Electronic publishing: the example of BMSAES

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Informatique et Egyptologie has tried to place itself in the forefront of encouraging developments in information technology (*informatique, Informatik*) into use in Egyptology. Issues which have been addressed, and which continue to be addressed, include databases, hieroglyphic word-processors, and the Internet. The stress over the past twenty years has very much been on encouraging developments to aid research, but the group has paid relatively little attention as to how this research should be disseminated and how the technologies we espouse so readily in other spheres might be turned to this end. It is now time for us to lead the way in publishing material via electronic media, since all work which has no publication might, in many ways, have been not done at all.[2]

What is an electronic publication? In theory the term should refer to any document produced electronically and available in some way for public viewing, free or at cost. In practical terms I am thinking rather of completed work which traditionally would see the light of day in print.

The most common method these days for presenting the results of research is via a web page, either as a complete web site, individual articles or a journal-like publication available over the Internet. A CD ROM which fits the criteria of distribution just mention is another method, which these days tends to concentrate on large datasets and lends itself particularly to data which is not likely to be modified. It is not difficult to quote examples of both, particularly web sites, the latter of which lend themselves well also to publishing interim material on the way to the final report. The best example of a CD-ROM for our purposes is the AEB, but it might also prove an interesting adjunct to publish some of the raw data for a book in this way too.

Today the move is for material to be available on the Internet, although much of what I have to say below is applicable to any electronic format. My aim is to survey the advantages and problems of the concept, and to look at some possible solutions. I wish to draw the reader's attention to two particular publications which illustrate some of the concepts of electronic publication within the archaeological and Egyptological area.

Archaeology has one principal electronic journal, *Internet Archaeology* (http://intarch.ac.uk/), located within the University of York in the UK. This publication has been active since 1996, and has been accepted as a mainstream publication among the archaeological community. Within the Egyptological sphere there is at present only *Internet-Beiträge zur Ägyptologie und Sudanarchäologie* (*IBAES*—http://www2.rz.hu-berlin.de/nilus/net-publications/index.html), published in the Humboldt-Universität in Berlin. *IBAES* is less of a journal and more of a forum for longer papers and specific collections, but the underlying principal of publication by electronic means is the same.

[1] Readers should note that there are many URLs in this paper, and several will wrap over onto the next line. It should, however, be possible to access them directly by clicking. These URLs were checked at the end of August 2002.

[2] An editorial in *Antiquity* 75 (2001), 233–9, especially pp. 234–6, well describes this situation as a form of iconoclasm (also available at http://intarch.ac.uk/antiquity/75-288editorial.html).

Advantages of electronic publication

The following is a summary of some of the principal advantages:

- Greater speed and increased frequency and flexibility of appearance.
- Potentially reduced cost. This will largely depend on how an electronic project is financed, but the printing costs are removed, and the main consideration has to be the time of the editor and setter of the work.
- Potentially greater availability due to the widespread use and penetration of computers and the Internet.
- Ability to present types of content which cannot be realised on paper, for example, interactive databases, video, and virtual reality. I have demonstrated some of these media in the course of previous *Informatique et Egyptologie* meetings, and I shall mention some other examples later.

Some of these issues, and particular problems, I discuss further below.

Problems and issues of electronic publications

However, electronic publication would not belong in the real world if it did not bring along its own problems and raise issues which we have never had to confront before. Some of these are technical, but others are in the minds of the potential users.

How seriously are electronic publications received in the academic world?

In the UK in the early 1990s a report was commissioned by various higher education funding bodies into issues raised with reference to library provision by recent expansion in undergraduate numbers. The report, which appeared at the end of 1993, became known as the Follett Report after the name of the chairman of the review group which produced it, Professor Sir Brian Follett.[3] As one of the subjects examined was how technology can be used to the advantage of the library, electronic publication figured in this report.[4] I attended a presentation of the report in Cambridge and recall particularly that it was felt at that time that academics had some way to go in accepting digital materials as the equivalents of print publications. This was in part due to innate suspicion of computers and 'new media' among some sections of academia, and most of those who have worked in conjunction with *Informatique et Egyptologie* over the years will sympathise with this. In 2002, the evidence is that this is changing. Electronic publications, properly reviewed, are now accepted for Research Assessment Exercises in British universities, and *Internet Archaeology* is now an accepted vehicle for academic communication. What is clearly needed is more electronic publications.

However, it cannot be denied that the question of the acceptability of electronic writings is above all a problem for the humanities; scientists have for far longer accepted all manner of electronic publication. Compare this: I recall when Helen Strudwick and I discussed the possibility of excavation data being placed on-line in 1993 during a discussion at the 'Thebanischen Beamtennekropolen' symposium in Heidelberg,[5] the idea was received with not a little scepticism. Some might argue that the days

[3] Full report at http://www.ukoln.ac.uk/services/papers/follett/report/

[4] The specific section is paragraph 283 of http://www.ukoln.ac.uk/services/papers/follett/report/ch7.html

[5] See J. Assmann, E. Dziobek, H. Guksch, F. Kampp (eds), *Thebanische Beamtennekropolen. Neue Perspectiven archäologischer Forschung* (SAGA 12, Heidelberg 1995); this informal discussion is not recorded in the publication.

of the printed paper are in fact numbered in the sciences, perhaps in part because so much science has less of a 'shelf life', and partly because scientists rarely publish primary material in the manner of Egyptology.

The question of accessibility

Much is often made of the so-called 'digital divide'. This term has been coined to express the potential for exacerbating the economic and social divides between various parts of the world as a result of variable access to high technology. The argument runs along the lines that if the 'First world' continues with its progress towards ever more sophisticated computer systems, we will be producing material (in our case publications) which are inaccessible to the majority of people on this planet as they are unable to afford the necessary computers and network infrastructure.

There is no doubt that in regard to certain aspects of technology this is very true. However, in terms of publication there is a contrary side to it, especially in relation to our subject; let us term it the 'financial divide'. Consider the cost of printed books today, in particular the cost of publications of primary material. How many libraries outside the 'First World' can afford to buy every relevant publication? [For that matter, how many libraries *in* that world can afford to?] Library purchasing budgets are often among the first to suffer cutbacks. Take the example of Egypt. The libraries of most Egyptian universities or SCA inspectorates are hard-pushed to have collections of basic books in the subject, never mind a working library. One of the most interesting developments in Egypt is the spread of computers around the country, and the purchase of such machines is usually far better funded than libraries, because of the many uses to which they can be put. Thus a student or colleague in Egypt may well have a better chance of accessing an electronic publication through a nearby computer with a modem than finding a book in a library.[6]

Survival of the publication

Once a conventional journal or book is printed and distributed, it physically exists as an object, and looking after it is the responsibility of the library or owner of the individual copy. Specialised libraries, or copyright collecting institutions, can also be relied on to maintain copies should others be threatened. The Internet publication, on the contrary, is a virtual object, usually only existing as a series of magnetic impulses which are made into something readable each time they are sent out to a computer which requests them. Thus the source host of the publication has to be constantly watched and maintained by its owner to ensure the publication's survival.

Among readers of this paper there will be few who have not suffered the exasperation of attempting to access a Uniform Resource Locator (URL), only to find that it has moved or simply 'disappeared into cyberspace'. I find this while maintaining Egyptology Resources (http://www.newton.cam.ac.uk/egypt). Sometimes this is because the original creator has given up maintaining the site on which the publication resides, but at other times it can be due to problems such as economic failure of the service provider. This is a major problem which has to be resolved, and there are various systems coming into operation to try and deal with it, some of which I mention below.

[6] In 2001 I used an Internet shop on the West Bank at Luxor near the mortuary temple of Sety I, and most users were Egyptians. The Internet first reached Luxor in about 1997/8, was first seen at the ferry landing on the West Bank in 1999 and has now penetrated inland. Home use is relatively uncommon however, inhibited by the availability of suitable computers and telephone lines.

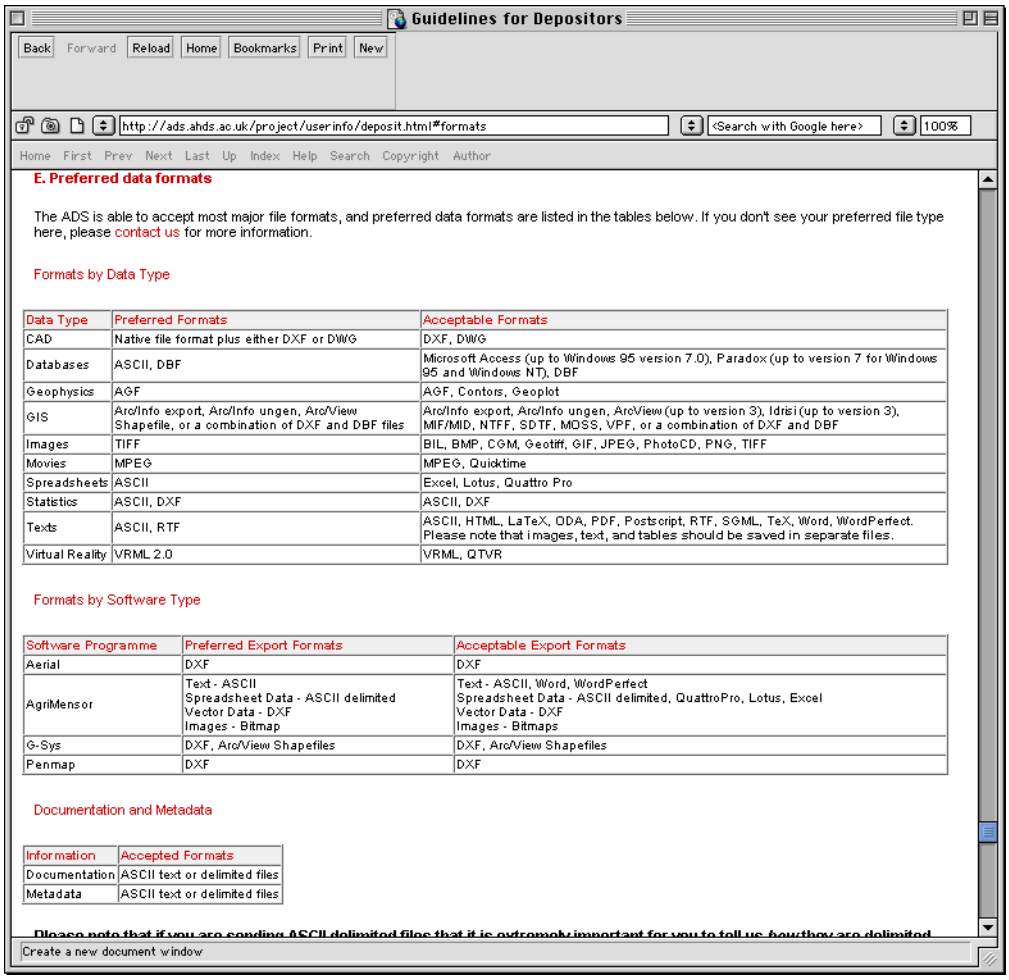

Fig. 1 The Archaeology Data Service preferred file formats.
http://ads.ahds.ac.uk/project/userinfo/deposit.html#formats

Ensuring permanence and archiving

Books are preserved through storage in secure buildings called libraries. If a book shows signs of decay it can be dealt with by a binder or conservator. As yet, there is little in place for the preservation and maintenance of electronic publications.

As an example, I have had contact with the Legal Deposit section of the British Library, who have the right to request copies of all publications produced in the UK. At present they do not have a policy on the collecting of Internet journals etc, although their instinctive reaction is to say 'send us a copy', just as they would with a book or even a CD-ROM. Logic perhaps dictates that they should collect URLs, since electronic publications of this type do not really exist outside the URL; and yet it can be argued that their collecting hard or electronic copy could help ensure the survival of the work. Legislation in the UK has yet to be passed which will bring electronic materials under the Legal Deposit system.

The concepts of 'Uniform Resource Names (URN)' and 'Uniform Resource Identifiers (URI)' have been proposed to resolve the problems of URL changes.[7] However, searching for information about them on the World Wide Web in fact illustrates the problem perfectly, since many of the links offered

did not in themselves work any more. I find it particularly intriguing that those who write about the (im)permanence of URLs do not see the irony of their writings becoming inaccessible.

Actual applications on these lines are being developed. The Handle System (http://www.handle.net/) sets out a method whereby these aims can be achieved, and an example of its implementation is the Digital Object Identifier system (DOI—http://www.doi.org/). These are all well worth following as future developments.

A related issue for the future would be this: what should happen if an electronic journal ceases publication? With paper journals, this is not a particular problem, as libraries would hold the published parts of the series anyway. But electronic material, as indicated earlier, theoretically ceases to exist when it is not accessible via electronic means. Would we have to fall back on archive copies?

This issue conveniently leads onto the question of archiving and indexing. The second is a requirement of any journal, but the library metaphor requires that all earlier/older material be accessible through the method of presentation—traditionally it would be bookstacks or shelves, and for electronic material let us assume that it is the Internet. This means that editors of electronic publications will have to ensure that there is adequate storage space available on their servers and that the design of the site permits easy access to this older material. These are relatively straightforward technical issues.

A matter which is less than straightforward is the maintenance of electronic data in usable formats. This is a very significant issue; how many users of computers in the early 1980s are now easily able to access that data, unless they looked to the future and made a point of converting it from one software program or operating system to another as they became obsolete?[8] There is always likely to be somewhere in the world where data can be updated (or 'refreshed' in the horrible terminology of the age), but it will be none of easy, immediate and cheap. I do not deny that the simplification of the number of computer operating systems and file formats since the 1980s makes it easier now for the ordinary person to keep their data current, and these problems are a major argument for ensuring that electronic publications are at least stored somewhere in mainstream file/software formats. The latter are most likely to survive in some form, or at least translators and converters for them will be readily available. Physical storage has to be treated carefully, since no-one can be sure of the future of the storage devices of today.[9]

Specialist data services, both profit-making and not, have been set up to make this storage and updating of electronic material easier. It would appear that the most promising method is for this to be handled by some sort of appropriate national authority in each country.

I should like to base my further discussion of this point using the UK as my example. There is there the 'Digital Preservation Coalition' (http://www.dpconline.org) which proposes to oversee initiatives

[7] See for example this article by Ian Peacock in the electronic magazine *Ariadne* for a description: http://www.ariadne.ac.uk/issue18/what-is/intro.html

[8] My own experience is salutary here. My doctoral thesis was written on an IBM mainframe computer, and was transferred to a Xerox word-processor in 1983 for printing the final copy. This machine used 8 inch discs, which are now obsolete. The text was then transferred to 140k discs (5.25 inch size) for an Apple IIe computer, and the published version was produced with an early version of Wordstar. I cannot locate those discs although I am sure I could find a way of transferring the data should they come to light. In the unlikely event of my producing a second edition of the book, it might be just as easy to scan the pages and use optical character recognition to extract the data. On the other hand, I did successfully transfer the raw database data of Old Kingdom names and titles which resides on my computers in ASCII text files. After the Pisa conference I noticed an article on the BBC web site making the same point in a more 'popular' manner: http://news.bbc.co.uk/go/em/fr/-/1/hi/technology/2207297.stm

for archiving and updating data. Specifically relating to the humanities is the 'Arts and Humanities Data Service'; within that one finds, for archaeology, the 'Archaeology Data Service' (ADS—http://ads.ahds.ac.uk/). This is at present primarily concerned with archiving and preservation of datasets as opposed to publication of discursive items,[10] but as electronic publication increases in importance, it will no doubt be able to fulfil the same function. The ADS both stores and 'refreshes' data in up-to-date formats.

It is worth for a moment perusing the list of supported data formats in **Fig. 1**. It is divided into those which are preferred and those which are possible. There is no doubt that the list errs on the side of caution, preferring those which are not proprietary, such as basic ASCII text, but realistically accepting most mainstream formats.

Another approach to the preservation of data is 'Open archiving', whereby sites are available on which authors can deposit papers freely, either as a location for publication or as a storage backup. As usual, scientists have been doing this for some time; see for example the heavily used and long-standing site http://xxx.lanl.gov. This is a little unsystematic and orientated to the sciences, and thus others are being developed closer to home. One example is being implemented in the UK at the University of Nottingham.[11] The idea here is that material can be accessed on a subject-by-subject basis.

Of course, the merit of such services is based on their constant and ready availability. If a site is commercially funded, there is always the chance that the income will be inadequate and the site has to close. Agencies funded on a nationwide basis are perhaps less vulnerable, but what would happen if government funding were removed or drastically curtailed, for example by a change of government or government policy? Governments have a habit of setting up initiatives in the hope that they will ultimately fund themselves—what happens when that aim is not realised?

I do not think this problem is insoluble, but it needs to be monitored carefully, and the actual copyright holders should also take all steps possible to preserve and 'refresh' their data. As hinted earlier on, this requires a change of mindset, in that none of us would normally think that it was our duty to preserve our books for the future. Presently, once something appears in print we abrogate all but the intellectual responsibility for our work; in the future, the unpredictability of the world may come back to haunt us. Nonetheless, in any medium we are still responsible for our archives which, in the case of excavation material, may include data which, although unpublished, may still need to be consulted further. We may thus soon have to be responsible for both published and unpublished material.

9 At the risk of over-elaborating the point, let us remind ourselves of some of the hardware formats which have come and gone. The 8 and 5.25 inch discs are history now, although readers for the latter are probably still available. It is debatable how long the 3.5 inch disc will last; Apple Computer abandoned fitting it into Macintosh computers as far back as 1998, although the PC world has yet to follow suit. Increasing file size is the 'kiss of death' for some of these smaller formats, although data without illustrations is likely to fit on floppy discs for many years to come. A number of other higher-capacity formats have failed to achieve acceptance. CDs, presently one of the favoured removable storage formats, could be replaced by DVDs. It is to be hoped that manufacturers will at least allow some backwards compatibility for a number of years until the average user can reasonably ensure the survival of his data.

10 It is now normal in the UK for grant-awarding bodies to stipulate that data resulting from the supported project be placed with the appropriate data service.

11 http://www-db.library.nottingham.ac.uk/eprints

Acceptance of the validity of electronic publication

I have already considered above the background to question of validity of electronic publication. This problem with the Internet is exacerbated by the existence within it of so much material of questionable merit, in particular relating to the broad subject of Ancient Egypt. It is necessary for the editors of electronic publications to convince their authors and readers that *their* electronic publication is different. This can be achieved by proper review of contributions, and such publications being run by reputable institutions. But it also requires colleagues to submit material for publication, and this is going to be a problem as long as the 'paper fixation' remains, in other words, that proper publication has to be on paper only. This was a concern of the Follett Report, although it does appear that it is in the process of changing, but probably only among a certain generation of user.

I regret very much having to draw attention to this, but one reason that the papers from the Würzburg conference were never published was concerns from the organisers whether, if they were published electronically, they were 'proper' publications. *Informatique et Egyptologie* should be taking the lead on this sort of thing, and if our papers cannot be published electronically, then who in Egyptology should do so? Fortunately publication of the Pisa meeting was already planned in advance.

There are examples on the net of self-published papers in Egyptology which, if they have not been subject to the scrutiny of others, can add to this low opinion held by colleagues of the academic credibility of the medium. More or less anyone can place material on the net now, and those who might do that should be encouraged to have it properly reviewed. This still is true of paper publications, but the relatively difficulty of paper publication (or rather its expense) means that only the most determined or wealthy will self-publish. Vehicles need to be put in place which will permit responsible electronic publication.

Copyright

The issue of copyright has reared its head from time to time at *Informatique et Egyptologie* meetings. However, the legal aspect of copyright is the same whether the publication is a paper or electronic one; the major difference is the ease of stealing material from electronic publications. I do not feel that we have to discuss the issue of copyright further.

The example of *BMSAES (Fig. 2)*

The electronic journal project *British Museum Studies in Ancient Egypt and Sudan* was suggested by Vivian Davies in 2000 to take advantage of the Internet and the possibility it offers for speedier publication. A considerable amount of time was spent taking opinions on how best to implement it. These involved finding out the experiences of others, notably *Internet Archaeology,* and giving consideration to many of the issues discussed previously. From this a set of practices has evolved, and I should like to consider the main issues. The journal is still in an early stage and these practices themselves must surely evolve.

Review process

The matter of peer review is an issue which has nothing especially to do with electronic journals, but which has to be present to maintain credibility of the journal and its contents. The small-subject nature of Egyptology has meant that the formal process of review practised by scientific journals has been slow to come to the subject, and for many years the wide ranging abilities of the editor were thought to

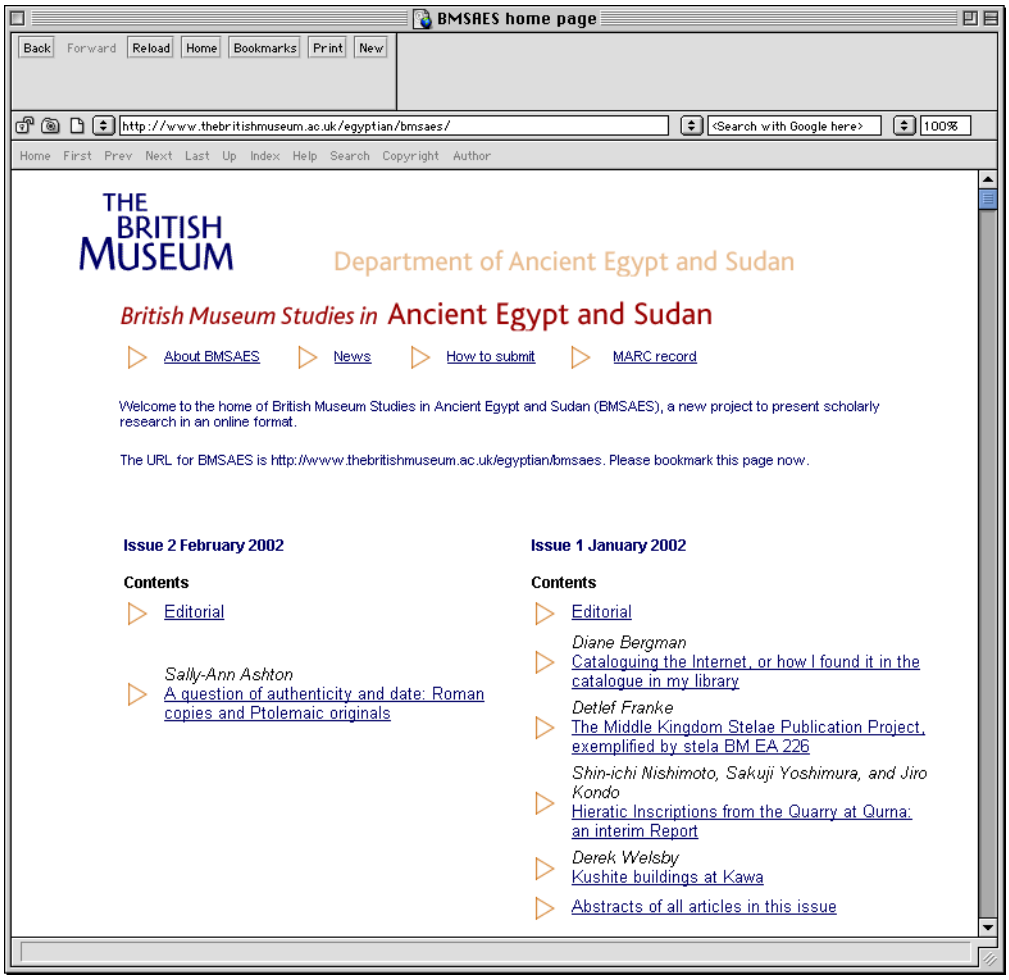

Fig. 2 Top screen of *BMSAES* in August 2002.
http://www.thebritishmuseum.ac.uk/egyptian/bmsaes/

suffice. With the more technical nature now of so many contributions, and the greater time constraints on editors, it is now much more difficult for the editor alone to fulfil these requirements.

The process of review is not without its problems. The journal which has most prominently adopted it, the *Journal of Egyptian Archaeology,* seems to have suffered a significant drop in the number of contributions from senior scholars. Whether this is because of the (real or perceived) lengthy wait for publication or the fact that scholars may object to their work being reviewed, or whether for some completely unrelated reason, I do not know. I understand that the *Journal of the American Research Center in Egypt* is now heading in the direction of peer review.

The Internet-only nature of *BMSAES*, however, makes the concept of review essential, to maintain the credibility of the journal as there is so much unreviewed and hence potentially unreliable material otherwise available on the Internet. For *BMSAES*, a gentler approach has been adopted to the problem of reviewing, by doing as much as possible of it within the British Museum, and going outside only when particular expertise is needed. Much of the process is also done electronically to speed matters along.

Frequency of appearance

Print journals tend to have a certain number of pages to be filled for an issue, and when that number is reached, articles usually have to be held over for the next issue unless a larger than usual issue is approved by the editor and publisher. The size of an issue is thus set by largely economic factors. Production of an issue revolves around a publication date, and for various reasons it can take a few months to three years for an article to appear. One of the aims of *BMSAES* is to take advantage of technology to move away from this.

For a start, an electronic journal does not need a certain large number of text pages to be viable; it is only necessary to set a critical number of articles for publication to proceed, and this can be as low as one paper. In fact the second issue of *BMSAES* did only consist of one paper, whereas there were four in the first. It has now been decided that two articles is probably a good minimum, and such a level of workload fits into and around other work projects. It is hoped that the third issue can be produced in Autumn 2002; there has been more material, but, after the initial acceptances, there have been a number of rejections. This suggests to me that we are succeeding in maintaining standards.

Library and cataloguing data

I took advice from librarians as to their bibliographical requirements for electronic journals. This again is something about which everyone is learning. An International Serial Number (ISSN) for *BMSAES* has yet to be organised, but Diane Bergman, Assistant (Griffith) Librarian at the Sackler Library of the University of Oxford, stressed that a MARC record should be produced for the publication, and she in fact contributed the record and an article on the subject to the first issue.[12]

A MARC record (MAchine-Readable Cataloging record) is an electronic form containing all the fundamental bibliographic data which can be downloaded and added to a proper library database (see **Fig. 3**).[13] In keeping with the wish of making *BMSAES* as electronically-orientated as possible. Diane Bergman's MARC record for *BMSAES* is available for download from the web site.

Format

The initial idea was to produce the articles for a web-based electronic journal using HTML.[14] This is, after all, the primary format of the web and that adopted by *Internet Archaeology* among others. However, further thought indicated that this could be problematic for a two major reasons:

- Web pages, even if used in conjunction with Cascading Style Sheets, can still display variably on screen and print even less reliably. The ability to print and store articles reliably is essential if traditional paper readers are to be convinced of the merit of the format.
- How is one to sub-reference articles? There are few reliable pointers which can be set in an HTML article; sections can be numbered, but what happens if, as is normal practice, a longer article is spread over a number of different HTML pages?

[12] Bergman, D., 'Cataloguing the Internet, or how I found it in the catalogue in my library', *BMSAES* 1 (2002), 1–6; http://www.thebritishmuseum.ac.uk/egyptian/bmsaes/issue1/bergman.html

[13] Description and proper definition of MARC available at the Library of Congress web site: http://www.loc.gov/marc/

[14] Two formats which were not considered are often used for on-line scientific papers. These are plain Postscript files or TeX files. I consider the former to be too unwieldy, as well as only being really useful for printing; the latter is favoured primarily for its ability to represent scientific equations. but its output is otherwise poor.

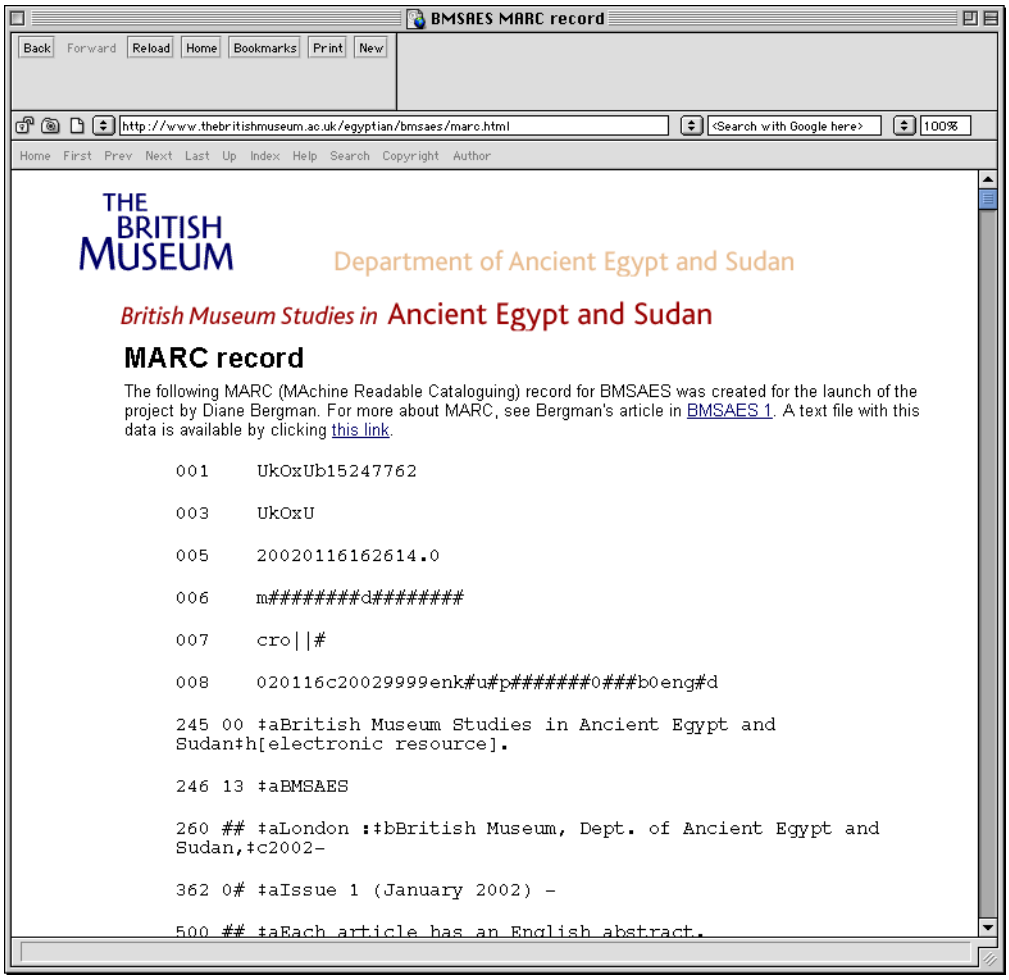

Fig. 3 Part of the MARC record for *BMSAES*.
http://www.thebritishmuseum.ac.uk/egyptian/bmsaes/marc.html

A lesser problem was also the limited layout features of HTML, leading to printed pages which are unsubtle and not good to read.

The need for good print quality and to address traditional structure and referencing led only in one direction, Adobe's Portable Document Format, or PDF.[15] PDF is supposed (like HTML) to be operating system independent, but unlike HTML, a document is expected to look the same regardless of the screen or printer involved. Also unlike HTML it cannot be hand-coded. The PDF format was originally targeted at the 'paperless office', whereby documents could be easily passed around in an administrative environment without the need for excessive printing, but it never really became popular in the area for which it was designed.

However, in the second half of the 1990s its potential for publishing documents was realised, and it is now firmly gaining dominance as the preferred method for submitting text both for printing and for high-quality on-line documentation. One reason for this is that the ability to embed fonts in documents means that the need for the printer to have this or that font is a thing of the past; another

[15] A simple description of PDF is available via Adobe's web site http://www.adobe.com

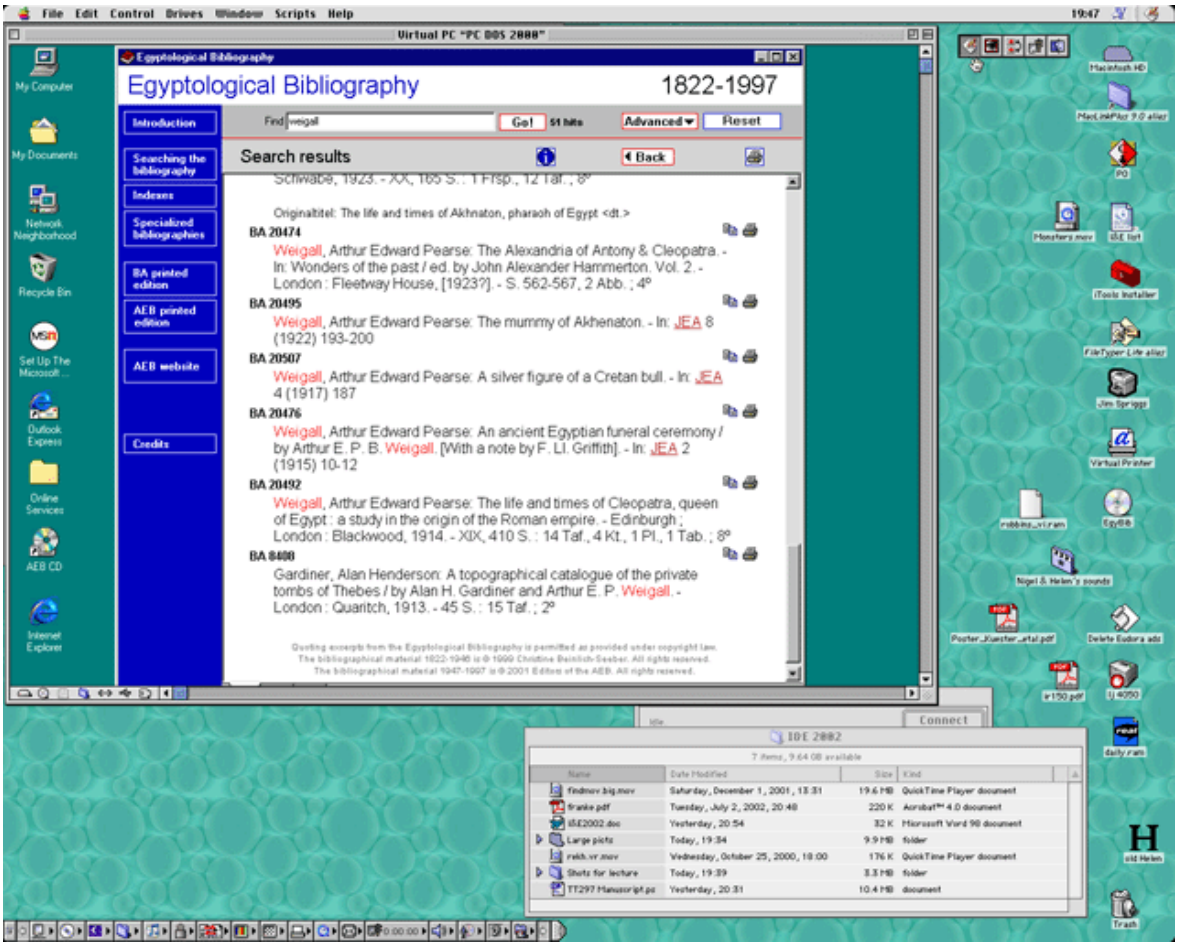

Fig. 4 The *Egyptological Bibliography* running on a Macintosh computer.

reason is that the files can be edited to a limited extent to deal with minor last-minute errors. The software used to read PDF is principally Adobe's Acrobat Reader, a free product available for Macintosh, Windows and UNIX systems. To produce PDF files one of the increasing numbers of PDF creators is needed, pre-eminent among which is still Adobe's Acrobat suite of programs, the centre of which is Acrobat Distiller.

PDFs can be created in a number of ways, and now a number of programs are creating them directly without having to purchase separate software like Distiller. But the classic, and most controllable, way of production is to create a Postscript file and run it through Distiller. Once a PDF file has been produced, the full Acrobat program can be used to make small editing changes, and other media formats like video can be added to the file. There are many further features of Acrobat and PDF files which cannot be enumerated here.

PDF files can be highly compressed, which is ideal for combining text and graphics in small files. As always, what takes up space is images. Controlling the size of the original images combined with varying the compression directly relates to the output file size. While highly compressed images will work well on a screen with its roughly 70–90 dpi resolution, and download reasonably quickly over a modem, the same images will not print all that well. The solution adopted for *BMSAES* is, for papers with images, to offer two versions of the paper, one lower resolution (for viewing primarily on screen)

and one higher resolution (for print). This is easily done from the same Postscript file by running the file twice through two different sets of saved settings for Distiller.

For the future, XML (Extensible Mark-up Language) theoretically holds out hope as a web-based

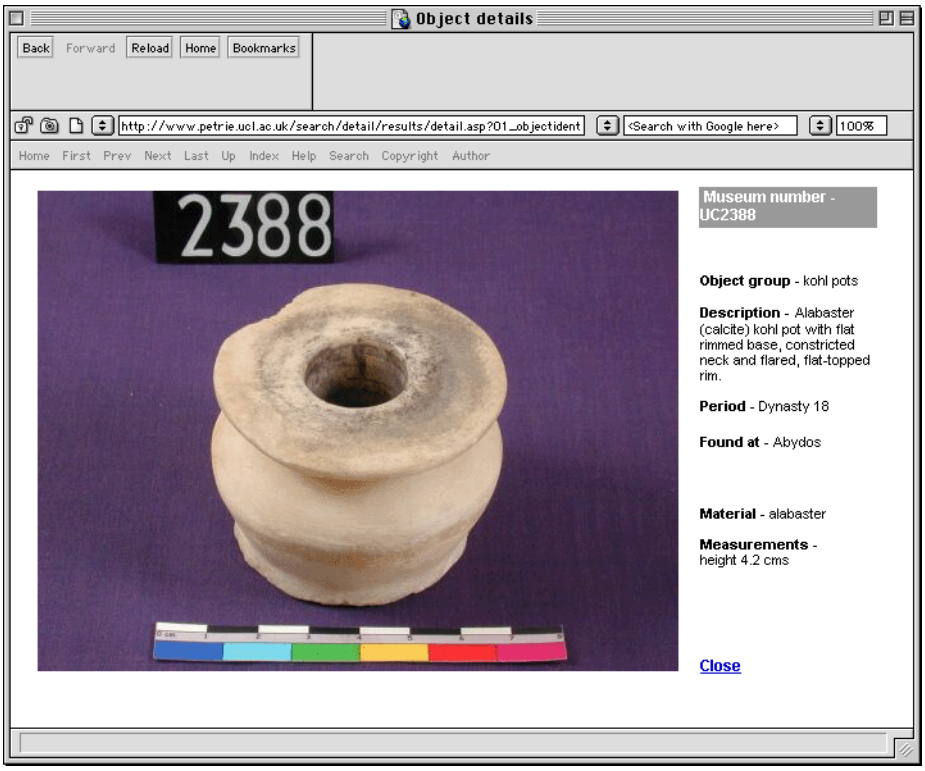

Fig. 5 Petrie Museum object UC 2388.
http://www.petrie.ucl.ac.uk/search/detail/results/detail.asp?01_objectidentifier=UC2388

format that also offers high-quality output and reliable formatting (see other papers from the Pisa conference). However, most of us have yet to come to terms with it, or do not have access to software which can write it for us; its verbosity means that it also produces much larger files.

Conclusions and the future

Publishing on-line types of material which cannot work in print

I have thus far not stressed one of the other great advantages of electronic publishing, the ability to publish the results of work in media types which just cannot work on paper. Databases are an obvious example; the most widely useful to Egyptology is the combined AEB/BA CD ROM named *Egyptological Bibliography* (**Fig. 4**). It is to be hoped that this will eventually exist in a web version. But databases can also be more complex and include a wealth of image information. The obvious CD ROM publication to quote in this context is the 'Egyptian Treasures in Europe' Project.[16] Other obvious data types which do not work outside an electronic context are video and virtual reality; for the former see for

[16] Information available at http://www.ccer.theo.uu.nl/ccer/et.html

example the material pertaining to my own excavations at http://www.newton.cam.ac.uk/egypt/tt99/video.html and for the latter see the paper presented by Robert Vergnieux in these proceedings.

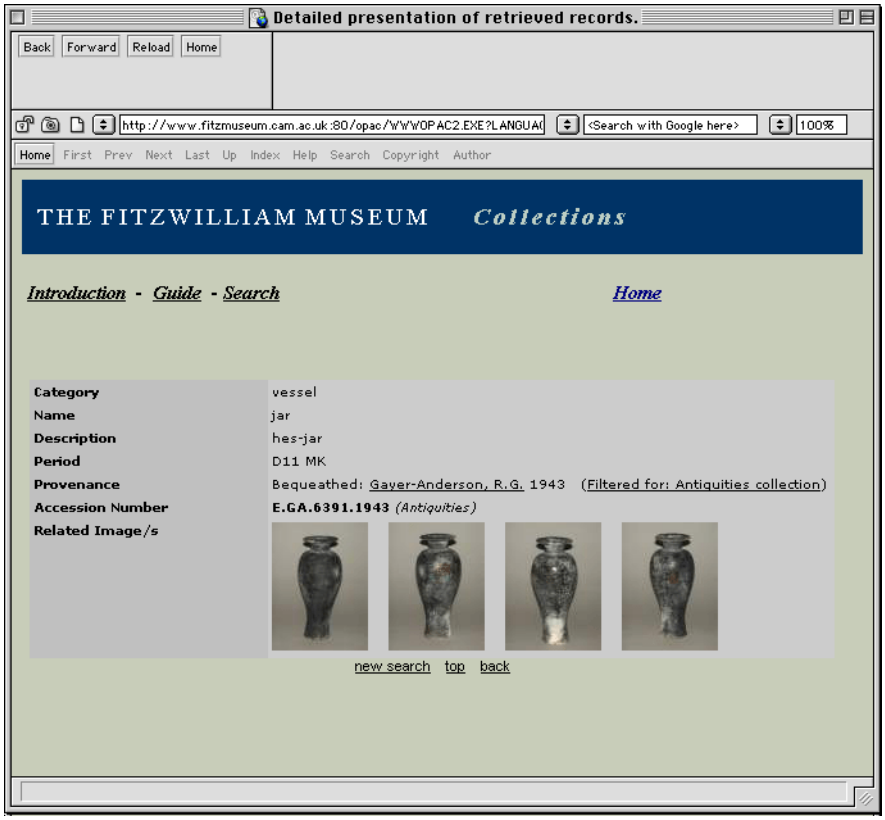

Fig. 6 Fitzwilliam Museum OPAC, object EGA 6301.1943.

Various elements of museum collections can be placed on-line with numerous photographs and other types of media. For example there is the Museum of Fine Arts in Boston's 'Digital Giza' project (http://www.mfa.org/giza). In the UK, various digital initiatives are in place; two of the most ambitious are to put much of the Petrie Collection (http://www.petrie.ucl.ac.uk/digital_egypt/Welcome.html) and the Fitzwilliam Museum on-line (http://www.fitzmuseum.cam.ac.uk/opac/public/info.htm).

The days of the large museum catalogue are perhaps over; a digital version allows more flexibility and permits publishing of material which is now just too expensive for paper. The difficulty is going to be to persuade museums to do this. The Petrie and Fitzwilliam Museums already have some objects in this format (for example, **Fig. 5** and **Fig. 6**), and the 'Egyptian Treasures in Europe' series has done much for several important collections.

The British Museum has a popular version of 500 Egyptian objects available through its Compass system (http://www.thebritishmuseum.ac.uk/compass/). These were written and edited for the public but they do provide a number of objects available which were not so before, and there was some new photography commissioned for them. It is presently not easy to link directly to a URL for a specific object (**Fig. 7**).

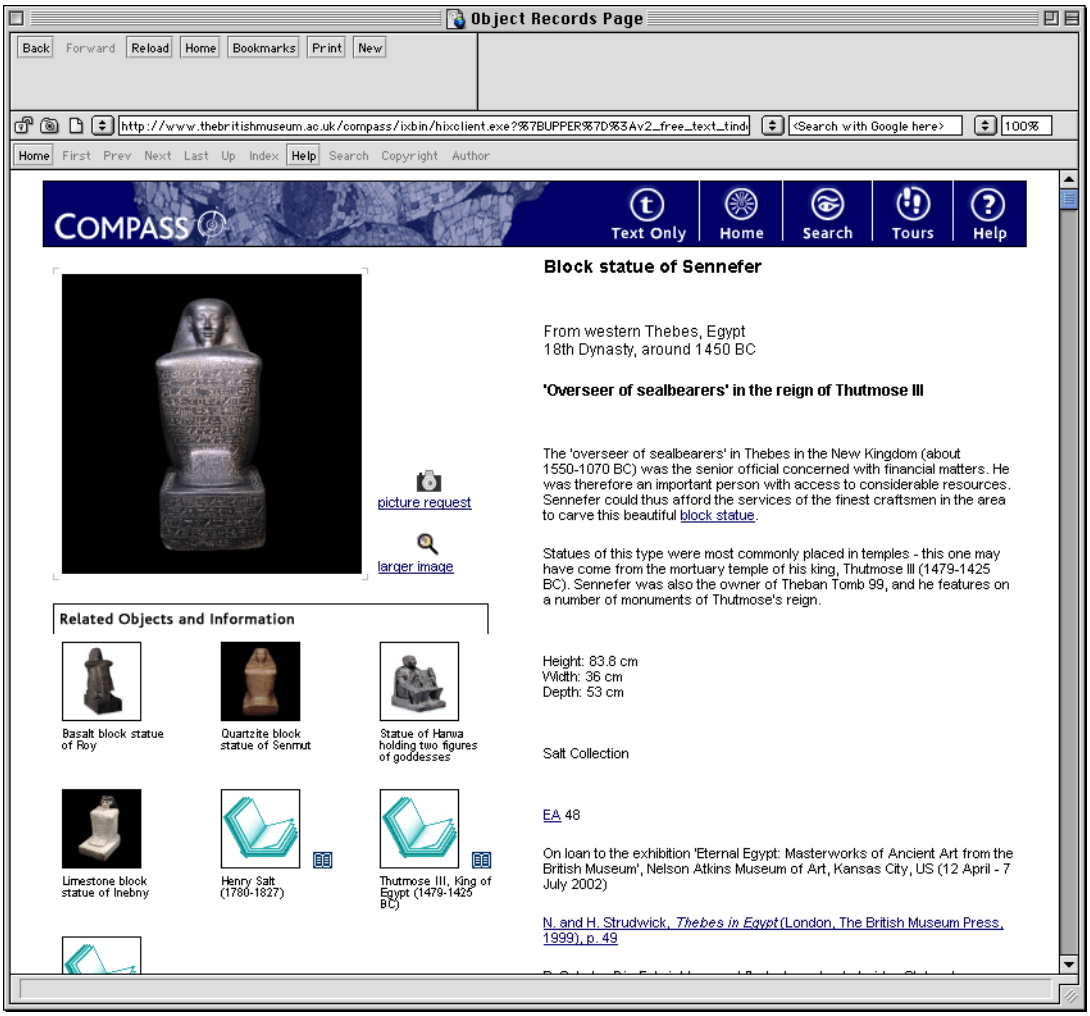

Fig. 7 British Museum Compass system, object EA 48.

Ways of reducing costs of publications

Cost can mean that in some subjects academic output is controlled and even restricted by commercial publishers. I think Egyptology is reasonably fortunate insofar as it is not as affected by this as the larger scientific disciplines, in which publishers of a number of widely used journals have greatly increased the cost of subscriptions to 'milk' the market because of the guaranteed audience and library standing orders. This is having the (perhaps self-defeating) effect that, in these days of non-expanding library budgets, many institutions are not renewing subscriptions. This self-perpetuating decline has resulted in a number of initiatives for the development of consortia to advise and develop publishing of journals on a not-quite-so-large profit system.

One such is SPARC *Scholarly Publishing and Academic Resources Coalition* (http://www.arl.org/sparc). These methods include cheaper ways of publishing on paper and also through electronic media. There is usually some co-operative venture involved to reduce the profit motive.

I believe this is not so much of a problem in our subject since no Egyptology journal is a real 'cash machine', and very few of them are published completely on a commercial basis—most are published

by societies or institutes who aim to cover costs or make just a small margin. Our journals are not attractive to the publishers!

Nonetheless, if a journal is to survive it has to at least cover its costs. Various charging models are in the marketplace, per paper, an annual subscription just to quote two of the more common. Some scientific journals give free access for 30 days after publication 'to aid authors'.[17]

So, where now?

I do not foresee Egyptology making major advances into the on-line area for some time to come, but the fact that there are electronic publications around such as *IBAES* and *BMSAES* will help point the way forward to some extent. Apart from anything else, better and faster Internet connections will be needed for Egyptologists to make better use of the medium. Far too many producers of electronic projects appear to forget that most home users are still accessing the Internet through modems, and, until broadband access is more generally available and more affordable, the concept of switching on one's computer and accessing needed material in a few seconds is rather an ideal. It should however be that for which we aim.

Informatique et Egyptologie has tried to place itself in the forefront of pushing developments in information technology into use in Egyptology. As I said at the beginning of this paper, I think we need to be leading the way in publishing material via electronic media, since all work which has no publication might, in many ways, have been not done at all.

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[17] The following editorial in *Internet Archaeology* dealt to some extent with just this subject: http://intarch.ac.uk/journal/issue11/editorial.html Note: this URL may not be available depending on whether or not the users' site has access to *Internet Archaeology.*