Ordnance Survey and the Depiction of Antiquities on Maps: Past, Present and Future. The Current and Future Role of the Royal Commissions as Suppliers of Heritage Data to the Ordnance Survey

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Abstract

The background and history of the mapping of archaeological sites is described, followed by an account of the method used to transfer information on 'antiquities' to the Ordnance Survey today. The impact of digitisation on the appearance of archaeology on OS maps has been of concern but the use of digital technology by the Royal Commissions, in particular GIS, opens up many opportunities for future mapping of the archaeological landscape.

1 Background

From the earliest stages of the development of modern mapping, 'antiquities' have been depicted as integral and important visual elements of the landscape. Antiquities appear on maps as early as the 17th century but it was only when, in the mid-18th century the systematic mapping of Scotland was undertaken for military purposes in response to the 1745 rebellion, that surveyed mapping of archaeological sites began. The man responsible was General William Roy who was a surveyor, engineer and archaeologist and sometimes called the 'father' of the Ordnance Survey (OS). He set the standard for the detailed and accurate mapping which has been the trademark of the Ordnance Survey for over 200 years and it was his example that led to the inclusion of archaeological monuments in the specifications for the National Survey started in 1791.
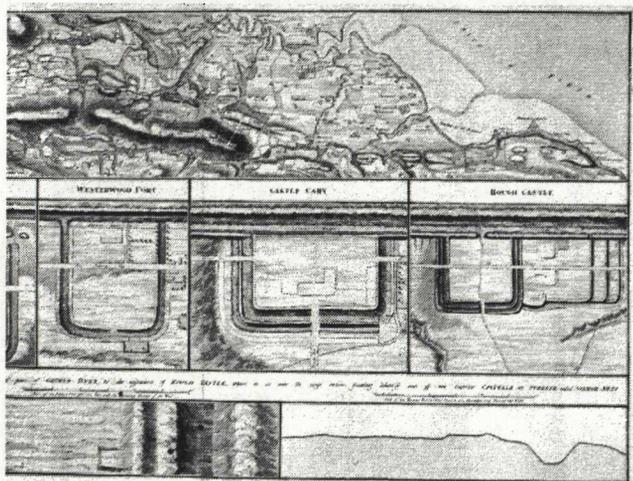

Figure 1. The Antonine Wall showing the section around Falkirk and plans of the forts at Westerwood, Castlecary and Rough Castle. Reproduced from the *Military Antiquities of the Romans in Britain* W Roy 1793 with the kind permission of the Society of Antiquaries of London

The Societies of Antiquaries also played a part. The Society of Antiquaries of Scotland in 1855 wrote to Government, 'The Society, having had its attention recently directed to the fact that many of the primitive monuments of our national history, partly from the progress of agricultural improvements, and in part from neglect and spoilation, were in the course of being removed, was of the opinion, that it would be of great consequence to have all such historical monuments laid down on the Ordnance Survey of Scotland in the course of preparation'. Reply from the War Department: 'I have much pleasure in complying with the society's wishes in this matter, so far as may be practicable, and that instructions will immediately be given to the Engineer department; but I must rely upon the Society of Antiquaries of Scotland endeavouring to assist the surveyors with local information.'(PSAS 2 1854-7,129).

In 1882, the Ancient Monuments Protection Act was passed, and it was not long before it was realised that more information was required about the monuments to be protected, including their location. In 1896, David Murray FSA. called for an archaeological survey of the United Kingdom to be carried out at Government expense. He considered that this would best be achieved by using the OS, but now giving the engineers more detailed specifications rather than relying upon the somewhat variable information previously gained from local landowners.

The Commissions were established in 1908 to make an inventory of monuments and indicate those most worthy of preservation, and from that time, the OS and the Commissions recorded archaeological information in parallel, maintaining discrete roles until 1983.

In 1920, O G S Crawford was appointed as the first OS Archaeology Officer. 'The primary purpose of my appointment' recorded Crawford,' was to reduce to order the chaotic mixture of antiquarianism and speculation that disfigured the Ordnance maps, and to bring it into conformity with existing knowledge.' Crawford undertook field investigation throughout Britain and made his notes in pencil directly on the 6-inch (County Series) mapsheets and was responsible for starting the systematic process of archaeological revision of OS maps which continues today.

In 1947, these maps were used by his successor, C W Phillips, in the expanding Archaeology Branch, to introduce a system of Record Sheet numbers in which each site was given a unique number on that particular mapsheet marked either at its exact location or listed in the margin if the location was uncertain.

Phillips also introduced the card index on which information about each site was recorded. These cards were designed to give information to assist with the publication of the site on the map and to list the authorities for that information. The Division assembled an unsurpassed card index and set of annotated 1:10,000 maps relating to monuments covering the whole of Great Britain and were responsible for the validation and publication of all the 'antiquities' on the OS map series. This index reached its zenith following the OS resurvey of Britain completed in the late 1970's, as every site had been assessed during that work for depiction (or not) on the map. It was extensively copied in the 1970's to form the nucleus of many local Sites and Monuments Records set up in the newly reorganised local authorities and it forms the basis of the National Monuments Records databases in England, Wales and Scotland.

This background and history serves to emphasise how the archaeological community has always been responsible for encouraging the depiction of antiquities on maps and for monitoring the standard and accuracy with which they are portrayed. This has not been without its struggles (Crawford 1955; Phillips 1980; Seymour 1980).

2 Serpell review

In 1979, a major reassessment of the role and procedures of the OS was conducted by the OS review committee under the chairmanship of Lord Serpell in 1979. It was recommended that the responsibilities for recording and surveying of antiquities should be transferred to the three Royal Commissions in England, Scotland and Wales, while responsibility for publishing remained with OS. This was put into effect in 1983 and the Royal Commissions have been carrying out their role in supplying information to OS for mapping purposes ever since, while encouraging the OS to continue their role as publishers of this information.

The Royal Commissions regard the supply of information to OS as essential to ensure that information published on maps does not deteriorate in quality and relevance to map-users. This responsibility is now enshrined by Government in the Royal Warrants that govern the activities of the Commissions.

In 1992, the OS requested a review of the relationship between the OS and the Commissions, the result of which was the establishment of a Service Level Agreement recognising the continuation of a special relationship between OS and the three Royal Commissions for the publication of Antiquities on OS regular map series. The Commissions still have a special and specific role in supplying information to OS for publication which is unlike that of other organisations with whom OS has regular contact.

3 Method

Information about sites of archaeological or historical significance is transferred to the OS in a rigorously standardised

format, known as an 'Antiquity Model'. An 'Antiquity Model' may take the form of a generalised plan designed to show the archaeological site in a style suitable for publication on a map, or an instruction to revise the descriptions of published monuments or to delete those which have been destroyed or which no longer fall within the publication policy of OS, such as find spots.
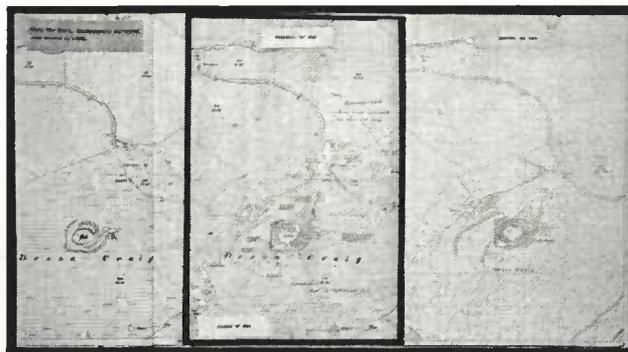
Figure 2. The three panels (originally prepared by the OS Scottish Archaeology Branch) show the revision of the depiction of the fort at Dreva Craig in Peeblesshire from the rather crude plan of 1908, through the meticulously penned antiquity model, to the 1965 published map which also shows the surrounding settlement first recorded in 1958 by the Royal Commission.

The necessity for the Commissions to map archaeology at the 'basic scale' (i.e., the same scales of survey as the OS), combined with technological advances in surveying techniques led to a reappraisal of the recording of archaeological landscapes and has had a major impact on the way the Commissions now carry out field survey.

At RCAHMS, EDM equipment is used in the field for data capture and, most recently 'Penmap' has been adopted, a system which allows digital maps or other relevant data to be taken out and updated on site. Antiquity Models are now only one of a series of plans derived from the detailed survey data using AUTOCAD. Antiquity Models are produced in the same style as the OS Superplan and are therefore presented to the OS in the way the Commissions expect to see it depicted on the plotted map. Means of transferring this data directly to OS in digital form are being actively pursued. After the information has been transferred to the digital archive an edit plot is sent by OS to the Commissions to check that the depiction has been correctly incorporated.

Field survey for OS is routinely undertaken in areas which are part of the Commissions survey programme, although specific areas are also surveyed on request by OS on occasion. In Scotland, antiquities are illustrated on some 16,000 of the kilometre squares, of which about 3% are updated annually. About 40% of the sites within the archaeology database of NMRS are depicted on OS standard series maps and must conform to OS criteria for depiction which have been agreed in consultation with the Commissions. The sites must be of archaeological significance as defined by the Commissions, so that this can include sites of importance to our industrial heritage or rural settlement of the eighteenth and nineteenth centuries as well as prehistoric, Roman and medieval monuments. All scheduled sites and all grade 1 and selected

grade 2 listed buildings are included. Otherwise the site has to be a topographic feature of at least 0.3m high. The Commissions also play a role in checking over information relating to antiquities on maps at smaller scales and have continued to publish thematic maps with OS including *Roman Britain* and *Ancient Britain*.
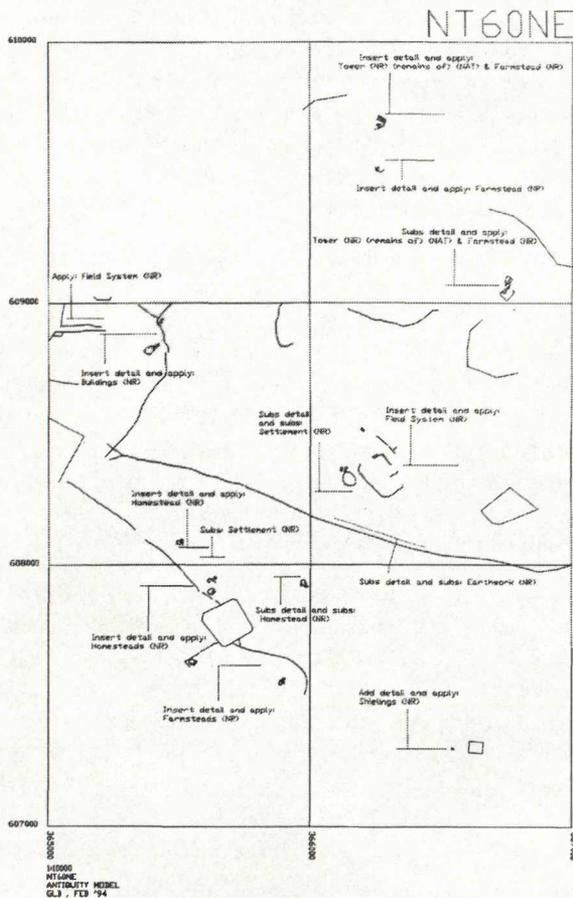

Figure 3. Digitised Antiquity Model

Although originally surveyed by the OS archaeology branch or the Commission staff, the vast majority of the depictions of antiquities in the OS digital data archive are the result of desk-based digitising from the original master survey documents by OS or their contractors. Some of the digitised depiction is quite difficult to interpret for those familiar with hachures, ornament and line detail, all of which have been heavily used on conventional maps to illustrate archaeological remains and manmade features in the landscape. Neither is the digital data in Landline particularly well conceived in the rural areas as the driving force for completion of the programme came from a powerful lobby most interested in the urban areas. The digitised data, however, has the potential to offer major advantages in terms of speed and efficiency, flexibility and analysis as well as transfer to other media, copying, converting and selecting and enhancing specific features.

RCAHMS now uses digital data as an integral part of survey, analysis, publication and NMRS record work. Data from survey is brought directly in digital form from the field and translated into AUTOCAD for manipulation into Antiquity Models or detailed survey drawings. Data is digitised from aerial transcriptions or from other sources such as first edition OS

maps. All this digitised data is transferred into the GIS where it can be combined with other data such as land use, OS height data and OS mapping, as well as data held in the NMRS Oracle database.

There can be no doubt, from the experience of all the heritage agencies in the UK, that the illustration of monuments on the OS maps has been and remains a very important influence working towards their public understanding, enjoyment and preservation. Under the Agriculture Acts of 1986 and the Ancient Monuments Acts of 1979, it is incumbent on the landowner to inform himself of the presence of a monument on his land and OS maps are one of the primary sources of information in this regard. Depiction on the OS map also provides a significant stimulus to the consideration of archaeological and historical sites at an early stage in the planning process and the accurate location and extent of sites is important in the determination and indication of constraint areas.

The landscape is a cumulative expression of many influences, human and natural, that have taken place, and maps are a powerful tool in its analysis and explanation. The depiction of archaeological and historical sites adds a chronological dimension essential to the use of maps in universities and schools, especially with the inclusion of 'environmental studies ' in the National Curriculum. Archaeological monuments are also of interest to general users - tourists, ramblers or local study groups for whom the OS maps can be the key to a life-long love of countryside and townscape.

It is in the OS interest to continue to ensure that topographic detail, in which extant monuments make up a significant component, is both accurately portrayed and correctly interpreted otherwise the credibility of other data on the map is brought into question. Also, it is in the national interest that this information is disseminated in a number of ways, but by far the most economical, wide-reaching and publicly available means is through OS mapping. The Commissions intend to continue to work closely with OS to improve the depiction of monuments on the OS digital data and their annotation as an essential part of the topography and landscape of Britain. The opportunity to do this may occur during the restructuring of OS data though the National Topographic Database (NTD) initiative. The National Topographic Database will address the issues of structured data, increasing the amount of layering and themes in the data, and one of those data sets is related to the 'heritage'. At present, the labels on the map have no intelligent relationship with the depiction on the digital map and there is no separate coding for the antiquities. The archaeological sites on a map cannot therefore be selected as a dataset in the same way that all the roads or all the rivers can be selected. This is a drawback which inhibits the use of this data in GIS systems used by those needing heritage data e.g., for heritage management, planning or those concerned with landuse, and it also limits the OS scope for adding value in the new NTD.

Other OS initiatives such as the National Geospatial Data Framework which is examining ways of relating and integrating geospatial data held by different bodies is also a potential mechanism for the future dissemination of antiquity information.

While there continues to be a major role for the depiction of antiquities on OS maps, there are a number of opportunities opening up which provide a more flexible approach for the dissemination of geospatial historical and archaeological information to the archaeological community, researchers and other users. The exciting use of technology such as GIS is that the map becomes an element in a whole spectrum of data and can provide a signpost to data held elsewhere. The Commissions' role will be to maintain the national records in the NMRS through detailed field and aerial survey and the collection of archive information and through the exchange or harmonisation of information with local records.

The archaeological database becomes a satellite of the GIS along with all the other accessible datasets, both visual and textual, and puts the map back into the centre as the key to distributed data. For NMRS this has cut down considerably on accessioning and cataloguing time and revolutionised the presentation of the information.

Data preparation time can be saved in pre- and post-survey as data is available on line in a format which is ready for manipulation and analysis. Predictive modelling can inform field strategies and draw attention to locations where field visits might be productive.

Any data, providing that it has spatial attributes such as National Grid Reference, Latitude and Longitude or Postal address, can be displayed. Boundaries and place-names, including historical and alternative names, as well as imprecise locational information (such as North of) can be managed by the GIS and analysed through it. It has proved particularly valuable for managing boundary changes in relationship to other data, especially that held in the database.

Distribution maps and presentational data can be easily produced. Some of the data which is now being held in the GIS, was previously transferred to the NMRS to be catalogued and made available on paper, e.g.. air photograph transcriptions, field surveys. This information is now transferred directly to the GIS where it is maintained and is available not only for display, but also for interrogation and for analysis against other data layers.

External data can be imported where appropriate and a project to test the import of contractor's data from an archaeological coastal survey will soon be undertaken by RCAHMS. This not only provides information in relation to other data but has the potential to address the serious problem of preserving the archive of work carried out using digital technology and to test the standards which will need to be put in place to ensure that this information is available for the future.

Procedures of this kind have enabled the integration of data relating to the historic landscape which was becoming increasingly difficult to do using conventional methods and which is now so crucial to heritage management and archaeological research.

In Scotland, as a joint development with Historic Scotland the GIS is now being made available on line to HS staff to access all the data available in RCAHMS and to provide interfaces which will allow the use of GIS in the scheduling and listing programmes. Maps can be created to HS specifications and survey, aerial transcriptions or information derived from the archive catalogue will be available on-line to inform decision making.

Using GIS as the focus, RCAHMS will be developing the concept of 'heritage layers' by undertaking a programme to transfer as much depicted data as possible into digital form. In parallel to this, the attribute data relating to this digital data is being further developed so that the depictions themselves derived from transcriptions or from field surveys or other data capture projects can be interrogated, as well as linking to the main NMRS and Historic Scotland databases which themselves will be linked to scanned images.

The power of this data integration cannot be underestimated, but is important to make this available not only to staff but more publicly. Firstly, the GIS itself is being developed to produce outputs tailored to meet users requirements. Although the presentation still requires some development, it is already possible to provide data on all the sites within 50km of the coastline, or all sites on wetland areas. Details relating to other government department initiatives such as Environmentally Sensitive Areas, and the Countryside Premium Scheme are already being supplied on demand.

Secondly, RCAHMS is also exploring the provision of access to the NMRS database through the WWW in a project which is jointly sponsored by RCAHMS, ORACLE, ADS (Archaeology Data Service) and SCRAN (Scottish Cultural Resources Access Network) and while this will not include access to maps in the first instance, it is only a matter of time.
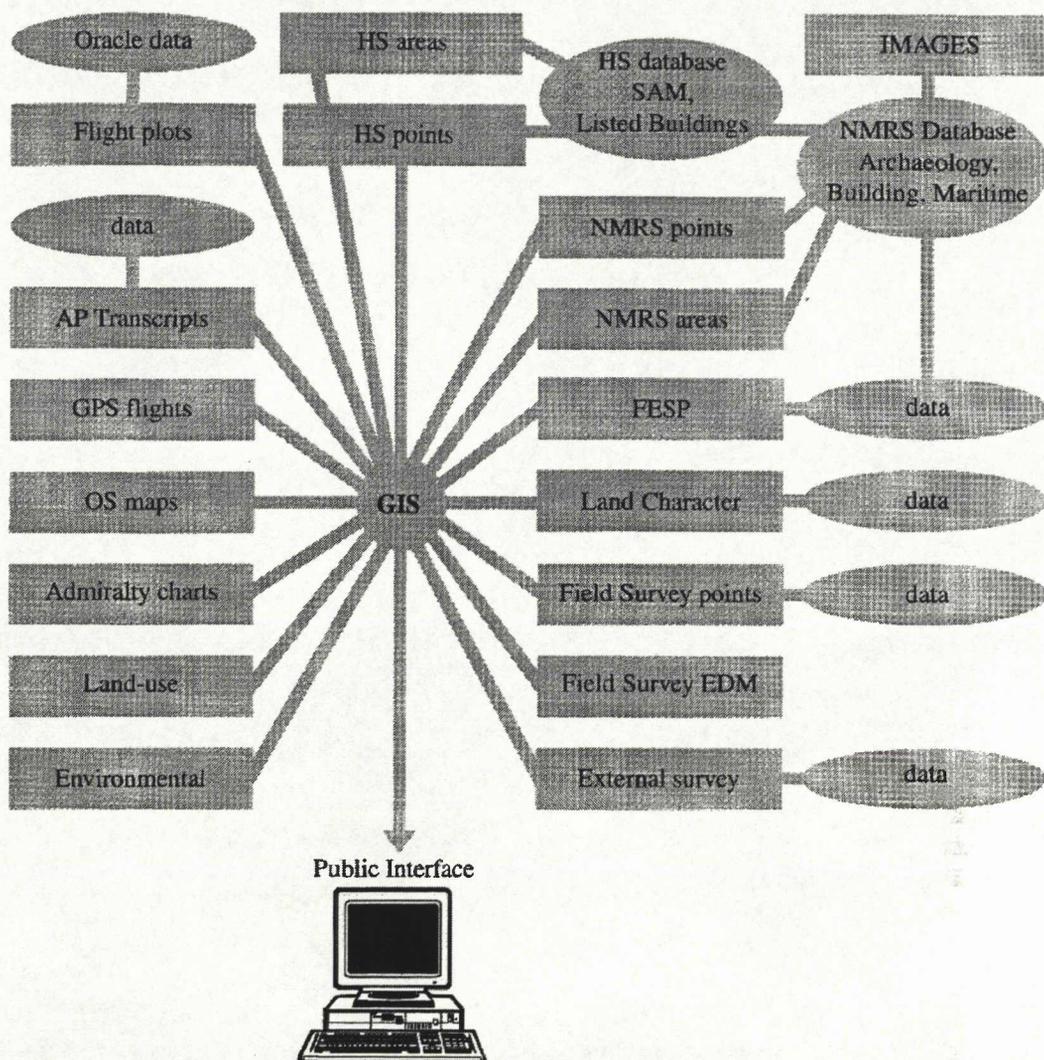
Figure 4. Diagram of relationships between data sets and RCAHMS GIS

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