INTERDISCIPLINARY EGYPTOLOGY

Panel Discussions (invited)

Scanning the Horizon: Egyptology in a Digital Age

Moderator: Paul T. Nicholson; Panellists: David Anderson, Anna Hodgkinson, Kathryn E. Piquette, Krisztian Vertes

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Abstract

This panel considered the ways in which archaeology and Egyptology have developed during the digital age. The panel discussed the challenges and benefits brought on by rapidly developing technologies. While methods of documenting archaeological contexts, objects, and heritage sites are easier than ever before, how all of this data is stored, maintained, and safeguarded for the future is a problem that must be addressed.

Keywords: archaeology, digital archive, technology, data dissemination

مسح الأفق: علم المصريات في عصر التكنولوجيا الرقمية

الملخص

تناولت هذه الجلسة النواحي التي تطور فيها كلاً من علم الآثار و علم المصريات خلال عصر التكنولوجيا الرقمية. كما عملت الجلسة علي مناقشة التحديات و المزايا الناجمة عن التطور السريع للتكنولوجيات. و من ثم تطرقت إلي أنه علي الرغم من أن وسائل توثيق السياقات الأثرية ، و القطع الأثرية ، و المواقع التراثية أصبحت أسهل مقارنة بأي وقت مضي، فإن كيفية تخزين ، و حفظ ، و حماية كل تلك البيانات للمستقبل تشكل مشكلة ينبغي إيجاد حل لها.

الكلمات الدالة علم الآثار ، الأرشيف الرقمي ، التكنولوجيا ، نشر البيانات

1 Introduction: Changing times, changing technologies

Egyptology has changed greatly in the last 40 years or so. In many university departments it has shifted from a linguistic or Oriental Studies focus to become part of a faculty or Department of Archaeology or Ancient history, reflecting the closer integration of Egyptology and Archaeology (see Physical Worlds panel summary).

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Amongst the changes in working practices which this integration has either brought about or facilitated is the arrival - one might almost say near-dependence upon - digital technologies. One of the basic tools of archaeology, the making of a survey map of a site or of a site within its landscape has developed from traditional methods of survey using a theodolite, to centimetre accurate plotting using GPS, a process which renders surveys much quicker and which records the data digitally from the outset, no need of notebooks except as back-up.

It need hardly be said that the ability to use computers in the field has had a massive effect on the subject. Initially these had to be used 'free standing', and that remains the case in remote parts of Egypt, but increasingly the coming of internet access, and mobile phones has revolutionised what can be done in the field. It has become possible to communicate with specialists world-wide, to send data to remote servers as back-up and to get technical support from University and Museum I.T. specialists. So rapid have these developments been that most students today assume that work on site has always been so simple and communication so rapid.

Digital photography is now so common that it barely warrants comment in archaeology or elsewhere. However, it raises some interesting issues which relate to the preservation of digital data and which the panel discussed. Software is ever changing and though the JPEG, TIFF and RAW formats have remained stable for some years there is no guarantee that they will remain so. The ease and low cost of digital photography means that many more images are taken than would have been possible with film so that even those projects which use film as a backup cannot hope to do so on the same scale as the digital record.

It is now possible to make 3D models from photographic images, these are extremely helpful but can create large files, similarly large are the files from 3D scanning of sites. This raises the issue of where such images, along with the mass of other digital data should be kept in the longer term.

2 Storing and safeguarding data

The archiving of ever larger digital files presents a major problem for us as heritage professionals. The photographic, survey and finds data so carefully recorded needs to be preserved and yet there are very few repositories for such data. The UK has the *Archaeology Data Service (ADS)*, but deposition of data there requires that it conform to particular standards and there is a cost for its storage. It also covers only projects which have a UK participation and preference is given to projects which take place within Britain. The result is that - as elsewhere in the world - data is kept on free-standing, often private, hard drives.

Even universities and other institutions often have limited space for the archiving of digital data. If private hard drives are kept at the same location and it be subject to fire, flood or other disaster these records can be lost. Similarly if the keeper of such a repository should die or become incapacitated without recording a password such data can become irretrievable. Likewise, if explanatory metadata is not added to records they may become difficult or impossible to use in the future.

This problem around the quantity of data generated and its-non-physical nature make it particularly vulnerable and it is not impossible that future generations will find the archives of projects from the nineteenth and twentieth centuries to be more permanent and accessible than those from the twenty-first. Future scholars may be limited to the use of the publication of results rather than to the archive from which those publications were synthesised – always assuming of course that publication has been on paper and not on a website.

3 Preserving the human touch

Vertes voiced concern with how we might determine what kinds of data matter (or will matter in the future) in visual documentation and how such data can be represented in two dimensions for publication. He raised interesting points, many shared with Piquette (below), regarding the relevance of drawing in an age when every millimetre of an artefact or wall can be scanned using a variety of digital imaging technologies.

An interesting point to consider is where we, as analysts should draw the line between treating ancient objects as data sets and admiring them for the human artistry and effort which went into their creation. There is a danger that by over-analysing we might lose track of the human agency behind the object, and it is that human agency which defines what we do as archaeologists. Could our ability to render objects virtually lead to a lack of connection and engagement with the 'real' artefacts? There remains a difference between holding an object in the hand and examining it by eye and looking at a virtual rendering of that object, however good that rendering might be. Both have their place but there is a need to be critically aware of the differences. How can the human factor remain the governing force behind visual documentation in the digital age? Do professionals need to present epigraphic documentation in an aesthetically pleasing form or shall we limit our focus on academic interest and trust the observer to form their own artistic judgement?

4 Collecting and disseminating data

Anderson emphasised the need for outreach within the subject. We have traditionally collected large amounts of data to try to document, and so in some measure preserve, the rapidly degrading/disappearing remnants of ancient civilization. However, the methods traditionally used by Egyptologists have been time consuming and often labour intensive which has meant that decisions must be made as to what should be documented and to what level of precision. All projects have limited funding and decisions have to be made within the constraints of funding and of time in the field. As archaeological professionals we must use careful judgement in applying traditional methods, however, with digital methods it may be possible to record more and more fully in shorter periods of time, lessening the pressure on field time and resources. However, the data collected in the field still needs to be processed and made available. This requires resources in the University or Museum following the field collection of data.

Although techniques are now more rapid and widely available we, as a discipline, still need to continue to embrace and accelerate the use of digital techniques for the documentation of existing remains such as temples and tombs where early documentation is either nonexistent, incomplete, cursory or inaccurate. By their nature these new digital techniques allow us to more effectively and efficiently track changes over time in monuments, disseminate results more quickly, and to make the results more accessible to a wider audience not just within the disciplines of Egyptology and archaeology, but to other branches of science and the general public. Such new technologies can facilitate conservation and integrated site management of monuments.

Piquette stressed the difficulties in dealing with image data from short-term, often underfunded, unfinished and incompletely published projects which too often end up on personal external hard drives or in small repositories where this data cannot be accessed and exploited. Does Egyptology need a central digital repository for abandoned / orphaned data similar to the ADS and, if so, what would be required to implement this? This problem of personal archives is, of course one familiar from a non-digital era too, but with more rapid collection of large quantities of data it has become of still greater concern.

There is also an important question as to what extent publishers are able to support the publication of digital resources such that the RAW as well as the processed data and results (used to support the research's findings) are

all accessible - thus enabling the verification of the results or re-use / recycling of the data. The need to continually migrate data as software systems evolve is a similarly difficult area requiring considerable resources. The ADS in Britain is able to do this but for a limited number of projects and the whole issue of archive resourcing for perpetuity is a difficult one, particularly in an environment where the humanities, digital and otherwise, seem to be under continual financial pressure.

Hodgkinson discussed what researchers should consider with regard to their research data prior to conducting their fieldwork / research activities? It was felt that fieldworkers should have plans for best practice in place prior to beginning to collect data and format metadata and that thought should be given at the outset not only to the methods of collection but to the longer term storage of the data. She encouraged a reflexive approach, asking practitioners to consider what worked and what did not in their previous projects and considering how those things which had been less successful might be modified for the future. Hodgkinson also considered field and laboratory based work and made the point that the same kinds of issues applied to any projects working within the broad framework of archaeology and heritage.