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# “The Changing of the Guards”?

## British Prehistoric Collections and Archaeology in the Museums of the Future

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■ **ABSTRACT:** Over the past 30 years, Britain’s large archaeological museums and collections have shifted their focus away from academic visitors exploring their stores and collections and toward the dynamic presentation of permanent and temporary displays. These are arranged to emphasize compelling and relevant interpretative narratives over the presentation of large numbers of objects. The shift to digitization and the online presentation of collections is a major feature of public engagement activities at many museums but also might open older and less accessible collections up to research. In this article, we consider what role digital platforms may have in the future of British museum-based archaeology, with special reference to initiatives at the British Museum. We suggest that online collections have the potential to mediate between engaging the public and allowing professional archaeologists to develop sophisticated research programs, since these platforms can present multiple narratives aimed at different audiences.

■ **KEYWORDS:** digital archaeology, museum-based archaeology, open access, public archaeology

### Changing Functions and Audiences for Archaeological Collections

European public museums, as developed in the eighteenth and nineteenth centuries, have long acted as curiosity cabinets: showcases for wonderful, mysterious, and often eye-catching things designed to educate, catch the imagination, and inspire visitors to dream of other places and times (cf. Bohman 2000; Oppen 2003). The eighteenth-century museum was the institutional site of the Enlightenment ideals of Britain and Europe, striving to reflect the universality of human endeavor (cf. Sloan 2003b), a goal that institutions such as the British Museum still take as a central and guiding principle and purpose (British Museum n.d.; MacGregor 2003). However, some of the historical realities of the period are more challenging. As empires fractured and the colonies declared independence during the early and mid-twentieth century, museums lost some of their mystique and their Enlightenment ideals looked less secure, even as they retained their kilometers of shelving and carefully classified national and foreign treasures. With the emergence of public history and the New Museology in the late twentieth century, their role



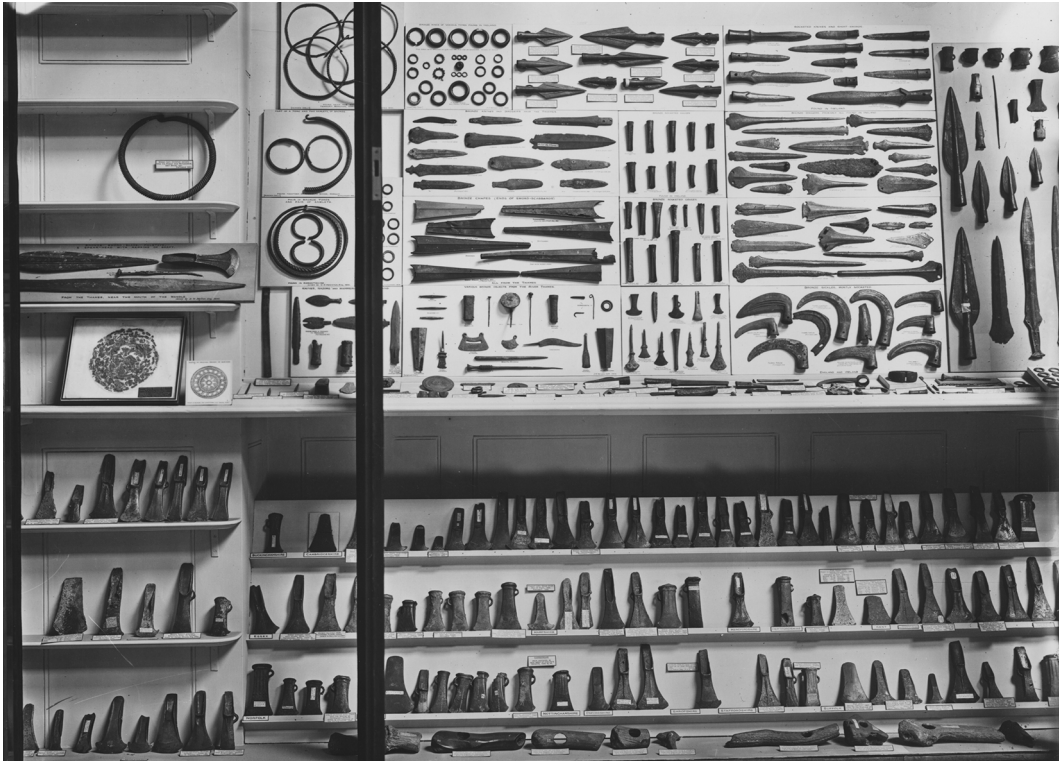
has changed yet again, from comprehensive and pedagogically valuable repositories of knowledge to be mined by researchers to sites of public engagement with a broad remit and a key role to play in community cohesion (Black 2005; Hooper-Greenhill 1994; Hudson 1998; Weil 1999).

A key part of the New Museology's critique of the traditional museum is focused on the centrality of objects to museum displays and, particularly, to the apparently *objective* truths encapsulated in glass cases full of large numbers of carefully measured and dated things. Instead, critics argue that museums, in order to have a more democratic focus and appeal, should build their displays around ideas and encourage multivocality in their interpretations (see, e.g., Vogel 1991; Weil [1990] 1994; Witcomb 2003: 86). In practice, this means that contemporary museums tend to display fewer objects and make use of a much greater array of forms of interpretation and presentation in order to engage and entertain a decidedly nonspecialist and increasingly diverse public (cf. Thrane 1996: 12–14) (Figure 1). New forms of exhibition, designed to bring new values, new stories, and new audiences to the fore, tend to deemphasize traditional links with research and researchers (cf. Witcomb 1997), albeit that materials held in store are easier to study first hand than through the glass of a case, provided museums have the space and resources to make increasing numbers of finds and excavation archives available. However, the question of how much material should be on display is particularly apposite to European later prehistoric collections.

In a seminar held in 1995 to discuss the British Museum's collecting policy, Ian Longworth (then Keeper of the Department of Prehistoric and Romano-British Antiquities), commented that the museum had long sought to acquire "outstanding" objects and had, as a result, been late in acquiring the "general," for which the public had little appetite (I. Longworth in Cherry and Walker 1996: 28). Longworth went on to estimate, "in self-defence," that only "half a per cent" of the material in his department could be considered to be "outstanding." This mismatch between exhibition/display policy, perceived public appetite, and the character of the material culture of any given period in museum collections was, thus, by Longworth's own candid admission, laid bare. To date we struggle to cope with its implications and, therefore, continue to tell very partial and distorted stories that do not seek to shift either academic or public perception about what constitutes the "outstanding," the "beautiful," and the "important," despite admission in the same seminar that such a goal was feasible (I. Jenkins in Cherry and Walker 1996: 29). Some periods of the past will, thus, suffer to a greater extent from the restrictions placed on the quantity and quality of material shown in galleries. European later prehistory has long been one such period and a number of recent developments only serve to exacerbate the situation.

Since the adoption of the European Convention on the Protection of the Archaeological Heritage (Revised) (also known as the "Valletta Convention"; Council of Europe 1992), many European countries mandate excavation in advance of development and require recovered material to be deposited in specific museums and repositories; but government funding for museums has been cut severely in the years following the Global Financial Crisis. The Museums Association (2014) reports, based on annual surveys of small and large UK museums, that, in 2013–2014 alone, more than half of museums surveyed had seen cuts to overall income, with cuts to full-time staff, reductions in temporary exhibitions, and even consideration to selling off parts of collections among their coping strategies. Moreover, these attenuated funding streams also mean that museums cannot afford previous levels of staffing—the Museums Association cuts reports document year-on-year cuts to staffing levels every year from 2011 onward, with the result that UK museums are increasingly relying on interns and volunteers (in the latest survey, 32 percent of museums surveyed recorded an increase in unpaid laborers; Museums Association 2014: 12). Anecdotal and personal experience suggests that, at some of these hard-

**Figure 1:** Views of European prehistoric galleries of the British Museum, (top) before 1934 and (bottom) after the most recent refurbishment in 2006 (© Trustees of the British Museum).



hit institutions, remaining curators and collections management assistants are often too busy with day-to-day administration, loans, exhibitions, and public engagement activities to do more than register new materials and one-third of museums surveyed by the Museums Association report that they expect a decrease in collections research in the years ahead (2014: 16). In this context, outside researchers should play a key role in exploring rapidly expanding collections, investigating new material, and linking it with older interpretations; but the financial pressures on many collections—especially in smaller and regional museums—are such that supporting and supervising research visits in collections are straining already stretched budgets.<sup>1</sup>

In this environment, it is encouraging and unsurprising that emerging digital systems designed to record collections and archival data and to make them accessible to researchers and the public have been widely adopted (see Mulrooney et al. this volume). We will use our experiences of museum-based archaeology and several case studies from the British Museum, to discuss the opportunities offered by emerging digital technologies both for research and for public engagement (as well as the complex relationship between the two). Finally, we will build on these case studies to present some broader thoughts on the implications of these sorts of endeavors for the future of museums and museum archaeology.

## Archaeological Collections and the Rise of Digital Media

Multimedia entered the museum space in the 1980s and 1990s within the framework of the New Museology (Hoffos 1992). Media displays were viewed by many New Museologists as a crucial tool for undermining the centrality of the object and of the singular curatorial voice by creating idea-focused, multivocal displays (Cameron 2007: 50–52). Stories of everyday people, Indigenous and First Nations elders, and museum visitors themselves were brought into the museum to sit alongside artifacts, connecting them to specific people and places and linking them into a variety of networks and communities (Halpin 1997). In this way, not only can we see multimedia engagement as being positioned in opposition to objects, but it also served a crucial role in bridging the gaps between the front of the museum—where the visitors enter—and the back—where the curators work (Witcomb 2007). Bringing new narrative focus, centering exhibitions on audience engagement and multivocality, and foregrounding curatorial and design decisions are all parts of the wider mission to decenter curatorial expertise and to restructure the museum away from the traditional hierarchy of curator-staff-visitors toward a more democratic and community-centered structure (Hooper-Greenhill 1992: 204–214).

Digital technologies rapidly joined other multimedia technologies in the expository and narrative work of the museum (Fahy 1995; Karp 2004). Today, digital technologies are used heavily in the visualization and interpretation of materials and sites within galleries, but also as open access portals to collections through the websites of specific real-world museums or virtual collections with no real-world analogue (Schweibenz 2004). Three elements in particular set these virtual spaces apart from brick-and-mortar museums: they are universally accessible to anyone with an Internet connection at any time and in any location; their collections can be explored, combined, and juxtaposed in whatever manner the audience/user deems fit, rather than being laid out following the guiding principle of a curator or designer; and, as such, they are uniquely open to new forms of interpretation proposed by the public, rather than mediated by curatorial expertise (Styliani et al. 2009).

While some researchers and museums specialists see the potential of these virtual spaces to become so-called constructivist locales where the audience or user becomes a co-producer of content alongside curators (Styliani et al. 2009: 525), conceptualizing digital heritage spaces

beyond websites/virtual museums seems to be a difficult prospect and information transfer within these spaces is largely *from* the museum *to* the visitor or user, even when attempts are made at public engagement. So, for example, Ross Parry and Nadia Arbach (2007: 281–290, fig. 14:2) propose that museum websites can serve as virtual museums, allowing users to construct their own interpretation and navigational patterns through a digital collection. However, their proposals are largely limited to a sort of creative bricolage whereby visitors to these Web resources can engage with, comment on, or reorder material and interpretations provided by the museums. Furthermore, they give no suggestions as to how this sort of online engagement might translate into new displays, information, or curatorial practices within the bricks-and-mortar museum spaces from which the digital information is drawn.

Especially with the advent of the Web 2.0 era (i.e., the shift in emphasis by online media providers to user-generated content and interoperability between platforms and media types) where comment sections are standard and social media applications are removing longstanding firewalls between audiences and their areas of interest (be they celebrities, politicians, or museum curators), digital media seem to be an obvious and highly efficient tool for the dismantling of the traditional dusty and disengaged museum. Yet, even as it is used in exhibits that foreground engagement and collaboration, the virtual and digital sector is still heavily focused on displaying information to audiences in engaging ways or creating virtual spaces in which information can be disseminated (cf. Witcomb 2007: 36–37). Participatory and social media applications are only now penetrating the wider heritage sphere, including some museum spaces in exciting and creative ways (e.g., Iversen and Smith 2012; Srinivasan et al. 2009; Stuedahl and Mörtberg 2012).

One example of how digital and multimedia exhibitions are changing the relationships between larger and smaller institutions is the British Museum–BBC Radio collaboration *A History of the World in 100 Objects*. This multimedia exhibition primarily comprised a hundred 15-minute-long radio programs, each discussing a different piece in the British Museum's collection, supplemented by extensive online documentation. Museums from around Britain were invited to add their own material and stories to the digital *History of the World in 100 Objects* collection, and these materials were navigable alongside the British Museum's star pieces. Moreover, members of the public were also able to contribute the images and stories of their treasures to this online museum, meaning that what appears at the outset to be two large British cultural institutions presenting an establishment view of heritage and culture was intended to offer a dynamic and multivocal space for telling a variety of authorized and personal histories of the world. The extent to which this was actually achieved is important but lies beyond the scope of this article.<sup>2</sup>

Archaeology embraced computing long before the digital era, and a strong subfield of digital applications and methodologies remains a hallmark of the discipline as developed, taught, and practiced particularly in European contexts. As a considerable proportion of the curatorial and heritage specialists working with archaeological materials in this part of the world traditionally received formative training in archaeology rather than the more recently popular subjects of museum, curation, or heritage studies, it is unsurprising that a variety of innovative digital tools have emerged in the archaeological heritage sector. Digital reconstructions of ancient places giving one the ability to visit Çatalhöyük and hear the sounds of daily life (Morgan 2009) or to interact with Maori material culture and architectural spaces (Brown 2007) are exciting elements of the digitization of archaeological heritage; but, like virtual museums, these too serve largely as a vehicle to disseminate information to an audience who can then experience it. While the experience itself need not be passive, it is largely unidirectional with information flowing *from* the museum *to* the audience and with digital replicas reinforcing and authenticating the tangible, real thing or place (Cameron 2007: 54–56).

However, a number of new endeavors have been conceived in recent years within the British heritage and museums sector that seek to use digital tools to engage the public by drawing on their experience, enthusiasm, and expertise to push forward more traditional museum practices: the collection of data, the identification of objects, and their preservation for the future. The anecdotal experiences of one author (Frieman) of having worked in several countries and continents suggests that archaeologists and heritage specialists working in Britain have come to expect a baseline knowledge of and respect for ancient materials that is significantly higher than in other countries. Prehistoric and more recent archaeological data are included in national curricula, archaeological excavations and explorations of the past are commonly featured on popular television and radio programs, and, as noted above with regard to the British Museum's *History of the World in 100 Objects*, there is a long tradition of the British public being invited into scholarly discourse about the past. In this context, it is perhaps not surprising that the British Museum and other heritage institutions have begun to view the digital space as a viable bridge between curatorial or archaeological expertise and the public, and one over which information can and should move both ways. Moreover, the British Museum now has 24 million online visitors compared with approximately 6 million visitors in person 2011–2012 (British Museum n.d.: 4), a situation that clearly warrants a digital response.

At this point, we want to explore two of these digital spaces in more detail with a special focus on how they relate to the study of European later prehistory. The first example we will discuss is the *Portable Antiquities Scheme*, an online database that seeks to record all finds of archaeological materials around England. This database exists at the nexus of government heritage legislation and organizations (e.g., Historic England), the museum sector (particularly the British Museum), archaeologists or other experts, and community members, including highly knowledgeable amateur archaeologists and detectorists. The second is University College London and the British Museum's MicroPasts project, which has attempted to open the stores of the British Museum (and other key institutions) to the public via a digital platform while also crowdsourcing curatorial support for the digitization of paper records and the construction of 3-D models (see Bevan et al. 2014; Bonacchi et al. 2014). Both of these projects have been far more successful than initially expected, but each also highlights very different pitfalls and problems that can emerge when digital curatorial platforms are developed with the public as “collaborative producers” (sensu Parry and Arbach 2007: 288).

### **The Portable Antiquities Scheme: The People's Database of English Archaeology**

In England and Wales, the Treasure Act 1996 (amended in 2002) and the Portable Antiquities Scheme (PAS) have considerably altered the involvement of museums and the public in recording their archaeological discoveries, many made in the course of metal-detecting—a legal hobby in Britain that has been popular for several decades. The Treasure Act (1996) replaced the outdated and restricted regulations on Treasure Trove in England and Wales and gave legal protection to a range of precious metals, amended to include copper alloy and iron hoards of prehistoric date (and associated nonmetallic objects) in the Designation Order of 2002 (Bland 2005). Finders were now legally obliged to report finds that met these criteria, and our knowledge of these finds has grown considerably as a result (e.g., Murgia et al. 2014). The legislation was supported by the launch of the PAS, designed to both manage the Treasure process and record finds that fall outside the definition of Treasure. The PAS currently employs some 57 staff (many of whom are Find Liaison Officers based in museums and local authorities across

England in order to provide specialist advice) and deploys the National Museum's curatorial expertise for the writing of reports on cases of potential Treasure, to be ruled so (or not) by the coroner (the independent judicial office holder, appointed by a local council to rule in a range of legal matters). Critical to the success of the PAS has been its online database,<sup>3</sup> which presents the finds and reports from both the legal and voluntary aspects of the Scheme (Pett 2010).

The impact of the Treasure Act and PAS on the study of British archaeology has been sizeable and is the subject of considerable commentary (Bland 2005; Murgia et al. 2014; Robbins 2013; Worrell et al. 2010). It is not intended to repeat these points here, but rather to focus on one underexplored aspect: how the results, successes, and tensions that arise from the Treasure Act and PAS relate to and feed into museum-based research and display.

The PAS has underpinned a large number of important scholarly research papers, PhD theses, and funded research projects, but, in the subject specialism of the present authors (later prehistory), it could be argued that it has done little to challenge existing frameworks of typological classification, analysis, and interpretation despite increasing our available data by many orders of magnitude. An unfortunate but often unavoidable side effect of the need for clear, definable, legally enforceable guidelines on what constitutes Treasure is that these regulations tend to favor the empirical over the interpretative or discursive. Andrew Bevan (2015: 1477) has rightly defended the role of such databases in charting the "systematics" of the archaeological evidence, as opposed to the (arguably exclusive) approaches of interpretative and postprocessual archaeologies in recent decades. However, as a result, the database is not designed with the intention of engaging a wider public audience. Other problems arise from the difficulties of maintaining consistency (and data cleanliness) across a large database being updated by a range of different finds liaison officers and curators working in different parts of the country and in different institutions. One might also question whether the notion of "many hands making light work" is the best way of arriving at new, deep understandings of the data. This is not to question the data-gathering merits of the PAS, which are tried and tested, but whether an additional layer of rolling curatorial or academic analysis and interpretation could be added in order to make more of the information in ways that do not rely on the temporary "fix" of short-time research theses or projects.

In active response to some of these questions, efforts have recently been made to improve the appeal and reach of the database (Daniel Pett, pers. comm.). The records are now supplemented—and linked into—other online platforms, such as Wikipedia, Sketchfab, and MicroPasts (see below; Daniel Pett, pers. comm.). Although attempts to allow multivocality through a forum proved unsustainable (Pett n.d.), the online database and rise in social media activity mean there is a healthy arena for discussing and sharing comments, thoughts, or work from the public and from researchers. New features, such as more easily understood/digestible chronological timelines and maps that allow users to search for objects found in proximity to them or to areas of the country that are significant for them, are also being trialed (Daniel Pett, pers. comm.). These initiatives are important, but there remains the wider issue of how curatorial knowledge and wider museum practice can complement and enhance the database and the value of finds acquired by museums through the PAS/Treasure process.

To understand the potential of this element, we can turn to the most outspoken criticisms of the PAS and the debates surrounding the role of metal-detectorists. A key critique concerns the loss of "context" and the destruction of the "archaeological record" in the course of metal detecting (e.g., Barford 2010; Gill 2010: 8–10, 2015). As a result, it is claimed that the finds made in the course of metal detecting are "collectables," impoverished by the lack of "archaeological" recording and that research using the PAS is deeply conservative and based around traditional, culture-historical approaches deploying distribution maps and normative typologies (Barford 2010: 16–19).

We should be clear: understanding and recording the archaeological context of finds is indisputably central to a full understanding of material culture. Nevertheless, the debate is of particular relevance from a museum perspective as it raises the question of what is the most valued and appropriate “context” in which to understand and present objects. The definition of “context” in relation to archaeological meaning is far from straightforward or singular (see Hodder and Hutson 2003: ch. 8). A more helpful term in discussing the potential of prehistoric PAS records may be the concept of “relational” meaning (Murgia et al. 2014: 362; Yates and Bradley 2010). How objects take on meaning by being placed with other objects or within particular landscape settings, and how these factors varied through time, are all aspects that can reveal people’s behaviors and social and ritual strategies (cf. Needham 2001). These issues recognize the significance of objects in ways that do not require reference to the “archaeological record” in the strict sense of stratigraphic relationships conveying meaning.<sup>4</sup>

Marie Louise Sørensen (2014) has recently noted that attitudes to typology and classification have been very slow to change in European archaeology, remaining a dominant tool and framing structure for the organization of and research into prehistoric material culture. The PAS online database of the future has the potential to present new and more dynamic ways of comparing and contrasting objects that do not rely on traditional classification but allow for more details of production techniques, landscape/topographical setting, and metal composition to undercut (potentially superficial) physical similarities derived from traditional approaches to typology/seriation in order to arrive at similarities and differences that were significant to past people rather than merely for the purposes of relative dating.<sup>5</sup>

Some of the most outspoken criticism of the PAS, therefore, stems from an outdated understanding of the nature of the relevant parameters of “context” and “classification,” and of where meaning can be derived in the archaeological “process” (Hodder 1999). Indeed, in the creation of multivocal meanings we move away from the traditional priority given to the “expert” excavator or finds specialist, an argument that is well rehearsed in postprocessual archaeologies but that has proved more stubborn to shift in the presentation of collections and databases online (Cameron and Robinson 2007: 169, 171, and *passim*).

The challenges of how best to classify, display, and “contextualize” finds in museum galleries that display increasingly few objects are related to the challenges facing museums in realizing the potential of online collection database for researchers and visitors (cf. Cameron and Robinson 2007: 165, 172). We can imagine providing the visitor with examples of objects (and pathways through them) from the same period, material, and type from their own region, country, or continent to those that catch their attention through mobile devices. In terms of research, we can strive toward a recording process and database that assist with disrupting the traditional attributes of material properties and qualities or provide more open ways of challenging assigned typologies (through greater admission of doubt and more images of diagnostic features), rather than simply satisfying the, albeit important, legislative requirements and basic drive to record objects in an empirically rigorous and confident fashion. This begs the question: in seeking the important goal of recording Treasure and PAS finds, could we be recording other *kinds* of information (relating to production techniques and aspects of how the objects were treated prior to or during deposition)? Given the stresses and strains currently on the PAS (Beard 2015), the answer is surely “no” (or “not now”), but online collections can provide an important starting point for changing attitudes to what can and should be recorded through the PAS and professional archaeologists, find specialists, and curators are best placed to initiate this change.

The issues raised here are well known to curators working on “permanent” galleries and temporary exhibitions but have still to be fully realized using the potential of digital/online



databases. Placing an object in “context” is clearly too broad and nebulous a term. The real work is to place an object in “focus” by highlighting relationships and networks through a range of techniques, including but not exclusive to references to the archaeological record from which it derives. By bridging the divide between curatorial and digital skills we can strike the balance that entertains and informs both public and academic audiences in a parallel and complementary fashion to successful exhibitions.

### **MicroPasts Project and the National Bronze Age Index: An Experiment in Crowdsourcing within the Museum Archive and Storeroom**

The MicroPasts project is an AHRC-funded collaboration between the Institute of Archaeology at University College London and the British Museum. It provides a multifaceted Web platform that permits collaboration between full-time academic researchers, museum staff, volunteers, and a range of interested parties in order to create new open access databases through crowdsourcing (see Bevan 2015: 1479–1480; Bevan et al. 2014; Bonacchi et al. 2014).<sup>6</sup> Many of the projects supported by the platform have previously proved difficult to publicize, develop, and fund and are widely distributed in their focus, both in terms of space and time.<sup>7</sup>

This case-study focuses on the project’s work toward transcribing the British Museum’s National Bronze Age Index (NBAI) and related projects involving the 3-D modeling of objects from the European Bronze Age collection (Pett and Wilkin 2015; Wilkin et al. forthcoming). The NBAI developed through the majority of the twentieth century and currently consists of approximately 30,000 double-sided cards detailing Bronze Age “implements” (weapons, tools, and ornaments), including information on findspot, circumstances, location, description, and archaeological context of discovery as well as line drawings (Figure 2). A resource that was initially used by only a small number of curators and specialists concerned with creating increasingly elaborate typological approaches is thus being made open with the assistance of the “crowd,” to be available, open, and “remixed” in combination of more recent finds and database from the PAS discussed above.

In addition to the main aim of digitizing the NBAI, the collaboration between curator (Wilkin) and the MicroPasts project team has also produced a number of cascading off-shoots with relevance to the Bronze Age collections, including the creation of 3-D models of objects within the collection, hosted by Sketchfab,<sup>8</sup> using the relatively inexpensive technique known as structure-from-motion from a series of digital photographs. These ask for contributors to digitally highlight the objects in study, removing the backgrounds, and were introduced in order to provide a greater variety of tasks for contributors to pursue. They also complement and enhance the “traditional” card index data, providing additional layers of data and potential engagement for public and academic audiences alike, creating linked and “nested” datasets (Bevan et al. 2014; Bonacchi et al. 2014).

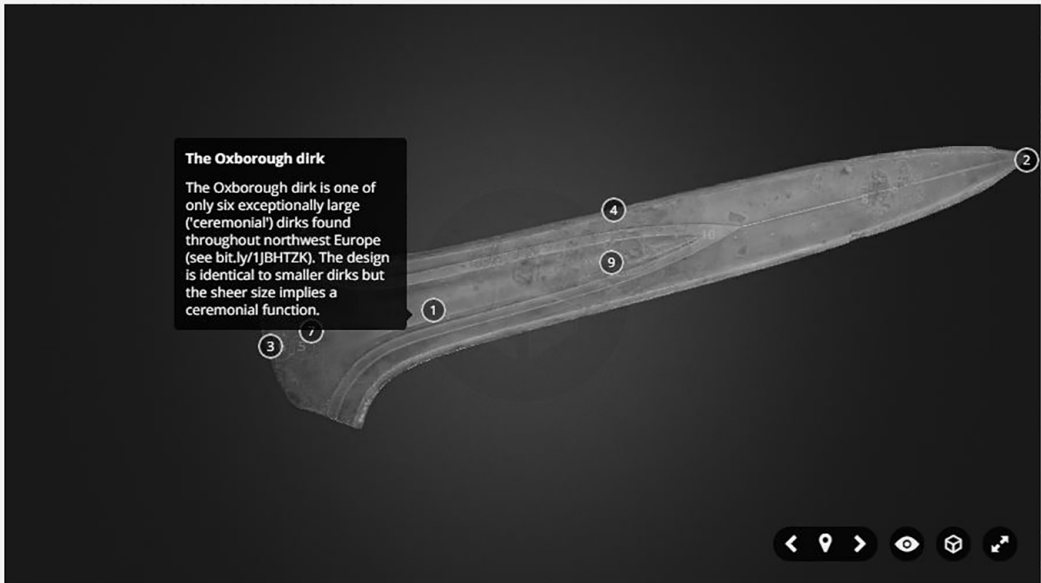
These models provide new opportunities for viewing and analyzing objects and new ways of engaging the wider (and new) public audiences. The models can then be annotated in Sketchfab in order to give structured “tours” of the key features of objects from curatorial (or alternative) points of view (Figure 3). The availability of 3-D models has also made it possible to create the virtual reality (VR) environment in which they could be contextualized, and this was achieved by the Samsung Digital Discovery Centre at the British Museum, which staged a special VR weekend in August 2015 and several additional events and workshops.<sup>9</sup> It is not self-effacing to note that, if Bronze Age metalwork can be the stimulus for events such as the British Museum’s VR weekend, then traditionally more popular subjects, such as the Celts, Romans, Vikings, and

Figure 2: An example of a card from the NBAI (© Trustees of the British Museum, CC-BY).

<p style="text-align: center;">Site</p> <p style="text-align: center;">DORSET, OSMINGTON HILL</p> <p>Osmington Hill nr. Sutton Pointe "discovered in cutting out an equestrian figure of the King." This is SY 717 853</p>		<p style="text-align: center;">Collection</p> <p style="text-align: center;">British Museum 75 1/6</p>	
<p>Swans, <i>Am. Br. Mus.</i> p. 52, Fig. 13. also ref. in Colt Hoare's personal papers in Record Office at Truro (MS 383/907)</p>		<p style="text-align: center;">REFERENCES TO PUBLICATIONS</p>	
<p>Length 157<sup>mm</sup> Width Butt. 29<sup>mm</sup> Blade 98<sup>mm</sup></p> <p>Composition Bronze.</p>	<p style="text-align: center;">DESCRIPTION</p> <p>flat cell, with flanges, indentations between the flanges on both sides.</p>		<p>Thickness 26<sup>mm</sup> Weight 56g.</p>
<p>Surface slightly pitted in places. Patina black.</p>		<p style="text-align: center;">ASSOCIATIONS</p>	
<p>OK!</p>	<p style="text-align: center;">REMARKS</p> <p>Found in Dorsetshire. Document.</p>		<p>CI</p>
<p>The Globe-Wernicke Co., Ltd., London. B 235</p>			

Figure 3: A 3-D annotated model of the Bronze Age ceremonial dirk from Beaune, France  
(© Trustees of the British Museum, CC-BY).

### The Oxborough Dirk



Ancient Egyptians, have even greater potential to engage the public and form the basis of a truly participatory museum (cf. Simon 2010).

Projects like *MircoPasts* that involve crowdsourcing and the “social Web” from “citizen archaeologists” are not without critics. A recent article by Sarah Perry and Nicole Beale (2015) has drawn attention to the underexamined and undertheorized social and political issues of relying on crowdsourcing, as part of a much wider issue of the increasing reliance of museums on volunteers. These issues must be tackled and not avoided, but it is also clear that the issue is far from clear-cut: “traditional” routes to museum employment are far from open, inexpensive, or democratic and participation in crowdsourcing can be entertaining, rewarding, and lead to new career paths (Bevan 2015: 1479–1481; Bevan et al. 2014; Chiara Bonacchi, pers. comm.). In respect to the NBAI, the project to digitize and transcribe this valuable resource had failed to attract funding from several other sources and may have remained the preserve of the “few” if not for the enthusiasm of *MircoPasts* volunteers. Each period and region of history and prehistory is important, but some are less well studied and recognized than others and require additional strategies and means of raising public interest and awareness. The questions raised by Perry and Beale (2015) cannot, therefore, be addressed through a single, broad-brush response to all crowdsourcing projects; rather, each has to be addressed on its own merits and with a degree of pragmatism given the competing strains and stresses placed on curators and museums, their funds and remit. Indeed, the situation is not so dissimilar to that facing the PAS: there is a need for pragmatism in order to make the best of the situation in which museums find themselves (cf. Bland 2005).

There is also a huge new opportunity to make objects from the reserve collections available in 3-D, including with curatorial annotations, within online databases. Although it is relatively simple technology, it could be considerably more useful for the public and researchers than the current disjointed blocks of photograph and text around which most online databases are based,

both in terms of the quality of the morphometric data but also because of the ability to annotate and convey very particular information about objects without disjuncture between description and object. This presents a great opportunity for multivocality, with different versions of the same annotations aimed at very different audiences as well as for attribute-orientated comments or question and answer sessions that are usually the preserve of object handling sessions (Wilkin et al. forthcoming). Critically, it is once again possible to make large numbers of objects available to the widest possible public in more immediate and engaging ways than previously imagined and without the return to packed museum cabinets that sought to evoke awe rather than understanding and were primarily enjoyed by the knowledgeable few.

### **Better Routes to a Digital Future**

Grounding a discussion of innovative and community-based museum work in the projects and collections of the British Museum might seem, to some, to be a contradiction in terms, due to its longstanding reputation as a venue for the preservation of institutional British culture rather than for community engagement (cf. Hazan 2007: 137–138). Yet, as discussed above, over the last decade, the British Museum has become involved in several world-leading digital collection and curation projects designed to bring together institutional expertise and the knowledge and experience of members of the public. While these are very much methodologically driven and represent the digital presence of quite traditional curation practices, they also build on the New Museological principles of engagement and multivocality, leading the British Museum to declare its online collections drawn from the PAS, MicroPasts and other projects the #MuseumOfTheCitizen.<sup>10</sup>

However, despite the intense public engagement that both the PAS and MicroPasts represent and the somewhat less intense academic discourse (this article included) that they have inspired, it is questionable whether either has really disrupted the traditional practice of archaeology in Britain, our understanding of later prehistory, or the chains of hierarchical expertise linking universities, museums, professional archaeologists, and the public. Despite the wealth of new (or newly accessible) data generated by these projects, new interpretations of the material in question, its role in past societies or, at least in the case of British prehistory, the structure of ancient British societies are yet to be forthcoming.

Nevertheless, we would argue that, through the application of new interpretative paradigms, new possibilities for understanding and social modeling can emerge. It is, in fact, the interpretative element that appears to be missing from the digital archaeological collections work described above. Although members of the public are invited into the museum space and contribute valuable skills and material as “collaborative producers” of data, there is less scope for their ideas or their intellectual collaboration to be showcased alongside the impressive products of their voluntary assistance. Moreover, if empirical approaches are needed to make schemes such as the PAS viable, and are characteristic of the archive material held in museums (e.g., in card indexes of finds and typological lists), how can we make sure that analytical and interpretative dimensions are given greater weighting?

We believe we must strive to build digital collections that are easy to search, interconnected, and open to interpretation and visualization of connections across space and time. It is through a dialogue around digital materials and physical collections that amateurs and experts can engage as equals in the production of archaeological knowledge (cf. Newell 2012). Greater attention needs to be paid to compelling narratives and to contextual and immersive potential of digital technologies. In addition to the PAS, in recent years British prehistory has seen a

number of important projects underpinned by big datasets, for instance the EngLaId (English Landscapes and Identities) project at the University of Oxford<sup>11</sup> and the Atlantic Europe in the Metal Ages (AEMA) project at the University of Wales.<sup>12</sup> It would be helpful for the agenda to now shift toward setting objects in their context and telling more integrated and compelling narratives with examples selected from digitally open (rather than inaccessible or intellectually opaque) collections in order to convey their key meaning to a busy public audience—and to fellow academics. This is the digital equivalent of providing the modern, stripped-back gallery experience *alongside* permission to search through the collections kept in our storerooms. Digital technologies now allow us to take responsibility for our curatorial and academic roles and insights and to communicate clearly and concisely to a wider public without closing off access to the objects that other academics and members of the public may consider equally, or more, significant.

Although the New Museology argues against the centrality of objects in museum displays and activities, clearly ancient materials, in their very materiality, have an attractive potency which draws in specialists and nonspecialists alike (cf. Witcomb 1997). As archaeological researchers active in the museum space, our relationship with ancient objects exists on a number of levels. Museum collections provide data and research questions that form the basis of our publications and major projects; but we (and, we suspect, most of our colleagues) have an emotive connection to the material culture we study. This sort of personal connection—be it in the form of inspiration, aesthetic appreciation, wonder, or any of a number of different, less academic forms of engagement—is shared between specialists and members of the wider community, and allows us common ground for approaching and interpreting these materials.

We argue that community engagement with museum collections can take many forms beyond the incorporation of personal narratives into museum exhibits, including, as we have shown, the meat and potatoes of traditional curatorial work: collections acquisition and data management. More than that, in many cases, input from members of the public—the metal detectorist who recovered a specific hoard or the volunteer who digitized 10,000 record cards—might include discursive information that is not immediately relevant but that might be significant to a future researcher or collections manager. The sorts of digital heritage projects we have discussed above are large, unwieldy, and challenging to manage, but yield obvious rewards in terms of increasing knowledge about museum collections, increasing accessibility of museum data, and increasing (and increasingly sophisticated) engagement with members of the public.

If digital spaces are to become a truly successful part of the museums of the future, we believe they must be integrated into the museum's traditional roles. An example of what can be achieved comes from the recent Asahi Shimbun Display of a Polynesian wooden sculpture of the god known as A'a in Room 3 of the British Museum.<sup>13</sup> The display included a timeline of the "lives" of A'a, from its creation on the island of Rurutu, to being given over to missionaries by chiefs of the island, to its arrival in England through the London Missionary Society. The end of the timeline told the story of the casts and models of the statue that had been made recently and had influenced several modern, Western artists, including Pablo Picasso and Henry Moore (Adams 2016). The timeline ended with a video of the digital 3-D model, also available online, making the statue available for downloading and printing as a 3-D model anywhere in the world. A key feature of the statue of A'a are the numerous smaller figures carved onto the body of the god, which have been interpreted in terms of "generative procreation" (Hooper 2016: 35). The production of digital and printed 3-D models was, therefore, in keeping with some of the key themes of the biography and character of the object that formed the focus of the display.

We follow Andrea Witcomb (1997) in suggesting that the narratives we wish to explore begin with and are inspired by objects, not the design of the fixture, fittings, and digital media in

the gallery space, as critical as these components may be to conveying the story once it has been established. Unless we acknowledge the lessons of archaeological and curatorial practice in recent decades, digital techniques as applied to curatorial and archaeological questions may, ironically, only perpetuate outdated attitudes inherent within the types of data that are amenable to digitization rather than disrupt the status quo or introduce important elements of prehistoric archaeology that are difficult to convey in the traditional setting of the contemporary museum gallery. Furthermore, archaeological, curatorial, and digital practices and theories must work together if we are to guarantee that digital techniques focus on our understanding of an object rather than serving only to set it within a generic (or even trivial) context (cf. Cameron and Robinson 2007).

In this article we have considered the potential for integration between digital platforms and museum collections in order to enhance the relationships between curators, researchers, and the wider public. As our experiences working with digitized archaeological collections have shown, the type of online databases required must be ordered, empirically informed, and traditional in order both to function within the constraints of contemporary software design and to incorporate legacy data in meaningful ways; but they must also be open, experimental, and disruptive of the status quo. For this, we find precedent in the striving Enlightenment ideals that characterize the most hopeful readings of the purpose and role of the museum. In the twenty-first century, showcasing the achievement of the human endeavor means inviting the audience to climb up on stage and join in the production. It makes sense to us that the very foundations of that stage—the assembly of museum collections and the production of knowledge through them—should be part of the process.

### **Acknowledgments**

We wish to thank James Flexner for inviting us to contribute to this volume. Special thanks also to the various curators and curatorial assistants who have aided our own research over the years and to the teams running the projects that have furnished examples for this article. In particular, thanks are due to Julie Adams, Sue Brunning, Jill Cook, Lizzie Edwards, J.D. Hill, Stuart Needham, Laura Purseglove, Juno Rae, Benjamin Roberts and the MicroPasts project team, Andrew Bevan, Chiara Bonacchi, Daniel Pett, Adi Keinan-Schoonbaert, and Jennifer Wexler. We owe our title to Bob Dylan, who reminds us that compromise and mutual learning are difficult, and may even push us to the brink of our capabilities and toward “elimination,” but that our “hearts must have the courage for the changing of the guards.” All leaps of logic or errors in fact are, of course, our own responsibility.

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### ■ NOTES

1. In a move that highlights the severity of the situation, the Prehistoric Society has recently issued a statement regarding museums charging for research access to collections and has, itself, created a Collection Study award (from February 2016), to support both researchers and museums in studying prehistoric material and archives held in museum stores: [www.prehistoricsociety.org/grants/grants\\_awards](http://www.prehistoricsociety.org/grants/grants_awards) (accessed 14 December 2015).
2. Although the site is no longer maintained, the radio programs and digital museum collection are archived and remain available at [www.bbc.co.uk/ahistoryoftheworld/exploreraflash/?timeregion=13](http://www.bbc.co.uk/ahistoryoftheworld/exploreraflash/?timeregion=13) (accessed 14 December 2015).
3. <http://finds.org.uk/database>
4. Although, even here, the looping or threading of prehistoric objects (e.g., ornaments and bodily adornments), or the verbal report of finders regarding how objects were positioned when found, can all prove highly useful for interpreting the motivations behind their deposition.
5. Moves in this direction are, in fact, already underway through the embellished records created using the database from the AHRC-funded project "Crisis or Continuity. Hoarding in Iron Age and Roman Britain" (British Museum/University of Leicester): [www2.le.ac.uk/departments/archaeology/research/projects/hoarding-in-iron-age-and-roman-britain](http://www2.le.ac.uk/departments/archaeology/research/projects/hoarding-in-iron-age-and-roman-britain) (accessed 14 December 2015).
6. See <http://micropasts.org>.
7. See <http://micropasts.org/data-centre> (accessed 14 December 2015) for a list of already completed projects, which, at the time of writing, include projects from the following broad subject specialisms: human origins, British prehistory, Egyptian archaeology, Near Eastern archaeology, British Roman archaeology, British early medieval history, British postmedieval archaeology, and recent historical documents.
8. See <http://micropasts.org/data-centre>.
9. For details of the Samsung Digital Discovery Centre's Virtual Reality weekend, see Edwards and Rae: <http://blog.britishmuseum.org/2015/08/10/virtual-reality-how-the-samsung-digital-discovery-centre-created-a-virtual-bronze-age-roundhouse> (accessed 15 December 2015).
10. For an example, see this tweet from the British Museum: <http://twitter.com/britishmuseum/status/674883241069953024>. For details of the #MuseumOfTheCitizen initiative, see <http://citizen.britishmuseum.org> (accessed 30 May 2016).
11. For details of the EngLaId project, see [www.oerc.ox.ac.uk/projects/englaid](http://www.oerc.ox.ac.uk/projects/englaid) (accessed 30 May 2016).
12. For details of the Atlantic Europe in the Metal Ages project, see [www.aemap.ac.uk/en](http://www.aemap.ac.uk/en) (accessed 30 May 2016).
13. *Containing the Divine: A Sculpture of the Pacific God Aa* was curated by Julie Adams and ran from 17 March to 30 May 2016; for details of the exhibition and online content see: [www.britishmuseum.org/whats\\_on/exhibitions/containing\\_the\\_divine.aspx](http://www.britishmuseum.org/whats_on/exhibitions/containing_the_divine.aspx) and [culturalinstitute.britishmuseum.org/exhibit/KAKyKHU7R6rvjQ?hl=en-GB](http://culturalinstitute.britishmuseum.org/exhibit/KAKyKHU7R6rvjQ?hl=en-GB) (accessed 30 May 2016).

## REFERENCES

- Adams, Julie. 2016. "A Celebrity Sculpture: New Discoveries and Old Questions." Pp. 9–27 in *A'a: A Deity from Polynesia*, ed. Julie Adams, Steven Hooper, and Maia Nuku. London: British Museum Press.
- Barford, Paul. 2010. "Archaeology, Collectors and Preservation: A Reply to David Gill." *Papers from the Institute of Archaeology* 20: 16–23.
- Beard, Mary. 2015. "Cuts to Archaeology." *The Times Literary Supplement*, 9 December. [http://timesonline.typepad.com/dons\\_life/2015/12/cuts-to-archaeology.html](http://timesonline.typepad.com/dons_life/2015/12/cuts-to-archaeology.html) (accessed 14 December 2015).
- Bevan, Andrew. 2015. "The Data Deluge." *Antiquity* 89(349): 1473–1484.
- Bevan, Andrew, Chiara Bonacchi, Daniel Pett, Adi Keinan-Schoonbaert, Jennifer Wexler, and Neil Wilkin. 2014. "Citizen Archaeologists: Online Collaborative Research about the Human Past." *Human Computation* 1(2): 183–197.
- Black, Graham. 2005. *The Engaging Museum: Developing Museums for Visitor Involvement*. London: Routledge.
- Bland, Roger. 2005. "A Pragmatic Approach to the Problem of Portable Antiquities: The Experience of England and Wales." *Antiquity* 79: 440–447.
- British Museum. n.d. "Toward 2020: The British Museum's Strategy." [www.britishmuseum.org/pdf/Toward\\_2020-The\\_British\\_Museum\\_Strategy.pdf](http://www.britishmuseum.org/pdf/Toward_2020-The_British_Museum_Strategy.pdf) (accessed 18 December 2015).
- Bohman, Stefan. 2000. "Nationalism and Museology: Reflections on Swedish Experience." Pp. 275–287 in *Heritage and Museums: Shaping National Identity*, ed. J. Magnus Fladmark. Aberdeen: Donhead.
- Bonacchi, Chiara, Andrew Bevan, Daniel Pett, Adi Keinan-Schoonbaert, Rachel Sparks, Jennifer Wexler, and Neil Wilkin. 2014. "Crowd-sourced Archaeological Research: The MicroPasts Project." *Archaeology International* 17: 61–68.
- Brown, Deidre. 2007. "Te Ahu Hiko: Digital Cultural Heritage and Indigenous Objects, People, and Environments." Pp. 77–92 in Cameron and Kenderdine 2007.
- Cameron, Fiona. 2007. "Beyond the Cult of the Replicant: Museums and Historical Digital Objects—Traditional Concerns, New Discourses." Pp. 49–76 in Cameron and Kenderdine 2007.
- Cameron, Fiona, and Sarah Kenderdine, eds. 2007. *Theorizing Digital Cultural Heritage: A Critical Discourse*. Cambridge, MA: MIT Press.
- Cameron, Fiona, and Helena Robinson. 2007. "Digital Knowledgescapes: Cultural, Theoretical, Practice, and Usage Issues Facing Museum Collection Databases in a Digital Epoch." Pp. 165–291 in Cameron and Kenderdine 2007.
- Cherry, John, and Susan Walker, eds. 1996. *Delight in Diversity: Display in the British Museum, Seminar March 1995*. Occasional Paper, Number 118. London: British Museum.
- Council of Europe. 1992. *European Convention on the Protection of the Archaeological Heritage (Revised)*. European Treaty Series 143. Strasbourg: Council of Europe.
- Fahy, Anne. 1995. "New Technologies for Museum Communication." Pp. 82–95 in *Museum, Media, Message*, ed. Eilean Hooper-Greenhill. London: Routledge.
- Gill, David. 2010. "The Portable Antiquities Scheme and the Treasure Act: Protecting the Archaeology of England and Wales?" *Papers from the Institute of Archaeology* 20: 1–11.
- Gill, David. 2015. "Damaging the Archaeological Record: The Lenborough Hoard." *Journal of Art Crime* 13: 51–57.
- Halpin, Marjorie. 1997. "'Play It Again, Sam': Reflections on a New Museology." *Museum International* 49(2): 52–56.
- Hazan, Susan. 2007. "A Crisis of Authority: New Lamps for Old." Pp. 133–147 in Cameron and Kenderdine 2007.
- Hodder, Ian. 1999. *The Archaeological Process: An Introduction*. London: Blackwell.
- Hodder, Ian, and Scott Hutson. 2003. *Reading the Past: Current Approaches to Interpretation in Archaeology*. Cambridge: Cambridge University Press.
- Hoffos, Signe. 1992. "Multimedia and the Interactive Display in Museums, Exhibitions, and Libraries." *Library and Information Research Report* 87. London: British Library.



- Hooper, Steven. 2016. "Mysteries, Methods and Meanings: On Looking Closely at A'a." Pp. 29–47 in *A'a: A Deity from Polynesia*, ed. Julie Adams, Steven Hooper, and Maia Nuku. London: British Museum Press.
- Hooper-Greenhill, Eilean. 1992. *Museums and the Shaping of Knowledge*. London: Routledge.
- Hooper-Greenhill, Eilean. 1994. *Museums and Their Visitors*. London: Routledge.
- Hudson, Kenneth. 1998. "The Museum Refuses to Stand Still." *Museum International* 51(1): 43–50.
- Iversen, Ole S., and Rachel C. Smith. 2012. "Connecting to Everyday Practices: Experiences from the Digital Natives Exhibition." Pp. 126–144 in *Heritage and Social Media: Understanding Heritage in Participatory Culture*, ed. Elisa Giaccardi. London: Routledge.
- Karp, Cary. 2004. "Digital Heritage in Digital Museums." *Museum International* 56(1–2): 45–51.
- MacGregor, Neil. 2003. "Preface." Pp. 6–7 in Sloan 2003a.
- Morgan, Colleen L. 2009. "(Re)Building Çatalhöyük: Changing Virtual Reality in Archaeology." *Archaeologies* 5(3): 468–487.
- Murgia, Alessia, Benjamin W. Roberts, and Robert Wiseman. 2014. "What Have Metal-Detectorists Ever Done For Us? Discovering Bronze Age Gold in England and Wales." *Archäologiscges Korrespondenzblatt* 44: 353–366.
- Museums Association. 2014. *Cuts Survey 2014*. [www.museumsassociation.org/download?id=1123548](http://www.museumsassociation.org/download?id=1123548).
- Needham, Stuart. 2001. "When Expediency Broaches Ritual Intention: The Flow of Metal between Systemic and Buried Domains." *Journal of the Royal Anthropological Institute* 7(2): 275–298.
- Newell, Jenny. 2012. "Old Objects, New Media: Historical Collections, Digitization and Affect." *Journal of Material Culture Studies* 17(3): 287–306.
- Opper, Thorsten. 2003. "Ancient Glory and Modern Learning: The Sculpture-Decorated Library." Pp. 58–67 in Sloan 2003a.
- Parry, Ross, and Nadia Arbach. 2007. "Localized, Personalized, and Constructivist: A Space for Online Museum Learning." Pp. 281–298 in Cameron and Kenderdine 2007.
- Perry, Sarah E., and Nicole Beale. 2015. "The Social Web and Archaeology's Restructuring: Impact, Exploitation, Disciplinary Change." *Open Archaeology* 1(1), doi: 10.1515/opar-2015-0009.
- Pett, Daniel. 2010. "The Portable Antiquities Scheme's Database: Its Development for Research since 1998." Pp. 1–18 in Worrell et al. 2010.
- Pett, Daniel. n.d. "Portable Antiquities on the web." [www.academia.edu/17150471/Portable\\_Antiquities\\_on\\_the\\_web](http://www.academia.edu/17150471/Portable_Antiquities_on_the_web) (accessed 13 Dec 2015).
- Pett, Daniel, and Neil Wilkin. 2015. "Citizen Archaeologists." *British Museum Magazine* 83.
- Robbins, Katherine. 2013. "Balancing the Scales: Exploring the Variable Effects of Collection Bias on Data Collected by the Portable Antiquities Scheme." *Landscapes* 14(1): 54–72.
- Schweibenz, Werner. 2004. "The Development of Virtual Museums." *ICOM News* 3: 3.
- Simon, Nina. 2010. *The Participatory Museum*. Santa Cruz, CA: Museum 2.0.
- Sloan, Kim, ed. 2003a. *Enlightenment: Discovering the World in the Eighteenth Century*. London: British Museum.
- Sloan, Kim. 2003b. "'Aimed at Universality and Belonging to the Nation': The Enlightenment and the British Museum." Pp. 12–25 in Sloan 2003a.
- Sørensen, Marie Louise. 2014. "Paradigm Lost: On the State of Typology in Archaeological Theory." Pp. 84–94 in *Paradigm Found: Archaeological Theory—Present, Past and Future. Essays in Honour of Evžen Neustupný*, ed. Kristian Kristiansen, Ladislav Šmejda, and Jan Turek. Oxbow: Oxbow Books.
- Srinivasan, Ramesh, Robin Boast, Katherine M. Becvar, and Jonathan Furner. 2009. "Blobjects: Digital Museum Catalogs and Diverse User Communities." *Journal of the American Society for Information Science and Technology* 60(4): 666–678.
- Stuedahl, Dagny, and Christina Mörtberg. 2012. "Heritage Knowledge, Social Media, and the Sustainability of the Intangible." Pp. 107–125 in *Heritage and Social Media: Understanding Heritage in a Participatory Culture*, ed. Elisa Giaccardi. London: Routledge.
- Styliani, Sylaiou, Liarokapis Fotis, Kotsakis Kostas, and Patias Petros. 2009. "Virtual Museums, a Survey and Some Issues for Consideration." *Journal of Cultural Heritage* 10(4): 520–528.

- Thrane, Henrik. 1996. "Contributions by the Principal Guests: Henrik Thrane, Funenmuseum, Odense." Pp. 13–15 in *British Museum: Delight in Diversity—Display in the British Museum Seminar March 1995*, ed. John Cherry and Susan Walker. Occasional Paper, Number 118. London: British Museum.
- Vogel, Susan. 1991. "Always True to the Object, in Our Fashion." Pp. 191–204 in *Exhibiting Cultures: The Poetics and Politics of Museum Display*, ed. Ivan Karp and Steven D. Levine. Washington D.C.: Smithsonian Institution Press.
- Weil, Stephen. (1990) 1994. "The Proper Business of the Museum: Ideas or Things?" Pp. 79–86 in *Museum Provision and Professionalism*, ed. Gaynor Kavanagh. London: Routledge.
- Weil, Stephen. 1999. "From Being about Something to Being for Somebody: The Ongoing Transformation of the American Museum." *Daedalus* 128(3): 229–258.
- Wilkin, Neil, Andrew Bevan, Chiara Bonacchi, Adi Keinan-Schoonbaert, Daniel Pett, and Jennifer Wexler. Forthcoming. "Crowd-sourcing the British Bronze Age: Initial Experiences and Results from the MicroPasts Project." *Museum Archaeologist* 35.
- Witcomb, Andrea. 1997. "On the Side of the Object: An Alternative Approach to Debates about Ideas, Objects and Museums." *Museum Management and Curatorship* 16(4): 383–399.
- Witcomb, Andrea. 2003. *Re-imagining the Museum: Beyond the Mausoleum*. London: Routledge.
- Witcomb, Andrea. 2007. "The Materiality of Virtual Technologies: A New Approach to Thinking about the Impact of Multimedia in Museums." Pp. 35–48 in Cameron and Kenderdine 2007.
- Worrell, Sally, Geoff Egan, John Naylor, Kevin Leahy, and Michael Lewis, eds. 2010. *A Decade of Discovery: Proceedings of the Portable Antiquities Scheme Conference 2007*. British Series 520. Oxford: British Archaeological Reports.
- Yates, David, and Richard Bradley. 2010. "The Siting of Metalwork Hoards in the Bronze Age of South-east England." *Antiquaries Journal* 90: 41–72.