Digital heritage as a route towards social engagement.

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Abstract

The project described in this contribution took an innovative approach towards community engagement in built heritage and archaeology, and incorporated the use of digital data capture and visualisation tools to foster communication between residents, experts and visitors. The research undertook to record the existing and remaining built fabric of a ruined stone church in rural Aberdeenshire, Scotland. The use of high definition laser scanning provides a rigorous and archivable record of the building and its environs at a moment in time. As a practical project is now enacted to provide physical conservation interventions, this can be updated and refreshed in time. The work is significant as it has provided an immediate vehicle to engage with local residents, and forms part of a prominent heritage-led tourist centre.

Keywords Scanning; Heritage; Outreach; Engagement

INTRODUCTION

Over the course of the past decade, the authors have been engaged with research which seeks to explore the ways in which digital tools can be used to foster engagement with the built heritage. Much of the literature within the field of digital documentation has concerned technical advances with regards to methods and approaches including the use of laser scanning and photogrammetry, including from drone footage. The emphasis within our own study was to apply some if these techniques, but aiming to use the data collected as a visual resource to engage the wider public.

The site itself is located in Aberdeenshire, Scotland, and contains a complex range and collection of built heritage, culturally important landscapes and a social and contextual diversity which is both highly distinctive and historically and culturally valuable.

The work described herein concerns a specific ruined church (located at Tullich, near Ballater), where the site contains a kirkyard, boundary wall, and recently extend new graveyard. The site also, until very recently, contained a number of carved 'pictish' stones, which are planned for reinstatement within a new bespoke display structure. The project contained a number of phases, included initial laser scanning of the site (with an emphasis on the building itself), the generation of representative images from the point cloud, the development of a mesh/surface model, and demonstration of the project results to various external audiences.

The historic environment faces many challenges, one of which is a poor understanding of the positive role it can play in the maintenance, development and regeneration of communities, their culture and their economy. Aberdeenshire Council is also responsible as the owner of numerous Scheduled Monuments and Listed Buildings, with the associated responsibilities for protection & management that this implies. Aberdeenshire Council regards the project as holding great potential to develop protocols, as well as actual data and models, which will have long term value and importance in terms of tourism, heritage interpretation, public engagement and condition monitoring.

METHODOLOGY

The work which was undertaken in relation to the collection of digital heritage data for the church itself required the research team to fully understand and evaluate the context within which the resultant data will be shown, and the likely uses to which would be put. For the purposes of this particular study, the team decided to use a high definition laser scanner (Leica P30), which insured that we were able to collect data that is a very high level of detail, and that we would be able to connect and subsequently analyse scan data with a high degree of precision. This last point is important with regards to project planning as it was going to be impossible to establish permanent markers our targets within the site itself (this meaning that cloud-to-cloud registration would be necessary). Although the building itself was not of a large physical size, the team collected data from 12 separate scanning positions, which were then registered/connected to collectively form an accurate, technically reliable and visually representative record of the building on the site. Once registration had taking place, it was then possible to convert the point cloud data for the building itself into a surface mesh, which would be suitable for incorporation within industry standard 3-D modelling packages. This process was undertaken using Autodesk ReCap Pro.

Figure 1: The existing site, located at Tullich near Ballater (Scotland)

Figure 2: The existing site, located at Tullich near Ballater (Scotland)

Figure 3: High definition HD scanner (Leica C10)

Figure 4: Still image from resulting point cloud data model

Figure 5: Still image from resulting point cloud data model

Also within the study, the project partners have engaged with a number of key local stakeholder groups, including local education (schools) and heritage organisations. It was notable that there seemed to be significant stakeholder interest in both the technology, and in the stories and intangible heritage which may be associated with the site. this experience provides an extremely useful foundation for the work to be undertaken in future studies, where the practical and technical protocols which were established through that work will be extended to embrace the collection of intangible and social heritage data.

RESULTS

This aspect of the study, concerning external engagement and consultation with potential end users of the data has certainly been the most interesting and research a valuable part of the study. The particular groups which have been consulted, and where discussions about the technology have taken place, included a local heritage and conservation interest group, and groups of primary school (9 to 10 years old) pupils at a local school.

With the former group, it was interesting to note that much of the discussion mirrored that which we had encountered in previous studies (Tait *et al.* 2016), in that the digital tools in themselves appeared to attract just as much attention as the site which was being studied. As the work now progresses, and the research team look towards studying, recording and presentation of other sites in the local area, receiving input from such groups with regards to sites which may hold particular social or cultural significance will be vital.

With the latter group, the research team were struck by the extent to which relatively young children were already quite familiar with 3-D digital modelling packages. Although the children themselves would probably not describe their hobbies using such terms, most of the children were very familiar with packages such as Minecraft, and the groups as a whole seemed particularly interested in the scanning technology which was taken to the demonstrations. During the first visit, the team demonstrated a larger scale scanner (Leica P30), but choose to utilise the smaller scale and far more portable be BLK360 on subsequent visits. In line with statements from the manufacturers Leica/ Autodesk, the team has been struck by the manner in which the technology and access to both hardware and software has been significantly democratised in recent years. It was, therefore, important to begin considering how what was once prohibitively expensive technology is likely to become pervasive in the coming years.

DISCUSSION

One final, yet potentially major outcome, from the research has been that of external visibility of the work, and the impact in terms of understanding and engagement with the built heritage. The town of Ballater, which is located nearby the study site, is historically significant in Scotland and the UK as a whole, through its connections with the British royal family. One of the ramifications of a connection, historically, was that a railway line was constructed reaching from Ballater to the larger city of Aberdeen during Victorian times, partially to provide access to royal residences in the area. Although the railway line itself was decommissioned in the late 1960s, the railway station building within Ballater has recently been refurbished to provide a tourist information centre and cafe. Outcomes from the laser scanning work have been displayed within the new building, alongside examples of pictish stones. It was also notable, perhaps, that external press and community interest in the study as a whole has tended to emphasise the relationship between the digital scanning, visual representation of the site and actual physical works which are now ongoing (still masonry appears on consolidation of the structure).

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