Digital Approaches to the Archaeology of the *Portus Romae*

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The Portus Project (www.portusproject.org) is a collaborative research initiative involving the University of Southampton, the British School at Rome and the *Parco Archeologico di Ostia Antica*, with funding from the Arts and Humanities Research Council of the UK. Since 2007, it has been employing an integrated archaeological methodology to investigate the development of the *Portus Romae* and its relationship to Ostia, Rome and the broader Mediterranean.

The research built upon the results of the 1998–2005 magnetometry survey of the whole of the port and its immediate surroundings, and focused upon the central isthmus of the port between the Claudian and Trajanic basins and, in particular the Palazzo Imperiale, a building that has been identified as the Imperial navalia and the Grandi Magazzini di Settimio Severo. Both the large scale and richness of the archaeological site meant that a flexible digital strategy was needed for this research from the start. As such, the recording of the topographical and geophysical surveys, standing buildings, the excavations and the recording of the finds at the site can be said to have been born digital, but at the same time to have also incorporated more traditional approaches.

The paper explored some of the components of the strategy employed by the project. In the first instance, it stressed the importance of earlier cartographic work at Portus, not least by scholars such as Gismondi and Lugli, and to some extent Lanciani. As the site was arguably better preserved in their day, it was felt that these may have contained important topographic details that needed to be taken into account by our work. Particularly important was a cartographic survey of the Palazzo Imperiale undertaken by the *Soprintendenza per i Beni Archeologici di Ostia* in the 1980s, whose results were incorporated into our own plans of the building. All of this work was complemented by our own topographic survey, with particular emphasis upon producing a close-contour of the modern ground surface and standing structures. In order to further develop our understanding of the topography of the buildings prior to excavation, Ground Penetrating Radar and Electrical Resistance Tomography surveys were undertaken between 2007 and 2009, the results of which were combined with our own topographic survey to provide for us as clear an understanding of the sub-surface prior to excavation as possible. The work was further complemented by some limited aerial photography, which included infra-red coverage.

The development of this overall digital coverage for the central isthmus provided the framework for the excavations undertaken between 2007 and 2013. These were articulated by means of a computerised excavation database record, the Portus ARK, developed in conjunction with LP Archaeology, and which was stored on the Southampton University server. Although initial recording of individual contexts was undertaken

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manually on paper context sheets, the information was subsequently entered onto the database, together with sketch plans, photographs, preliminary matrices of structural relationships and details of finds. Individual contexts, walls, floors and other features encountered during excavation were planned both by use of a total station and, where possible, a Differential Global Positioning System (DGPS). This produced a huge amount of digital data which was subsequently re-constituted into computer-based digital plans of all three buildings for the seven periods of occupation back in the UK.

These data, together with the 2007 and 2009 geophysical data provided the basis for the creation of computer graphic models of all the buildings for each of the periods. The work for these began on site, with close two-way collaboration between the archaeologists and the computer-graphic modeller, and continued in the laboratory. The models underwent at least three different iterations, with valuable input being provided specialists in Roman architecture working with the project, who were able to add an extra interpretative dimension to the creation of the models. Creation of these models not only played an important role in the development of interpretations of buildings on the site, but has also greatly facilitated outreach, communicating the character of this key part of Portus to the general public and underwriting other forms of awareness-building and impact by means of Massive Open Online Courses (MOOCs). Parallel to all of this work was the digital recording of the finds, which included traditional photography, polynomial texture mapping of exceptional pieces, such as column capitals, inscriptions and fragments of sculpture and occasional brick stamps.

Data relating to all of this was stored on the project server and linked to the standard records of all classes of finds which were linked to the ARK-based context records.

The paper was at pains to point out that in order to reach this point, the project has had to process huge amounts of data, which made it absolutely vital for projects on this scale to have clear priorities for which data were to be stored. It then outlined a brief statement on the final destinations of the digital data produced by the project, which will be deposited at the *Parco Archeologico di Ostia Antica*, the Archaeology Data Service at York and the University of Southampton. It concluded with a brief statement on the ongoing publication process. This sees a traditional paper publication of the results of the excavations in two major volumes, underpinned by an online digital resource that will map on to the digital archives mentioned above.

Notes

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