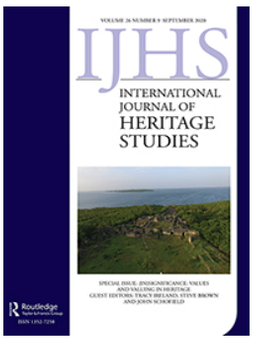

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3D visualisation, communities and the production of significance

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ABSTRACT

In this paper, we discuss how community co-production of heritage records facilitates the production and negotiation of new forms of value and significance. We draw on case studies from the ACCORD project, which used 3D digital technologies for community engagement through co-creation, to explore how a site's significance can be affected and challenged through community recording. Whilst multiple modes of recording operate in this way, digital 3D recording, long held as the sole domain of the technical expert, is often deployed by heritage professionals as a means of enhancing authorised historic and scientific values through the sophisticated and precise recording of a site's physical structure. Here we argue that these recording techniques can also offer a means of exploring and challenging existing authorised regimes of significance and insignificance, giving voice to alternative and richer perspectives through the recording process itself, as much as through the resultant record. This challenges orthodox thinking about both the primary purpose and effects of digital recording and opens up new directions for their use in heritage practice.

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3D; digital heritage; value; community co-production; significance

1. Introduction

Over the last two decades, 3D digital recording and visualisation have become firmly embedded in cultural heritage practice. Novel digital recording technologies have been deployed to document historic objects, monuments and landscapes, and sophisticated 3D modelling techniques have been used to create visualisations and reconstructions. However, the use of these technologies has generally been informed by expert forms of knowledge, with the result that they are typically applied to the kinds of heritage associated with high levels of cultural significance in national and international heritage regimes. There is, as yet, little attention to local forms of social significance (see Byrne, Brayshaw, and Ireland 2003), let alone how the unconsidered application of these technologies, as well as more traditional recording techniques, can validate and reinforce the existing authorised heritage discourses, ossifying notions of what is significant and what is insignificant.

Using 3D digital recording as an example, this paper looks at the impact of recording processes in reinforcing or challenging regimes of significance, and its corollary, insignificance. By examining the role of records and record-making in the creation and validation of cultural significance, and social significance or value, in particular, we reveal the reflexive relationship between heritage records, record making and the significance ascribed to heritage places, practices and objects. Furthermore, we consider the ways in which forms of value and significance can be influenced by

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the recording method itself. We discuss the technologies of significance production and the ways in which they can be intelligently mobilised by communities, challenging pre-existing conceptions of significance and elevating the apparently insignificant.

To illustrate these processes we draw on three pertinent case studies derived from research carried out by the ACCORD project team (Archaeological Community Co-Production of Research Data). This project was led by Glasgow School of Art, in partnership with the University of Manchester, Archaeology Scotland and the Royal Commission for Ancient and Historic Monuments in Scotland (now part of Historic Environment Scotland). The overarching aim of ACCORD was to examine the opportunities and implications of digital recording and visualisation technologies for community engagement and research. The methodologies underpinning the community co-design and co-production of 3D records and models are discussed elsewhere (Jeffrey et al. 2015; Maxwell 2017), along with their role in the production and negotiation of authenticity (Jones et al. 2017). Here we focus on how the co-design and co-production of digital records around places, buildings and objects offers a means of exploring and challenging authorised regimes of significance and insignificance.

Before introducing the ACCORD project we examine the relationship between recording and significance. We then introduce the ACCORD project and its methodologies, before moving on to discuss three case studies from the project, which reveal the complex relationships between recording and the production of significance. We demonstrate that in the context of co-design and co-production communities are able to intervene in this relationship in a sophisticated manner, often challenging existing regimes of significance and asserting alternative forms of significance that fall out-with traditional expert, legal and quasi-legal frameworks. The research has important consequences for how heritage management organisations and heritage researchers engaged in recording campaigns mobilise their resources in response to existing hierarchies of significance. The research also points to new opportunities for comprehending, and ultimately accommodating, multiple forms of significance by focussing on the importance of community engagement with the recording *process* rather than simply the resulting record.

2. Recording and the production of significance

As discussed elsewhere in this volume, significance is central to heritage conservation. Objects, places and practices that do not meet an expert-defined threshold of significance necessarily become insignificant within that conceptual framework. It is also argued elsewhere in this volume that this form of appraisal ignores or minimises a host of alternative, yet unrecognised, values. This in turn has an impact on contemporary understandings of significance, but it also ossifies the template by which significance is judged and makes it harder for new forms of significance to emerge and be acknowledged as time passes. One of the key ways in which significance is signalled by national/regional heritage management systems is through the continued mobilisation of resources around what is considered significant in their framework. Amongst these resources we could include, designation, active conservation, signposting, public interpretation, official performances and ceremonies. Central to these authorised heritage practices (Smith 2006) and the production of significance is the process of recording and the focussed attention this requires. A management body operating through a particular regime of significance is able to mobilise recording resources to reinforce authorised forms of significance, by focusing professional, and ultimately public, attention on the site. Indeed, it is usual that the more significant a site is considered to be, the greater the volume of records associated with it. While this applies to a variety of forms of record, including informal public records, diaries, photographs and popular culture references, it is official, 'authorised' records, of heritage sites that carry greatest weight amongst the majority of professional audiences, these may include measured surveys, remote sensing and geophysical survey, aerial photography, 3D recording, and formal written descriptions (including legal and quasi-legal descriptions). Regardless of their stated purpose, these official records operate as powerful

indicators of how significant a site is considered to be, and their value as this kind of marker is further enhanced by the perceived expense and technical difficulty entailed by these forms of record-making and management. The real or apparent investment of resources therefore operates powerfully in creating a framework in which significance is simultaneously demonstrated, validated and made harder to challenge.

Having stated that significance is in part produced and reinforced by the mobilisation of resources, it should be acknowledged that there is a highly reflexive relationship between significance and the intensity of activities associated with a site. Consequently, it is not always easy to unpick the relationship between the act of recording and the significance of a site. Are the records being created because the site is considered significant or is the site made significant by virtue of the attention paid to it in the form of recording and other practices? While this may seem a classic 'chicken and egg' debate, it is inarguable that the act of recording itself does indeed contribute to, or validate, the sense of significance that a site accrues. However, while recording clearly operates to reinforce particular forms and hierarchies of significance, we argue that it can also create an avenue through which pre-existing conceptions of significance can be challenged, and new forms of significance, local, personal and emotional, made visible.

There is no better exemplar of how the perceptions of a recording technology flavour the reception of the record produced than born digital recording methodologies, particularly 3D recording techniques. 3D recording technologies were adopted in the heritage sector relatively early in their development, yet until very recently they have been firmly located in the domain of technically trained heritage professionals. The discipline's long tradition of creating minutely precise records of artefacts, structures and excavations has naturally given rise to a strong professional interest in new recording technologies as they arise, from photography through to film and video and most recently (i.e. in the last 25 years or so) to 3D. There are a number of digital technologies that now facilitate non-contact recording in three dimensions, all underpinned by more or less complex digital file formats and supporting manipulation and visualisation software frameworks. These include; laser scanning, various forms of structured light scanning, photogrammetry (now frequently termed Structure from Motion or SfM) and reflectance transformation imaging (RTI).

Despite their extensive use in heritage contexts (particularly in archaeology, standing buildings and built heritage survey), 3D digital recording techniques retain a particular cachet, and arguably even a mystique, in public perceptions (see Maxwell 2017, 3.1), and even amongst heritage practitioners. This stems from multiple specific characteristics of digital technologies, but most notably: their break from the analogue world (Jeffrey 2015); their connotation of authority (Gidlow 2002, 20) their clear links with computer science (as well as technical survey); and the high levels of expertise and the expense that are still (often erroneously) associated with them (Jeffrey et al. 2015, 290). It has long been recognised that social conceptions of the 'digital' firmly place it in the domain of 'hard science', making them prone to kinds of counter-productive techno-fetishism (see Huggett 2004). Through this process, technical precision and accuracy in recording may become the primary marker of the quality of a record, consequently the more significance a site is accorded, the greater the precision likely to be used in recording it. For example in 2009 Historic Scotland's (Scotland's then national heritage body) first large-scale terrestrial laser scanning project focussed specifically on the (then) five Scottish sites inscribed in the UNESCO World Heritage List (Historic Environment Scotland 2019a). A further example of this is the English Heritage's high-precision laser scanning of the World Heritage Site of Stonehenge, which revealed hitherto unknown carvings (Abbott and Anderson-Whymark 2012). This recording approach, using sub-millimetre precision, and the subsequent analysis, was extremely successful and can only have further enhanced the significance of Stonehenge. However, the vast majority of other, less 'significant', sites have not (at least not yet) been scanned with the same degree of precision.

Of course, from a technical conservation and management perspective there are obviously a range of strong arguments for the utility of high-precision records: management; reconstruction; erosion monitoring and analysis (for carved stone examples see Foster et al. 2016, Section 3.3.2/3.6,

and the Stonehenge scanning project above). Clearly, it would be incorrect to argue that precision has no purpose. However, it would also be incorrect to argue that recording is a neutral and technical activity that sits outside debates around how authorities assign and validate significance in the historic environment. On the contrary, the act of recording, how it is done (including to what levels of precision), who does it, using which technologies, and why, are all part of the production and validation of a hierarchy of significance. In fact, it can be argued that the control of these highly accurate, resource-intensive records by using complex licencing protocols and selective access is clearly a political and exclusionary act (see Jeffrey 2018), which deliberately reinforces the apparent authority of certain kinds of expertise and its role in the arbitration of significance.

We argue that the recording process is more than a *post hoc* expression of a site's significance, but is an active ingredient in the generation of significance itself. We also argue, that certain forms of record, such as those described above, act more effectively than others in this process. Does this then offer a means by which notions of significance and insignificance can be challenged? Indeed, could the recording process be mobilised as a means of actively creating significance where none, or little, was previously apparent (at least in a form that would be recognised or accepted by the existing expert arbiters of significance)? Furthermore, what happens if we open up forms of recording to wider communities through collaborative methods?

3. Participatory recording and the ACCORD project

Collaborative participatory methods such as co-production, co-design, co-curation, co-creation, and co-innovation have become increasingly popular in multiple activities and areas of enquiry, including public service provision, health, product design, museums and heritage (e.g. Burr and Matthews 2008; Conroy, Clarke, and Wilson 2012; Cottam and Leadbeater 2006; Davies 2010). Similarly, in the heritage sector community participation itself is nothing new. However, in community heritage, there is a tendency in practice for expert authority to be maintained, with community participants ultimately remaining in the position of consumers (Smith and Waterton 2009). For example, one of the few publications focusing on the potential of photogrammetry for community engagement in heritage, McCarthy (2014), remains firmly rooted in authorised forms of heritage practice with an emphasis on training and the creation of records of heritage assets (for another example see Bryan and Chandler 2008). In contrast, co-design and co-production are associated with forms of community participatory practice, which challenge traditional relationships of power, control and expertise. Effective co-design and co-production should be transformative, challenging pre-existing perceptions and ways of working, as well as changing 'producer and product, process and outcome' (Cahn and Gray 2012, 131). Counter-mapping is perhaps one of the more prominent examples of the recent impact of co-production in the heritage sector (e.g. Byrne 2008; Harrison 2011; De Nardi 2014), combining traditional mapping practices with more intuitive ones such as 'story-trekking' and oral history.

The ACCORD (2013–15) project involved ten community heritage groups across Scotland, from Dumfries and Galloway in the South to Shetland in the North. The groups were constituted in multiple different ways, ranging from pre-existing heritage and archaeology groups, to broader local community groups, to informal communities of interest or practice formed round a particular location. ACCORD fieldwork with each group normally took 2–4 days, sometimes consecutively and sometimes spread out over a number of days/weeks, depending on the location, circumstances and nature of the group. In this project, 3D recording and modelling were used in place of participatory mapping, but importantly its co-design and co-production approach also sought to engage with the complex and multi-layered attachments of participants (to objects, buildings and places). The project examined the opportunities and implications of collaborative, community-based, digital recording and modelling, using the techniques of photogrammetry and RTI (Jeffrey et al. 2015). Occasionally time of flight laser scanning was also deployed by the team, for example for

large-scale recording. However, of all the techniques we deployed, photogrammetry was by far the most successful from a community engagement perspective.

Digital photogrammetry (SfM) uses multiple digital images, which overlap and cover all surfaces of an object or site. Identical points in consecutive images are identified allowing relative camera positions in 3D space to be inferred and from this the 3D location of multiple points on a target's surface can then be calculated. In the last few years, photogrammetric software has advanced to such a degree that manual intervention in image alignment is rarely required, and the quality of the resulting datasets and models rivals that of both structured light and laser scanning devices (for example see Barbero-García et al. 2018). At the same time, the fact that consumer-grade cameras and cheap (even free) software can produce such impressive results has meant that the technical and financial barriers to use for private individuals and community groups have significantly diminished (Jeffrey et al. 2015; Haukaas and Hodgetts 2016).

RTI, like photogrammetry, is image-based, and easily carried out by groups with varying levels of expertise working together. RTI is a powerful tool for the recording and analysis of lightly incised or carved surfaces. It is not in fact a true 3D recording technology (sometimes described as a 2.5D technology), but allows for multiple images capturing multiple lighting positions of a surface to be integrated into a single file (e.g. a Polynomial Texture Map or PTM, see Malzbender, Gelb, and Wolters 2001). The PTM when used in conjunction with viewing software allows the user to dynamically change the lighting position in an image, including interpolated positions. Significantly, the PTM also contains normal mapping information that allows the user to change the surface properties of the images object, such as its specularity.

A distinctive aspect of the ACCORD project is that 'co-design' encouraged community participants to take an active role in selecting recording 'targets', with particular attention to the significance of heritage places as they perceived it, as well as the social and communal values associated with them (Jones 2016). At the same time, the project team explored the impact of community co-design and co-production on the value and authenticity of both the digital models and their original counterparts. For these aspects of the research, we used qualitative methods associated with rapid, or focused, ethnography (e.g. Knoblauch 2005; Pink and Morgan 2013; Taplin, Scheld, and Low 2002) to gain insight into the effects of community participatory 3D recording on the significance and authenticity of both the 3D models produced and the original historic objects, monuments and places they are based on (Jones et al. 2017).

As discussed by Jones et al. (2017), our work with each group began and ended with focused group interviews, which acted as points of intensive discursive enquiry where background knowledge could be obtained, and concepts and experiences relevant to the project explored (Finch, Lewis, and Turley 2014; Kitzinger and Barbour 1999). We also used participant observation during the co-design and co-production of the digital records and models, which facilitated intensive observation of these practices and the values that mediated them (for a similar approach in the context of research on health and safety practices see Pink and Morgan 2013). Community participants had different levels of photographic and digital/computer proficiency, with only a handful of individuals across all of the groups possessing any prior experience of photogrammetry, and none with experience of the other techniques. Members of the project team brought technical expertise and experience to the co-production, although it was very important that ACCORD was not seen simply as a kind of formal training project in which experts trained community groups. A collaborative and participatory ethos was actively promoted with community participants intimately engaged in the recording process, as well as site selection. The final project engagement with each group was again through a semi-structured group interview. In this case, the focus was on exploring the significance, value and authenticity of the record (Digital Heritage Object) and visualisations, as well as their relations with the tangible objects and places they represent. Where forms of attachment and ownership surfaced these were actively explored, as were the aesthetics of the virtual forms produced. The discussion also focused on the practices involved and the

experience of co-design and co-production and the ways in which participation in 3D visualisation impacted on the interests and attachments of community participants was considered.

Following on from the field work, some community participants continued with related research and recording triggered by the ACCORD work. This could take both the form of non-digital activities such as archival research, oral history, artistic practices, blogging and so forth, but also included further photogrammetry and RTI (Blog 2013–15 in ACCORD 2017a). A number of ACCORD participants has also gone on to work on subsequent community co-production projects using 3D digital recording such as Scotland's Rock Art (ScRAP 2019). Ownership of the resulting assets (intellectual property and copyright) was openly negotiated with the community groups usually resulting in use of the relatively open Creative Commons Attribution licence (i.e. CC-BY, Creative Commons 2018). Group-generated contextual and complementary material, such as maps and photographs, was also archived in association with the 3D content. Whilst the project team took responsibility for deposition of the archive with the Archaeology Data Service (ACCORD 2017a) the associated metadata and paradata emphasise the co-produced nature of the content. It should be noted that the act of archiving, i.e. of taking care of the material generated, and facilitating access to it, for the long term, is itself an expression of how significant the material is considered to be, and engagement with a formal archival process (e.g. via a Trusted Digital Repository) serves to enhance perceived significance. For a fuller discussion of this point and how it acts directly on our reception of digital content more generally see Jeffrey (2018). The ACCORD project team also published details of their activities in Discovery and Excavation Scotland (DES, Archaeology Scotland 2018) and information entered in this journal of record is ultimately integrated with the official Scottish National Record of the Historic environment (Canmore, Historic Environment Scotland 2019b).

In the following sections, we discuss three ACCORD case studies deploying the methodologies and technologies described above. We focus on the impact of the recording processes, including their ostentatiously technical nature, on the production and negotiation of significance. One of the most explicit examples of these processes at play is the work we did with climbers at Dumbarton Rock, who were overtly motivated by the marginalisation of the site's sporting heritage, *vis a vis* the nationally significant Dumbarton Castle, which is located on the Rock and is a property in the care of Historic Environment Scotland (Canmore ID 43376). The ACCORD project was seen by many of the climbers as a way to highlight the significance of 'Dumby's' climbing heritage. The recording techniques the project deployed, photogrammetry, laser scanning and RTI, are all standard professional techniques, but none had previously been deployed at the climbing site, let alone by a community group. They were seen as a means to make this heritage 'official'; to legitimise it and as one climber put it, 'to stamp our rights on the place'. We have discussed the case of Dumby at length elsewhere (see Hale et al. 2017; Jones et al. 2018), and therefore focus on other ACCORD case studies below. These illustrate some of the more subtle and perhaps less explicit ways in which communities grasped the opportunity to make important points about what was significant to them through the act of co-producing records with the ACCORD project.

4. Case study 1, Falstaff and 'King of the Castle', Castlemilk

In this case study, we discuss the work we undertook with the 'How Old Are Yew' community history group in 2014. Based in Castlemilk, a social housing scheme to the south of Glasgow city centre, this group was is led by a community woodland officer and comprised residents of the housing scheme with an interest in local history. We worked with five people from the group some of whom were longstanding members and two of whom had also been members of, the now defunct, Castlemilk Local History Group. Castlemilk housing estate is built on the site of a mediaeval estate which had belonged to members of the Royal House of Stuart. The last major building of the aristocratic estate, Castlemilk House, was demolished by Glasgow City Council in 1969 after having served as a children's home since the 1930s (one of the groups we worked with

had been a resident of the home as a child). The extensive housing scheme subsequently built on the site of the house and its estate was intended to alleviate city centre slum conditions and to improve the quality of life for citizens who were relocated to this new satellite scheme sitting on the edge of the countryside. However, it quickly became apparent that services, such as buses, shops, places of worship and public houses, were so inadequate that the community felt isolated, marginalised and abandoned (see '*The Big Flit*' by Castlemilk People's History Group 1990). In combination with the poor quality of the new housing stock, this sense of marginalisation led to a growing reputation for poverty, crime and violence, which continues to some extent to dog Castlemilk even today.

In terms of the expert narratives, or authorised heritage discourse, there are two competing elements to the Castlemilk story. The first is the history and archaeology of Castlemilk House (Canmore ID 44894), an important seat of the Stuart family, potentially with some associated archaeological dates as early as the thirteenth century. The second is the story of the modern housing scheme as an early example of mass social housing and slum clearance in Scotland. For the citizens of Castlemilk, Glasgow and Scotland, the second narrative is highly significant, including politically, and Castlemilk holds an almost iconic position in popular culture. However, looking at the relative significance of these stories in the authorised discourse and the consequent mobilisation of resources for recording, a different picture emerges. Taking as an example the records held for 'Castlemilk' in the online index of the National Record of the Historic environment, 'Canmore', a search reveals a range of sites relating to Castlemilk House and its policies, a bridge, a lake, a landing place, cottages, kennels, as well as manuscript and photographic records relating to the estate house itself and a 1992 excavation undertaken by Glasgow University for Glasgow City Council. In contrast, records relating to the post-war housing estate, synonymous in most people's minds with Castlemilk, and once home to 37,000 people, are limited to a mid-nineteen nineties photographic survey and architectural records relating to modern ecclesiastical buildings. Through the ACCORD focus groups, a different narrative emerged which challenged both these grand narratives (the history of the Royal House of Stuart and the social and economic history of post-war Glasgow), neither of which now resonates with the lived experience of the people of Castlemilk. This emerging community narrative was one of hope and triumph over adversity coupled with very strong social bonds and sense of community identity, constructed partly in response to the failures in planning through which they had suffered.

This story, of how the community came together and did things for themselves, which sits outside sanctioned hierarchies of significance, is ultimately what the group felt was significant about Castlemilk (see the Summary Statement of Social Value in ACCORD 2017d). Through the co-design process described above, the group selected two targets for photogrammetric recording, and subsequent archiving with the ADS. The first was a response to the loss of Castlemilk House, and specifically the sense that their local heritage has been appropriated by others. In the grounds of Castlemilk House, there had been a piece of nineteenth-century garden sculpture by Robert Frost representing the Shakespearean character of Falstaff. When the house was demolished, Falstaff was relocated to a public space at Torrance House in the nearby town of East Kilbride. The group decided this should be their first target and through discussion it became apparent that their engagement with the statue would allow them in some sense to reclaim it as a piece of the history of Castlemilk (Figure 1). However, it proved much harder to settle on anything that could be recorded that might represent the hopeful, optimistic, well-bonded community expressed in the focus group. After further discussion during which the interest of the ACCORD team in the recent history of the community was established, the group selected for recording a very recent sculpture, created as part of a public art project in 1999, by prominent Glasgow artist Kenny Hunter. This optimistic and hopeful sculpture known as 'King of the Castle', takes the form of a young boy looking towards the city, with the inscription around the base 'Somewhere in the distance is my Future' (Figure 2). Kenny Hunter himself was approached to take part in the recording exercise and visited to discuss the process with the group during the recording. Incidentally, the specific

Figure 1. The 'How Old Are Yew' group recording the Falstaff sculpture in Calderglen, East Kilbride. Copyright 'How Old are Yew' and ACCORD CC-BY.

Figure 2. The 'How Old Are Yew' group recording the 'King of the Castle' with Kenny Hunter. Castlemilk, Glasgow. Copyright 'How Old are Yew' and ACCORD CC-BY.

affordances of the digital records, such as unlimited reproduction (Jeffrey 2015) went on to inspire further work by Hunter (e.g. 'Migration of the Aura', Hunter 2016)

When given the opportunity, the 'How Old are Yew' group had essentially side stepped-both the authorised discourses that adhere to Castlemilk. They identified forms of significance that mattered to them, as well as recognising it was possible to create a connection between their narratives and real-world objects through the process of recording. In a sense, through these objects, they were also able to engage in making place and resisting displacement; making a place through practices relating to the modern estate and its former aristocratic heritage, whilst resisting the displacement of Falstaff through their digital re-appropriation of him (Jones et al. 2017). The digital outputs of the 'How Old are Yew' work are deposited with the ADS digital archive, an archive dominated by professional and academic outputs. Importantly, statements of contemporary social value, which also include descriptions of the group, the recording activity and why it was undertaken, are also archived with that data (for more discussion on why this form of archiving is important see Jeffrey 2015). A formal record of the ACCORD event was also created, via DES, for the National Record of

the Historic environment (Canmore) incorporating both the recording event and the sculpture itself into the national record (Canmore ID 355375).

5. Case study 2, Bressay Manse, Shetland

In October 2014, the ACCORD team worked with the Bressay History Group on the Island of Bressay in Shetland. The Bressay group is specifically focussed on the preservation, exhibition and publishing of items relating to Bressay folklore, tradition and dialect, however, they have also been active partners with professional archaeologists and community-oriented archaeological organisations such as Archaeology Scotland and Scotland's Coastal Heritage at Risk Project (SCHARP, Scotland's Coastal Heritage at Risk Project 2018). In 2008, the group were behind a project to move a Bronze Age burnt mound inland, away from the threat of coastal erosion in partnership with Adopt-a-Monument Scheme and the SCAPE Trust (a charity that works with the public to research, investigate, interpret and promote the archaeology of Scotland's coast). The burnt mound was relocated to an area beside the island's ferry terminal and Bressay Heritage Centre essentially creating a new heritage site intended to act as a tourist attraction (SCAPE 2010).

For work with the ACCORD project, the group decided to look at the Cullingsburgh Township which is situated on the East side of Bressay (and notably, on the opposite side of the island to the visitor centre). The group were keen to encourage visitors to travel beyond the ferry terminal and to explore other parts of the landscape. Part of the Township includes the remains of an eighteenth-century church (Figure 3) and associated burial ground, which overlies an Iron Age Broch, both of which are designated as part of one Scheduled Ancient Monument. This designation indicates that these features are considered as nationally important within authorised heritage frameworks; however, it was evident during fieldwork that this particular form of significance did not align in a straightforward manner with local perceptions and, as with Castlemilk, this was reflected in their choice of recording targets. Cullingsburgh's best-known monument is in fact an ogham-inscribed tenth-century cross-slab (Canmore ID 1279). The original was removed from the site in the nineteenth century and is on display in the 'Early People' gallery of the National Museum of Scotland in Edinburgh. In 2000, the Shetland Churches Trust commissioned a resin-based replica which was installed in Cullingsburgh to celebrate the millennium. However, many in the local community do not view the replica in a favourable light and would prefer the original stone returned to Shetland. The heritage management argument against this focusses primarily on the

Figure 3. Bressay History Group recording at Cullingsburgh Manse, Island of Bressay, Shetland. Copyright Bressay History Group and ACCORD CC-BY.

cross's fragile state, which would present obvious conservation issues if it was erected outside and exposed to the weather (as the replica currently is). Associated with the Cullingsburgh sites and monuments (but not contemporary) is an eighteenth/nineteenth century Township, head dykes and (likely) Bronze Age Burnt Mounds, none of which is designated. An interpretation panel situated next to the replica stone gives further information on the Bressay Stone, church, Broch and place name, but omits mention of the other heritage assets.

Through the co-design process, a decision was made to record two sites, a gravestone of a Dutch ship commander lost at sea but buried at Cullingsburgh, and the ruined manse (minister's house) within the township (see the Summary Statement of Social Value in ACCORD 2017c). The latter choice was kin-based, inspired by the fact that the last resident of the manse, 'Lowrie' Manson, was a direct relative of a member of the community group taking part in the ACCORD project. The group were aware of an 1897 photograph (now archived with Shetland Museum) showing Lowrie sitting in the manse with his daughter Katie, and a photogrammetric record of the manse was seen as a way to 'give life' to the monument (Figure 4). During discussions about which heritage assets mattered to the community and therefore what would be most appropriate to record, the resin-based replica cross described above was mentioned as a potential target by the ACCORD team. As with the Castlemilk group when describing the Falstaff statue, there is a sense that an original has been removed from the community in which it belongs, and this dislocation impacts the community's sense of Cullingsburgh as a place of significance (cf. Jones 2006). Furthermore, the (in)ability to influence heritage management decision-making and outcomes can be seen as an indicator of how (in)significant the community is in the eyes of the state. Thus, the impact of the pseudo-empirical objective methods for developing hierarchies of significance used in national heritage systems (Ireland 2017) reaches beyond the fate of the heritage site or object in question. Whereas in Castlemilk the process of recording and modelling the original was seen as an act of re-appropriation, in Cullingsburgh the decision not to record the replica was derived from a clear understanding that if the community was to do this, it would validate the replica as a substitute for the original. Here the relationship between recording and legitimation of an authorised regime of significance is quite explicit. The community's aversion to recording the replica cross is an act of 'making insignificance'; an active rejection of an existing regime of significance, not around the original cross, but in relation to the community's claim to it. These themes were again reflected in how the community group has gone on to use the products from the ACCORD fieldwork. In this case, using the interactive 3D model of the manse for display within their own Heritage Centre. The group has

Figure 4. Laurence 'Lowrie' Manson sitting with his daughter at the southern end of the manse, Cullingsburgh, Island of Bressay. Photograph courtesy of the Shetland Museum Photo Library, by J Valentine 1887. Copyright Shetland Museum Archive..

foregrounded hitherto unacknowledged local significance in order to create a new focal point for visitors to Cullingsburgh, associated with, but separate from, the nationally designated assets or the replica cross-slab

6. Case study 3, Grimsay wheelhouse, North Uist

In summer 2014, the ACCORD team worked with a well-established history and archaeology group called Access Archaeology in the Outer Hebrides archipelago on the Atlantic coast of Scotland. This group, comprising island residents, is based on North and South Uist (the 'Uists'), part of the Eilean Siar (Western Isles) region, although many members originate from elsewhere in the UK. The group is very active in archaeological survey and works on projects with the local island archaeologist, as well as national projects such as SCHARP. Despite long collaboration with existing national and university-led heritage projects, the site that the Access Archaeology group selected for photogrammetric recording has an ambivalent position in authorised discourses of heritage and significance. Grimsay Wheelhouse (Bagh Nam Feadhag, Canmore ID 320517) is a potentially nationally significant site which was *made less significant* through the intervention of a local island inhabitant in the 1990s, at least in with regards legal designation. Wheelhouses are a form of Iron Age dwelling predominantly found in the Western Isles where they appear mostly on the machair, or fertile coastal plain, on the west coast of the island chain. Many wheelhouses are scheduled monuments. Grimsay Wheelhouse could also have been considered an excellent example of this type of site and therefore suitable for inclusion in the schedule. However, it was 'excavated and consolidated' from 1993–1997 by a local retiree, Roy Ashworth, who did not follow standard archaeological practice and who neither recorded or published the excavation in a way that would be considered best practice for a modern professional excavation. He also reconstructed some of the site's walls according to idealised notions of a wheelhouse, working beyond what could be reliably inferred from the evidence base. As a result, for many professional heritage managers and archaeologists, the value and significance of the site were actively degraded by this intervention.

For the Access Archaeology group, however, Grimsay Wheelhouse is an example of the type of site that stands for the Uist's archaeology in an 'iconic' sense, setting these islands apart, in their view, from the other Hebrides. This is particularly the case for Grimsay, given its location, which is inland and towards the east of the island, away from the main concentration of wheelhouses on the coastal west. For Access Archaeology members, Ashworth's excavation and consolidation work does not undermine the significance of the site in the same way that it has done for archaeologists and heritage managers. Indeed, for them, its reconstruction enhanced the significance of the site through making visible the internal 'wheel' configuration of the building's chambers. In fact, the group expressed a strong interest in using 3D recording as a basis for even further reconstruction in Virtual Reality (although this was beyond the scope of the ACCORD project). The photogrammetric recording exercise by ACCORD and Access Archaeology was a deliberate attempt to redress the apparently unjust loss of significance the site had suffered through the attention of the local resident and his unsanctioned activity (Figure 5). The group's selection of the Grimsay Wheelhouse as a focus for the project's recording work on the Uists represents a purposeful application of resources to challenge the perceived insignificance of the site and emphasise its social significance. This challenge is re-enforced by the subsequent decision, taken on site, to record using RTI, the marker stone placed by Roy Ashworth within the wheelhouse. Consisting of his initials and the dates 1993–1997, the marker stone is a signifier of his work (i.e. a record of his 'authorship' as well part of the process itself) (see the Summary Statement of Social Value in ACCORD 2017b). Actively recording the stone represented an explicit acknowledgement that the work of Ashworth is now firmly woven into the fabric of the site in the eyes of the local community, irrespective of how it is considered by heritage professionals (see the Historic Environment Scotland 2019b, Canmore ID 320517). (Figure 6).

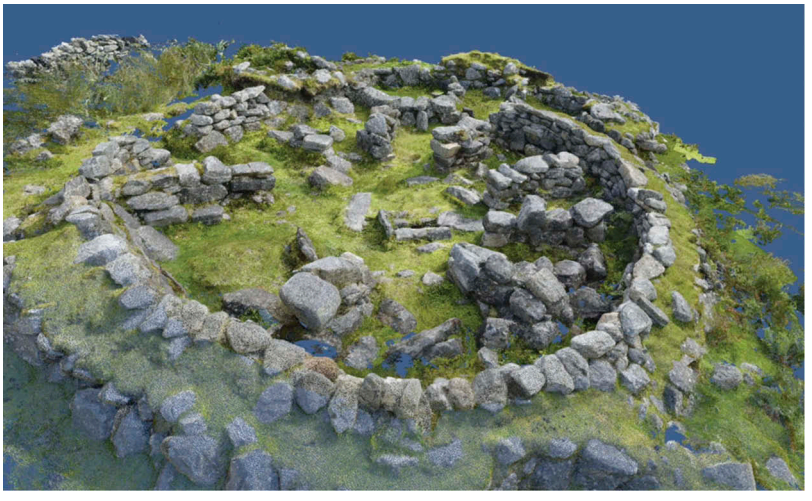

Figure 5. A screenshot of the highly detailed photogrammetric model created by ACCORD and Access Archaeology of the Grimsay Wheelhouse, North Uist. Copyright Access Archaeology and ACCORD CC-BY.

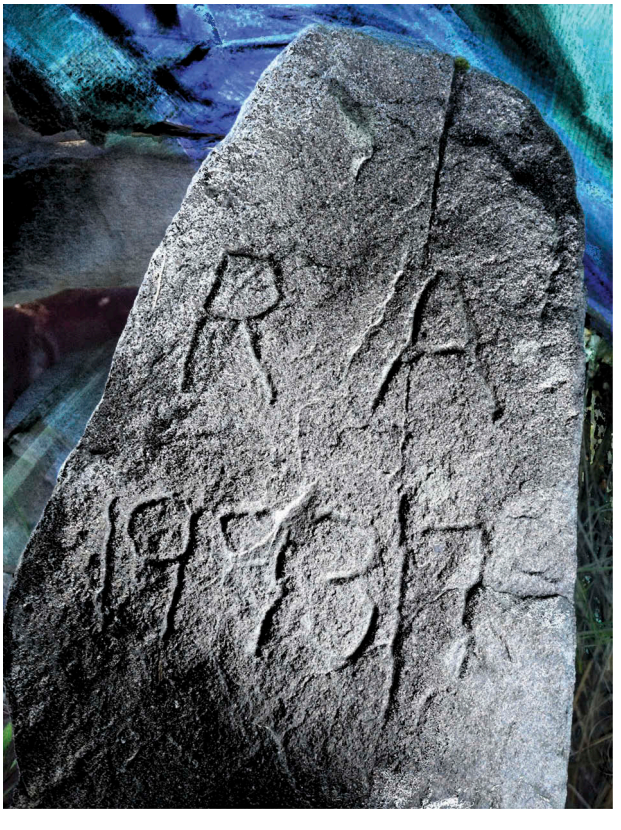

Figure 6. A screenshot of the RTI showing the stone with initials RA and the date 1993–7, created by Roy Ashworth to mark his work on the wheelhouse. Copyright Access Archaeology and ACCORD CC-BY.

7. Conclusion

With recording techniques, including digital recording methods, the notion that 'the process is the product' (Jeffrey 2004, 280) is not new. However, in most contexts this refers to the focussed

attention, inherent in the recording process, and the way this catalyses new analysis or new thinking about the recording target rather than the final record itself. Using the case studies above, we have argued that when thinking about regimes of significance, the way in which the recording process is enacted can challenge and generate value, as well as validate and reify. The product, i.e. the output of the recording process, which may itself have agency, here stands primarily as proof that the process was undertaken and it was the actual process itself that was the agent of change, challenging old, or generating new forms of significance.

As described in Case Study 1 (Castlemilk) above, the volume and form of records can be a strong signifier of the degrees of significance ascribed to sites by different constituencies, irrespective of the actual content of the records themselves. Similarly, from the same case study, the lack of recording activity can ultimately come to be seen as part of the process of relegation into insignificance. The 'How Old are Yew' group recognised the power of engaging in recording non-traditional heritage sites that reflect significant aspects of their community identity that they perceived as being neglected.

Turning to Case Study 2, Grimsay, it was again records, or the lack of them, that eroded the site's significance. Had the 1990's excavation and 'consolidation' been recorded by approved, traditional means, there would have been no question about the site's significance in the authorised discourse. The fact that it was now considered less significant as a site due to the nature of the original recording, was directly challenged by the decision of Access Archaeology group to record it, in this case photogrammetrically, along with the untrained excavator's marker stone (using RTI). This intervention questioned the ways in which it has become insignificant in authorised heritage discourses, by re-identifying it as an iconic example of a distinctive kind of Uist heritage. Subsequent to Access Archaeology and ACCORD's work, the national body responsible did undertake their own photographic (not photogrammetric) survey of the site in 2016 and 2017, including Roy Ashworth's 1997 stone.

On Bressay in Shetland, Case Study 3, questions about the relationship between recording and significance arose once more. This time there was a strong perception that something (the replica Cullingsburgh cross), should *not* be recorded, because to do so might suggest that it had significance to the community, when in fact the community saw the replica as inauthentic, or at least not an adequate substitute for the original housed in Edinburgh. Instead, the group focused on an example of recent vernacular heritage, the remains of the Cullingsburgh manse, which had a direct personal relationship with one of the members of the group.

An important aspect of the ACCORD approach is that it challenges the prevailing view of 3D records as tools for heritage management, with the attendant emphasis on precision, accuracy and resolution. Instead, it asks us to think about what the process of actually creating the record achieves for those participating in its production and the potential novel and creative uses of the process (and its outputs) for the communities involved. It remains inarguable that there are benefits to achieving the best possible output in terms of technical quality, especially for future users, and the communities we worked with generally acknowledged this. However, we also argue that to focus only on the quality of the outputs and the potential future uses distracts from the immediate and powerful consequences of the production process itself, as an engine for generating new forms of social value and indeed new forms of authenticity (Jones et al. 2017).

Since the completion of the ACCORD project, the approaches it developed, including social value capture and co-production using digital recording methods, have been adopted by a number of other projects. This includes a major, ongoing, AHRC-funded community rock-art recording project in Scotland (ScRAP), a collaboration between Historic Environment Scotland, the GSA and the University of Edinburgh (ScRAP 2019). ScRAP focuses on Neolithic and Bronze Age Atlantic Rock Art. Through recording exercises with avocational heritage groups across Scotland ScRAP aims to challenge the apparent lack of significance accorded to these monuments which are both enigmatic and ubiquitous (with thousands of known sites), but with relatively few examples considered significant enough to be granted the status of legal protection. Through deploying 3D

digital recording as a participatory practice that recognises its own role in the generation of significance, rather than being presented as uncontextualised technical process, we hope to formulate new conceptions of significance around these monuments.

Many cultural heritage managers recognise the constantly shifting, dynamic, and contested nature of significance and social value, but this nevertheless remains uncomfortable and practically challenging, particularly in the context of legal designation. However, outside academia and professional practice, this dynamism is patently the reality we all experience. The continuing focus of resource-intensive recording practices on authorised forms of heritage clearly reinforces its significance alongside the relative insignificance of heritage objects and places that fall outside these strategies. This, in turn, will tend to create a narrow, partial and one-dimensional vision of the past. More broadly, the regimes of significance in which such strategies are formulated should themselves be seen as dynamic and actively open to challenge from multiple constituencies. By acknowledging the power of the recording process itself, rather than simply the resultant records, we might help to address the key question posed in this volume. Not what is significant and what is insignificant, but how can multiple forms of significance coexist, and how can resources be actively deployed in such a way that one reified and self-perpetuating form no longer continues to dominate the others?

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References

Abbott, M., and H. Anderson-Whymark. 2012. *Stonehenge Laser Scan: Archaeological Analysis Report*. Swindon: English Heritage. English Heritage Research Report 32/2012.ISSN 2016-9802.

ACCORD. 2017a. "*Archaeology Community Co-production of Research Data [Data-set]*." York: Archaeology Data Service [distributor]. doi:10.5284/1042733.

ACCORD. 2017b. "*ACCORD with the Access Archaeology Group in the Uists [Data-set]*." York: Archaeology Data Service [distributor]. doi:10.5284/1042725.

ACCORD. 2017c. "*ACCORD with the Bressay History Group [Data-set]*." York: Archaeology Data Service [distributor]. doi:10.5284/1042727.

ACCORD. 2017d. "*ACCORD with the How Old are Yew? Group, Castlemilk [Data-set]*." York: Archaeology Data Service [distributor]. doi:10.5284/1042729.

Archaeology Scotland. 2018. "*Discovery and Excavation Scotland*." ISSN 0419-411X. https://archaeologyscotland.org.uk/join-us/discovery-and-excavation-scotland/

Barbero-García, I., M. Cabrelles, J. Lerma, and A. Marqués-Mateu. 2018. "Smartphone-based Close-range Photogrammetric Assessment of Spherical Objects." *The Photogrammetric Record* 33: 283–299. doi:10.1111/phor.12243.

Bryan, P. G., and J. H. Chandler. 2008. "Cost-Effective Rock-Art Recording within a Non- Specialist Environment." *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences* 37 (B5): 259–264.

Burr, J., and B. Matthews. 2008. "Participatory Innovation." *International Journal of Innovation Management* 12 (3): 255–273. doi:10.1142/S1363919608001996.

Byrne, D. 2008. "Countermapping: New South Wales and Southeast Asia." *Transforming Cultures eJournal* 3. doi:10.5130/tfc.v3i1.687.

Byrne, D., H. Brayshaw, and T. Ireland. 2003. *Social Significance: A Discussion Paper*. 2nd ed. Hurtsville: New South Wales National Parks and Wildlife Service.

Cahn, E. S., and C. Gray. 2012. "Co-Production from a Normative Perspective." In *New Public Governance, the Third Sector and Co-Production*, edited by V. Pestoff, T. Brandsen, and B. Verschuere, 129–144. Abingdon: Routledge.

Castlemilk People's History Group. 1990. "*The Big Flit*." Workers' Educational Association. ISBN-13: 9781870140119 doi:10.1099/00221287-136-2-327.

Conroy, M., H. Clarke, and L. Wilson. 2012. *Connected Health and Social Care Communities*. Swindon: AHRC.

Cottam, H., and C. Leadbeater. 2006. *Co-Creating Outcomes*. London: Design Council.

Creative Commons. 2018. Accessed August 2018. https://creativecommons.org/licenses/

Davies, S. M. 2010. "The Co-production of Temporary Museum Exhibitions." *Museum Management and Curatorship* 25 (3): 305–321. doi:10.1080/09647775.2010.498988.

De Nardi, S. 2014. "Senses of Place, Senses of the Past: Making Experiential Maps as Part of Community Heritage Fieldwork." *Journal of Community Archaeology and Heritage* 1 (1): 5–22. doi:10.1179/2051819613Z.0000000001.

Finch, H., J. Lewis, and C. Turley. 2014. "Focus Groups." In *Qualitative Research Practice: A Guide for Social Science Students and Researchers*, edited by J. Ritchie, J. Lewis, C. M. Nicholls, and R. Ormston, 211–242. London: Sage.

Foster, S. M., K. Forsyth, S. Buckham, and S. Jeffrey, eds. 2016. *Future Thinking on Carved Stones in Scotland: A Research Framework*. Edinburgh: Society of Antiquaries of Scotland. Accessed July 2018. https://www.scottishheritagehub.com/content/future-thinking-carved-stones-scotland

Gidlow, J. 2002. "Rock Art and "Bubble Worlds." In *Contemporary Themes in Archaeological Computing*, edited by D. Wheatley, G. Earl, and S. Poppy, 16–21. University of Southampton Department of Archaeology, Monograph 3. Oxford: Oxbow Books.

Hale, A., A. Fisher, J. Hutchinson, S. Jeffrey, S. Jones, M. Maxwell, and J. S. Watson. 2017. "Disrupting the Heritage of Place: Practising Counter-archaeologies at Dumby, Scotland." *World Archaeology* 49 (3): 372–387. doi:10.1080/00438243.2017.1333923.

Harrison, R. 2011. "'Counter-mapping' Heritage, Communities and Places in Australia and the UK." In *Local Heritage, Global Context: Cultural Perspectives on Sense of Place*, edited by J. Schofield and R. Szymanski, 79–98, Farnham: Ashgate.

Haukaas, C., and L. M. Hodgetts. 2016. "The Untapped Potential of Low-Cost Photogrammetry in Community-Based Archaeology: A Case Study from Banks Island, Arctic Canada." *Journal of Community Archaeology and Heritage* 3 (1): 40–56. doi:10.1080/20518196.2015.1123884.

Historic Environment Scotland. 2019a. "Scottish 10 Project." https://www.engineshed.scot/about-us/the-scottish-ten/

Historic Environment Scotland. 2019b. "Canmore: The Online Catalogue to Scotland's Archaeology, Buildings, Industrial and Maritime Heritage." Accessed 2019. https://canmore.org.uk/

Huggett, J. 2004. "Archaeology and the New Technological Fetishism." *Archeologia E Calcolatori* 15: 81–92.

Hunter, K. 2016. "Reproductive!, Edinburgh Sculpture Workshop Catalogue." http://www.edinburghsculpture.org/wp-content/uploads/2016/09/ESW-KennyHunter-Reproductive.pdf

Ireland, T. 2017. "Quotidian Utopia: Orhan Pamuk's *Museum of Innocence* and the Heritage of Love." *Future Anterior* 14 (2): 13–26.

Jeffrey, S. 2004. "Three Dimensional Modelling of Scottish Early Medieval Sculpted Stones." PhD Thesis, University of Glasgow. (2003) [data-set]. York: Archaeology Data Service [distributor]. doi:10.5284/1000187.

Jeffrey, S. 2015. "Challenging Heritage Visualisation: Beauty, Aura and Democratisation." *Open Archaeology* 1: 144–152. doi:10.1515/opar-2015-0008.

Jeffrey, S. 2018. "Digital Heritage Objects, Authorship, Ownership and Engagement." In Di Giuseppantonio Di Franco, P., Galeazzi, F., and Vassallo, V. (Eds) *Authenticity and Cultural Heritage in the Age of 3D Digital Reproductions*, 49–56. Cambridge: McDonald Institute Conversations. McDonald Institute for Archaeological Research, University of Cambridge. ISBN 978-1-902937-85-4. doi:10.17863/CAM.27037.

Jeffrey, S., A. Hale, C. Jones, S. Jones, and M. Maxwell. 2015. "The ACCORD Project: Archaeological Community Co-Production of Research Resources." In *CAA 2014, Proceedings of the 42nd Annual Conference on Computer Applications and Quantitative Methods in Archaeology*, edited by F. Giligny, F. Djindjian, L. Costa, P. Moscati, and S. Robert, 1–7. Paris: CAA.

Jones, S. 2006. "Making Place, Resisting Displacement: Conflicting National and Local Identities in Scotland." In *Cultural Heritage: Critical Concepts in Media and Cultural Studies*, edited by L. Smith, 150–173. Vol. 4. London: Routledge.

Jones, S. 2016. "Wrestling with the Social Value of Heritage: Problems, Dilemmas and Opportunities." *Journal of Community Archaeology and Heritage* 4 (1): 21–37. doi:10.1080/20518196.2016.1193996.

Jones, S., A. Hale, S. Jeffrey, J. Hutchinson, M. Maxwell, and J. S. Watson. 2018. "Conservation, Climbing and Graffiti." *Context IHBC* 155: 28–31.

Jones, S., S. Jeffrey, M. Maxwell, A. Hale, and C. Jones. 2017. "3D Heritage Visualisation and the Negotiation of Authenticity: The ACCORD Project." *International Journal of Heritage Studies* 24 (4): 333–353. doi:10.1080/13527258.2017.1378905.

Kitzinger, J., and R. S. Barbour. 1999. "Introduction: The Challenge and Promise of Focus Groups." In *Developing Focus Group Research*, edited by R. S. Barbour and J. Kitzinger, 1–21. London: SAGE. doi:10.4135/9781849208857.n1.

Knoblauch, H. 2005. "Focused Ethnography." *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research* 6 (3) Art. 44. http://www.qualitative-research.net/index.php/fqs/article/view/20/43

Malzbender, T., D. Gelb, and H. Wolters. 2001. "Polynomial Texture Maps Hewlett-Packard Laboratories." http://www.hpl.hp.com/research/ptm/papers/ptm.pdf

Maxwell, M. 2017. "Power Is in the Process: The ACCORD Project." *Internet Archaeology* 44. doi:10.11141/ia.44.10.

McCarthy, J. 2014. "Multi-Image Photogrammetry as a Practical Tool for Cultural Heritage Survey and Community Engagement." *Journal of Archaeological Science* 43: 175–185. doi:10.1016/j.jas.2014.01.010.

Pink, S., and J. Morgan. 2013. "Short-Term Ethnography: Intense Routes to Knowing." *Symbolic Interaction* 36 (3): 351–361. doi:10.1002/SYMB.66.

SCAPE. 2010. "*(Blog) Shorewatch, Welcome to the Bronze Age Bressay!*" http://www.shorewatch.co.uk/cruester/

SCHARP, Scotland's Coastal Heritage at Risk Project. 2018. http://www.scharp.co.uk

ScRAP. 2019. "*Scotland's Rock Art Project*." http://www.rockart.scot

Smith, L. 2006. *The Uses of Heritage*. London: Routledge.

Smith, L., and E. Waterton. 2009. *Heritage, Communities and Archaeology*. London: Duckworth.

Taplin, D. H., S. Scheld, and S. M. Low. 2002. "Rapid Ethnographic Assessment in Urban Parks: A Case Study of Independence National Historical Park." *Human Organization* 61 (1): 80–93. doi:10.17730/humo.61.1.6ayvl8t0aekf8vmy.