Ruminations about Electronic Publication in Archaeology

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As I was browsing through my *Computer Shopper* magazine the other day ñ not a daily occurrence, I hasten to add ñ I saw two most astonishing devices. They go by the names of "Mobile Assistant", from the Xybernaut Corporation, and "Trekker", from Rockwell. Designed along similar lines, each consists of a small computer unit (about the size of a medium-sized dictionary) which is worn on a belt, and a lightweight headset which looks just like the ones that the kids working the drive-through window in MacDonald's wear, with an earphone and a microphone, with the added bonus of an eyepiece which flips down to cover one eye. (Satisfaction guaranteed for Trekkies with a Borg fetish.) These computers operate through a voice interface, thus enabling the user to walk around and work with their hands while computing. Apparently, the tiny, one-inch screen on the eyepiece produces a picture which floats in front of the user, giving an image about the size of a normal desktop monitor. These wearable computers take some getting used to ñ not least because they have to be trained to understand your individual voice perfectly, and because one eye is looking at the real world through a transparent computer screen, while the other is just looking at the real world ñ but they already being used by technicians and engineers working on complex systems, such as helicopters and airplanes, who need constant access to electronic manuals.

My thoughts began to race. Not because I'm overcome by a desire to own one so that I can continue working on my thesis while ambulating around the Safeway choosing aubergines, but because the potential applications in archaeology are remarkable. Imagine tucking the headset on under your field hat, settling down in a trench, pulling out your (optional) pen interface and drawing profiles straight into the computer, while looking at the real profile *through* the transparent computer screen. Imagine dictating notes on site directly into your word-processing program without a pause in action ñ just keep trowelling, rummaging through the tool box for a line level, or waving your hands distractedly. No more dirty notebooks, or notes on audiotape which need transcribing, or for those who already use computers on site, no more worries about dirt in your keyboard, or trying to find a dry place to sit for a minute to type.

Just imagine.

Then try imagining that technology has been developed which permits archaeologists to easily and very rapidly publish provisional and interim reports, share databases and catalogues, reach members of the public who are interested in archaeology, publish papers using all the illustrations they want, or even virtual reality simulations ñ and, currently, to do most of this practically for free.

Presumably it isn't necessary for me to point out that, like the wearable computers, the latter is reality.

I am not the first, obviously, to write about the potential of the Internet for archaeologists. Those interested are encouraged to see the home pages of Internet Archaeology, William

Kilbride's 1994 paper in the first (and, alas, only) issue of Online Archaeology and David Gill's Archaeology on the World Wide Web , originally published in Antiquity in 1995. (For discussion of general developments in online publishing, see the Open Journal Project's A survey of STM online journals 1990-1995: the calm before the storm. For additional general commentary on electronic scholarly publishing, see Leslie Chan's Exciting Potential of Scholarly Electronic Journals and the many excellent links therein, as well as the home page of the pioneering electronic journal Psycholoquy.)

Kilbride wrote that "Despite the obvious potential of the Internet and the World Wide Web to revise the way that archaeologists publish, and the numerous problems associated with publication in archaeology, it has taken archaeologists a surprisingly long time to recognise the potential of the Internet to address some of these problems." This is still the case, although with the advent of peer-reviewed electronic journals in archaeology and related subjects, and a growing awareness of the potential of on-line communication, the situation is a little better than it was two years ago. It is my contention, however, that the extensive use of the Internet and the World Wide Web in archaeology is no longer an option, an avenue with potential that should perhaps be explored in more depth: rather, it is essential. The reasons for this are two-fold. First, we as archaeologists stand to benefit from using the Web for publication and research. Second, other Web-users stand to benefit from archaeologists' publishing on the Web.

There has been much written about the potential of the WWW to change the way archaeologists write and publish. I will say here only that archaeology is particularly visual, 3-dimensional, and experiential discipline, and that the opportunity to write in a new, possibly more intuitive, way, and to incorporate virtual reality simulations and interactive visuals, is one which should not be ignored. And, of course, the inexpensive and easy publication of data which would otherwise be housed in obscure archives, the reduction in the time lag between excavation and publication, and the potential to provide interim reports on research, later to be superseded by final versions, are all benefits which are already being realized (as those who browse through the literature from our information pages will see), and should be exploited to the full.

However, as well as affecting how we write and publish, the Web can also effect a concomitant change in the way we read. The library as we know it is changing. As one example, Academic Press has developed an International Digital Electronic Access Library (IDEAL) to allow users to access all Academic Press journals through the Web, with the aim of giving more readers more convenient access to the journals than is possible with printed versions. Access to the database of tables of contents and abstracts for all of these journals is free ñ just visit the IDEAL site ñ but actual articles can only be obtained by registered users on licensed library networks through a PDF viewer like Adobe. In 1995, AP signed an IDEAL agreement arranging access with a consortium of 180 British colleges and universities.

This, and developments like it, could be a wonderful boon to those who need access to specialised journals, especially in an era of declining library acquisition budgets, and decreasing selection of available printed periodicals. Even for periodicals which are still available in printed versions, given the choice between (a) trudging in the rain to the library, finding that the one journal volume I want isn't on the shelves, searching through the "To be Reshelved" cart for it, waiting for the photocopier behind someone who just can't understand the reduction ratio buttons, etc. ñ and this is if the library has the journal I need, and (b)

browsing through the latest abstracts on my computer screen and ordering the specific article I require, and having it appear on my screen a little later, all the while parked comfortably in the office with a coffee .... I'll choose (b). (Though this is not to say that I think, or hope, that the conventional library will become extinct.) This would apply even more if I lived and worked more than a 20 minute walk from a research library, which of course many people do.

These new ways of distributing electronic forms of established print journals, taken in combination with the creation of new peer reviewed electronic academic journals of international quality, will soon have effects on academics other than simplified access to reading material. It will not be long before these journals are rated as highly (or perhaps even more highly, because of their wider distribution) as some printed journals, by committees in the Research Assessment Exercise and other academic evaluations. Given that CD-ROMS and similar materials are already being submitted for assessment by some scholars, and that the RAE Guidelines are flexible on this point ñ "Refereed journal articles published through electronic means will be treated on the same basis as those appearing in printed journals" (*1996 Research Assessment Exercise: Guidance on Submissions*, page 19, Annex C para. 46) ñ we should expect that electronic publications aplenty will be submitted in the next round of RAE evaluations in four years' time.

Even so, there are many academics who will continue to resist using or creating electronic publications. In part, this may be on the grounds that they have no need for it; in their own small research sub-specialty, they may feel that there is no reason for them to seek information anywhere but in the pages of highly specialised printed journals, and that, by the same token, there is no need for them to publish anywhere else.

However, these academics should perhaps consider the possibility that there are people accessing the Web who would have an interest in their research ñ and not just other professional scholars. A quantum leap in public access to the Web is about to take place, due to two developments: WebTV and the Network Computer.

The WebTV consortium has developed technology which will enable anyone with an ordinary telephone line and a television set to have access to the Internet, including the WWW and email services, at least in the United States. Their mission is "to make the Internet as accessible and compelling for consumers as broadcast television is today", and they plan to accomplish this through the WebTV network service ($19.95 per month) and the accompanying magic box which sits on top of the television, having cost a small fraction of a computer's price. The system is being launched right now in the U.S., and soon, it seems, there may be a host of people who surf the Net not only with deliberate intent, but also with the remote control from their sofa during commercial breaks, or when there's nothing good on TV.

The related Network Computer promises a similar increase in the size of the Web's audience. Not to be confused with networked Personal Computers (like the one you're probably accessing this page from), Oracle's NCs are "cheap and cheerful" machines which use memory and information from the Internet instead of having their own memory, disk drives, etc. They are straightforward to use, will cost only a few hundred dollars, and promise, after their impending appearance in the shops, to provide computing ability and Internet access to more people than ever before. Even Oracle's arch-competitor and success story extraordinaire, Microsoft, is introducing developments in this direction. (*The Economist* Sept.21/96, p 106)

Even allowing for a certain amount of PR hyperbole about how these developments are going to change the world, it seems clear that we should expect a substantial increase in Web traffic over the next few years. More and more people will be looking there. So, then, what do you want them to know about archaeology?

The standard complaints from archaeologists after their first introduction to the Web are, first, that "there's nothing on my specific subject there that I want to see", or second, that "I have to look too hard to find it." The second complaint, involving knowing how to use search engines and cataloguing systems, is a subject for another day. (One wouldn't expect to waltz into a library knowing nothing about catalogues and indices, and after 2 minutes of searching, have the desired material in your hands, but somehow people often expect this from the Web.) However, the first complaint needs to be addressed here and now.

When I was a kid, my parents (in their infinite wisdom) sent me to do a little course in computers for children at the local college. We wrote tiny programs in Basic, and generally had a good time. But one of the first things we were taught was this rule of programming: Garbage In, Garbage Out. The same applies here: What comes off the Web is what's put on it. If you're happy with the quality and type of information about archaeology available on the WWW to archaeologists, and to the interested public, then fine. If you're not, then *change it*. Basic publishing on the Web is easy. Most university departments now have home pages, and most are agreeable to the addition of subpages. Basic HTML (HyperText Markup Language) is easier to use than the word-processing software that most of us use every day, and can be learned in about 30 minutes. (See this HTML Primer to learn more.) It is possible, and simple, to take the time we usually devote to nodding vigorously in response to others' exhortations about how important it is for archaeologists to communicate with the public, and to actually *do* some communicating instead, in a forum which will reach many people. Creating a Web site is very uncomplicated in comparison to writing a popular book or making a television program. Granted, there will be no financial reward for publishing in this way unless you use higher-tech software and a paid format, but surely that is not what all publishing is necessarily about.

This principle of being active in the world of the Web, and exercising a little control over what is on it, extends further still. One final reason for archaeologists and other scholars to gain better understanding of the Internet, and explore its potential, relates to censorship. The Net may offer a greater chance for control of available writings than ever before, because it gives the illusion of free access to the "information superhighway", when in fact availability of material can be tightly regulated. Already in Singapore, government censorship of the Internet is in place, through the use of a "proxy server" through which all Internet providers must route their customers. This system is one method of enforcing the government's decision that Internet users may not discuss race or religion, criticise the government, or show pornography (*The Guardian* 15/8/96, p.12). This precedent is of considerable concern. The Blue Ribbon Campaign For Online Freedom of Speech, Press, and Association reports that there is a real risk that in some places in the West, a wide range of materials which are perfectly legal in bookstores may soon become illegal on the Web. Obviously, children's access to the Web should be controlled (there are well-developed systems now for parents and schools to use: see the Blue Ribbon Campaign's "Skeptical?" page), and anything which is illegal in print should be illegal on the Web, but surely further restrictions should be a matter for public debate, not bureaucratic decree. Those who use the Web for research should become informed about these issues, make choices about the kind of place they want cyberspace to be, and do what they can to influence its future development.

Archaeologists, more than most, think about the way in which material culture and people interact. Information technology can be seen in much the same light as material culture; as a society, we shape it, and in return, it shapes us. Lest we be molded in undesirable ways by these forces, it is most important for us to involve ourselves in the ongoing creation of the Internet, whether through judiciously using information available through it, publishing on it, or participating in the creation of appropriate legislation to regulate it.

Let's ensure that we wear our computers, rather than the other way around.

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