

The Computerisation of the National Archaeological Record

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Résumé. L'archéologie est l'étude des vestiges matériels de l'espèce humaine et le *National Archaeological Record* en Angleterre s'occupe d'inventorier les sites de toutes les périodes, depuis la Préhistoire jusqu'aux bâtiments de la seconde guerre mondiale, soit à l'intérieur des terres, soit dans un rayon de 12 miles dans les eaux territoriales. Le présent article décrit le développement et l'informatisation du *National Archaeological Record* et son évolution actuelle en une base de données unifiée comprenant également d'autres archives informatisées et répertoires de la *Royal Commission on the Historical Monuments of England* (RCHME). Cette base de données réunira les informations sur les monuments archéologiques et architecturaux, des photographies aériennes historiques et les cartes en un relevé de l'environnement historique de l'Angleterre.

Keywords: historic environment, archaeology, maritime records, computerisation, thesaurus, data standards, *Informix*, GIS, *Oracle*.

Mots-clés : environnement historique, archéologie, archives maritimes, informatisation, thésaurus, standards de données, *Informix*, GIS, *Oracle*.

1. Introduction

The Royal Commission was founded in 1908 "to make an inventory of the historical monuments and constructions connected with, or illustrative of, the way of life of the people [...] from the earliest times to the year 1700 [...]". For many years the Commission attempted to complete and publish this inventory on a regional basis but progress was inevitably slow given limited resources and the rapid evolution and revision of standards of survey and academic knowledge.

In 1963 a broader remit was adopted which allowed RCHME to include in its inventory monuments upto 1714 and later monuments at its discretion. At the same time the structure of the Royal Commission was radically altered with the creation of a new section, the National Monuments Record. This Record consisted of three divisions, the Archaeological Records Section to

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curate the archaeological surveys and records generated by RCHME together with other archaeological archives appropriate to the national record; the Air Photography Unit for archaeological photography and interpretation; and the National Buildings Record.

In 1983 the archaeological responsibilities of the Ordnance Survey (OS), the government map making agency were transferred to RCHME, together with its national card index of archaeological sites. In the following year RCHME also assumed responsibility for the vertical air photograph library of the Department of the Environment, a major resource for archaeologists and a wide range of professional bodies.

Although some historic wrecks and other archaeological sites in the intertidal zone were included in the O.S. Archaeology Division card index, there was no systematic record of maritime sites, an increasingly threatened resource. In September 1990 the British government therefore authorised RCHME to compile a central record of historic wrecks within the 12 mile limits of territorial waters as part of the National Archaeological Record.

The increasing degree of threat to archaeological sites of the recent centuries including those relating to the Second World War, led the RCHME in 1992 to expand the remit for recording in the National Archaeological Record to include all archaeological sites upto 1945 A.D.

2. The Computerisation of the National Archaeological Record

Computerisation of the National Archaeological Record reflects the organisational development of RCHME and an early focus on data capture to improve access to and interpretation of a large and rapidly increasing number of records.

With the transfer of the O.S. Archaeology Division record in 1983 a full study was commissioned for its computerisation as the core of a National Archaeological Record. Computerisation was commenced in 1985 configured around a *Vax 11/750* and the relational database *Oracle*. Data storage was designed around three principal datastores—records of archaeological sites, bibliographic sources, and references within these sources to archaeological sites.

The operations and use of the database were organised functionally, namely site recording, bibliographic reference recording and online access for both internal and external users.

By 1989 the record held details of c. 150,000 sites and the data and indexes occupied about 750 Mb of disk space. The largest table held lines of descriptive text, about 1.8 million records. Online access to the database for the London

office of the NAR and regional offices of RCHME was provided through a menu driven system or through single line commands utilising the WHERE clause of the SQL query language.

A number of fields in the database were mandatory including the national grid reference, administrative location, the date and type of site and the source of information for the record.

Print-out formats included short summary records, detailed records, records of grid co-ordinates for mapping and a standard data exchange format used in England for data exchange between archaeological organisations.

A mapping system was developed by Lancaster University for the NAR, linked to the database at Southampton, providing topographic detail digitised at 1:300,000 which could be combined with archaeological detail from the NAR. The system ran in a CAD environment and outputs included hard copy and files in DXF format.

In London computerisation of records and indexes maintained by the Archaeological Records section began in 1983 configured around a Plessey 68,000 micro computer running under the *Xenix* operating system. The *Informix* relational database package was used for information storage and retrieval. Databases were developed for the cataloguing of photographs, microfilmed excavation archives, and specialist archives held such as those of Medieval Village Research Group. Another development on the system was the computerisation of the Excavations Index — a record of all archaeological excavations in England. This record identified individual acts of excavation on sites, the location and categories of surviving records, the location of finds and details of publication. This provided a basis for the assessment of surviving archaeological archive, priorities for security copying and detailed recording of archaeological events to complement the monument record. By 1989 details of some 25,000 excavations had been recorded on this database together with the location of 14,000 excavation archives. Other databases held records of some 38,000 photographs, 1,600 microfilm archives, and 3,000 Medieval Village Research Group records. Development of these databases gave the staff considerable expertise in defining standards for levels of computerised accessioning, indexing and cataloguing of archives as well as the recording of archaeological events.

Information from these databases could be output in a number of ways: First via the *Perform* utility supplied as part of the *Informix* package. This allowed the use of the data entry screen for retrieval purposes. Simple ad hoc enquiries e.g. all Roman sites excavated in Somerset could be retrieved by filling in the appropriate values in the relevant fields. More complex enquiries to search for a range of values within a field were retrieved using the *Informer* query language.

An example of the type of enquiry which was dealt with in this way would be the names of all excavators of sites in the counties (regions) of Hampshire or Wiltshire between 1900 and 1950. For generating printed catalogues and indexes the ACE reporting facility was used. The syntax of ACE is similar to INFORMER but it has additional features which allow you to format the output for the printed page.

A public enquiry system was set up linking a number of routines using the above facilities into menu driven system to cater for both on-line searching and the production of print-outs in a variety of formats. At their most complex these print-outs provided "publication" outputs for any chosen area linking into a single report an introductory text, contents list, catalogues ordered by NAR number and indexes to the catalogue *e.g.* by date of excavation or name of excavator.

3. The Development of Data Standards

A key part of the computerisation of the National Archaeological Record has been the development of data standards to maximise retrieval from the databases.

The majority of archaeological enquiries, which are not formulated simply on the basis of location, focus on the fields indexing the type of site and its date. For most archaeological sites, information is incomplete and its interpretation will have varying levels of certainty, definition and complexity. Problems are particularly acute in the definition of archaeological site types for which several thousand terms are in common use and where standardisation and cross-referencing is essential to maximise retrieval. The development of a thesaurus of archaeological sites types has therefore been a priority in the computerisation of the Record. A first edition was published in 1986 using the familiar broad term/narrow term/related term model. Subsequently this was substantially revised and enlarged in co-operation with other national organisations in England and adopted a polyhierarchical structure.

Similar developments in creating a thesaurus for architectural terms were central to the computerisation of the National Buildings Record.

More recently the Commission has been working with the Association of County Archaeological Officers and other national bodies to produce a data standard for "core" information fields for archaeological Sites and Monuments Records at a national, regional and local level. It is hoped that this standard will aid the entry, retrieval and exchange of archaeological data and further encourage the growing level of co-operation and integration between different databases in England.

4. The Development of the National Monuments Record Database

Like many other organisations who have had a rapid expansion of responsibilities and have adopted computerisation at an early stage, the Commission has moved forward throughout the 1980's with initiatives in various areas concentrating on data capture. A number of separate and not always compatible databases had arisen and the development of an organisation wide informations system strategy was seen as a key requirement for the coming decade.

In 1990 the Commission initiated a Information Systems Strategy Study which made the following key recommendations:

- 1) A fully integrated National Monuments Record (NMR) system should be developed to replace all current disparate applications.
- 2) The NMR system should replace all current National Archaeological Record, National Building Record and National Library of Air Photographs systems by a process of phased migration.
- 3) A communications network should be created between all RCHME offices to allow access to the central NMR system.
- 4) The NMR system should consist of the *Oracle* relational database running on a single centrally accessed *Unix* database server machine.
- 5) Pursuit of technologies such as GIS (Geographical Information Systems) and imaging systems should be delayed until the core text-based systems had been amalgamated into the central NMR database.
- 6) An evaluation of RCHME's requirement for geographical and spatial information systems should be undertaken following implementation of the NMR system and its recommendations pursued on the basis of a pilot project.

The recommendations of the study were accepted by RCHME and in 1991 consultants began the analysis of user requirements for the NMR system. In November 1991 this analysis of the requirement was signed off by RCHME and at the beginning of 1992 work began on building the new system. Now at the beginning of 1993 the system has gone live for the recording of archaeological and architectural monuments, a communications network between all RCHME offices is in place, and archives and "activities" databases such as the Excavation Index or the NAR photographic catalogue are being prepared for phased migration into the new system.

The new NMR is built around four key databanks:

- Monument Recording,
- Activities/ Event Recording,
- Archive and Bibliographic Recording,
- Roles.

