

HPAR7004 Archaeological Research Methods: Assignment 1

Pontefract Castle: Community Project

1 Introduction

A drawbridge pit was discovered at Pontefract Castle (scheduled monument 1010127) in 2016. The excavation of this was later tendered as a community project which aimed to have social impact or 'value added' through public engagement, as well as meeting the planning regulations for the development of the visitor centre. The original body of work was a four week commercial excavation with community satellite workshops and one week community excavation (30th September - 3rd November 2019). The drawbridge pit was larger than expected so a second season of commercial archaeology was programmed between 17th July and 14th August (Casswell 2020).

The project was funded by Historic England with funding allocated under the terms of the NPPF Emergency Investigation Assistance. DigVentures were commissioned by Wakefield Metropolitan District Council to undertake the community excavation at Pontefract Castle gatehouse (Casswell et al. 2019).

This project presented an interesting challenge as the methods employed needed to address the research questions and achieve a high degree of public engagement. To meet both of these aims the project tackled the archaeology in such a manner as to make the results and process more accessible to non-professionals while maintaining professional standards. This was achieved by using a "born-digital" recording system, extensively 3D modelling the excavation, and disseminating results through a range of media. This essay argues that to a large degree this methodology enabled the project to both meet professional standards and engage the community.

2 Project Aims

To understand if the methodology applied to the project was suitable one must understand the aims of the project (Chartered Institute for Archaeologists 2014). The complete aims are outlined in the project design (Casswell et al. 2019, Section 3), though they can be broadly split into two larger categories, archaeological and social impact aims. The archaeological aims can be summarised as defining and characterising the gatehouse and drawbridge pit. The social impact aims can be summarised as creating opportunities for the local community to get involved in and learn about the archaeology of Pontefract Castle. Here the focus was broad outreach, engaging a wide range of people and visitors, rather than creating very deep engagement with a more limited set of participants. It is important to note that neither the social aims nor the archaeological aims are asserted as being more important than the other nor are they mutually exclusive.

3 Project Methodology

For this essay the methodology considered is limited to the digital recording system, photogrammetry and community activities. While the project utilised many other techniques such as remote sensing, sampling, finds collection and analysis for the purposes of this essay they are not considered. The complete project methodology can be viewed in the project design (Casswell et al. 2019) an abbreviated version is presented here to give the discussion some context.

3.2 Digital Dig Team (DDT)

The site was recorded using an online relational database (DigVentures 2015). This published the records live with the excavation of the site (DigVentures 2019a). This was used to record contexts,

samples, special finds, photo register, features, trenches, and the section/plan register. Every participant of the project both professional and amateur was able to create and transform the records of the site.

3.3 Photogrammetry

Photorealistic models were produced using photogrammetry, specifically structure from motion (SfM). These models were created using a Canon EOS 60D camera by taking overlapping photos with coded targets that were located using a Trimble differential GPS. The models were then processed using Agisoft Metashape. This is in accordance with the workflow outlined in Historic England's guidance, (Historic England 2017, Section 1.8). The completed models were uploaded onto Sketchfab (<https://sketchfab.com/digventures/collections/pontefract-castle>).

3.4 Community Activities

During the project there were many opportunities to partake in the archaeology. These included: guided tours, educational sessions for schools, excavation and finds room workshops for YACS/ families/ adults, photogrammetry workshops, an art workshop, a poetry workshop, blog posts, social media feed, and online videos. The archaeology was also disseminated in print media (Wakefield Express and the Pontefract and Castleford Express), and on BBC news (BBC Look North and BBC Radio Leeds). The full public programme and evaluation methodology is outlined in the post-ex assessment (Casswell et al. 2020, Section 9).

4 Discussion

4.1 Digital Dig Team (DDT)

Most of the data recovered bar the physical archive was recorded using Digital Dig Team. DDT functions similarly to a traditional paper record (to describe contexts and to keep track of other digital and paper records such as drawings and photos), but also gives the ownership of the creation of the record to those who excavated it and who's heritage or archaeology the castle is.

A common issue identified by participants is that their experience in community archaeology as amateurs is limited to digging a site, it is often the reserve of the professional to record and interpret it. DDT allows volunteers to be actively involved in the recording process, this not only contributes to the projects aim to teach volunteers skills in archaeology, but means that the archaeology (in terms of the archaeological record) is co-produced by the volunteers who excavated the site and they are recognised for that.

As an archaeologist one often hears the phrase 'excavation is destruction', DDT like other recording system exemplifies the idea of 'preservation through the record' though probably better fits into the phrase coined by Roosevelt et al. (2015) 'excavation is digitization'. The record is the legacy of a project, and increasingly these records and archive are "born digital". The value of archaeological data can be enhanced and made more accessible when recorded in a digital format. As more methodologies on site become digital, such as digital photography and creating location data with a GPS, being able to integrate more of the record into software for post-ex analysis (e.g. QGIS/ArchGIS) is becoming necessary.

Any digital recording system should be built with national databases in mind. Otherwise we build a collection of disjointed digital eco-systems that fragment the archiving landscape, rather than leveraging on these tools to standardize outputs and reduce time spent recording and/or transcribing. As much as archaeologists resist shared thesauruses and standardisation due to the large variety of

archaeological sites, periods or find types, we are now in a digital age and in order to effectively collect data from across sites and organisations in a way that we can cross examine these results we need to start thinking about machine searchability and standardisation (Kintigh 2006; McCoy 2017). This is not only in the terminology we use as a sector but also how we collect data and make it available. DDT does not feed into a national database such as ADS. The time spent to disseminate the results on these national databases is not reduced, nor is the system well adapted to do this. For example, the system does not collect metadata and the export function is limited. While the record is easily accessible, being online, free and user friendly, it is disparate, only the one project can be viewed on the database. In order to streamline this dissemination process the digital records should all be created with depositing with ADS or other reputable archiving bodies in mind. If the results cannot be easily placed somewhere to ensure their long-term storage, producing the results digitally may only have the appearance of efficiency.

Given these considerations, DDT is very effective in fostering community engagement through the co-creation of the record and has some potential to streamline and enhance post-ex and archiving work. However it requires further integration with standardised databases and tools to fully meet the methodological needs of modern archaeology.

4.2 Photogrammetry

3D models are a great way to interact with archaeology for those who cannot attend site. The 3D models produced of the excavation received nearly 4,000 views online. Disseminating results in this manner was particularly important for a number of reasons. First, the site was a deep excavation that would not have been easily made safe for groups to come and visit in person. Second, the latter season of excavation took place in July-August 2020 when COVID-19 was severely impacting travel. Third, the trench was backfilled to create access to the castle's museum and information centre. The 3D model could provide a long-term option for Pontefract to display and allow people to see and interact with a part of the castle that is now buried. An issue frequently faced by archaeology is that it is expensive, whether that be displaying an artefact or conserving a building. It has been proposed that 3D models can be a cost-effective way of displaying finds in these 'virtual museums' (Howland et al. 2014). It could be argued that this extends from artefacts to sites. At Pontefract the cost of conserving a 6.5 metre deep drawbridge pit, and having to construct access around it would have been impractical. As the castle has an onsite museum the high-resolution photorealistic model could be utilised as an interactive exhibit (Howland et al. 2014), allowing visitors to 'visit' the drawbridge pit while physically the site is buried underground.

3D models are also a very accessible way to disseminate results. Models on Sketchfab are free to access online. The photorealistic models are easily understandable and interpretable to a non-professional in a way that reports or other data collected on site might not be. This is because the models produced look like the site did on the ground, this removes the need for specialist knowledge such as drawing conventions, or specific vocabulary. The models can also be annotated (e.g. DigVentures 2019b; DigVentures 2019c) to explain what the model is showing (Figure 1).

Community participants often want to see the results very quickly (Haukaas and Hodgetts 2016), which is not always possible in archaeology and the more scientific methods you add the more abstract the process of excavation becomes and the longer the post-ex process can take. Photogrammetry on the other hand can be produced relatively quickly and is easily shared with those engaging in the project.

Models can be used to create orthophotos and composite illustrations (Casswell et al. 2020, Figure 2-11). These outputs also form strong tools in the post-ex analysis process. This is well exemplified at Pontefract, as mason's marks were visible on the 3D models, which helped answer several of the aims outlined (Casswell et al. 2019, Aim 2: Q5, Q7, Q9), by connecting the drawbridge pit to masonry



Pontefract Castle Gatehouse (pre-excavation)

3D Model



DigVentures PRO

FOLLOW

2.1k

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+ Add To </> Embed ↗ Share

🚩 Report

◀ Triangles: **43.1k** ♀ Vertices: **21.9k** [More model information](#)

Figure 1. The pre-excavation photorealistic model of the excavation area uploaded onto Sketchfab. The model is annotated with descriptions of features within the model. Source: Sketchfab.

identified on the upstanding remains of the castle. As such, photogrammetry was a methodology that was very successful in achieving a wide variety of aims on this project.

4.3 Community Activities

In terms of our community activities the project didn't aim to create a strong community focused around producing output, but rather aimed for a lightweight model of community participation (Haythornthwaite 2009). This has the benefit of being more inclusive and reaching larger audiences, which is reflected in the figures of those who got involved either in person (1,206 people) or through interacting online (over 500,000 combined impressions across various social media platforms)(Casswell et al. 2020).

Whilst DigVentures was on site in 2019, there was a 138% increase in visitors received by the castle (Casswell et al. 2020). An interesting statistic would have been if our presence on site continued to have an impact on the visitation and interaction with the castle after our field season had finished. For this project to look at this would be a misleading figure, after the first phase of excavation finished in November 2019 the following two years have been deeply shaped by the pandemic.

For those not visiting the site simply adding data to the HER isn't enough. The HER while technically publicly accessible, attracts very little attention (Redhead 2021), due to the specialist knowledge needed to understand the material and the lack of a user-friendly format. This ties in with the argument

made above that DDT and photogrammetry make archaeology more accessible, however these still require some degree of archaeological knowledge and pre-existing interest. To reach the broadest audience additional outputs are required (Chartered Institute for Archaeologists 2014). The project timeline collates social media, mini-updates and blog posts (Figure 2; DigVentures 2020a). Longer format YouTube videos were also utilised to explain the archaeology. For the Pontefract Castle excavations DigVentures produced four videos gathering nearly 21,000 combined views (DigVentures 2020a; DigVentures 2020b; DigVentures 2020c; DigVentures 2021). This again represents a broader and more diverse audience than would have been possible to give tours of site, especially during the pandemic, as well as enabling the sharing of more detailed content. These methods all focus on engaging a broad audience with the archaeology of the local area, effectively fulfilling Aim 4 of the project (Casswell et al. 2019).

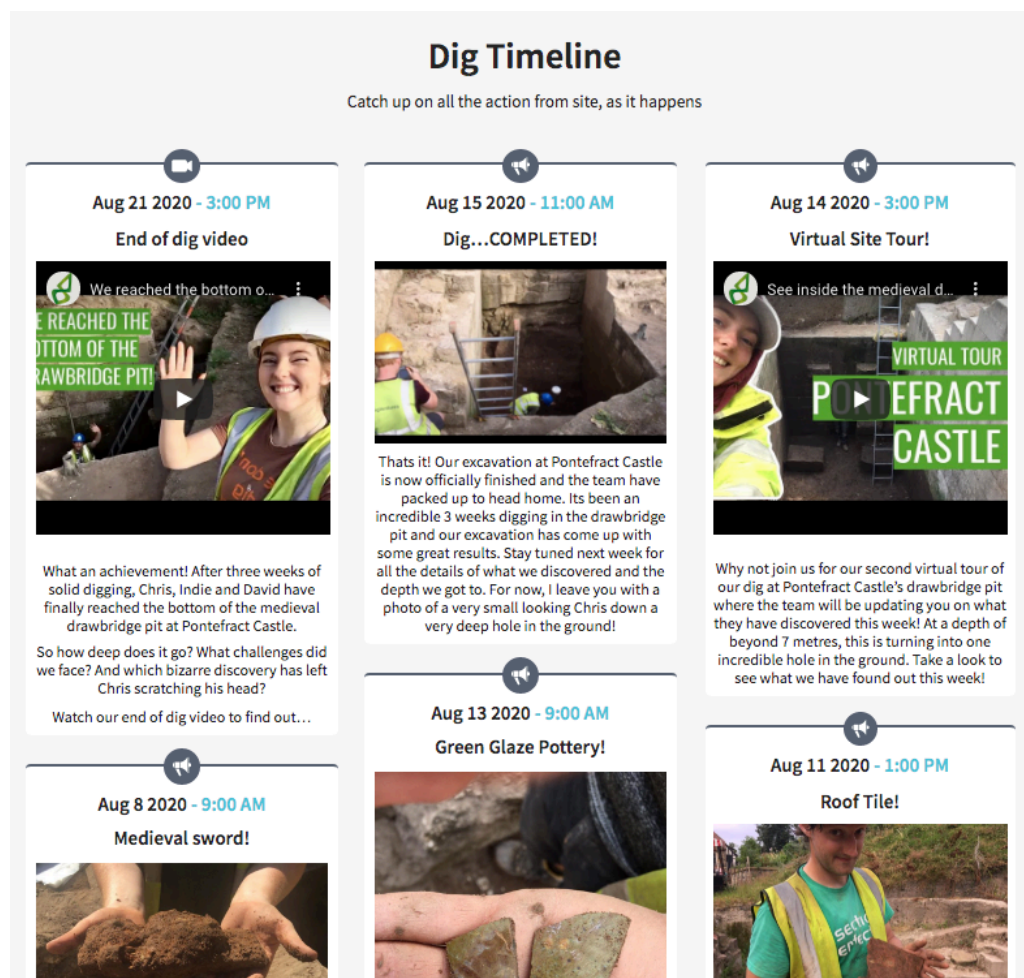


Figure 2. The dig timeline for the Pontefract Castle project. Source: DigVentures.

5 Conclusion

Overall the methods discussed in this essay successfully met the needs and aims of the Pontefract Gatehouse project. This is particularly true for the usage of photogrammetry, which very effectively fulfilled a wide range of aims, as well as the broad variety of public outreach methods employed. The usage of DDT was somewhat less well suited, as this created strong community engagement, but did not meet all the requirements of modern digital archaeology. On balance however, the successes far outweighed the limitations of the methods used.

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