuable staff time and cannot as this stage be considered a core activity.[46]

'Mashups' are at the most experimental technical end of the digital history field. A mashup can be defined as 'a website or application that combines content from more than one source into an integrated

experience'.[47] Locations on maps, for example, can be linked with photographic archives that in turn can be linked with historical commentary. And yet the various parts of this composite 'mashup' exist on a separate server and in a stand-alone form that is valuable in its own right even before it is brought into connection with the other parts. At this stage mashups give an enticing glimpse of how future history texts may look in tomorrow's distributed online information environment. An example that shows how useful this approach can be for presenting oral histories is the recently launched project *Oral Histories of Route 66* (History of Science Department and Center for Educational Resources, The Johns Hopkins University).[48] The mashup documents a journey made by Jay Crim and Shekar Davarya in 2002 along the route of the now decommissioned highway — recording stories and collecting images and videos that shed light on its history. The mashup brings together a photographic archive, text of interview questions with answers provided in raw form as segments of video interviews, and external links to websites relevant to places along the route — with all entries brought together by being located by markers on a map of the route (using the *Google Maps* application, and also including links to satellite imagery using the *Google Earth* application).

In the future it is conceivable that larger networks of 'mashed up', interlinked digital histories could start to map localities culturally as well as spatially, with entry portals giving access to a vast array of stories of places, features, objects and lives of communities.

Conclusion

The many new digital tools and resources that people now have for communicating, storing, retrieving and sharing information are having a major impact on the traditional patterns of doing research and disseminating research across all academic disciplines and in professional settings, including in museums. In the digital history field there is a pattern whereby the emphasis is shifting from the fixed final publication towards seeing new value in research-in-progress and harnessing that information in databases. The nature of the database as an open-ended, updatable, ever-changing form is set against the finality of the printed book and, in the museum context, the relatively static nature of conventional exhibitions. In that shift there is also a new emphasis being placed on dynamic user-initiated collation and relational *positioning* of historical information. If it were not for the advanced search and retrieve facilities built into modern search engines and modelling and simulation programs, then the information would stand idle and inactivated. Somewhere between information and interpretation — and between what were once called primary and secondary sources in the study of history — is the newly active user, initiating processes that rearrange data and show new patterns in that information. This is certainly a kind of interpretation — but it is not the kind traditionally associated with academic historical enquiry. This kind of discovery based learning and interpretation — where the activity of finding and making sense of the material puts the user centre stage rather than being a passive receiver of information — has long been a goal of museums. And yet acknowledging this trend also requires a long-term reconsideration of the status of the online museum visitor, who now needs to be thought of as an active collaborator rather than as a guest or client.[49]

The future of digital history will not be reliant on databases working in isolation in the same way that the future of museums cannot only be in the physical setting. What this means is that the era of 'walled in' knowledge is over.[50] The global development of a cyberinfrastructure for the sharing of complex information is adding a newly secure layer of interconnectedness between information resources that bypasses some of the haphazard and anarchic information spaces of the World Wide Web. It is also forcing the development of new standards that aim at a seamless integration of and access to information stored across the world on different servers; this is a set of new platforms, languages, and protocols that is starting to offer a glimpse into a new future of interconnected, even automated, information sharing and linkages. New standards are already helping to formalise digital preservation policies and processes and this will be a growing responsibility of museums and other cultural collecting institutions.

Future digital history texts will not be stand-alone products, although some will continue to take a physical form as museum installations; they will increasingly recombine information available through any number of online services to create new forms and new portals to information. Museums will need to embrace the new 'messiness and complexity around the new ways of communicating and the use of collections'.[51] This recombination of information across online services will help to frame history in new ways. It may no longer be possible to simply call these *texts*: they will be composite, shifting, information resources that are defined by their very distributed nature rather than by their location within a particular institution, discipline or domain.

At its best, digital history represents a new kind of historical aesthetic, a new means of conveying historical experience, and a new way of recording and remembering. At its worst, digital history generates projects that create barriers to historical understanding. Evaluating the success or otherwise of such works is a highly subjective activity that is complicated by the fact that these are hybrid works that must be considered from many perspectives including usability, design, production, data management, as well as in terms of their historical content. Should the same standards be applied as would be for traditional historical interpretation and presentation? Or should interface design and usability issues be the main concerns, since content is more easily changed in the digital environment? What other dilemmas does history need to confront in this environment? Museums have taken the lead in utilising new technologies and they have been willing to experiment and take risks. As evolving technologies offer ever greater possibilities, other branches of history are taking up new digital opportunities. With the increasing emphasis on the kinds of *spatial* multiplicity and connectedness required by innovative forms of digital representation it is likely that the ways we understand and imagine the past, and temporality itself, will also change. Historical time will be less linear, more spatialised. With so much happening already, there is no doubt that the field of historical enquiry and criticism needs to be further opened up to include discussion of these experimental approaches so that those concerned with the presentation of the past can be at the forefront of determining history's digital future.

This paper has been independently peer-reviewed.

Notes

1 Quoted in EH Carr, *What Is History?*, Penguin Books, Harmondsworth, Middlesex, 1964 [first published 1961] p. 7.

2 This required putting faith in 'a classificatory schema that deployed narratives of scientific advancement and national and imperial progress'. See Ian McShane, 'Museums, multimedia and history education,' *Southern Review: Communications, Politics and Culture*, vol. 38, no. 1, 2005, 18–32 (p. 18); Tony Bennett, 'The political rationality of the museum', *Continuum: An Australian Journal of the Media*, vol. 3, no. 1, 1990, 33–55; Tony Bennett, *The Birth of the Museum: History, Theory, Politics*, Routledge, London, 1995; Tony Bennett, *Culture: A Reformer's Science*, Allen & Unwin, St Leonards, 1998.

3 The motto of the British Museum pronounces confidently that it is the 'Museum of the world for the world'. The goal of the early leaders of the American Museum of Natural History has been described as 'trying to know and save nature, reality'; 'their explicit ontology was holism, organicism'. See Donna Haraway, *Primate Visions: Gender, Race, and Nature in the World of Modern Science*, Routledge, New York, 1989, p. 58.

4 See ibid., pp. 56–7.

5 This is a long way from the dream of a universal history — and yet the surveillance culture we live in may yet rekindle this vision, as our movements and communication are increasingly monitored and recorded.

6 See www.youtube.com.

7 Haraway, *Primate Visions*, p. 54.

8 Luigina & Liam J Bannon Ciolifi, 'Designing hybrid places: Merging interaction design, ubiquitous technologies and geographies of the museum space', *CoDesign*, vol. 3, no. 3, 2007, 159–80 (p. 159).

9 M Christine Boyer, *The City of Collective Memory: Its Historical Imagery and Architectural Entertainments*, MIT Press, Cambridge, Massachusetts, 1996 [first published 1994], p. 133.

10 If there were to be one broad criticism of work across the digital history field it would be that the reception of its material is hampered by the context in which the audiences of digital history (the 'users') access the information. Nothing can replace the contextual framing possible in a physical environment.

11 See Andrea Witcomb, *Re-Imagining the Museum: Beyond the Mausoleum*, Routledge, London, 2003.

12 McShane, 'Museums, multimedia and history education' (p. 18).

13 ibid.

14 Paul F Marty, 'Museum websites and museum visitors: Before and after the museum visit', *Museum Management and Curatorship*, vol. 22, no. 4, 2007, 337–60.

15 Lynda Kelly, 'Social media: The future', contribution to panel discussion, Social Media and Cultural Communication conference, Museum of Sydney/Australian Museum, 29 February 2008.

16 Caroline Payson, 'Building and maintaining an online community', masterclass presented at the Social Media and Cultural Communication conference.

17 This has been the experience, for example, of Sydney's Powerhouse Museum (reported on by Sebastian Chan at 'The World of Social Media' session, during the Social Media and Cultural Communication conference).

18 BJ & Nework Soren, 'Best practices in creating quality online experiences for museum curators', *Museum Management and Curatorship*, vol. 20, no. 2, 2005, 131–48.

19 Payson, 'Building and maintaining an online community'.

20 The use of interactive displays in the museum environment is often linked to reduced funding, with museums forced to become 'razzle-dazzle fun houses' of 'high tech gimmicks'. Leigh Dayton, 'Theme parks with old stuff', *Australian Higher Education Supplement*, 22 February 2006 (p. 30).

21 Ross Parry, 'Digital heritage and the rise of theory in museum computing', *Museum Management and Curatorship*, vol. 20, no. 4, 2005, 333–48 (p. 333).

22 Lionel Trilling, *Sincerity and Authenticity*, Oxford University Press, Oxford, 1974, p. 127.

23 Quoted in Carr, *What Is History?*, p. 49.

24 Michael Coventry, 'Moving beyond "the essay": Evaluating historical analysis and argument in multimedia presentations', *Journal of American History*, March, 2006, www.indiana.edu/~jah/textbooks/2006/coventry.shtml.

25 Victor Burgin, *In/Different Spaces: Place and*

Memory in Visual Culture, University of California Press, Berkeley, Los Angeles, 1996, p. 192. Burgin goes on to say, 'From a world in which images were once limited in number, circumscribed in meaning and contemplated at length, we have today arrived at a society with images are consumed "on the fly". Images from magazines, newspapers, snapshots, videos, films, broadcast and cable television, and so on … The fragmented universe of images today'.

26 Burgin quotes Fredric Jameson. See Frederic Jameson, 'Postmodernism and the logic of late capitalism', *New Left Review*, no. 146, 1984, 66–82 (p. 66).

27 It is worth mentioning that before Web 2.0 (a term first used around 2004), the wider public was able to sample some of these kinds of personal interactions through their encounters with experimental projects in museums — such as the pioneering Eternity project at the National Museum of Australia.

28 See dlib.etc.ucla.edu/projects/Forum.

29 See www.texasslaveryproject.org.

30 For landmark discussions on fragmentation in the context of postmodernism, see: Jean Baudrillard, *Fragments, Cool Memories III*, 1990–1995, trans. Emily Agar, Verson, London, 1997; Zygmunt Bauman, *Postmodernism and its Discontents*, Polity Press/Blackwell, Cambridge, UK, 1997; and Patricia Waugh, *Practising Postmodernism*, *Reading Postmodernism*, Edward Arnold, London, 1992.

31 See www.teara.govt.nz/en.

32 See www.adb.online.anu.edu.au and www.oxforddnb.com.

33 *American National Biography*, www.anb.org.

34 See www.oxforddnb.com/public/sgtpepper.

35 Reported on by Caroline Royston (representing the National Museums Online Learning Project, United Kingdom) at 'The World of Social Media' session, Social Media and Cultural Communication conference.

36 On the history and dimensions of hypertext, see George P Landow, *Hypertext 3.0: Critical Theory and New Media in an Era of Globalization*, Johns Hopkins University Press, Baltimore, 2006.

37 Hence the term 'online documentary' is being increasingly used.

38 See college.usc.edu/labyrinth.

39 See Jeffrey Shaw & Peter Weibel, *Future Cinema: The Cinematic Imaginary after Film*, MIT Press, Cambridge, Massachusetts, 2003; and Edward A Shanken, 'Historicizing art and technology: Forging a method and firing a canon', in Oliver Grau (ed.), *Media Art Histories*, MIT Press, Cambridge, Massachusetts, 2007, pp. 43–70.

40 See, for example, the essays in Noah Wardrip-Fruin & Pat Harrigan (eds), *First Person: New Media as Story, Performance and Game*, MIT Press, Cambridge, Massachusetts, 2004.

41 See songlines.interactiondesign.com.au.

42 See www.pictureaustralia.org.

43 Fiona Hooton, 'Social media: The future' (contribution to panel discussion, Social Media and Cultural Communication conference).

44 See en.wikipedia.org/wiki/Main_Page.

45 *Scholarpedia* (see www.scholarpedia.org) is an alternative to *Wikipedia*. This resource uses the same open source software as *Wikipedia* but it enlists academic experts to write the featured articles. This may be a model for future specialist research resources, and yet at this stage there are very few entries.

46 This issue was raised and extensively debated at both the Biography and New Technology conference (Humanities Research Centre, Australian National University, September 2006) and the Social Media and Cultural Communication conference.

47 This definition is taken from *Wikipedia*. Against all the fears of misinformation, definitions such as this one are useful and accurate. See en.wikipedia.org/wiki/Mashup_%28web_application_hybrid%29.

48 See maps.google.com/maps/ms?ie=UTF8&hl=en&msa=0&mssort=5&msid=103763259662194171141.000001119b4b42bf062c2.

49 Frank Howarth, 'Re-imagining cultural interaction', contribution to panel discussion, Social Media and Cultural Communication conference.

50 I am referring here to the quotation mentioned earlier in this paper, from M Christine Boyer, *The City of Collective Memory*, p. 133.

51 ibid.

Citation guide

Paul Arthur, 'Exhibiting history: The digital future', *reCollections: Journal of the National Museum of Australia*, vol. 3, no. 1 (2008), pp. 33–50.

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