digital cultural heritage: FUTURE VISIONS

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The symposium Convenors received a total of 33 abstracts. All abstracts underwent a double-blind peer review by two members of the Symposium Organising Committee. Authors of accepted abstracts (24) were invited to submit a full paper following presentation of their draft papers at the symposium. All submitted full papers (8) were again double-blind peer reviewed by two anonymous reviewers and given the opportunity to address reviewer comments. Papers were matched as closely as possible to referees in a related field and with similar interests to the authors. Revised papers underwent a final post-symposium review by the editors before notification of acceptance for publication in the symposium proceedings.

Please note that the paper displayed as an abstract only in the proceedings is currently being developed for an edited book on digital cultural heritage.
Innovative new data collection and digital visualisation techniques can capture and share historic artefacts, places and practices faster, in greater detail and amongst a wider community than ever before. Creative virtual environments that provide interactive interpretations of place, archives enriched with digital film and audio recordings, histories augmented by crowd-sourced data all have the potential to engage new audiences, engender alternative meanings and enhance current management practices. At a less tangible level, new technologies can also contribute to debates about societal relationships with the historical past, contemporary present and possible futures, as well as drive questions about authenticity, integrity, authorship and the democratisation of heritage.

Yet for many, gaps still exist between these evolving technologies and their application in everyday heritage practice. Following the success of a sister conference in Brisbane, Australia in April 2017, this symposium focused on the emerging disciplines of digital cultural heritage and the established practice of heritage management. The symposium aimed to provide a platform for debate between those developing and applying innovative digital technology, and those seeking to integrated best practice into the preservation, presentation and sustainable management of cultural heritage.

The symposium was designed to encourage critical debate across a wide range of heritage-related disciplines. We welcomed papers from practitioners and academics working in cultural heritage and related fields such as architecture, anthropology, archaeology, geography, media studies, museum studies and tourism. We particularly encouraged papers that explored the challenges of digitising tangible and intangible cultural heritage, those that identified issues with digitisation and digital interaction, and those that addressed the theoretical challenges posed by digital cultural heritage.

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EDITORS and SYMPOSIUM CONVENORS
Abstract
This paper focuses on the conservation of archeological landscapes in urban contexts and the specific case of Rome’s archaeological area. The aim is to understand how the concept of cultural heritage transformed from a characterising sign of the elite to a resource for large-scale tourism. However, what could be done to make the archaeological evidence more accessible without decreasing the scientific quality of the cultural offer? The use of augmented reality (AR) as a guide on the site has been experimented with in multiple forms throughout the Archaeological Area of Rome and has increased visits even amongst the citizens of Rome (Ministero dei beni e delle attività culturali e del turismo, 2018). From an analysis of the current cultural offering and comparison with other international sites, it has been possible to develop guidelines that combine this type of representation and ensure a balance between the real and virtual world. It emerged that the use of AR as a narrative tool for ancient events led citizens to ‘wear’ the garment of the tourist in their own city, rather than bring their urban reality into the archaeological context. Indeed, in Rome’s case the urban context continues to assume features aimed at touristic exploitation. Banal souvenir shops and mediocre restaurants have replaced the once highly frequented artisan workshops that characterised the landscape around the archaeological area. To integrate urban archaeology into everyday life as a space in the city and to valorise cultural heritage, the simple image of elements constituting the original archaeological landscape is not enough. In order to save the cultural identity of this heritage, it is necessary to preserve its context and respect the authenticity of the locations, not to fall into the mere (though didactic) spectacle of the cultural heritage.

Keywords: Cultural heritage; Virtual reality; Virtual restoration; Archaeology; Multimedia; Conservation
Introduction

The context for this paper is the current debate on the valorisation of archaeological landscapes in urban contexts. The paper begins by reflecting on the significance of heritage in contemporary civilisation and considering how the concept of exploiting cultural assets has changed. The case to be examined is the Central Archaeological Area of Rome (CAA), taken as a symbolic example of an archaeological landscape immersed in a city centre. The objective is to identify what new systems are used by public institutions and other conservation bodies, and to identify which systems would be useful to reconcile the exploitation of the CAA with the needs of contemporary society in order to make spaces geared for tourism, but also a cultural draw for citizens (Ancona et al. 2012).

The research takes as its starting point the need to highlight the archaeological landscape in an urban context as an active element in processes that transform the city (Manacorda 2007). These processes are increasingly affected by the inevitable effects of globalisation. It is important to acknowledge these effects in order to control and guide them rather than being overwhelmed by them. For some time now, a technological revolution has been underway, bringing the use of the computer as a mechanism for production, distribution and communication into the cultural arena. New technologies have helped make it possible to conduct broader research, to analyse, study and, only then, valorise cultural assets (Bonacini 2014, 21-89).

Technology is one tool being used by authorities to bring local citizens back into archaeological areas, encouraging their use by the creation of museum pathways across an area. This paper considers what could be done to make the share of archaeological evidence more accessible without decreasing the scientific quality of the cultural offering. The paper concludes by questioning whether the new forms of use are enough to bring citizens into the area to reclaim the city without turning them into tourists.

Theoretical background

In the case of Rome, to be able to develop a good plan for the use of augmented reality it is crucial to be aware of the archaeological landscape one is dealing with and of the connection this has, and has always had, with the city that has grown up around it (Brancati et al. 2015). The choices made in organising the CAA have not always been driven by the desire to make the reading of archaeological finds accessible to everyone; interpreting them has often been the sole preserve of scholars.

Evidence of this trend is found in the way that the area of the Roman Forum and the Imperial Forums feature a layout that is heterogeneous in time and space. For example, in the area of the Roman Forum there are structures dating from Ancient Rome existing side by side with more recent constructions.

Figure 1. The ancient Settimio Severo Arch and the baroque facade of Church Santi Luca e Martina in the Roman Forum. (Source: Piranesi, G. B. 1748. Views of Ancient and Modern Rome.)
side with buildings of later construction, such as the Chiesa dei Santi Luca e Martina, built in the 7th century on the ruins of an earlier building, which was in turn built on the site of the Secretarium Senatus (Armellini 1887, 451-453), an annex to the Curia (Figure 1). Another example is Via Alessandrina, built in the 16th century at the behest of Cardinal Michele Bonelli, with its surviving traces lying between the areas covered by the Forums of Augustus, Nerva and Traiano (Nibby 1841, 237) (Figure 2). Yet this place was, until a few years ago, a more fully integrated part of the urban fabric than it is today. The interactions between the city and the archaeological landscape represent the most significant change since the creation of the Monumental Zone in Rome. It is, in fact, by analysing relationships with the urban context that we can understand how much and in what way the effects of the tourist market have influenced the development of this area (Ricci 2002).

The Monumental Zone was created in 1887 by a ‘declaration of public utility to isolate some monuments in the southern part of Rome and connect them by means of walkways and public parks’ (Commissione reale per la zona monumentale di Roma, 1914) (Figure 3). As was highlighted in the report attached to the Monumental Zone plan, the aim of the work was to safeguard the cultural heritage from building speculation and improve areas considered to be among the most insalubrious in the capital.

The implementation of this project, carried out over the subsequent decades, included providing citizens with a pathway linking public parks, and broad tree-lined avenues, intended to encourage the use of the archaeological heritage within the urban context of the capital. There were various later actions altering the layout of the area; the most significant, in terms of the grandiose nature of the works, were the interventions completed during the Fascist period (Figure 4). However, before the advent of mass
in her honour lies between the Roman Forum and the Temple of Venus and Rome. This event last took place on 12 March 2017 on the Via dei Fori Imperiali (Figure 6). One of the most significant contemporary examples, the 1960 Rome Olympics, should also be mentioned. Spectators arrived to watch the wrestling in the spectacular setting of the Basilica of Maxentius, which was used again in the 1970s for the architect Renato Nicolini’s film festival, ‘Estate Romana’. The Park, too, was open to the public and used by the inhabitants of the area as an urban space, as were the grounds of the historic Roman villas, a heritage site for the world, but also for the city.

In theory, the current trend is to no longer interpret urban archaeology as somewhere remote from daily life, but as a space in the city in which individual sites or a single monument is an integral part of a unified local area with an integrated service infrastructure (Segarra Lagunes 2000). On the one hand, this approach allows the conservation of architectural finds and, on the other, it ensures that the city’s heritage is used to meet the contemporary needs of the city, there being a fluid connection, without the physical and perceived barriers existing at some of the other archaeological sites in the capital such as, for example, the Largo di Torre Argentina. The problem still sits on the desk of academics and administrators, in an attempt to integrate theory into the implementation of well-intended plans.

One of the responses suggested by a selection of institutions as a way of attracting citizens back to live in the archaeological centre leans towards the use of multimedia as a narrative tool for the events that affect the ancient ruins.

**Hypotheses development**

The use of augmented reality as an on-site guide has been tried in various forms in the CAA and has achieved a degree of success, not only with tourists (Figure 7). In the case of the Domus at Palazzo Valentini, gradually revealed by lighting, the visitor enters into a dark space, in which the various sections...
To the use of immersive reality (Co-Op Culture, 2018), which is also used for the Coliseum tour ‘Live Ancient Rome’ (Falcone, 2017).

From an analysis of current cultural offerings and comparison with other international locations, there emerges a need to establish some possible guidelines that should be common to these types of representation. The CAA’s new forms of usage with the assistance of multimedia are a consequence of rapid technological development, but they must be consistent with relevant rules and regulations (London Charter 2009; Seville Principles 2011; The Florence Declaration on Heritage and Landscape as Human Values 2014). This action is vital in order to ensure a balance between the real world and the virtual world, and to provide exhibitions that communicate cultural heritage in a way that is both scientific and easy to understand.

are illuminated as the narrator tells their story (le Domus Romane di Palazzo Valentini, n.d.). Another example, in the Imperial Forums, is the route through the structured space in the Forum of Caesar, which passes through the hypogea areas below Via dei Fori Imperiali and allows visitors to explore areas previously off-limits to the public. Similarly, the show in the Forum of Augustus, which projects the history of the Forum and the fire of 64 AD in the time of Nero onto to the massive wall of the Suburra district (Viaggio Nei Fori, 2015). A further example is Santa Maria Antiqua, with its narrative explaining the complexity of its artworks (Co-Op Culture, 2018) and the history of the Domus Aurea from construction to the damnatio memoriae, and from its rediscovery in the Renaissance through to 20th century digs (Figure 8). This can be experienced in person by visitors thanks to the use of immersive reality (Co-Op Culture, 2018), which is also used for the Coliseum tour ‘Live Ancient Rome’ (Falcone, 2017).

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augmented reality, a number of aspects have been identified as determinants of the quality of the representation offered. These parameters can be divided into two main categories: direct assessment or explicitly identifiable, and indirect assessment or easily inferred by studying the cultural offering. In terms of direct assessment, the following criteria have been identified:

- Type of digital technology used, from laptops to headsets (Brancati et al. 2015);
- Degree of autonomy in enjoying a cultural asset. The Archeoguide method with personal headsets for each visitor, or the ARAS method with headsets at the location that anyone can choose to use or not use (Bonacini 2011);
- Predominance of the real or the virtual on the tour route (e.g. at Palazzo Valentini where the view of reality is subordinate to the show on offer because the darkness of the room does not allow the real ruins to be fully appreciated);
- Scientific nature of the contents with explicit referencing of sources, historical rigour applied to reconstructions and philological authenticity;
- Availability of one or more interpretation aids;
- Communication format whether in person, a hologram or a narrating voice;
- Whether the visit follows a set route or there is free choice;
- The option to access more detail on what has been shown via augmented reality e.g. iTACITUS and MobiAR models (De Paolis et al. 2007, Empler 2015).

Indirect assessment criteria are summarised as follows:

- Interaction between the visitor experience and the heritage site, including links between what is seen in the stories and the architectural finds visited;
- Whether user action is active or passive. An active visit has greater autonomy and flexibility, and a passive visit has the user watching films or looking at documents;

Research method

Based on the experience of applying multimedia methods in recent years in both Rome and other international locations, the characteristics of various forms of use of the visual arts in relation to cultural offerings, and the merits and defects of each form, have been analysed in accordance with principles 2.2 e 2.3 of the London Charter. The aim was to identify the individual contexts that each form was best suited to in order to restore the archaeological areas to those who live there and not to tourism alone (Bonacini 2014; Biagi Maino and Maino 2017).

By studying the current range of cultural offerings, heterogeneously connected through use of...
it is necessary to also preserve the context in order to ensure that cultural values are passed on (Manacorda 2007). Based on the findings of this research, a scenario opens up that offers a number of usage opportunities that could be developed in the immediate future. Additional possible uses include:

· Visualising the city of the future based on planned and not yet realised projects. For example, work on structures or architectural ensembles, using the development of a virtual restoration project to show what it will look like before it is actually created;
· Visualising alternative scenarios for the city of the future;
· Bringing together information on tourist and city services that visitors can use before or after the visit, such as transportation systems, accessing the area, ticketing information and various types of tourist services available;
· Using preferences shown by the visitors during their visit to invite ‘cultural recalls’ or further visits to the area;
· Developing virtual tours that include the urban area, to show parts of the city and walkways that have now gone or have profoundly changed, looking at them from a broader architectural angle (based on London’s Streetmuseum) (Kerruish, 2010);
· Opening up the cultural offering to people with disabilities (London Charter 2009, 11).

For example, special tours using avatars to communicate information in sign language e.g. Google Glass 4Lis model, created for the Egyptian Museum of Turin;
· Creation of exhibitions that also show the restoration work carried out to give ruins the appearance that the visitor can see with their own eyes, possibly in the context of special tours.

Only if technology is seen as a tool that can be adapted to meet the need to preserve and protect cultural assets, abandoning the view of technology as the final objective, is a real collaboration possible
with the aim being not to interpret the ruins and restore their dignity, but to restore some view to better sell the archaeological panorama to tourists, even where this is in conflict with the restoration charters (Limoncelli 2012). With virtual restoration visualisations, it is possible to offer a reconstruction scenario that includes decorative furnishings, for example, without impacting on the physical structure of the monument (Figure 9). One possible use is in the case of archaeological assets in a very poor state of preservation where reconstruction would have to be very substantial. Alternatively, in the case of decorative features for which we have evidence in graphical reproductions or of where only faint traces remain. Multimedia exhibits offer a reconstructed visualisation of reality. Even when it is a virtual restoration, therefore, the principles that would apply to a real restoration should always be followed. That is, a philological construction should be produced and adapted to the specific instance it is applied to. It would be desirable, in this regard, to repeat a ‘how it was, where it was’ created ad hoc for each structure, in order to create a suitable virtual restoration. It is interesting to promote virtual restoration not only for didactic purposes, but also for it to be used to support monitoring of the state of deterioration of structures (Giannotta et al 2014). In terms of the landscape of the contemporary city, virtual restoration would be useful for ensembles or structures:

- That have been destroyed by wartime events or natural disasters;
- That have become unusable or unsafe;
- That are no longer visible because they have been demolished;
- Whose usage has to be restricted for reasons of conservation or ownership, but which could thus still be viewed.

In augmented reality reconstructions during recent years, great attention has been placed on the original urban context. The question remains how the context in which these archaeological ensembles are located between the ‘scientific’ world and the ‘human’ world (Bennardi and Furferi 2007).

**Discussion, implications and limitations**

Even in the absence of physical material, virtual restoration represents a first step towards real restoration. Virtual restoration can be incorporated where, for example, the traces of the past may not be sufficient to determine with certainty the actual appearance of a structure. It can also be used as an alternative to carrying out restoration work aimed more at increasing mass tourism rather than safeguarding monuments (Limoncelli 2012). In this way it would be possible to avoid reconstruction work aimed solely at ‘promotion’ without conservation. Less common, but still widespread, are examples of reconstructions that are created arbitrarily.
should be dealt with today. Are urban policies in line with universally recognised principles for protecting and safeguarding the cultural identity of heritage assets? For example, by Administrative Decree 8410/09 the Sicily Region introduced the Regional Charter for Memory-Places in line with the principles for the protection of cultural intangibles ratified by the Paris Charter of 1972. In the case of Rome, can we still speak of ‘memory-places’ in relation to the urban areas surrounding it?

What surrounds the CAA is, indeed, no longer an urban fabric lived in by its inhabitants, with artisan shops on the Rione Monti, for example (Figure 10). Today, the landscape in the area around the CAA is heavily geared to the tourist market, which is definitely a long way from, and unrelated to, the noble intentions of the cultural debate on the idea of reconnecting archaeological areas with the urban fabric of the contemporary city (Figure 11). However, what makes the archaeological landscape are the traces of mankind on the land, including in relation to the symbolic aspects that are characteristic of mankind in contemporary times (Manacorda 2007).

Thus, what needs to be recovered is not merely the view of the architectural elements that made up the landscape of the archaeological site in an urban environment in its original phase of life. To restore the CAA to the city, wide-ranging technical policies are needed that take account of:

- The historical dimension: this means reconstructing the history of the urban fabric that is inextricably entwined with that of today;
· The technical dimension: planning for archaeological digs must take account of the needs of the living and modern city, so must link into town planning;
· The planning dimension: alongside the theme of knowledge sits the idea of linking the major excavations to parts of the contemporary city. In this context it would be appropriate to work not only on individual archaeological finds, but also to assert the value of memory as an active factor for development, rather than exploit its resources to produce (Limoncelli 2014). Changing course in terms of conservation policies has become a necessity in order to protect heritage. Unfortunately, the case of Rome is not unique. This phenomenon has also affected other Italian and international locations, such as Amsterdam and Barcelona. In the light of these reflections a scenario is opening up in which the implications for the future must involve collaboration between the technical side and planners. Protective measures need to be adopted at a territorial level that can safeguard the authenticity of the historic centres of European capitals, increasingly trapped between managing large number of visitors, the benefits tourism brings to the economy, and the need to avoid debasing the cultural offering to ensure that the cultural identity of heritage is handed down to future generations, as well as communicated to those here now.

References


