KEY CONCEPTS IN PUBLIC ARCHAEOLOGY

Edited by

Gabriel Moshenska

UCL PRESS

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5
Digital media in public archaeology

Chiara Bonacchi

Introduction

The twenty years following the mid-1990s witnessed a step change in the communication landscape, which can be summarised under the label of new digital media. In this period, the popularity of the Internet and mobile technologies has become more widespread, and previously distinct media forms have been progressively converging into fewer and 'newer' ones (Casey et al. 2008: 57–8; Castells 2010; Castells and Cardoso 2005; Lister et al. 2009: 420; Livingstone and Das 2009). An additional development since the early 2000s has been the shift from a straightforwardly informative World Wide Web to a more dramatically interactive Web 2.0 and 3.0, better equipped to support collaboration (e.g. O'Reilly 2005). This chapter will discuss the transformative roles of new digital media in public archaeology. It will focus on addressing key aspects relating to digital engagement, and thereafter explore possible applications of 'media-as-data' (Housley et al. 2014: 7) for public archaeology research.

The expression 'new media' has been used since the 1960s to describe the restructuring of 'media production, distribution and use' that follows the invention of new technologies (Bonacchi 2012a: xv). However, today, the term 'new media' is usually called upon jointly to refer specifically to communications that are increasingly digital, interactive, hypertextual, virtual, networked, simulated, ubiquitous and delocated (Lister et al. 2009: 13; McQuail 2005: 38). These transformed

(and ever transforming) communications may result in 'new textual experiences', 'new ways of representing the world', 'new relationships between subjects and media technologies', 'new experiences of the relationship between embodiment, identity and community', 'new conceptions of the biological body's relationship to technological media' and 'new patterns of organization and production' (Lister et al. 2009: 12–3). To understand the nature and pace of some of the recent changes that have been mentioned, it will be useful to recall the 'media ecology' view first proposed by the theorist Neil Postman (Naughton 2006: 43; see also Bonacchi 2012a). According to Postman, media can be regarded as organisms that inhabit an environment. Every new event (or invention) that is introduced in the media environment causes a series of ecological adaptations, as a result of which most of the pre-existing media practices, forms or content tend to adjust and survive in novel ways, rather then disappear suddenly. Following this idea, the chapter hopes to provide initial answers for two main questions. How have recent transformations in the communication landscape been affecting (or how may they affect) the practice of public archaeology? How can they support research concerned with the manifold facets of the relationship between archaeology and society (Matsuda and Okamura 2011; Schadla-Hall 1999, 2006)?

Digital engagement with archaeology

Bitgood described 'engagement' occurring in museum contexts as any 'deep sensory-perceptual, mental and/or affective involvement with exhibit content' which might lead to 'personal interpretation', 'meaning making' or a 'deep, emotional response' (Bitgood 2010). Despite its roots in the field of museology, the definition can be invoked for different kinds of digitally- and non-digitally- enabled interactions with cultural content and institutions (see also Ridge 2013). It seems thus entirely appropriate to adopt it here as well, when referring to digital engagement with archaeology as a discipline, and as the process and outcomes of undertaking research via archaeological methods. Such engagement may result from one or indeed a mix of two possible approaches to communication, which we will call, respectively, 'broadcasting' and 'participatory'. Whether one or the other is ultimately implemented is largely a consequence of the types of human relationships that those initiating the communication are willing to establish with other citizens and institutions (Bevan 2012).

Before turning to examine broadcasting and participatory modes of digital engagement, it is useful to review some of the key factors and dynamics that influence both of these two modes. As already noted by several commentators (e.g. Morgan and Eve 2012; Perry and Beale 2015; Richardson 2014a, 2014b), in archaeology, as in other subject domains, the democratising powers of new digital media are hindered by the unequal possession of the physical means, skills and knowledge that are needed to get involved. Poor connection is still a barrier in many parts of the world, including more rural or remote regions in countries where, on the whole, Internet use is relatively high (see e.g. Enterprise LSE 2010: 7; Ofcom 2010: 227). The social geographies of digital literacy are equally uneven (Hargittai 2002). Having classified 'online skills' into operational, formal, information and strategic, Van Deursen and Van Dijk (2010)[1] discovered that education influences all of these four categories, whereas age is a determinant of operational and formal skills only. Additional studies have then demonstrated the role of cultural background and parental education in particular (Gui and Argentin 2011). In turn, different levels of digital skills can potentially unlock different kinds of engagements, as shown, amongst other published works, by nation-scale research enquiring about the 'composition' of online audiences of arts and culture in Britain (Arts & Business et al. 2011). The study identified and profiled three main 'audiences', highlighting how only 11 per cent of the surveyed population (the 'leading edge') enjoyed creating as well as accessing, learning, experiencing and sharing content online. The majority of respondents were instead found to use the Internet to access, learn, experience and share existing resources, without contributing personally to generate new ones. Far from being specific to the UK, these results portray a general trend in digital cultural engagement, even though creative uses of the Internet are becoming increasingly more popular, and especially so amongst younger people aged 16 to 24 years old (European Commission 2011).

These considerations urge us to reflect critically upon how expectations to open up archaeological practice via digital media relate to the fact that social change is often slower than technical innovations and that, at least at an early stage, new media are likely to reproduce, in a different wrapping, some if not all of the barriers and social divides that

1 Operational Internet skills: 'operating an Internet browser'; formal Internet skills: 'navigating the Internet'; information Internet skills: 'locating required information'; strategic Internet skills: 'taking advantage of the Internet by: developing an orientation towards a particular goal; taking the right actions to reach this goal; making the right decisions to reach this goal; gaining the benefits that result from this goal' (Van Deursen and Van Dijk 2010: 4).

characterise the analogue world (e.g. see Bonacchi 2012a; Richardson 2013). For instance, one of the drivers behind the eagerness of galleries, libraries, archives and museums to embark on the design of digital engagement programmes is frequently that of reaching out to younger people, who are today (as they have been for decades) under-represented amongst heritage audiences (Bonacchi 2012b, 2014; Merriman 1991; Piccini 2007; Swain 2007). These efforts have proved to be entirely achievable on a substantial number of occasions (e.g. Jeater 2012), but not equally across different social groups. Another example is that of archaeological volunteer societies established offline, whose members are usually in older age bands, and therefore tend to commit less enthusiastically to activities that entail the use digital technologies (see e.g. Bonacchi et al. 2015b; Thomas 2010: 23).

Finally, digital engagement with archaeology may bring along new and particular ethical issues that should be adequately pondered and weighed up front in so far as this is possible. By means of example, some forms of digital engagement that rely strongly on voluntarism and on the donation of time, skills and knowledge in support of activities proposed by archaeological organisations have been criticised as

Case study 5.1: Crowdsourcing and crowdfunding archaeology

Crowdsourcing is a method for collecting information, services or funds in small amounts, from large groups of people, over the Internet (e.g. Dunn and Hedges 2012). This practice emerged in the commercial sector in the first decade of the twenty-first century, when it started to be used by companies to outsource labour to interested workers around the world, as in the case of the Amazon Mechanical Turk (www.mturk.com/mturk/welcome; Howe 2006). In recent years, however, crowdsourcing has received growing attention also from scholars and practitioners in the cultural heritage sector, who are exploring it as a method for managing heritage resources, curating collections and undertaking research in collaboration with members of the public (see e.g. Dunn and Hedges 2012; Ridge 2014). In archaeology, crowdsourcing has been sought to create data or raise funding to support individual projects, although virtually no research has been published until now about the ways in which 'crowds' have been leveraged to pursue archaeological agendas (some initial work: Bonacchi et al. 2015a, 2015b).

Crowdsourcing applications aiming to produce archaeological information and knowledge have usually taken a contributory approach (Simon 2010), asking volunteers to help with research that had already been designed by archaeologists working in bespoke institutions. In some cases, these applications were powered by multi-subject platforms such as Zooniverse (e.g. the Ancient Lives project), whereas, in others, new websites were developed ad hoc (e.g. the Portable Antiquities Scheme). The tasks that the online public have been asked to complete so far tend to be mechanical (Dunn and Hedges 2012), and to vary from the interpretation of digital imagery (e.g. Yu-Min Lin et al. 2014), to the geo-referencing of finds, the transcription of artefact records and 3D modelling. Another characteristic shared by archaeological (and more generally heritage) crowd-sourcing projects is their tendency to involve groups of people that are certainly smaller than what a 'crowd' might be pictured as being. If these groups of participants are interconnected and have similar goals, norms and values, they are usually referred to as online communities (Haythornthwaite 2009). A kind of crowdsourcing that is worth a separate mention is crowdfunding, a form of web-based micro-financing where contributors make small monetary donations in support of certain ventures. Archaeological crowdfunding relies either on generalist platforms that already have high public visibility (e.g. Kickstarter or Indiegogo) or on thematic websites dedicated to heritage (e.g. CommonSites, DigVentures and MicroPasts). MicroPasts has been the first to experiment jointly with the crowdsourcing of archaeological data, forum discussions about the uses of such data to fuel novel research and the crowdfunding of community archaeology initiatives (Bevan et al. 2014).

exploiting free labour and contributing to neo-liberalist economies (Perry and Beale 2015). The outcomes of heritage crowdsourcing practices (see case study 5.1) have also been critiqued for affirming 'truths' constructed by majorities, and often excluding the alternative views of minorities (e.g. Harrison 2010). Furthermore, open geographic information can pose ethical challenges related to its potential use by looters to feed illicit trades of antiquities (Bevan 2012), and citizens taking part in heritage monitoring via web or mobile crowdsourcing (e.g. Cultural Heritage Monitor) may incur risks to their personal security. Building on prior work published in the couple of years before their study (e.g. Colley 2014; Richardson 2013; Walker 2014a, 2014b; but also Huggett

2012), Perry and Beale (2015) remind us of these potential issues and stress how little is known and researched about the impacts of the 'archaeology-themed' or 'archaeology-relevant' social web on the self-representations of users/producers, on the discipline of archaeology, on institutional workflows and on societal structures.

Case study 5.2: Social media engagement with archaeological sites

A pilot study undertaken in 2013 contributed to further our understanding of how social media, and Facebook particularly, are used to engage with archaeological content and institutions (Bonacchi and Galani 2013*). As part of this research, a survey was conducted with 533 users of the Facebook pages of fifteen museums, galleries and heritage sites in the north-east of England. Amongst them, there were two archaeological sites (Arbeia Roman Fort and Museum and Segedunum Roman Fort) and an open-air museum (Beamish). Two hundred and twenty-five survey responses pertained to the Facebook pages of these three institutions specifically, showing that Facebook was used primarily by people who had already been to the venues in person (81 per cent), most of whom had also visited the sites at least three times in the previous twelve months. Consistently, the majority of respondents lived locally, as demonstrated by the fact that 159 postcodes (of the 221 collected in all) were from the north-east of England, with an additional thirty-five from other UK regions.

Survey respondents had 'liked' the Facebook pages of the three institutions principally in order to support and promote them, or to obtain information about the events and activities 'on offer' (these options were selected, respectively, by 81 per cent and 76 per cent of the total). Motivations related to other people, such as existing friends or fellow Facebook 'fans', were instead less frequent (e.g. 'like their online friends to know they are cultured', 'some friends had also liked the page', 'wanted to connect with other people who "liked" the institution' were answer categories chosen only by 9–11 per cent

* A brief synthesis of a small part of the results of the pilot study is reported in this chapter. The pilot project was conducted by the author from February to June 2013, with funding from the Cultural Engagement Fund of the UK Arts and Humanities Research Council. The project was led by Dr Areti Galani at Newcastle University, and undertaken in collaboration with Tyne & Wear Archives & Museums.

of survey participants). Ultimately, institutional Facebook pages proved useful to: (a) maintain the 'loyalty' of local audiences from a strictly marketing perspective (34 per cent of respondents could actually claim to have increased their visitation frequency as a result of their interaction with the pages); (b) guide and inform other cultural engagement decisions made by these audiences; and, to a lesser extent, (c) provide an opportunity to expand one's own knowledge about the sites, or relevant archaeological and historical content (for 41 per cent of respondents).†

The 'broadcasting' approach

The expression 'broadcasting mode of digital engagement' is used here in its widest possible meaning to describe one-way forms of communication. So far, this mode has been the most frequently implemented by archaeological organisations in the UK (e.g. Pett 2012; Richardson 2014a, 2014b; see also case study 5.2), and is accompanied by a view of communication as the transmission of messages from a sender, to a receiver, over a medium. When a response is invited from the 'receiver', through a feedback mechanism, this is mainly to provide comments and information that might be useful to improve a service or the communication itself in future, rather than for the collaborative construction of meanings.

In a commercial setting, the online broadcasting of archaeological content tends to remain subject to quite a few of the rules that were in place in the pre-digital world. In a well-known article published in *Wired* (Anderson 2004; see also Anderson 2006), it was argued that entertainment markets are increasingly catering for niche tastes as a result of the fact that digital technologies are progressively transforming a 'world of scarcity' into one of 'saturation', where space is no more an issue and audiences can be international. As already pointed out (see e.g. discussion in Bonacchi et al. 2012), although inspirational, this view does not accurately describe the current reality of things. Even online space can have costs, and it is more easily remunerative to use the Internet for offering fewer 'pop' products that appeal to high numbers of people than more niche products for a 'long tail' of individuals scattered around the

† More in-depth, qualitative research would be needed to triangulate and ground this last claim (c).

world (see Bonacchi 2012a, for further discussion on this topic). Thus, a number of traditional constraints to the sale of archaeological documentaries reappear also on digital platforms. Additionally, the online provision from institutional broadcasters is still tightly linked to (if not coinciding with) their offline schedules (see Bonacchi et al. 2012). This means that only seldom and with difficulty are digital technologies able to open effectively new spaces for a subject like archaeology through the operations of media institutions. Nevertheless, the 'provision' of archaeology via television and radio broadcast remains worthy of consideration and scrutiny for its function of 'agenda setting', its long-lasting societal impacts (e.g. see Bonacchi 2013), and its more democratic reach amongst audiences with different levels of formal education if compared, for instance, to museum or heritage site visitation (Bonacchi 2014; Piccini 2007).

A broadcasting approach to digital engagement can also be embraced directly by heritage organisations and archaeologists. A notable case is that of *A History of the World in 100 Objects*, a radio series produced in 2010 by the British Museum in partnership with BBC Radio 4 (Cock et al. 2011). Episodes were released as podcasts and downloaded in very high numbers worldwide (Cock et al. 2011). This success led the director of the British Museum to stress the value of the initiative in enabling the Museum to act not only as a 'producer' but also a 'broadcaster' of cultural content (Bonacchi et al. 2012). A further example is that of the Streetmuseum applications (apps) developed by the Museum of London's marketing team, in collaboration with – amongst others – the History Channel (Jeater 2012). These smartphone apps offer information about some of the Museum's collections and link artefacts with their context of discovery. A similar concept is at the basis of the Archaeology Britain app, which combines resources from the British Library and the UK Archaeological Data Service to provide insights into a number of British archaeological sites. Here again, all of the content originates from institutions and is passed on to audiences, expressing an authority-ranking model of human relationships (Bevan 2012; Fiske 1991). Vlogging (video blogging) and blogging are also, in themselves, forms of broadcast digital engagement, unless they give rise to conversations through comment threads. Perhaps the largest initiative of this kind in archaeology is currently the Day of Archaeology, a yearly endeavour that involves hundreds of archaeologists worldwide posting about their work (Richardson 2014c). In other cases, instead, the production and publication of audio-visual logs has been explored to offer

updates on the progress of excavations, such as those at the site of the Pillar of Eliseg, in Wales, UK (Tong et al. 2015).

Organisational capacity has a huge impact on the efficacy of digital broadcasting, but not every museum has the size and resources of the British Museum or the Museum of London. If outsourced, smartphone applications, for instance, can have rather high development costs for the budgets of most GLAMs (galleries, libraries, archives and museums) – let alone archaeological societies – especially considering that their visibility online and actual use by people beyond the simple act of downloading them is often very limited (Richardson 2014a). As a response to issues of scalability and sustainability and in order to reduce 'capacity gaps', new projects have arisen that try to offer open source platforms, tools and intelligence to assist in the development of apps for the public interpretation of heritage sites (e.g. Mbira). The visibility of applications remains instead a more difficult cliff to climb, since it is strongly linked to institutional branding. In this regard, it will be sufficient to point out the significantly lower number of downloads achieved by the Archaeocast podcast series, produced by the UK-based archaeological commercial company Wessex Archaeology (Goskar 2012), compared to *A History of the World in 100 Objects*.

Participatory practices

Apart from the broadcasting mode, participatory kinds of digital engagement invite direct input from organisations and citizens other than those accountable for starting the activity. Four main levels of participation can be identified (Simon 2010), spanning a spectrum from contributory, to collaborative, co-creative and hosted. In contributory participation, individuals or groups within society assist archaeologists with the completion of tasks as part of research or work programmes that have already been defined and set up. This is the case for that kind of crowdsourcing where citizens are asked to help with the recording and digitisation of data (see case study 5.1). Examples are the Portable Antiquities Scheme, which was set up to document metal finds collected by members of the public (often via metal detecting) in England and Wales (Pett 2010, 2014); or Pleiades, where online contributors help to match 'attested names' of places from the Greek and Roman past with 'measured locations' (Harris 2012: 586).

Collaborative ways of participating entail involvement in aspects of archaeological research that relate to the analysis and

interpretation of data, and potentially to the development of new working methods and procedures. Digital technologies have supercharged opportunities for collaborative participation; the take-up of open-source software, open data and access (e.g. Bevan 2012; Hole 2012; Lake 2012) is in fact fostering synergies amongst people who operate in archaeology and neighbouring subjects in different capacities all around the world. The term 'open' refers to the philosophical standing of those 'promoting open redistribution and access to the data, processes and syntheses generated within the archaeological domain' (Beck and Neylon 2012: 479–80). Such approaches encourage moving from traditional distinctions of 'professionals' and 'amateurs' to a discourse where more value is attributed to the possession of relevant skills than to institutional affiliation. Examples of collaborative participation are those of the recent UK-based Heritage Together and ACCORD projects, which involved the public in choosing sites and archaeological features to be recorded via 3D modelling. The aims of both initiatives were those of creating resources of value to both researchers and members of local communities. A further example is TrowelBlazers, whose contributors conduct historical research to uncover the lives of women in archaeology, geology and palaeontology across the centuries.

Co-creative participation moves a step further and requires that the activities to be undertaken are planned and developed jointly by all those involved. Together with hosted participation (see below) this is possibly the most challenging type of engagement to initiate, not least because of the traditional structure of heritage and research financing. Very few are the grant funding schemes where initiatives not entirely driven by organisations can be proposed. So far, the most substantial co-creative work in public archaeology has perhaps been the one related to community archaeology, material culture and digital repatriation. A number of projects in this realm have explored the ways in which new digital media can facilitate local communities' connection with and interpretation of their material culture alongside the work conducted by archaeologists and anthropologists. This is the case in The Sq'éwlets: A Stó:lo-Coast Salish community in the Fraser River Valley project in Canada, which also critically and usefully highlighted how open Creative Commons licences do not suit the restricted nature of traditional knowledge in the Stó:lo-Coast Salish community and are thus not advisable to use without adaptations (Hennessy 2015).

Most digital participation starts in a contributory form, and only subsequently, and in a minority of cases, proceeds towards

collaborative and co-creative engagements. Hosted participation is even more rare and presupposes that an institution provides space, expertise and infrastructure to facilitate the implementation of a project designed and undertaken by 'members of the public'. This kind of participation is enabled by the crowdfunding platforms of MicroPasts and DigVentures, two websites created to host community heritage teams in search of funding. And finally there is a number of wholly grassroots initiatives that have been thought of and taken forward by citizens whose main job is not related to archaeology. In this group are websites such as The Megalithic Portal or Pompeii in Pictures, as well as a plethora of generative practices (e.g. photosharing via Flickr) that contribute to the emergence of 'non-sanctioned' meanings linked to archaeological sites or objects (see Garduño Freeman 2010 for a discussion of the topic linked to built heritage). These activities are conveniently mentioned in this section, but they may also follow broadcasting modes of digital engagement, if the communication they embrace is predominantly one-way.

Digital media-as-data

At least some of the traces left by our internet-based interactions with archaeological content and organisations can be freely extracted, tidied up and analysed. For example, data mined from publicly accessible fora and blog posts, Facebook pages, tweets, and comments to videos shared via YouTube or Vimeo can support studies into attitudes and behaviour towards the human past and its archaeological investigation, while newspaper, magazine, television and radio content can help discover how and why archaeology has received 'institutional' media exposure in different geo-political, social and cultural contexts. Following comparable experiments in the social sciences, it is even possible to design applications that, via crowdsourcing and gamification, question contributors directly about their understanding of, interest in or engagement with the subject area that we are here examining.

The information contained in these 'web archives' can be aggregated to form very large if not 'big' sets of data able to open up novel analytical pathways. Big data is characterised not only by its impressive volume, but also by sheer variety and velocity, a fine-grained and relational nature, and great flexibility (e.g. Housley et al. 2014; Kitchin 2013, 2014). For research that leverages social science theory and methods, such as that in public archaeology, this deluge of data allows

a move from traditionally sharp divisions between quantitative and qualitative approaches to much more fluid and integrated quali-quantitative mindsets and methodologies (Venturini and Latour 2010). In a pre-digital world, there would be two main kinds of research strategies, extensive and intensive, as suggested by Housley et al. (2014; see Table 5.1). The extensive kind would be looking to collect larger amounts of data for quantitative types of analyses, which, however, could not also be 'locomotive' and examine in a continued way the effect of time passing. Surveys, for example, are helpful to gather information from multiple cases at one point in time, and even if the same human subject is questioned more than once, the method of investigation remains punctiform (the measurement occurs on specific days and at particular times). Ethnography permits locomotive research designs, but only as part of 'intensive' strategies of investigation. The latter are helpful to study 'micro-interactions' as they unfold (Venturini and Latour 2010), but disconnect them from an understanding of 'macro-structures'. Digital media makes it possible to bridge the divide that has been described, enabling both extensive and locomotive research: 'big' web data can be inspected quantitatively while not preventing as many close-up observations as needed across a potentially continuous temporal spectrum.

There are, however, at least three main issues which can limit the potential use of web archives. The first is their accessibility, since it is not always possible to mine, free of cost, all the data that is available. The second issue is ethics. For example, institutions can mine users' personal data through social logins, but whether and how this can be ethically done is still the subject to heated debate. The third issue is

Table 5.1: Types of research strategy

		Research data/design	
		Locomotive	**Punctiform**
Research strategy	**Intensive**	E.g. ethonography/observational studies	E.g. cross-sectional qualitative interviewing
	Extensive	E.g. new social media analysis: population level, naturally occurring data in real/useful time	E.g. surveys (cross-sectional, longitudinal); experimental studies

Source: Edwards et al. 2013: 248, discussed in Housley et al. 2014.

usability. Data harvested via web platforms is often decontextualised, as it happens in the case of posts, for example, which cannot be easily linked with insights relating to the personal, social or physical 'niches' in which they were generated. It is therefore very difficult to understand who is expressing certain views or manifesting a given behaviour. To bridge this gap, it might be helpful to consider triangulating or integrating analyses of 'big' or 'very large' data with the inspection of smaller data (e.g. Kitchin 2013, 2014). Public archaeology research using digital methods is just beginning and, if adequately informed by theory and directed at the resolution of problems, its potential could be enormous.