Artefacts: Starters for Standards

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Abstract. Various developments in science in general and in archaeology in particular that threaten the very heart of the discipline are shortly discussed. This leads to the observation that there is an urgent need for new ways to store, access and distribute trustworthy information and knowledge. The concept of Reference Collection is introduced and its central role in high quality knowledge exchange both locally and internationally is explained. Available tools are indicated and a plan for future co-ordinated actions is shortly discussed.

1. Introduction

Democratisation of information and the enhanced universality of the research practise in general are examples of processes that change the scientific world fundamentally. At the same time, since the signing of the "Treaty of Valetta, Malta" in 1992, the discipline of archaeology in Europe is going through changes of its own, unequalled by any other discipline. From a rather marginal field, that satisfied the intellect and conscience of the few initiated, archaeology has become a partner in planning and development projects, and gained a firm place in the political arena. Not only the number of projects and participants exploded, also the discipline professionalized, involving a diversification of functions. At the same time the government likes to deregulate and is "withdrawing" from actual involvement, leaving it to the discipline itself make the rules and by them guarantee the quality. We see the development of all kind of institutions and mechanisms to do just that, resulting in an intensified formalisation and regulation of activities. These agents of change have in common an intensified exchange of knowledge and an unprecedented increase in information flow.

2. Quality Control

In the Netherlands new institutions take the place of old implicit quality control mechanisms. To date there is a College for Archaeological Quality that publishes the Quality Norm for Dutch Archaeology (KNA), containing prescribed procedures for excavations and forms to be used. The Archaeological Inspection sees to the quality of the work of the field unit by checking the followed procedures, and a Register of Archaeologists is being set up, that bounds the activities of individuals by a Code of Conduct. None however monitors the quality of the observations in the field and the actual content of the end products.
The quality of archaeological research is in principle assessable through its output;

- the research report,
- the final publication and
- the archived material, the field documentation, the descriptions of the finds (databases) and the finds themselves.

Site reports are published in numbers, but sometimes the distribution of reports is restricted. This precludes the distribution of the contents, i.e. new knowledge. But if the publication is distributed more widely, it is still often hard to assess its value. Sometimes material is not identified beyond the most basic levels. Also, the tradition of reconstructing, measuring and drawing the finds more and more abandoned because of the high costs involved. It is quite thinkable that, unintentionally and unnoticed, false information is fed into our knowledge base, because the responsible researcher did not have the expertise available. The reader has to take the information at face value, having no means to evaluate the conclusions of the research. This happened before, of course, but now possibly at a much larger scale.
Final publications are only to be expected when extraordinary important sites are at stake. The bulk of researches will only deliver site reports. Fortunately in the Netherlands a nationally funded project aims at synthesising the new information from the site reports. It is needless to say that the value of any synthesis is also dependent on the quality of the input.
The archived material is usually checked only in an administrative way: are all prescribed documents and files delivered in the prescribed format? And, are all described finds actually in the boxes? To assess the scientific value of the archived material, i.e. the field documentation and the descriptions of the finds is usually beyond the task of the keeper of the archive. In fact the scientific value of the archives is only sporadically checked.
More disturbing, however, is that traditional quality control mechanisms are no longer the major checks on the bulk of the excavation projects. Formerly, the chain of scientific control started from professor/director as the ultimate accountable person and whose reputation was at stake, via the senior researcher to the junior and finally the student. In a privatised market situation these checks on quality are absent.

Peer review is more difficult to realise as well. Where formerly one's peers were housed in clusters in a small number of larger institutions, today they are often widely dispersed over small excavation units. They have schedules to keep, unable to answer questions from members of competing company's. In such a setting quality is in fact checked only by the Code of Conduct, i.e. the scruples of the individual and much less so of the management, that will have other priorities then the quality of content alone. In fact, quality of available information can hardly be checked at all. It is also an illusion to think that the quality of field work and subsequent analysis can be enforced in any way. We will have to do with indirect methods, perhaps inter vision and with trust.

3. Reference Collections

To make up for the loss of direct quality control in the past, the only option available now is to make circumstances much more favourable for exchange of knowledge digitally, promoting the quality indirectly and at the same time offering better evaluation possibilities. Needed is an intensified and open communication about

- the results of the analyses
- the sources of knowledge used

It is of vital importance for the discipline to adjust its goals and methods to the new circumstances. Fortunately, for the larger part we may benefit from developments in other disciplines and adjust them for our own purposes, a behavioural trait that has been so very characteristic for the development of archaeology in the past.

Developments in Information and Communication Technology can help us to provide a high quality, trustworthy knowledge base readily accessible for anyone.

In our view the availability of lexicons, glossaries, dictionaries, thesauri and classifications and, the new development of ontologies, illustrated by background information, including pictorial representations, is instrumental for safeguarding existing knowledge and promote the accumulation of high quality new knowledge.

This combined information we call "reference collections". They form the vocabulary when discussing finds. Reference collections are also subsets of all the archaeological phenomena found. They can be seen as a special kind of shorthand, a statistic, a summary of the often overwhelming numbers of finds and are the result of in-depth analyses. In print these reference collections are normally included as catalogues following the scientific report. Although reference collections are a summary of all findings, they still can be very extensive. Electronic publication offers opportunities for the presentation of archaeological collections that the printed form lacks: the possibility of non-linear presentation and the practical unlimited number of pages available for colourful display. The relative compact format of reference collections allows us also to show a wider audience the wealth of our heritage without the need to digitise everything that has ever been found.

4. Dealing with standards

When talking about reference collections, the seemingly unsolvable paradox of the desire for standards in communication but the impossibility of standards in analysis immediately resurfaces. This discussion became immanent from the moment systematic recording systems were first developed and overviews were being set up in the 19th century and intensified with the introduction of the computer databases to store primary archaeological data in the field and the laboratory (viz. Chenhall 1968, Cooper and Richards 1985, Adams and Adams 1991).

We have to use standard terminology if we want to communicate our results beyond our own project/desk.

The problem with standards is that they are designed for one of many possible purposes and are temporary. Depending on the aim of a classification, be it relative chronology, cultural identity or technical evolution, other elements for defining the variability are chosen. Furthermore, typologies become refined or change when new knowledge becomes available, in short these knowledge structures are highly dynamic.

We have to explore new strategies to ensure the use of standards for documentation and at the same time allow dynamic change to satisfy scientific purposes. New communication protocols are gaining ground. Two major developments come to the front:

1. The development of ontologies for groups of material on the basis of the CIDOC Conceptual Reference Model (http://cidoc.ics.forth.gr) will add semantics to the data. It holds the promise of allowing access to multi-lingual, and multi-paradigmatic classifications and typologies by humans AND machines alike. A standard, chosen for a good reason by some people, will direct to other standards that have been developed for other purposes by others. So now, we know what we are talking about. But how are we going to talk about our results?
2. Peer to peer discussion forums, like MSN, are becoming extremely popular among the younger Internet community. Weblogs (Blogs) are become popular very as fast instruments to exchange individual knowledge and ideas. The development of Wikipedia, the free encyclopaedia, and the BBC's moderated h_2g_2, are very successful examples of democratic knowledge infrastructures, using WikiWiki collaboration software. They allow for a highly dynamic environment.

The combination of intensive communication and the definition of standards is at the core of the concept of the National Reference Collection (NRc) in the Netherlands.

5. NRc

Thoughts about the development of a National Reference Collection are relatively recent in the Netherlands. Right from the start of the development of our electronic Sites and Monument Register, ARCHIS (Roorda and Wiemer 1992) it

was clear that in order to assure high quality input we had to endorse the use of a standard terminology. A permitted terminology, an hierarchy of broad and narrow terms called the Archeologisch Basis Register (ABR 1992), accompanied the introduction of ARCHIS, but it was also evident, that with illustrations, explanatory texts and references to the real specimen, this list would become of much higher value. Technical limitations, however, precluded any development in this direction at that time.

In 1997, at the annual Dutch archaeological congress, "Reuvensdagen", two presentations expressed the need for a National Reference Collection, here meant primarily as a collection of physical objects, in order to let every archaeologist become acquainted with and refer to the same standard material and "talk the same language" when describing his/her finds (Bartels and Van Heeringen 1998), (an idea, by the way, made practise in the UK since the early sixties). The idea of standard terms was taken a step further into an international scope with a project funded by the Council of Europe. To facilitate and promote cross-border researches a multi-lingual glossary on Bronze Age monuments was developed (Barber and Van Regteren Altena 1999).

In 2002 we started a feasibility study on the possibility for a digital national reference collection (NRc). A pilot project for this will start in 2005, which has the aim of showing possible sponsors the potential of the site and to get us figures on costs. The late medieval glass collection of the ROB will be disclosed. Simultaneously to this pilot project. a project is started that will last 4 years for the automatic recognition and identification of objects from digital images. Another two year project is to develop an ontology for a reference collection of Late Medieval glass.

6. European shoulders

In 2003 a consortium of 11 European partners formed the European Reference Collection initiative (eRC). The eRC wants to address the professional archaeologist, the non-professional archaeologist and the professional non-archaeologist. It is based on the notion that knowledge on archaeological materials and material culture (including human induced features in the soil) is the foundation of all our analyses, policy-making and story-telling. To day, in an expanding discipline this kind of knowledge should be ready available for those who need it, irrespective of time and place. The consortium wants to develop, building upon the knowledge gained in the successful ARENA-project, an international knowledge infrastructure consisting of top down and bottom up approaches. The content will be provided by a network of web sites and communities of specialists at free will of course. These websites will be interoperably accessible, among themselves, but also form a central web site (portal). In each country (or super-region) governed portal sites provide facilities like distributed searching, like the hosting of collections, shows links to relevant sites, provides discussion and publication facilities, together with background knowledge on standards and ICT. These "top down" portals are interconnected allowing world-wide communication and knowledge exchange. In the UK this role of a central portal is given form by the ADS, who host already a number of reference collections. At a European level we, the European partners, will engage in the development of the network. Thereto ADS has taken the lead to make a bid for a Culture 2000 grant. Other initiatives are pending.

7. Conclusion

In the light of "Malta", internationalisation and democratisation of knowledge we see the traditional institutes are redefining their roles and new institutions are being formed. Also the profession of the archaeologist is changing with it, and need to change perhaps even more than we could think of only recently.

In this conference we discussed about how information and communication technology (ICT) can help us maintaining the highest quality standards at the source of all our knowledge: the identification of the fragmentary remains of past human activity; the interpretation of primary data in archaeology.

The challenge will not be so much the technology, but moreover to organise ourselves to adjust and use these new tools available for the good of our profession.

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