29
Computer applications in the fields of archaeology and museology in Hungary

Attila Suhajda
Hungarian National Museum

29.1 Introduction

During the 1990 WAC1 conference I had the opportunity to briefly introduce the state of computers in archaeology in Hungary (Suhajda 1992). At that time only a few archaeologists and museologists were using computers to help them in their work. This was not only a direct result of a lack of computers: the spread of any new albeit highly useful tool is directly affected by whether or not potential users can recognise the new capabilities offered by the computer. It is essential that software for the archaeologist, trained primarily in the humanities, be highly user friendly if the computer is to be recognised as a helpful ally. A fundamental constituent of the archaeologically-friendly computer is the database capable of retrieving the desired information in the most ideal format and detail (even graphically) for the researcher.

Since 1990 much has changed in Hungary. Computer hardware has become significantly cheaper and a number of museums have been able to purchase PC's; in fact their use has become everyday. Primarily PC use is confined to word-processing and occasionally to database building. In 1993, money from the World Bank and a PHARE grant provided two museums, including the Hungarian National Museum, with UNIX workstations and a high performance RDBMS software package.

Since the end of 1993 a new project has been underway within the Hungarian National Museum. Taking advantage of the possibilities offered by the new computers, the aim of this program has been to design and execute a complete archival system for the Museum. Already during the first phase of the programme a number of practical problems have been encountered, which this paper will address.

29.2 The State of Computer archival Systems in Hungarian Museums

One important advantage Hungary has is that since 1963 archiving in all museums has been conducted according to uniform legislated prescriptions. All objects are entered into an inventory book and a standard object description card is completed for the object. Of course, this by no means implies any kind of uniformity of information, yet it is possible to generalise about archival related problems (for example, unstructured record cards holding minimal information). Although computers were used in archaeological excavation work during the 1960's, it was not until the mid 1980's that they began to be used for object archival in museums. In all instances IBM compatible PC computers were used; however many different types of software made their appearance. In an effort to put a halt to this slightly chaotic situation, the Ministry of Culture and Education took responsibility and purchased the DataEase software package for the 50 largest museums. This highly user-friendly software, which can be connected to large RDBMS systems is now in place and the setting up of databases is underway in a large number of Hungarian Museums.

Following the introduction of DataEase, the Ministry of Culture instigated a project aiming to develop for each individual type of collection, a standard inventory structure capable of holding more detailed information than the old inventory books. Those who were regarded as experts on the various collections or historic periods were requested to take part in the programme. The resultant 'base forms' were complemented by various secondary databases (for example, a list of Hungarian place names) and the trial system was sent to certain museums at the end of 1992. The results of this trial were not very encouraging: the system was too complicated and proved difficult to use. The fact that many of the museums had already begun developing and preferred their own systems at the time of the trial was most likely the main contributing factor to this negative result. Thus the Ministry of Culture was quick to adopt the initiatives of the individual institutions.

In the 1990's the various museums began connecting into the national X.25 packet switched computer network. As well as the larger museums, many of the smaller county museums also connected into the system. Use of the system is without charge in academic circles.

At this point I would like to outline the Hungarian National Museum's concept for an archaeological database (which has also been adopted by the Ministry). Essentially this new concept focuses on prescribing a standard format for basic information, thus achieving a certain degree of uniformity across all computer archiving in the museums.

According to the plan, the primary databases of all the museums will be located on the central computer at the Hungarian National museum. Information will be accessible through either the BITNET or INTERNET networks. This situation is practically achievable given the available technical capabilities. Should, in the future, any of the county museums receive the appropriate hardware, the ideal scenario would see the creation of a distributed database structure. Presently the majority of

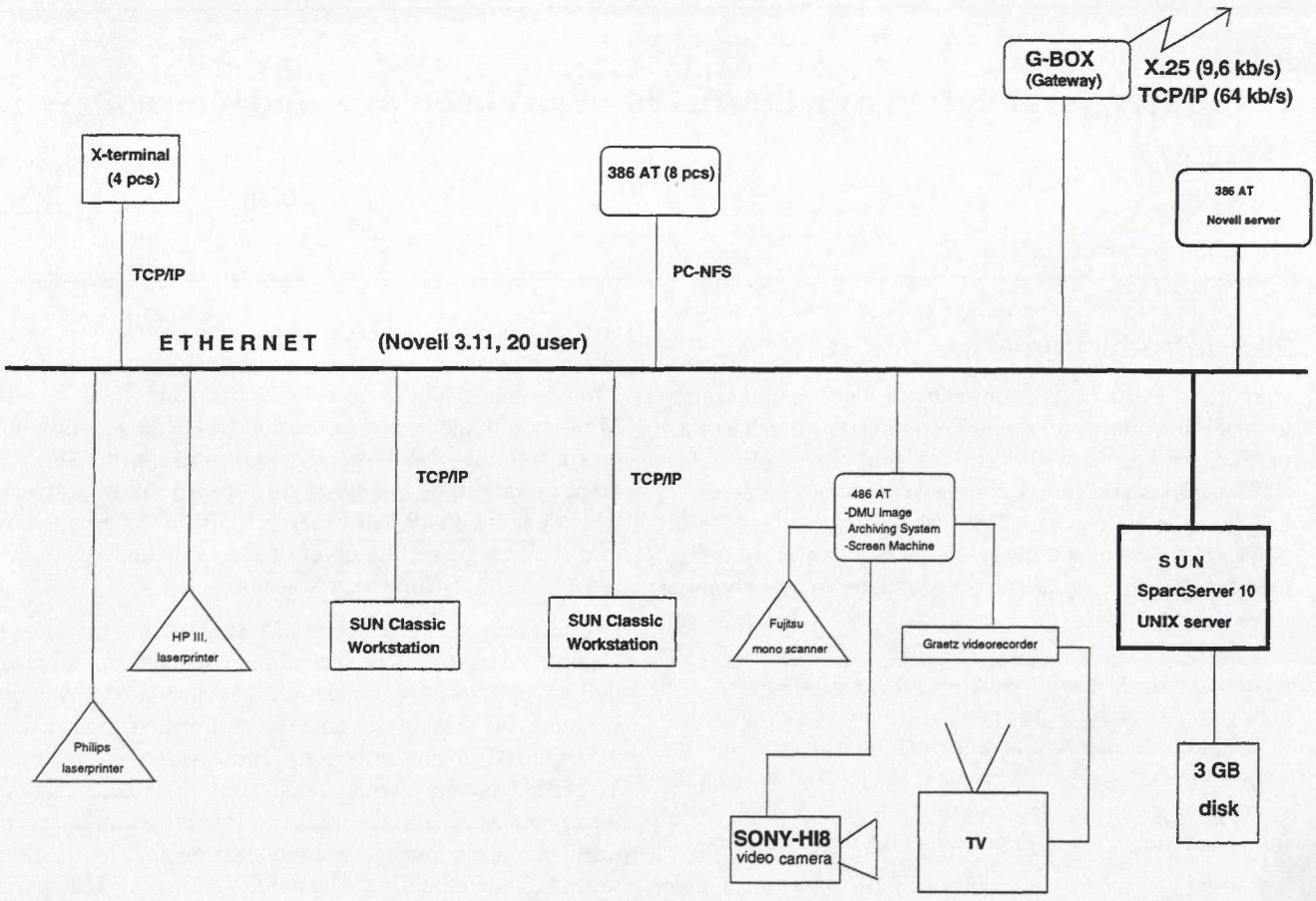

Figure 29.1: The Local Network of the Hungarian National Museum

museums are yet to be connected into the national network.

Another important development related to Computerised Object Inventories concerns the new legislation presently being prepared, which will contain clauses concerning the basic information referred to above, as well as regulating Computerised Inventories and archives (Security prescriptions, etc.). This legislation will make it possible for archiving to take place solely on the computer, removing the requirement for a hand written copy to be completed.

29.3 The Hungarian National Museum Project

The aim of this project is to enter all objects and their related information in the museums collections onto the computer in a relational database. The project extends into the following major information fields:

- object inventory
- restoration details
- movement of objects (lending etc.)
- bibliography (references to objects)
- photograph and drawings collection

Altogether, the 16 collections of the institution hold about 1.3 million objects, 500,000 photographs and drawings, and the libraries hold 200,000 books and 600,000 periodicals. It was until recently inconceiveable that such an amount of information could be held as a single integrated system. The entering of the individual collections onto computer has begun: presently the entire Roman, 10% of the Prehistoric, and a number of the smaller collections (including the Palaeolithic) have been entered, totalling 160,000 objects. As an experiment, some 1000 colour photographs and some video films were entered with the Roman and exhibited archaeological material. An Image Processing Station has been set up employing a Screen Machine Video-Signal Digitiser Card with a Sony Hi8 videocamera and both colour and monochrome scanners. Unfortunately this aspect of the work cannot be continued due to lack of adequate data storage capabilities.

The end of 1993 saw the arrival of the new hardware and software configuration (courtesy of the World Bank and PHARE funding). This comprised 1 SUN SPARCServer 10, 2 SUN Classic workstations, 4 NCD colour X-terminals and the INGRES RDBMS (Figure 29.1). Work began designing the new archival system in the light of the capabilities of our new equipment. The first question which we needed to clarify was what exactly did we want to do?

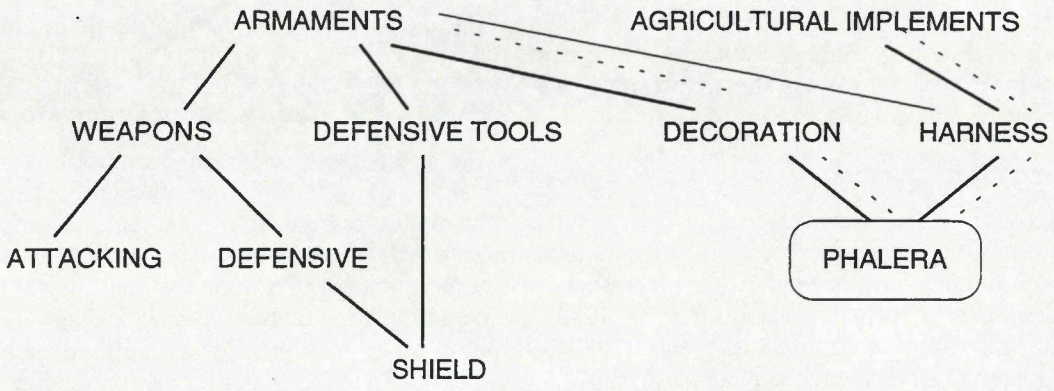

Figure 29.2: A thesaurus example

Naturally, a good archaeological database has to be an improvement on the traditional card-system. It should be:

- uniform (identical objects described by different names should be able to be located)
- user friendly (operate with a graphics interface)
- easy to transfer information to various analysis systems (e.g. statistical programs, GIS and modelling systems).
- contain visual information – pictures and drawings – about the objects.

Should these prescriptions be fulfilled, then it should follow that a whole new world of previously unrecognised relationships should unfold before our eyes. This is our aim.

Developing a database capable of handling the complex descriptions many archaeological artefacts and objects require, as well as spanning the great discrepancies in time and source of the museum's collections raised a number of problems for us. For example:

- Inventory Data. The object descriptions vary greatly in quantity and quality. This is complicated by the fact that the descriptions were frequently written more than a hundred years ago; thus it is not a simple and straightforward data conversion.
- Object identification. Inventory numbers changed in form and content over time (e.g. the year of entry was sometimes at the front, at other times at the rear).
- The same objects are recorded in the inventory or the card system under different names or even different classifications (this can be caused by a number of reasons, including the differing opinions held by two individual researchers).
- Data Protection (see below).
- Quality storage of visual records and their associated written descriptions (how to describe the contents of a picture).

The following are some thoughts for solutions for the problems outlined above.

29.3.1 Data Protection

Data Protection is one of the most difficult problems. Surprisingly, this is not primarily a technical question but often one of access to the objects. Despite it being compulsory to publish the results of archaeological excavations within five years of the finish of the excavation, many researchers 'sit' on their finds for years, not disclosing them to anyone and not allowing them to be entered into the computer database. This situation is only rectified upon the death of the individuals concerned. Of course, a stronger stance on the part of the Hungarian Academy of Sciences, which issues excavation permits, is necessary. It should also be added that one of the other reasons for the non-publishing of research is the lack of sufficient funding.

Related to the resolution of this question we have decided upon two-level access. The first level is the basic database, comprising 15 pieces of basic information:

1. Inventory number
2. Acquisition method
3. Acquisition date
4. Place of acquisition
5. Manufacturer
6. Place of manufacture
7. Identification
8. Date
9. Material
10. Dimensions
11. Classification
12. Description
13. History
14. Store
15. Picture

This conforms basically with the UNESCO ICOM-CIDOC committee recommended draft Archaeology Data Standards. Use of the system at this level essentially does not require special access status.

The second level is the Research Level Database. Various record structures (related to the various collections) for the different object types will consist of a minimum of 30–40 fields and will contain all available information about the object in question. Permission to

access this database can only be given by the person in charge of the collection concerned. Naturally, the system will keep a record of the various users, recording who logged in when and what they looked at.

29.3.2 Naming of Objects

The existence of a dictionary of terminology for the various periods would help enormously in this situation. Unfortunately, nothing of this kind exists at present in Hungary, despite a beginning made during the 1980's. The continuation and completion of this task is will be slow and torturous. Should such a dictionary finally be realised, then all the objects would need to be re-described and re-classified. This would be a gigantic task and not one which, at the present moment, is realistically achievable.

We have attempted to find a solution which requires less work and is perhaps more quickly realisable by introducing a thesaurus system whose value set corresponds to object names. This thesaurus works hierarchically and resembles to an extent the Art & Architecture programme (1992) The difference is that it is not simply a tree hierarchy but also establishes relationships laterally (Figure 29.2). Synonyms can be given, and a key word might occur in more than one category. If a search is conducted using the thesaurus then we can receive results containing the key word and/or all terms hierarchically or laterally derived from the located key word. It is hoped that the thesaurus can be browsed through whilst searching and that explanatory icons will be included with the keywords in the final product as well. The thesaurus will be used in all fields where keywords exist.

29.3.3 A few words about Image storage

The photograph collection contains a vast number of images, many of which are glass negatives more than a hundred years old or irreplaceable pictures of lost or destroyed objects. In the interests of safe, secure storage of these images it is necessary that they be digitised and stored with the highest possible quality. This is why we have begun to think about digitised storage of these images. The other major reason for this line of thinking is that an image often has far more descriptive value than any written description. Initially we considered recording the images on video film but this proved to be too slow. After looking at a number of alternatives we finally decided on a KODAK Photo-CD system. The CD provides near photo-quality, secure storage of images. The biggest problem is that, at best, 100 colour pictures can be stored on one CD, thus a large database cannot be handled in this way. The introduction of the KODAK juke-box, with a capacity of 100 CD's, might provide the solution in this instance. However, on our own we are unable to finance such an expense, and will look to sponsorship from companies with the project.

References

SUHAJDA, A. 1992 'Computer archaeology in Hungary' in P. Reilly & S. Rahtz (eds.) *Archaeology and the Information Age: a global perspective*, 52–56, Routledge, London.

Art and Architecture Thesaurus 1992. Oxford University Press, Oxford.