

Computer usage in post-excavation: what do we really, really, really want?

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Abstract

This paper aims to present the unit based, finds specialist's view of the impact of 25 years of computer applications on post-excavation in Britain. It focuses on developments over the past ten years, taking as its starting point Francis Prior's review of post-excavation computing which was undertaken as part of the IFA's survey of computer usage in British Archaeology (Prior 1986). The paper will assess what progress, if any, has been made over the past decade, and what factors have helped or hindered progress.

Prior, in his paper, felt that before archaeologists consider why they use computers, they need to be clear about why they do archaeology at all. Similarly, the subsequent developments in computer applications cannot be discussed in a void, and it is important to consider first the broader changes that have taken place in British Archaeology over the past ten years.

The last decade has seen the arrival of PPG 16, with a move towards developer funding and competitive tendering. The preference is for archaeological remains to be protected in situ rather than preserved by record, where this is practical. Small scale evaluations have become the bread-and-butter work of most units, while the number of full-scale excavations has declined. We have been clearing up our backlogs and we don't want, and can't afford, to create any more. These changes are reflected in the computer applications which are most likely to attract funding, and have therefore undergone the most exciting developments.

A good example is the current interest in landscape studies and the increasing use of GIS. This allows large expanses of archaeology to be documented at relatively low cost. It does not damage the archaeology or, perhaps more importantly, generate vast quantities of finds that need to be processed and analysed. It assists us to direct any further excavation at specific, well focused research questions. Any funding channeled in this direction, it is argued, should cut down on unnecessary spending at a later stage.

In 1986 Prior described computers as symbols of power and prestige (Prior 1986, 50). This still holds true today. Archaeologists are increasingly concerned

with justifying their existence, both to the wider public and within the profession. This in part reflects the financial pressures they are experiencing. Council based units are fighting the corner for archaeology when budgets for arguably more fundamental services are being cut, and the survival of contracting units is equally under financial threat. Work undertaken by archaeologists is now more closely monitored; by a range of government inspectors, local government curators, and consultants employed by developers. By using interactive systems and virtual reality, computers allow archaeology to be presented to the public, and funding bodies, in an exciting and innovative way. They also provide a high profile tool by which archaeologists can demonstrate their academic weight, perhaps even be seen to lead their field by using or developing new technologies. A fancy computer application will always attract more attention than a well described fabric series, or a perfectly excavated and recorded context, although these are equally important tools.

The past ten years has seen a period of consolidation in post-excavation computing, rather than the leaps and bounds of progress seen, for example, in landscape studies. The vast majority of archaeologists are now computer users, with most people using off the shelf software. The fact that a variety of packages are used is not a problem as data can usually be exchanged or converted. More problematic is the enormous variety of coding systems used by units and individuals, when recording the same types of data.

Computers have an obvious role to play in post excavation: for producing publication text, graphs and figures; for recording and analysing complex data sets; and for devising and monitoring post-excavation programmes. They facilitate the

integration of finds and stratigraphic data at an early stage in the process, so that specialists can be provided with the lists of information that they require. It is also easy to up-date records and amend phasing when specialists feed information back. This is particularly important when our working practices split finds between specialists using fairly random combinations of criteria; such as period, material and type. An integrated approach to analysis will obviously make it much easier to produce well integrated reports.

There are undoubtedly still some finds analysts, perhaps working on small assemblages of specialised material, who feel that computers have little to contribute to their personal research. There are still some field archaeologists who do not record site data in a way appropriate for later computer analysis. Most finds specialists only use a limited range of applications, mainly spreadsheets and databases. A handful of finds specialists are getting to grips with more complex statistical techniques, using correspondence analysis and measuring standard deviations, but most tend to stick to very basic statistical analyses, calculating mean averages and percentages. The majority of us, if we are honest, are still rather scared of statistics, and although we may have access to packages that could produce statistical data, do not have the mathematical training to understand the results. Specialists are also required to focus on a defined range of questions if they are to keep within budget, and will therefore stick to methods they know and feel safe with.

Prior felt that productivity and speed were increased by the use of computers. He hoped that, by speeding up the reporting process, computers would allow archaeologists to spend more time getting on with the business of archaeology 'in the field,' as he put it. This leads to two questions; has the process in fact been speeded up, and if so, has the desired effect been achieved?

If we are talking strictly about the report writing stage then the process must have become more efficient. Texts can easily be edited and integrated, and data can be converted rapidly into graphs and tables. It has, perhaps, become harder to let go of reports - it is always possible to see improvements that could be made to a final draft, and we are now able to make them. Today, it is possible to disseminate data and reports on the Internet; through new 'publications' such as Internet Archaeology or more established publications, such as the CBA 'British Archaeology' series. However, I suspect only

a small minority of units, and even fewer freelance specialists, currently have access to the Internet. Scanning the Archaeological Resource Guide for Europe, for example, fewer than 15 units have web pages, and not all of these have access to the Internet themselves. Perhaps this will have been a more significant development when the next review takes place.

The broader process of post-excavation analysis, however, has not necessarily been speeded up. Computers allow data to be manipulated very rapidly. They also allow us to manipulate much more complex data than we could with our pocket calculators, which motivates us to record more data. In pottery studies, for example, full recording by fabric and form is now the accepted norm. Time might be saved by typing data directly onto the computer, but many units still use paper records as the basic archive, from which data then has to be entered and checked for typing errors. Each project seems to generate its own particular computing problems, and how many of us are confident and honest enough to include in our costings the days spent trying to solve unforeseen problems? It is the data recording itself which is the main time consuming element, a point to which I will return below.

The second question is: if and where the reporting process has been speeded up, has it had the effect that Prior hoped for? I personally do not think it has. There is increasing pressure on units to be competitive, simply to survive. Approaches to excavation and post-excavation have become more streamlined, and any savings resulting from computer usage are more likely to be cut from the budget in order to maximise efficiency and produce a competitive costing.

As I have noted above, the costs for recording artefactual data represent a substantial proportion of any post-excavation project budget, particularly for sites of a type and period where bulk finds such as pottery are common. This is a particularly important consideration when undertaking more sophisticated analyses, such as the intra-site spatial analysis of finds undertaken at Shepton Mallet (Biswell et al. 1995). The pressure is on to speed up the post-excavation process.

We can do this by becoming more efficient. Familiarity with the material is an obvious advantage. Units or specialists with a long standing interest in the archaeology of a particular area should have an

advantage here. They are repeatedly dealing with the same material and are in a good position to refine their recording systems. Even so, handling and recording thousands of individual fragments is time consuming.

An alternative is to cut the amount of data recorded. The project aims can sometimes be met, for example, by analysing a sample of the pottery, perhaps from defined key groups. Alternatively, it is possible to cut down on the methods of quantification. Although it is generally agreed that finds should be adequately quantified, there is still disagreement over what 'adequate quantification' constitutes. This has less to do with computer usage per se, and more to do with what is considered acceptable by individual specialists, project directors or local government curators. Their opinion will reflect their level of experience, both with the material and statistical techniques. How many archaeologists involved in post-excavation have sufficient training in statistics to make these decisions? How many, for example, understand when a sample is not statistically valid? Anything that affects the integrity of the data has obvious implications for the validity of the results, however "state of the art" the computer application used. Their opinion will also reflect their familiarity with current research agendas and theoretical perspectives, yet many decisions are made on a reactive, project by project basis, rather than forming part of a longer term research programme -- perhaps inevitable given the lack of confidence most British units and their staff have in their long term security. There is increasing pressure on specialists to cut down on the data recorded while at the same time, ironically, the range of computer applications available to analyse this data is expanding. British archaeologists have moved on from Frere's levels system, where the data selected for detailed analysis and publication was selected from a full data set in the level 3 archive. Specialists are now more likely to be told that if the data cannot answer the specific research questions of a project, then the time spent recording it cannot be justified. In 1986 Prior was particularly concerned that archaeologists should understand why they were crunching numbers in the name of archaeology. Ten years on this still seems to be a very valid area for debate and concern. He felt that 'computers (or rather the people who use them) have helped to create a mountain of redundant, meaningless, but very expensive numbers. However, many examples could be cited from recent research in ceramic studies, for example, to demonstrate how the increasing availability of quantified data allows more complex research questions to be addressed. The recording and dissemination of good, quantified data

should, in my opinion, be one of the fundamental aims of post-excavation.

Prior raised a number of other issues which are still relevant today. He felt that in 1986 archaeologists were trying to use 'today's' technology to sort out 'yesterdays' problems, many of the computers having been bought for backlog projects which were dealing with data that was not recorded with computerisation in mind. There can still be a tendency to see computing as a post-excavation problem rather than a fundamental part of a project's methodology, needing to be considered at the research design stage and reflected in the recording systems used during excavation. The requirements of the receiving museum were another area of concern highlighted by Prior, who was concerned that 'computers should be used to produce a useful museum accession list as an objective of the software suite'. This has still not been achieved and there must be a nightmare of incompatible computerised records lurking in museum stores.

To conclude, what do we really want in post-excavation? Firstly, I think we want good communication. It is very important that those who are pushing forward the frontiers by developing archaeological computer applications are aware of the relevance these applications have to the large number of archaeologists based in field units. The gap between project-funded, unit-based archaeologists and those involved in research and development, often university based, has not closed. Computer specialists and those involved in synthetic research need to be aware of the limitations of the data recorded. Conversely, anyone involved in excavation and post-excavation needs to understand the potential of the applications available, and of course the broader research framework to which that work contributes. Good communication between site, computing and finds specialists is fundamentally important, right from the research design stage of a project when the methodology of on site recording is decided.

We might benefit from another survey, such as the one undertaken by the I.F.A. in 1986, to study variations in computer usage between units; considering how people are using computers and not just what computers and software they use. It could consider how applications are integrated or shared, how information and skills are disseminated -- within and between organisations, and who makes decisions about software use and development.

Our requirements in terms of computer applications are often fairly basic. We should not feel that we ought to be using a wider range of applications simply because they are available and can be used to impress. In post-excavation we are the data gatherers. We are concerned with setting good standards for data recording while at the same time keeping within budget. If we are producing and manipulating statistically valid and reliable data, that is of value in wider synthetic studies, then we are doing a good job. Obviously we would like to be doing more synthetic research ourselves, for which we could probably use a wider range of applications. That, however, is a problem of funding which is a separate story. Most important is the need to understand why we are doing

what we do, and seek advice accordingly from statisticians, finds and computing specialists. Otherwise, as Prior said in 1986:

‘a computer makes it much easier to do bad archaeology well. If bullshit baffles brains, elegant, well presented bull-shit both baffles and satisfies, in an insidious, meretricious fashion, where style replaces content.

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