

Questions Raised by Electronic Publication in Archaeology

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Abstract

Electronic publication has become an accepted part of archaeology. It is seen as relatively cheap and easy to produce, giving a rapid result, as well as creating a widely accessible resource, but is it being used to its full potential?

This paper will address the issues which have been created by electronic publication in archaeology, how technological capabilities rival multimedia possibilities, and how speed and ease of publication have a bearing on the quality of presentation. Is it good enough to use the Internet for dissemination alone, or should we be focussing more upon the possibilities available through this alternative medium?

Keywords: electronic publication, Internet, non-linearity, database, images

1. Introduction

Electronic publication and the use of hypertext have been the subject of CAA papers for some years as the medium has developed (e.g. Ryan 1995). The purpose of this particular paper is to discuss the use of electronic publication in archaeology at present. In order to do this it will focus upon the transformation of a hard copy excavation report into an online hypertext document. It raises the question of whether this type of online report can be structured in such a way as to allow the reader to control and reinterpret the data presented. It covers the ability to include additional archive material from excavations, such as an online finds database, as well as clickable maps, plans and additional images. It attempts to compare the time taken to produce an online report in comparison to a traditional one and assess the longterm viability of an electronic report.

The internet strand of electronic publication has become more accepted with the appearance of journals such as *Internet Archaeology*, a peer reviewed electronic journal for archaeology which was first published in 1996 (Heyworth et al. 1996). There are now also web-sites offering information on on-going excavations (Hodder 1999), as well as guides for the public on popular tourist attractions. It seems, therefore, only a small step to start publishing excavation reports on the internet. As has been done on a few occasions so far both in *Internet Archaeology* (Wickham-Jones 1998) and on other excavation specific web-sites.

Using the Internet as a medium for publication provides new possibilities for the presentation of information. Conceptually this is not only in the way that the content of a document can differ i.e. more images, dynamic web pages etc. but it also enables the text, which can be exactly the same between a document in print and a document online, to be read in a different way. This is the difference between a linear document that is presented with a very rigid structure and a non-linear document that is basically a collection of pages that can be tied together in any number of ways.

It would appear however that the medium is not being used to its full. The amount of information presented on the Internet as if it was still a paper publication is huge. The two most usual approaches are to put the text into one large HTML page, with a

linked contents list at the beginning, or not to present the document as HTML at all, but as a PDF file.

The motivation behind these two methods of electronic publication appears to be the desire to retain a traditional look to the document and also to allow it to be printed easily. It is well known that many people prefer to read text on paper as opposed to on screen, and that true hypertext documents can be seen as impractical as a publication medium because of the number of HTML pages there are to print out.

2. Aims of case study

The main aims of this case study were to create an online version of an excavation report, to expand on the information usually available in these reports and to change the format of that information. This was done in an attempt to demonstrate that the Internet is a useful medium for the publication of archaeological research, and that it is able to make information available to more people in a more user-friendly fashion.

The excavation report of the Anglian and Anglo-Scandinavian settlement at Cottam B, East Yorkshire was selected for this exercise. The excavation was carried out under the direction of Dr Julian Richards with a team from the University of York, UK. The online version of the report contains aspects that it was not possible to include in the hard copy version, i.e. a finds database, colour images, clickable maps and plans and post-excavation specialist reports in their entirety.

The excavation report was not originally intended for electronic publication and the traditional text report is published in the *Archaeological Journal* (in press). The traditional report follows a very rigid linear structure: the presentation of all the supporting data, followed by a discussion of the evidence and ending with a conclusion gathered from the facts. An online, hypertext version of such a report would not take full advantage of the medium if it did not change this structure. Hypertext allows links to be inserted in the text or within images, which if followed will expand upon the point of that text, or image. Another aim was, consequently, to reformat the report to suit the hypertext medium and to allow the reader to choose his or her own, possibly non-linear, path through the text.

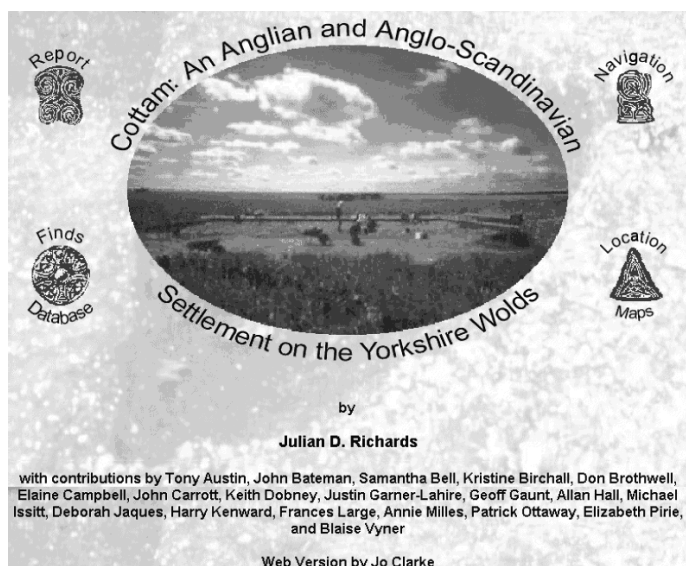


Figure 1: The title page.

These aims are all to do with the presentation of the excavation report. There are, however, other aspects to this exercise: how difficult is it to create an online excavation report? How long does it take to transform information intended for archive into a form ready for presentation? Once this has been achieved, how many people will actually use this form of the report, and how does one prevent it from becoming outdated and unusable?

3. Description of the Online Excavation Report

3.1. Structure of report

The first thing the reader sees when accessing the report is the title page (figure 1). It is made to be eye-catching, the electronic equivalent of “glossy”. The page contains the title, the authors, a picture of the site and four buttons giving access to the report itself. They give four different ways into the report:

- “Report” leads to the main path through the text.
- “Navigation” takes you to the “contents” page, it is a pictorial version which attempts to give a two dimensional impression of the links between the sections of the report (figure 3).
- “Finds Database” takes you to the query page of the database, from there you can pick the criteria you wish to search by and access the results.
- “Location Maps” leads to a sequence of clickable maps showing the location of the site at different scales.

The report has been structured as to avoid linearity, but the text does need to progress and contain some sense of order. To this end there is a directed path through the report, which although it is only basic, gives it a necessary backbone; something for the rest of the report to hang from. The non-linearity comes in the way that text is linked to illustrations and back to text, or to other illustrations.

The main path shown in the online version (figure 3) differs slightly from that of the hard copy report (figure 2).

Contents

Summary

Introduction

- Background and research aims
- Strategy and Methods
- Site location

Metal detector evidence

Field walking at Cottam, 1993 by B.E. Vyner

Geophysical Survey by Justin Garner-Lahire

Methodology

Area 1 results

Area 2 results

Assessment

Excavations at Burrow House Farm, Cottam, 1993 and 1995

Introduction

Period I: Natural and periglacial features

Period IIA: Anglian Phase A

COT93.1

COT93.3

Period IIB: Anglian Phase B

COT93.1

COT93.3

COT95

Period III: Anglo-Scandinavian

COT95

Period IV: Medieval and modern

The Pottery by Tony Austin

The Finds Assemblage edited by J.D. Richards

The worked flints by John Bateman

Miscellaneous stone items by J.D. Richards; lithology and provenance of stone objects by G.D. Gaunt

Building material

Non-ferrous metal objects by J.D. Richards with a contribution on a ninth-century strap end by Elaine Campbell

Metalworking debris

Iron objects by Patrick Ottaway

Cottam ironwork recovered by metal detector by Patrick Ottaway

Post-Roman coins by E.J.E. Pirie

Bone and antler objects

Assessment of biological remains from COT93 by John Carrott,

Allan Hall, Michael Issitt, Harry Kenward, Frances Large and Annie Milles

Plant macro fossils from COT95 by Allan Hall

Assessment of the bone assemblage from COT93 by Keith Dobney, Deborah Jaques and Don Brothwell

Identification of highly fragmented mammal bone from COT95

edited by J.D. Richards from report by Samantha K. Bell, Kristine Birchall and Don Brothwell

Discussion

Acknowledgements

Appendix A: Concordance of metal detector evidence

Bibliography

Figure 2: The contents page of the hard copy report.

This is because the online version is able to escape from the enforced linearity experienced by the original, and support a layered presentation. The main part of any report is the discussion and interpretation of the findings. It does, however, have to have supporting evidence. So the options available to print publication are either to include many introductory sections or many appendices, or both. This is where the ability to layer a hypertext document is useful. The main text of the report can be presented obviously, with all the detail hidden underneath. Consequently figure three illustrates the main path through the text; “Summary”, “In-

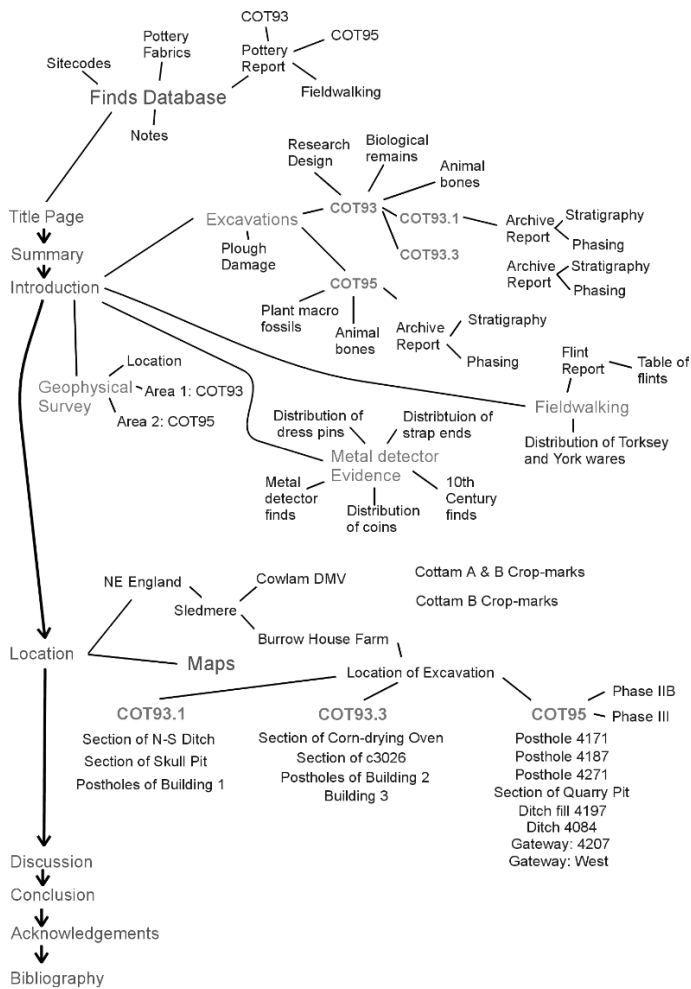


Figure 3: The contents page of the online report.

roduction”, “Location”, “Discussion”, “Conclusion”, “Acknowledgements” and “Bibliography”. The reader is told what the report is, what it is about, where it is, and then you get to the main interpretation of the site, without having to go through the more detailed areas of the report. The reader, however, may want to look at certain detail; hypertext makes that possible, through links to the areas of the report which are left out of the main path. This non-linearity is illustrated by the site-map or navigation page (figure 3).

The original idea was to make a more concise version of the traditional contents page (figure 2) into a frame at the side of the screen. This would have made navigation easy for the reader. However this did not seem feasible considering the size of contents list, and would force the report into a linear format. Instead a more pictorial form of contents page was opted for. It works by each label acting as a link to that section, and every section is represented in it. Although this form of contents page does not show every link between sections, it is able to give the reader more of an impression of the links between different areas of the report, than the traditional list would. The pictorial contents page also highlights the main path through the text.

Another aid to navigation was the inclusion of a frame at the bottom of the page containing the four buttons from the title page as well as a “home” button to allow the reader to go back to the beginning (figure 4). The combination of this small frame of navigation buttons and the “contents” or navigation page allows the

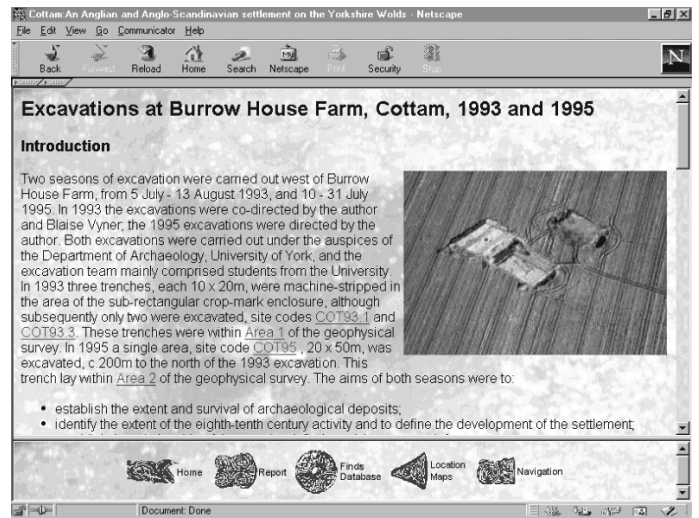


Figure 4: The navigation frame.

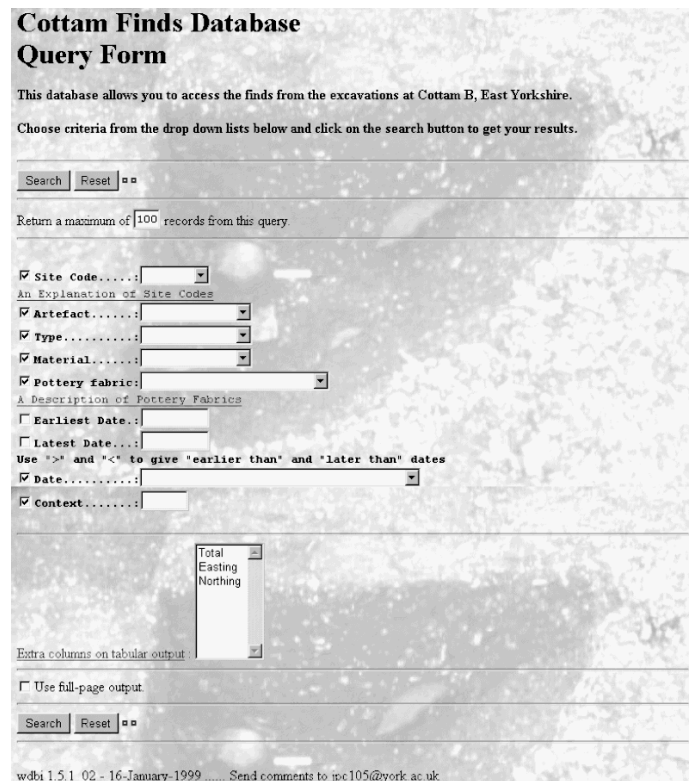


Figure 5: The query page.

reader enough freedom to roam the text as they please, and to access all pages with ease.

The database is the section of the report which differs most from the text version of the report. It allows the reader to query the small finds from the fieldwalking, metal detecting and excavation at the site. There are three main pages that the reader sees, the query page (figure 5), the basic results page (figure 6), and the more detailed results page (figure 7). This allows the reader to drill down into the data gaining more detailed information with each “click”. This is a theme which runs through the report as a whole allowing the reader to access information that matches their understanding or interest.

The results tables contain links to pictures of the artefacts and more detailed information from the specialist finds reports. It is

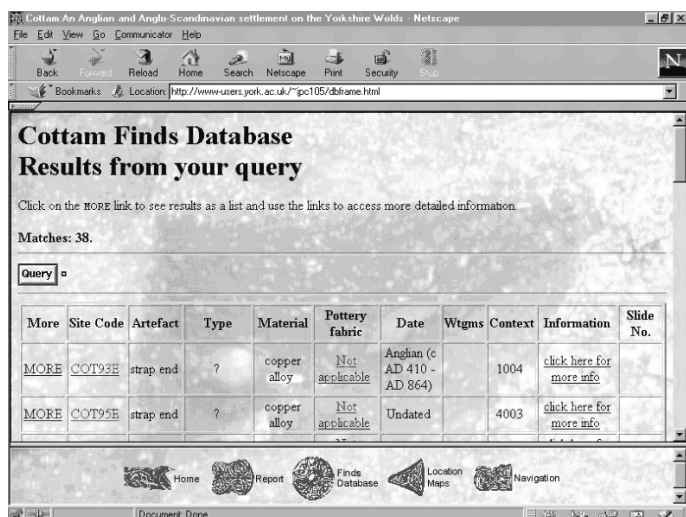


Figure 6: The basic results page.

also possible to link from sections of the text to results of particular queries, or individual database entries. This is one of the great advantages of having an online database in an excavation report. It does away with the need for lengthy descriptions and tables in the text. It also, of course, allows the reader to gain access to information not usually available.

4. Advantages and disadvantages of electronic publication

Having described the basic format of the electronic report, in this section I will discuss the methods used to create the report and any advantages or limitations I encountered using these methods.

4.1. Images

Images are a clear way in which an online report can transcend a hard copy one. It is easier to include colour images online than it is in print, due to the cost of colour printing. Also the amount of images is not limited by page limits. Images used online can also be “active” as is demonstrated by the clickable maps. The only limitation online is the amount of time it takes to download a web page containing many images. The online report does contain some large images, i.e. excavation plans, but they are not included in line with the text but are in separate pages to speed up access.

The images used are of various types, mostly scanned from photographs and drawings although some have been generated electronically i.e. by a GIS. The production of these images was time consuming and even those that were scanned from images intended for the print publication had to be cleaned and modified for use on the web.

The excavation plans were originally digitised using AutoCAD, with the intention of combining them with the geophysics, crop-marks and the excavation plans. The display of AutoCAD files was not possible however without the use of a plug-in, such as AutoDesk *WHIP!* or Voloview Express, which would reduce the accessibility of the information to many readers of the web document.

The ability to include more images in an electronic publication is an advantage but the more which are included, the more time it takes to create them, whether it is by digitisation, scanning or by

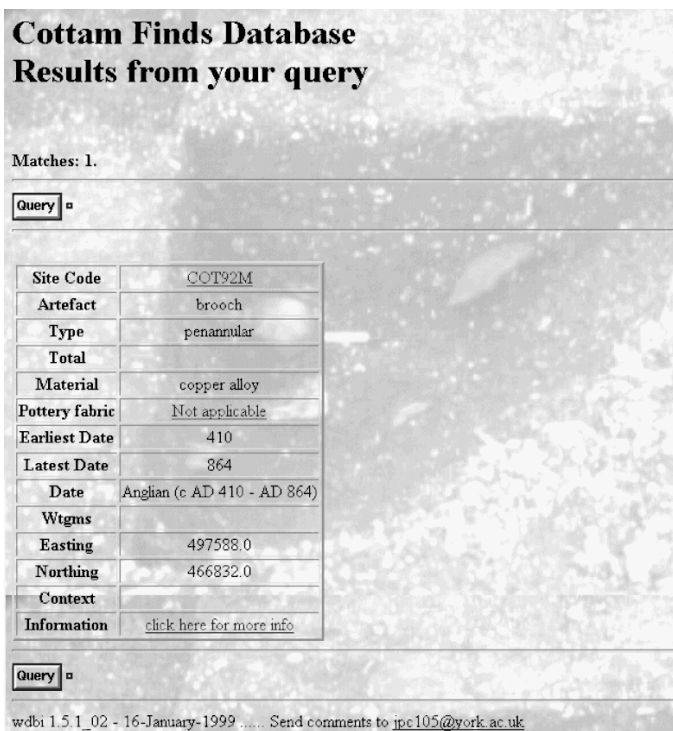


Figure 7: The detailed results page.

using a GIS. If scanning or digitising, the quality of the original also effects the time involved. Equally, it also takes time for an illustrator to draw publication pictures. Images are time consuming to produce for both Internet and print publication. Internet images are generally colour and there are more of them but they are at a lower resolution; with printed images the situation is reversed: fewer, black and white line drawings, but of better quality.

4.2. Additional material - archive/specialist reports

It is another well known advantage of online publication that disc space is not as restrictive as the number of pages in a print publication - therefore the publication of the whole of specialist reports is possible, rather than a simple summary. Although a limited number of readers may be interested in the whole report, at least if it is in electronic form the data within it can be extracted and reused.

4.3. Clickable maps

Clickable maps are a particular characteristic of electronic documents. They create a dynamic and spatial appearance to otherwise static illustrations. They are used in the sequence of location maps, which allow the reader to “zoom in” to the excavations and also to link to discussion of the images.

There are also basic distribution maps in which the reader is able to link to the database from individual finds in this case study. These distribution maps were created using the GIS software ARC/INFO and imported as images, so they do not provide the functionality of a GIS, although that can be implemented with more time.

Another use of the clickable map is in the Navigation page. The relation between pages in text was more easily portrayed using

this method than it would have been with a list of text as shown in figure 3.

4.4. The database

The database allows the illustration of points made throughout the text and also lets the reader interrogate the data themselves. The report allows easy access to the database, from references to finds in the text and also, from individual database entries to descriptions in the specialist reports. It also links to illustrations of the artefacts where available.

The database runs on MySQL (<http://web.mysql.com/>) and is displayed on the web using a perl script called WDBI (Web DataBase Interface) (<http://www.wdbi.net/>). As the database is run by a cgi-script it is not client dependent, and so will run on any browser that is able to deal with HTML forms.

An online database is a feature that is only available in an electronic report and is one of the major advantages of using this type of publication. It makes a report more of an archive or research tool than a simple publication.

4.5. Archive stability

HTML provides a stable archival format; anything more proprietary is going to need more care and migration if it is to survive the years.

A last aspect of electronic publication is the need for the report to remain in a fixed place on the Internet. A most unfortunate characteristic of Internet publication at present is the transitory nature of web pages. References quoting web pages soon go out of date and all that is found is that wonderful "404 Page not found error"... This is not good practise and is where the Archaeology Data Service is essential to Archaeology.

5. Conclusions

An electronic excavation report is able to include more data and present it in a greater variety of formats than a traditional form of publication. There is a greater ability to see information from perspectives chosen by the reader, rather than being solely directed by the authors argument. An excavation report cannot be completely non-linear and reader directed but can offer more paths through the text than are available in a traditional publication.

The use of Internet technology allows a wider range of presentational characteristics, such as the finds database, the clickable maps and the use of more images, as well as GIS based techniques of displaying spatial distribution. The simple techniques are easy to use although they can be time consuming to create and maintain. The one major disadvantage in comparison to a printed volume is the need to maintain and upgrade the report as time

passes and technology advances. However, it is possible to make this form of publication into both the archive and the publication if suitable file formats are used. It is also accessible to more people as an online report, as it is possible to access a web page from anywhere in the world. Both access and archival ability are very much dependent on the file formats used and the software needed to display any proprietary formats. Therefore the use of formats requiring plug-ins reduces access and should be carefully considered.

As the Internet becomes more widely used, this form of publication is certain to grow, as it is an effective way of disseminating information. Digital archives, like the ADS, are likely to become the libraries of the 21st Century, because digital information is more difficult to preserve as the growth of technology accelerates.

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References

- HEYWORTH, M.P., ROSS, S., and RICHARDS, J.D., 1996. Internet archaeology: An international electronic journal for archaeology. In Kamermans, H. and Fennema, K. (eds.), *Interfacing the Past: Computer Applications and Quantitative Methods in Archaeology CAA95*. *Analecta Praehistorica Leidensia* 28: 517-523.
- HODDER, I., 1999. Archaeology and Global Information Systems. *Internet Archaeology* 6 (<http://intarch.ac.uk/journal/issue6/hodder/index.html>).
- LONGSTAFF, T.R.W., 1994. Hypertext as a medium for archaeological publication. *Archaeological Computing Newsletter* 39: 1-2.
- RICHARDS, J.D., in press. An Anglian and Anglo-Scandinavian settlement on the Yorkshire Wolds. *Archaeological Journal* 156.
- RYAN, N.S., 1995. The excavation archive as hypertext document? In Huggett, J. and Ryan, N. (eds.), *Computer Applications and Quantitative Methods in Archaeology 1994*, BAR International Series 600, Tempus Reparatum, Oxford: 211-219.
- WICKHAM-JONES, C. and DALLAND, M., 1998. A small mesolithic site at Fife Ness, Fife, Scotland *Internet Archaeology* 5 (<http://intarch.ac.uk/journal/issue5/wickham/index.html>).