

Digital Archiving in Archaeology

Speaking about the Past to the Future

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The amazing progress of the information and communication technologies during the past few years is going to change entirely the way we work, write, communicate, and publish. We also have changed, whether we recognised it or not. Computers have become a familiar working tool in recent years, even if most of the users know little more than to type a text, use a mouse, and click on screen buttons. Is it too little? If we think what the spread of these basic skills means, the answer is 'no'. We probably live the greatest revolution since the invention of printing. The range of opinions goes from proclaiming a 'Post-Gutenberg Era' to minimising the impact of digital media upon traditional academic research and publishing. Technology is not cheap, and it requires specific skills. In a way, digital information is closer to audio compact disk than to print material: it needs a device to be accessed. People do not like to read long texts on screen. Therefore information technology will never entirely replace the book, the most genial storage medium for the dissemination of information. It offers a complementary instrument: the digital medium. The new technology is both an opportunity and a challenge. We have to learn to use it. One of the most interesting application areas is the digitisation of archival material.

Archaeological Archives

Archaeological archives are recent, as recent as archaeology as a scientific discipline. We can speak of archives beginning with the second half of the 19th century, when systematic archaeological excavations, surveys, catalogues and inventories replaced the antiquarian interest for collecting artistic objects from the past. In some countries archive means both material finds and accompanying documentation. I will use the term 'archive' only for information on any support.

There are at least three main types of archaeological archives: private archives; organisational archives of research institutes, universities and museums; and national archives, as a result of the development of national or regional inventories of sites, monuments and collections during the 20th century.

The development of the scientific research methodologies and techniques towards the end of the 19th century and the beginning of the 20th century went hand in hand with the growing interest to the context of the finds, for the sites and cultural landscape, for the study of the past societies and for their economic, social and intellectual achievements. In institu-

tions and private collections, the finds were more and more often accompanied by documentation material: inventories, excavation diaries, notes on field walks, correspondence, drawings, plans, maps, and photos. We have not preserved much. Many things were lost because of wars, fire, bad management, neglect, censorship, improper storage space, and lack of conservation. Time erosion added its contribution. Only a part of those early archives have been studied or even known.

The largest part of the archaeological material in our county museums - most of them created after the Second World War - started to be gathered in the 1950s and the 1960s. The growing number of excavations and the new requirements for the management of the collections resulted in a growing number of publications and an even greater quantity of paper archives. In general, the archaeological archives are badly preserved, difficult to access, and the cost of publishing is high. It is improbable for small and medium-size museums to have staff dedicated to the care of their archives. Therefore we risk losing a lot of valuable information.

Since the mid 1980s we have started to write and process data and information on computer, producing text files, tables, databases, spreadsheets, digital maps, and virtual reconstruction. A lot of information is stored in computer; searched, analysed, combined, sorted, using the specific software facilities. Only a selection of those data is printed on paper. The amount of digital resources will grow year by year. Digital files are not as stable as paper support because they need a certain computer machine to be accessed. Due to the rapid technological evolution, hardware and software are changing every five years. It becomes difficult to use older files with more recent programmes. How are we going to preserve them?

Digital archives can be either digitised paper documents or digital files. Long term archiving is necessary for both. For how long? For as long as we can.

Ideally an excavation archive has four layers:

- the basic layer are the paper archives and the collections of finds;
- the second layer is the digital archive (inventories, data bases, text files, reports, images, with the possibility to search, browse electronically large amount of data for better understanding, alternative ideas, comparisons and checking);
- the third layer is the monograph of the site;
- the fourth layer is the popular book, for the curiosity and enjoyment of the public.

All represent the publication, not just the monograph. Publishing a monograph or a final report of the results of the archaeological researches is a selective process. A lot of material will remain outside the publication, sometimes forever. Because of the limited space and the time to process the discoveries, the researcher prefers to select those finds that better confirm his or her ideas, to avoid things difficult to explain, and to postpone an entire publication for a later date.

Archaeological archives are important for several reasons, apart from the sentimental one, to pay respect for the history of the discipline:

- they contain valuable primary information about field researches;
- they were gathered at a time when archaeological remains were much more visible than today;
- the information can be revised, reanalysed and compared in accordance with the progress of theory, excavation technique and new archaeological discoveries.

We should not forget that archaeological excavation is a destructive research. All that remains from an excavation is the information. Often you cannot go anymore in the field, because nothing is left there. Any organisation should have responsibilities towards the information it creates and maintains. The archaeological archives represent a significant investment of financial, intellectual, time, and staff resources, and this engenders a responsibility to maximise the benefits which can be derived from that investment by ensuring their preservation, providing appropriate access, and encouraging their reuse¹. As it happens often in life, what should be done is not being done. The excuse is always lack of resources, while it is, in fact, lack of discipline and professional standards.

The rapidly increasing quantity and range of data being produced require an integrated, comprehensive archiving strategy, using standards in order to make all this material available. Data standards state what information to record, in what way, in order to ensure that nothing important about a research is left apart and that information retains its full original meaning in time. Too often documents related to former excavations and surveys are incomprehensible to other archaeologists (when they do not entirely miss): strange codification and symbols, omissions, personal abbreviations, lack of graphic material. Some archaeologists are against the standards of content, considering them a limitation of the creative interpretation of the archaeological discoveries. They favour only standards of forms². Data standards are, in fact, the most efficient means by which to maximise the consistency, compatibility and retrievability of information.

One of the acute problems of archaeology is that we excavate more than we can process and publish. Only recently documentation and long term storage of information related to archaeological diggings has become a hot topic of both debate and action. Important archaeological sites have been poorly documented and information is lost in great part. Unfortunately, few Romanian archaeological publication projects were accomplished as planned. We can compile a long list of eponymous sites excavated for many years and not having yet a complete monograph: Boian, Gumelnița, Hăbășești, Tărtăria (Neolithic period); Glina, Monteoru, Otomani, Wiettenberg, Verbicioara, Tei, Noua (Bronze Age); Babadag, Bârsești-Ferigile (Hallstatt); great sites from Latène period; Greek and Roman cities and fortifications, as well as those for the Byzantine and mediaeval periods.

A general image of Romanian archaeology would be full of 'black holes'. Even the monographs are only a severe selection, often one-sided and influenced by both the cultural and ideological background of the time and by the personal qualities of the author. 'Fashion' and the knowledge level of the period might also have influenced selection. Some categories of objects are eliminated just because either their significance was not known or because they have been considered unimportant. Only full access to archaeological excavations archives and complete and illustrated inventories could assure periodical reconsideration of earlier researches and new connections, which leads to an entire new vision on some archaeological cultures.

Archaeological maps published during the communist period need careful revision too. During the Cold War, Eastern European countries adopted very severe regulations concerning the use and publishing of maps. Any plan beyond the scale 1:500 was considered potential military secret, as well as the indication of heights and topographic details. The maps published during that long period, at a time when archaeological excavations were done on a large scale, are incomplete and even false. Cultural areas were sometimes drawn without any real base (e.g. Ipotești-Cândești). They need revision in accordance with archaeological reality.

Neither archaeological collection is properly documented. In many museums and research institutes, archaeological collections are not fully registered and lack photo documentation. The problems I mentioned are general problems worldwide. Should we invent archaeology for 'digging' for archaeological information?

Romanian archaeology is still little known abroad. Few publications in foreign languages appeared, with modest issues and poor distribution abroad. There are relatively many local museums periodicals, but most of them in Romanian and almost unknown (even in Romania those publications are not found in book shops.) People interested hardly find the information they needed. The common feature of older Romanian publications – with few exceptions - is the scarce and poor quality illustration. It is sad to see recent archaeological books, published abroad, with very few and sometimes obsolete information about Romanian archaeological reality. Romanian archaeologists are poorly informed too. Many books and papers begin with deploring the lost material, the unpublished earlier excavations, etc.

I do not imagine it will be easy to surpass so many problems accumulated in time. Still, there is something we can do: digitisation and electronic publishing.

Digitisation of Archaeological Information

The digitisation of documents and images - through either scanning, Optical Character Recognition (OCR) or data entry - and publications on CD-ROMs and the Internet is a way to save, preserve, catalogue, and facilitate access to such resources.

By digitisation, the border between archive and its publication is removed. A CD-

ROM is a catalogue, a book or a journal on an alternative support: less expensive, smaller, and easier to circulate. At present, the low use of archives is due not to a lack of demand but to a lack of accessibility. The Internet, a global virtual library, allows consultation of digital archives stored on a computer server from any place, at any time. Although the Web access is still restrictive outside the developed countries of the world - which have 80 per cent of the Internet users - we can expect a growth in the near future. How can we achieve that? I will refer to some principles and technical issues, and then exemplify by describing undergoing and finished projects of the Institute for Cultural Memory (cIMEC).

Principles of Selection

The question of which criteria should be applied, and by whom, in the selection of material for digitisation and preservation ought to concern scholars. Criteria, which might be used to govern the selection of material for digitisation, include:

- where the information content is high;
- where significant research and teaching benefits would accrue from its conversion;
- where material is at risk;
- where the benefit of digitisation is greater than the risk to which it subjects the material being digitised;
- where the existing storage medium is no longer suitable (e.g., nitrate film, photographic prints);
- where digitisation would significantly increase resource accessibility; where 'rights' issues are not a barrier to dissemination and reuse;
- when it enhances the ways in which the content of collections can be studied, manipulated or accessed.

Preservation Strategies

Scanning can digitise the original non-digital material (texts, photos, plans, and maps). Digital archiving projects are not very expensive at institutional level. To scan, to rename the image files in a clear way, to organise them in directories, to record basic identification information for each item and to inscribe the files on CD-ROMs require a personal computer and a scanner, plus one or two persons to do the job. More important are careful planning and good will as well as the commitment to fulfil the task.

The resulting image files, TIFF format, must have a high resolution. The files will be organised in directories and subdirectories, renamed following established rules, and copied on CD-ROMs, in several copies, for long term preservation. CD-ROM copies must be stored in different locations for safety reasons. A copy of the image files in JPEG format is more suitable for daily browsing, and can be kept on the hard disk (if there is enough space).

All excavation-related data must be stored in a project directory with a relevant name (site name, or site name and year). The subdirectories include:

- Data sets (databases, spreadsheets);
- Correspondence;
- Project management;
- Reports;
- Images.

Files must be given meaningful titles, which reflect their content. In order to ensure that files are titled in a structured and predictable manner, the file names must include either the relevant project/site identification (e.g. site code, site acronym, project number, accession number) or a unique reference number. The file name must include version number when necessary. A hyphen must be used between the number and the year (e.g. 153-2002). The 3-letter extension is reserved for application-specific extensions only (DOC for Word documents, RTF for Rich Text Format, TIF for Tagged Image File Format developed by Adobe for raster images, JPEG for Joint Photographic Experts Group, a compressed Format).

Digital file preservation strategies include technology preservation, migration, interoperability and standard formats.

Technology preservation is a strategy based upon the preservation of the original hardware, operating system, and application software required accessing a digital resource. A person must know to use them. That can be only a short-term solution. The effort is unreasonable in the long term.

Data migration is the most widely adopted strategy. It is a transfer of a digital resource from one hardware and software environment to another. Many common software packages allow files created using a previous version to be converted to the latest version format. The backward compatibility is usually limited to the most recent previous version.

Interoperability is a capability of reading and converting files formats created by a similar software package into another, or of converting files to common interchange formats (e.g. comma delimited export format).

The use of widely acceptable standard formats, software independent, is a good solution for certain types of data (e.g. HTML for text and TIFF for images). The use of such international formats has the advantage to allow the access on any kind of computer, digital resource being no more dependent on any particular software package. The challenge is to maintain the authenticity of the original digital resources during any of the chosen procedures (e.g. to avoid losing or changing data in a non-controlled way).

Cataloguing

For the retrieval of information, digital files must be catalogued using metadata. Metadata means 'data about data'. It is a cataloguing technique for the information files, whether digital or paper based. A library catalogue is a good example of metadata. The reader can look for a topic, author or title without having to browse through the books or periodicals themselves. Also related resources can be more easily linked. One of the most popular metadata standards is the so-called Dublin Core Metadata Standard³. It is a simple and useful system for archaeology files. It provides an easy and concise 15 elements core designated to describe any type of information:

1. IDENTIFIER (unique identifier for a resource)
2. TITLE (name given to a resource; if title information does not exist, it can be concatenated from other elements, e.g. Poiana Settlement)
3. DESCRIPTION (free text description of a resource)
4. SUBJECT (keywords classifying theme or concept of a resource, e.g. Cremation cemetery)
5. COVERAGE (concerned with spatial and temporal characteristics of the intellectual content of a resource, e.g. the Iron Age)
6. CREATOR (people/organisations primarily responsible for creating intellectual content of a resource; There can be multiple creator roles associated with a resource, also archival information - finds, paper, microfilm, etc.)
7. CONTRIBUTOR (minor intellectual input)
8. DATE (dates associated with creation, validity maintenance and availability of a resource, e.g. project start: 1965)
9. FORMAT (data format)
10. LANGUAGE (language of the intellectual content of a resource – generally represented by ISO 639 two letter codes, e.g. RO for Romanian)
11. PUBLISHER (entity responsible for making a resource available in its present form, e.g. CIMEC)
12. RELATION (related resources – identifiers, bibliographic references, etc.)
13. RIGHTS (rights management statement – intellectual property rights, copyright, access conditions, etc.)
14. SOURCE (information about a resource from which the one being catalogued is derived – e.g. books, archives, detests, record – normally references by an ISSN, ISBN, URL)
15. TYPE (resource type – the nature of a resource or object (book, article, dataset, collection, digital archive, etc).

All elements are repeatable in Dublin Core except IDENTIFIER, which is necessarily unique.

Long Term Preservation

There are three basic principles for preserving electronic media:

1. First, they should be stored in a proper storage environment, which is different from that of paper-based material: 18-22°C temperature, 35-45% humidity, without much fluctuations in both, no magnetic fields, kept in cases, no direct sunlight, contact with dust, smoke or liquids and not left in drives unnecessarily.
2. Second, more than one copy should be made and stored separately.
3. Third, their conditions should be monitored regularly, by sampling, to check the information is still intact and accessible. If any problems are encountered, new copies should be made immediately.

The two main types of media used today are *magnetic*, which relies on a pattern of magnetic impulses to store data, and *optical*, which relies on a pattern made by laser light. The latter have a greater capacity and more stability in time. The CD-ROM (Compact Disk Read Only Memory) was developed from the audio CD, one of the most successful consumer products since television. It is a plastic disk coated with a reflective aluminium surface and sealed by a protective clear lacquer, in which sometimes product information is printed. It offers 600 megabytes of storage, equivalent to 200,000 pages of text or 15,000 images. Accelerated ageing tests have led to a claim that average disks will last as long as 1,000 years.⁴ The real problem lies not so much in preserving media as in ensuring that the information they contain will remain accessible. The drive mechanism for accessing the CD-ROM and the software or programmes used to control it do not survive 1,000 years, or even 100 years. With an average hardware and software life span of five years, it is a formidable challenge to tackle the problem.

Any organisation can digitise its archive, but the long-term preservation should be the responsibility of a special national body, funded for this purpose, and able to fulfil more complicated technical operations. The first such service in the world is the Archaeology Data Service (ADS), established in 1996 and located at the York University, England. The aims of the ADS are defined as follows:

- to collect, describe, catalogue, preserve, and provide user support for digital resources that are created as a product of archaeological research;
- to promote standards and guidelines for best practice in the creating, description, preservation, and use of digital archaeological research data within the UK archaeological community;
- to facilitate access to existing archives, and offer Web access to such resources (<http://ads.ahds.ac.uk>)⁵.

The work of ADS is a model for other countries. In Romania, the Institute for Cultural Memory is the most experienced organisation in preserving digital resources, providing access on-line, and assisting other institutions in developing their own

projects. The archaeological community must be aware of the importance of preserving digital archives and join forces to establish it in a coherent way.

Electronic Publishing

Publishing a large amount of data mainly in digital format becomes more and more appealing, as complicated and unpractical as it seemed until recently - 'Who will read?' 'How would that be accepted by the academic system?' Information technology is cheaper and more available. CD-drive is a standard component of any new computer. Internet is accessible even in less developed countries (see the spread of Internet cafés). Archaeologists and other professionals are more familiar with computer use. The prestige of paper catalogues monographs and reports remained intangible, despite the high costs, distribution difficulties and low number of issues. Can we replace them entirely or in part with electronic editions (Web publishing and CD-ROMs)?

The Institute for Cultural Memory (cIMEC) is already well known for its commitment to the dissemination of computer use in cultural heritage sector. The Web site of the institute, opened in May 1996 (<http://www.cimec.ro>) remains the main gateway to Romanian cultural heritage information. A dedicated site for archaeology (<http://archweb.cimec.ro>), developed under the ArchTerra European Project, is a useful and generous host for Romanian archaeology. What are the main chapters of information we bring to the public, either specialists or only amateurs?

- Sites
- Archaeological excavations
- Bibliography
- Legislation and regulations
- Virtual exhibitions
- Archaeological journals index.

We discover, assist and publish electronically what otherwise would have remained inaccessible. We are currently involved in several digitisation projects. One project is the digitisation of the card archive of the 'Vasile Pârvan' Institute of Archaeology in Bucharest, known under the name of *Archaeological Repertory of Romania*.

The Archaeological Repertory of Romania Archive Digitisation Project

The 'Vasile Pârvan' Institute of Archaeology in Bucharest started half a century ago (in 1949 - 1950) the documentation for the Archaeological Repertory of Romania (RAR). It resulted in an important amount of paper cards bound together in files, arranged topographically on regions, districts and localities, according to the

administrative organisation of the time. The activity stopped in 1956 due to lack of funding. The paper archive has never been published, although scholars working for territorial archaeological repertories consulted the archive during their preliminary documentation. The project had the ambition to record any mention of archaeological discovery in the known literature back to the 18th century as well as the unpublished field surveys. The result was a rather heterogeneous bunch of information. Despite that, the Archaeological Repertory of Romania has become a myth. The legend of a unique and valuable information content together with the very restricted and selective access to it induced the idea that the archive is a must for any attempt to do an archaeological inventory, in any part of the country.

During the past fifty years, the only intervention upon the archive was done in 1968, when the director of the Institute, the late Professor D.M. Pippidi initiated the up-dating of the location information according to the new administrative organisation of Romania (from 1965), in forty one counties instead of districts and regions. The manuscript cards were typed - with no further checking of the quality and correctness of the content. The regions and districts for each locality or place of discovery were converted into the correspondent counties. Then, silence again, although from time to time the idea of bringing up to date and publishing the repertory came into discussion, with no further action. The cards yellowed, the ink faded, and passing of time made the up-dating and critical interpretation of the archive more and more difficult.

In the meantime, the county museums started to publish county repertories – a valuable undertake, although the methodology, content and illustration quality was sometimes to be blamed. Many of them included information extracted from the RAR archive, either citing it or not (as in the Archaeological Repertory of Cluj county). Only one third of the Romanian territory was covered. For the older ones, published in the 1970s, up dating is needed. The future progress in the development of a modern National Archaeological Record cannot be done without including previous undertaking. Being responsible for the National Archaeological Record of Romania, we proposed to the management of the Institute of Archaeology to digitise the archive and make it available for further research by publishing in digital format.

The project of digitising the RAR archive started in 2001, following a co-operation agreement between the Institute for Cultural Memory and the Institute of Archaeology. It aims at critically extracting the basic information out of the manuscript into a database (location, site type, period, and bibliographic reference), and scanning the originals for digital archiving. A working group proposed the data model. A database application (Access 2000) was designed for the aims of the project. The Institute of Archaeology is responsible for cataloguing, and CIMEC is responsible for the database maintenance, scanning of the original cards, image processing, and inscribing them on CD-ROMs. At least one copy is stored in each location.

The database will act as a search index, and the user has also the possibility to read the original cards on screen. A team of young researchers of the Institute of

Archaeology⁶ extract and enter the information into the database, while the equipment, the software application, the technical assistance and the scanning of cards is provided by CIMEC. The result of this enterprise will be a digital archive with searching facilities, on CD-ROMs, suitable for reference, research and further study, updating and dissemination. An index of the RAR archive is going to be published in a volume. The Ministry of Culture and Religious Affairs, through the Archaeology Direction, finances the project as part of the National Archaeological Record. At present (November 2002) there are over 5,500 records in the RAR database (5,522 site records, 4,621 localities, 1,769 assemblies, 831 complexes, 6,970 finds, 14,954 bibliographic references) and 3,000 cards are scanned, which represent some 40% of the archive.

The project followed several stages. The first operation was to inventory the archive. Nobody knew before if we have 100,000 or 50,000 pages. After the identification and recording of the localities for each county, we could establish the volume of information: there were 32,000 documents, covering 4,600 localities. A general statistical table allowed for the first time to get an image of the content of the archive, on counties and localities. Two months after the work started, we solved the enigma of the amount of cards and gave identification numbers to each card page, for reference. At CIMEC, the localities and areas of discoveries were identified in the official file of the administrative organisation in Romania (SIRUTA), and unique administrative entity identification codes were provided.

The second operation was to start, in parallel, the scanning of the text archive and the extraction and recording of its basic content, with the purpose of creating an index database. What are the expected results?

- Saving the archive and facilitate access to it in digital format;
- Providing search indexes on location, period, site type;
- Including the information into the National Archaeological Record Database;
- Providing a bibliographic reference index;
- Creating a searchable digital resource with a friendly user interface for searching, browsing, zooming and printing;
- Publishing in digital format.

The project is neither spectacular nor a masterpiece of technology. It rather illustrates what we should do and could do with a low budget in order to save, bring back to the public eye and facilitate contemporary access to a work done long ago, with public money too.

Other documents in the historical archive of the Institute wait for digitisation. Most of them have never been published, are difficult to study, and in a poor state of conservation. We scanned selected text documents, drawings; museum inventories, and surveys information such as:

- Inventories from the mid 19th century of the National Museum of Antiquities;
- Journals of surveys from 19th century – beginning of the 20th century;
- Drawings, paintings, plans of sites and finds;
- Old photos from the late 19th century excavations at Tropaeum Trajani (Adamclisi, Constantza county) and Suceava mediaeval city.

They belong to the history of Romanian and European archaeology. They are also a source of information for reference and present days research.

National Cultural Heritage Database: A Recovery Success Story

Managing large databases over long time periods, in a changing technological environment is a huge task. If you work with such electronic information resources, you know what I mean. If you do not, or have just started a database project, try to imagine your database in twenty or thirty years from now on. Our projects are usually planned for a period of three to five years. Our databases must live much longer.

Databases initiated years ago are getting old. The question is: what should we do with them? Should we abandon them, or should we try to recover the information? The bigger the effort involved in the development of the database, the stronger the desire to save the information. The fast technological evolution during the past few years has brought problems which few people had envisaged only ten years ago: how to provide access to electronic information depending on programs or hardware platforms obsolete today? How to preserve the electronic information in time?

A research database is never complete. There will be always new data or new angles to revise data. The same with cultural heritage databases, like those for museum collection management or national records. The latter are active for a long period of time, need important human and material resources to develop and tend to become inertial (like banking or other extensive information systems). Because of both their complexity and the amount of data stored in the databases, it is more and more difficult to keep up with technological changes. Some older databases were simply abandoned. Other data sets are preserved together with the software, which assures the access.

When having to upgrade a database, there are at least three aspects to take into consideration: the software recipient, the formal aspect of data and the quality of the content.

We have to migrate the old database into new software and, sometimes, on another hardware platform. The rapid changes in modern technology - which created the problem, together with new opportunities - have determined the software vendors to offer the required update software tools, even if those tools are not entirely satisfactory. As you know, conversions not only from one software to another, but also from the old to the new version of the same program recover well data but loose programmes, and user developed applications.

It is equally difficult *to get rid of the database 'wrinkles'*. What are the signs of data old age? The text is written in capitals, with no diacritics (for languages like

Romanian or French, these are highly significant for pronunciation and may even change the meaning of the word). Data are rigidly aggregated in fields with visible fixed length. No field description is longer than 256 characters (memo-type fields are a more recent invention). Data structure often reflects the requirements of the initial software, even if the records are now in a relational database application: flat unique table, several different data in the same field (like *period* and *author*), many abbreviations and codes. The content is still valuable but the form obsolete, difficult to read, and to use. When, whether and how should we change that?

Database content needs on-going improvement. That means information updating, formal errors checking - all usual operations in database administration. In many old systems, limitations of disk space and other technical restrictions imposed a fragmentation of database records either in several databases, according to thematic or data entry period criteria, or on several information supports. Only later, when technology and hardware resources of the institution allowed that, various parts have been united in the same database (brought under the same roof) and all kinds of mistakes came to light.

Database content improvement also means rethinking the development of the database in light of present trends: images, large descriptions, multiple use, on-line access on the Internet.

Database Decisions: to Change or not to Change?

The option to make improvements to a database depends very much on whether the data set is an open or closed one. For an archaeological excavation inventory, electronic archiving of the database and the preserving of the original software is often enough. We are aware of the importance of keeping the original archaeological finds digital inventories, as well as the paper archives documenting the archaeological excavations, either published or not.

On the contrary, if the data set is actively used, growing or envisaged for new goals, we must seriously think to improve it. That is our case at CIMEC with the national database of movable cultural heritage.

The Romanian Database for National Movable Cultural Heritage (SI-PCN) started more than twenty years ago (in 1981) and has 760,000 records, 40 per cent of them being of archaeological interest. It was based on a French documentation software package (MISTRAL 2 of Bull Company), on a mainframe produced in Romania, FELIX - a French licence of IRIS-50 mainframe model. It is a historical information resource, with contributions from many institutions. It is "historical" also because the information is 12 years old or more. The growth rate of the number of records declined abruptly after 1990, when the information system for the inventory of the national cultural heritage was severely troubled by the political changes following the fall of the communist regime. Museums

have stopped sending new object cards (or electronic records) to the national database. That was bad in one way but good in another because we got the time to enter the tones of cards gathered at CIMEC. The database was migrated from the old technological support to the new one, based on personal computers. At the same time we entered some 500,000 object cards sent in the previous period. After 1996 the national database could have become a closed archive if new developments would not have made the national database a project underway again. Not only because new records are going to be added and catalogues to be extracted (like the series dedicated to the gold coins in Romanian museums) but also because Romanian museums only recently have started to computerise their collections inventories. There are few computers and limited data entry capacity in museums. Under these circumstances, a copy of the museum records from the national database is valuable: saves time, offers a data standard model, and a core information to begin with (large museums have up to 80,000 records). Many Romanian museums asked for copies of their records from the national database. A third of the database records is going to be distributed that way. It would have been a pity to give the copies of the records in an old-fashioned format. The database was poorly used because of its rigid format and unfriendly user interface. That is why we decided to improve the content of the records, to normalise, correct and up-date the information.

Database Changes: What, How, Who?

You need a lot of courage to start a project of radical improvements. Today, half way in this undertaking, we can present results and solutions, which could be useful for others too.

The work has been carried out in steps:

a.) Change of the software recipient and hardware platform

The first stage (1990 - 1993) was dedicated to data migration onto a new hardware and software platform, in parallel with adding new records: from Mistral on mainframe to Paradox, FoxPro and later Access on server and PCs network. Now the database is in Access 2000. Several databases were merged into a unique one.

b.) Change of the formal aspect of data and global corrections

The second stage was dedicated to formal changes and spelling corrections:

- changing automatically the text in the main fields - object type, period, material and technique, place of discovery, site type, description - to small case, title case or sentence case;
- adding diacritical signs (manually and with facilities like Find/Replace);
- normalising the terminology;

- identifying good information which have been placed in the wrong field (e.g., date in the "Author" field) etc.

The work was done in part automatically - using a module designed to extract unique occurrences from a database field into a table with three fields: *old term, count of term in records, new term*. The extraction can be applied to any table and any field. We have the option of parsed extraction (each value extracted separately from multi-value fields - or not (the field content taken as a single string). For example: Archaeology: Type: 1,629 terms; Period: 725; Place of discovery: 7,394 terms; Materials and techniques: 2,646 terms; Site types: 513. In total 146,256 terms were extracted in parsed mode (otherwise, the combinations of terms in the same field would have lead to much more records).

The next operation was to change globally the case, by copying automatically the initial term into a "New Term" field, with lower case, title case or sentence case, depending on the meaning of the field. Then, we put diacritics with the aid of a spelling checker. One by one case, spelling mistakes and useless variants of a term corrected; are marked by a special sign (#) errors which could not be solved out of their context. Counting occurrences of each single term in a data field is a useful guidance for finding mistakes (one or two occurrences for a term is suspect).

A team of six analysts worked for 4 months with 150,000 terms and variants. Another person verified each field three times, each time. The last checking was done by experienced archaeologists.

The third iteration was for corrections in the context:

- importing new terms in the database by replacing old occurrences with new ones;
- extracting by query records marked (with #) in various fields and correct them in the context;
- updateing records in the database.

Then, unique occurrences were extracted again, in order to make a second revision, as well as to put marks in a special marking field, and to allow splitting of aggregated information. We plan to split into elementary fields:

- by position;
- by terms list;
- by marking;
- by prefixes.

Not only that aspect and data quality improved, but so did the resulting indexes for each field as well.

c.) National Database Index

The third round was for extracting statistical access index of the database. They are available on the Web too (<http://www.cimec.ro/scripts/pcn/index/>).

Adding images will further improve the usefulness of the database. We started to

scan photos of objects recorded into the database, preserved in a photo archive of 140,000 items at CIMEC. Some 4,000 photos are already in digital format (November 2002).

National Database Before and After the Treatment: Results and Benefits

Efforts to give a new life to an ageing information resource are to the benefit of the museum community. The database can be more actively accessed. It is more suitable for producing catalogues. We can extract copies for the implementation of local databases. An on-line content index is available.

We cannot preserve the entire cultural heritage for the future, but we may try to preserve the information about it. Databases for cultural heritage are precious documentation resources, which deserve proper care. We also have to learn from these painful upgrading efforts to insist for the use of data standards, to be as close to “future-proof” as possible.

Our mission is to assist digitisation inside a community still very shy in matters of new technology, and disseminate the results for a wider public, at home and abroad. The obstacles are not so much money but the organisation. At the same time a new attitude towards opening the locks of ‘hidden’ archives is needed.

European Projects in Digital Archiving

In Europe, the active policy for encouraging the development of e-content and the information society was favourable to digital archiving initiatives. Several programmes and projects of the European Commission and the Council of Europe deal with digital archiving.

AREA (Archives of European Archaeology) is a research network dedicated to the history of archaeology, with particular emphasis on the archives of the discipline, their promotion and preservation. Now entering its third phase of activities with the support of the European Commission (Programme Culture 2000), the AREA databases are freely accessible on the website (<http://www.area-archives.org>). The main database concerns archival resources relevant to the history of archaeology (over 3000 records in some 300 repositories across Europe). A second database is being elaborated on another primary source: early antiquarian books. This will combine bibliographic details on rare pre-19th century books with their attached iconography in digitised format.

ERPANET (Electronic Resource Preservation and Access Network) is funded by the European Commission under IST programme. The project is going to build an active community of members to enhance the preservation of cultural and scientific digital objects through rising awareness, providing access to experience, sharing policies and strategies, and improving practices (<http://www.erpanet.org>).

ARENA (Archaeological Records of Europe - Network Access) is a three-year project (CULTURE 2000 Programme), co-ordinated by the Archaeology Data Service, and dedicated to extending on-line access and digital preservation of European archaeological archives. CIMEC is a partner in this project (http://www.cimec.ro/Arena/Arena_eng/index.htm).

ARENA brings together six European co-organisers and three associated partners in Denmark, Iceland, Norway, Poland, Romania, and the United Kingdom, in order to develop a framework to protect and promote digital cultural archives of European significance (ARENA Homepage: <http://ads.ahds.ac.uk/arena/>). Each of the partners has a regional or national responsibility for the management of cultural archives (either digital or paper) and each has existing strengths as regards the protection or promotion of digital data. It is intended that the co-operation agreement will develop and strengthen co-operation between the partners in a structured and long-lasting way and will be extensible to allow additional partners to participate beyond the lifetime of the funded start-up phase.

Aims of the ARENA Project are:

- To allow the partners to share and extend their existing expertise and experience within a structured and sustainable framework;
- To make expertise and experience gained through the project available to other European agencies;
- To develop and promote digital archival file format and metadata standards and communications protocols;
- To identify areas where there is a need for Guides to Good Practice, to translate existing Guides, and to seek to develop projects for the creation and promotion of new Guides;
- To promote scholarly and public access to selected digital archive data sets and archaeological texts of international significance;
- To develop a system of interoperable map-based searching which allows users to cross-search the archives of several partners, with an easy to use and intuitive user-interface, for public use;
- To agree metadata standards for the description of cultural archives;
- To investigate the use of multilingual thesauri in cross-searching;
- To implement interoperability using http and/or Z39.50 protocols and SGML/XML or other emerging technologies;
- To create a framework for a European Archaeological Archives web-based portal.

Over the course of the agreement we intend to undertake a number of distinct but interrelated activities, within the framework of a European digital archiving cultural heritage network:

(1) Organisation of initiatives for exchange of experience and the further training of professionals.

It is intended to develop a programme of European seminars and workshops on the preservation and promotion of digital cultural heritage data. The workshops will allow the partners to share their existing expertise and experience and to make it available to all European countries. The partners will also develop and promote guidelines for digital archival file format and metadata standards and communications protocols translated into local languages and disseminated in paper format and/or on the Internet, as appropriate.

(2) Promoting elements of the heritage concerned including important archaeological texts (books, papers, catalogues) made available in digital format.

Each of the partners is responsible for the protection and promotion of significant archaeological archives. As part of the co-operation agreement they will make a number of key archaeological archives and cultural heritage data sets available to the profession and the general public.

(3) The adapted and innovative use of new technologies, to the benefit of participants, users and the general public.

Archaeological data always have a geospatial component in that the location and various attributes of sites, monuments or finds can be mapped according to grid reference co-ordinates. Many of the partners already have some experience in the use of map-based searching and web-delivered clickable maps. For example, since 1997 the DKC at the National Museum of Denmark has operated an interactive map-based web site with access to the Danish National Monuments Record. The ADS has also recently provided map-based searching for its catalogue. This approach provides a very intuitive interface to cultural data, for academic, professional and public audiences. Such spatial interfaces are particularly important at European level, where a true understanding and appreciation of past cultures and societies (such as Celts, Romans, Slavs, Vikings etc) depends upon map-based searches which transcend modern political boundaries.

(4) Organising research projects to raise the public's awareness and to teach and disseminate knowledge.

Web-based technologies for the documentation and preservation of digital data are developing rapidly. The ADS has substantial experience in the Dublin Core metadata scheme and Z39.50 communications protocols which have already been adopted by a number of bodies across various disciplines and in different European countries. For these to work at a transnational level it is necessary to investigate the application of multilingual thesauri. The Norwegian Museum Project has extensive experience in the application of SGML/XML to archaeological archives. Such standards are essential in order to develop interoperability and integrated access and resource discovery for the scholarly

community and general public alike. Under the co-operation agreement the partners will research and implement these standards and develop research projects to enable interoperable access to distributed archives from a European heritage web portal.

Digital archiving is a new field of activity with a great potential. Research and co-operation at a national and international scale is going to improve the methods, the tools, and the standards needed to gain the expected benefits for archaeology in saving, preserving, facilitating access, and publishing the most significant archives.

Notes

¹ A. Brown, *Digital Archiving Strategy*, *English Heritage Centre For Archaeology*, 2000.

² T. Madsen, *Digital Recording of Excavations - Do we need standards and common strategies?*, in *Our Fragile Heritage. Documenting the Past for the Future*, Copenhagen, 1999, pp. 131-137.

³ The Dublin Core Metadata Initiative (DCMI) is an open forum engaged in the development of interoperable online metadata standards (<http://dublincore.org/>). Initiatives include the development of the Dublin Core (DC) 15 element metadata set. Many governments are now adopting DC as a metadata standard.

⁴ G. Mackenzie, *Preservation of Electronic Media*, in *Library Conservation News*, no. 38, January 1993, p. 1; *New Scientist*, 4th April, 1992, p. 19.

⁵ J. Richards, P. Miller and A. Wise, *Digital Archives in Archaeology*, in *Our Fragile Heritage. Documenting the Past for the Future*, pp.123-130.

⁶ Roxana Dobrescu, Adina Boroneanț, Andrei Măgureanu, Adriana Panaite, under the supervision of Dr. Alexandru Păunescu.



Fig. 1. Prof. Vladimir Dumitrescu (from the archive of Dr. Silvia Marinescu-Bîlcu).

⑥ E în genere cunoscută constatarea că marile cursuri de apă care străbat continentele au avut aproape întotdeauna un ~~un~~ rol la dezvoltarea civilizațiilor, încă din cele mai vechi timpuri. Acest fenomen a fost verificat în clipe strălucit atât în ce privește civilizația egipteană, cât și în ce privește civilizațiile din Mesopotamia, ea să citeze numai două exemple mai cunoscute și incontestabil concludente pe deplin. Dintreaga civilizație egipteană — ale cărei începuturi preistorice se urcă la cel puțin 5.000 de ani înainte de Christos, nu poate fi explicată și înțeleasă decât prin valoarea Nilului, fără de care ~~interaga~~ ^{și} regiunea ar fi fost un pustiu și n'ar fi putut avea nici un rol în istoria civilizațiilor omenești, așa cum Herodot vorbește că « Η Αἴγυπτος ὄψον τοῦ Νείλου ἐστὶ — adică Egiptul este un dar al Nilului » — nu face niciodată o glorie stilistică ci exprimă în chip lapidar un adevăr istoric incontestabil.

⑦ Același lucru se poate spune desigur și despre civilizațiile din Mesopotamia: fără binefăcerea Tigrului și Eufratului n'ar fi avut aici nici civilizațiile preistorice dela Susa și dela Ur — și n'ar fi avut apoi nici civilizațiile istorice — în general mult mai bine cunoscute, sub denumirea de civilizația asyro-babiloniană.

Exemplele acestea se pot înmulți desigur, însă nu cred că e locul să prelungim aici această exemplificare.

Sau totuși această constatare a rolului fluviilor în dezvoltarea civilizațiilor omenești dealungul mileniilor și al

Fig. 2. The manuscript of a course on prehistory taught by Prof. Vladimir Dumitrescu at the Bucharest University, in the 1930s (from the archive of Dr. Silvia Marinescu-Bîlcu). The original manuscript was scanned and the content transcribed on computer. Both were published by CIMEC on the CD-ROM with the title 'An Unknown Culture: Gumelnița' (2002).

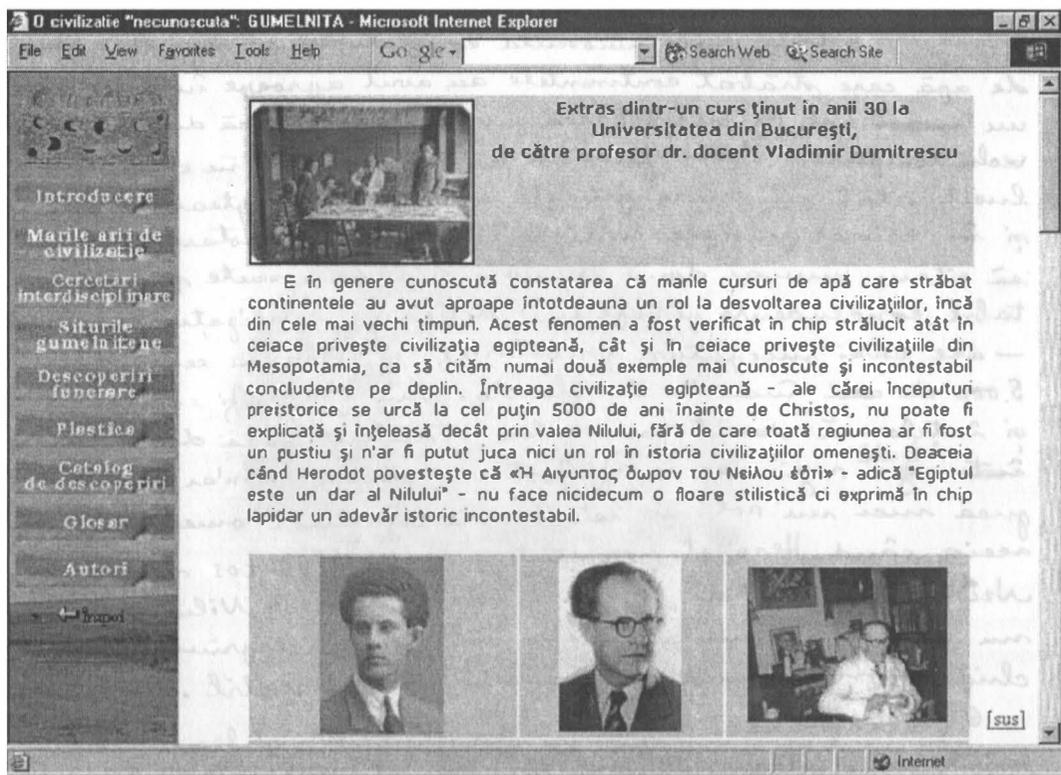


Fig. 3. Digital documents published on the CD-ROM: 'An Unknown Culture: Gumelnița'.

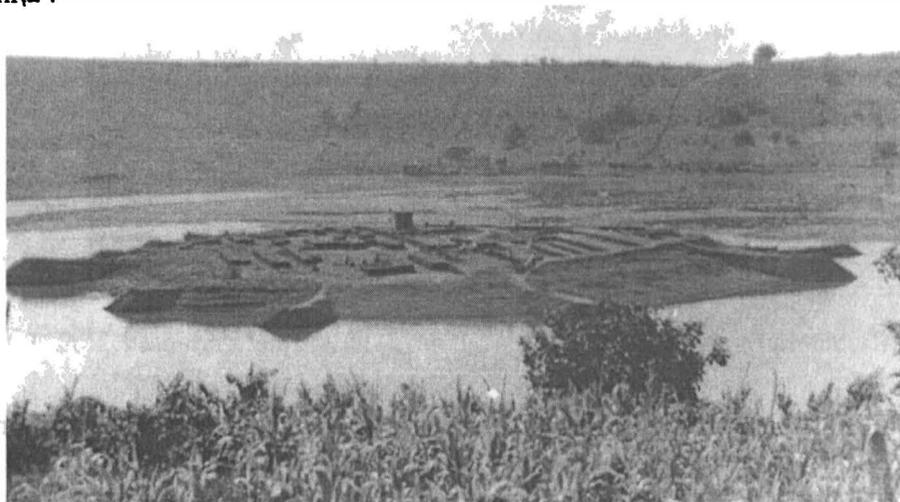


Fig. 4. Cascioarele – Ostrovel: scanned photo of the excavations in 1963-1965 (Dr. Silvia Marinescu-Bîlcu's archive).



Fig. 5. Căscioarele - Ostrovel today (digital photo, November 2002).

național, Săla Mare (J. Săla-Mare)
 1876

Medieșul Aurit (Mediș, Aranyosmedgyes), r. Satu Mare, reg. Baia Mare.

În drumul dintre Mediș și Părtău, lângă pod, s'au descoperit mai multe
 „umelte și arme” lucrate din corn, precum și gropi de provizii, în care
 s'a găsit grâu carbonizat. Epoca neolitică. -2. Pe teritoriul comunei
 s'au mai făcut următoarele descoperiri: a) Deposit compus din două
 topoare de luptă cu disc din bronz. Epoca bronzului. b) Într'un loc
 arabil s'a descoperit în 1903 un vas de lut conținând un tezaur cu
 107 monete daice de tip Filip II (40 în Ms Budapesta, trei în col.
 Dess., 443-444, 807).

I. B. Măroug, Sătmăr, 75. -2.a) I. Berciu, Apulum, I, (1939-1942), 33. W. Gohl
NK, II (1903), 57-61; A. Blanchet, Traité, II, 461; Dess., pl. XVIII, 443-444, pl.
 XXIII, 807; K. Pink, Unsere Zeit, 82, 83, 134, nr. 9.

Fig. 6. Medieșu Aurit - scanned card for the digital archive of the Archaeological
 Repertory of Romania (archive of the 'Vasile Pârvan' Institute of Archaeology Bucharest).

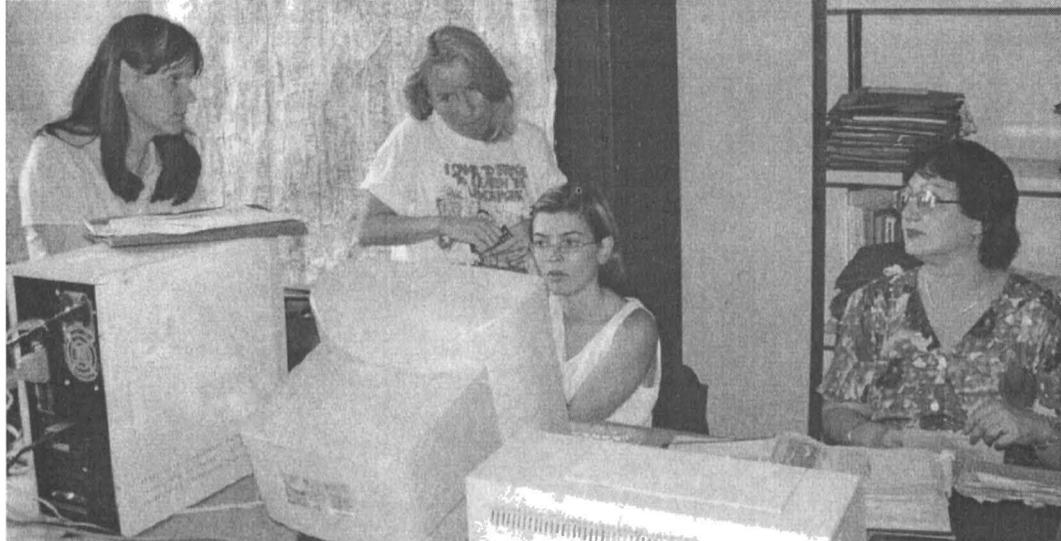


Fig. 7. Archaeological Repertory of Romania (RAR) digitisation project: the team at work (from left to right: Roxana Dobrescu and Adina Boroneanț from IAB; Alina Gheorghe and Irina Oberländer-Târnoveanu from CIMEC).

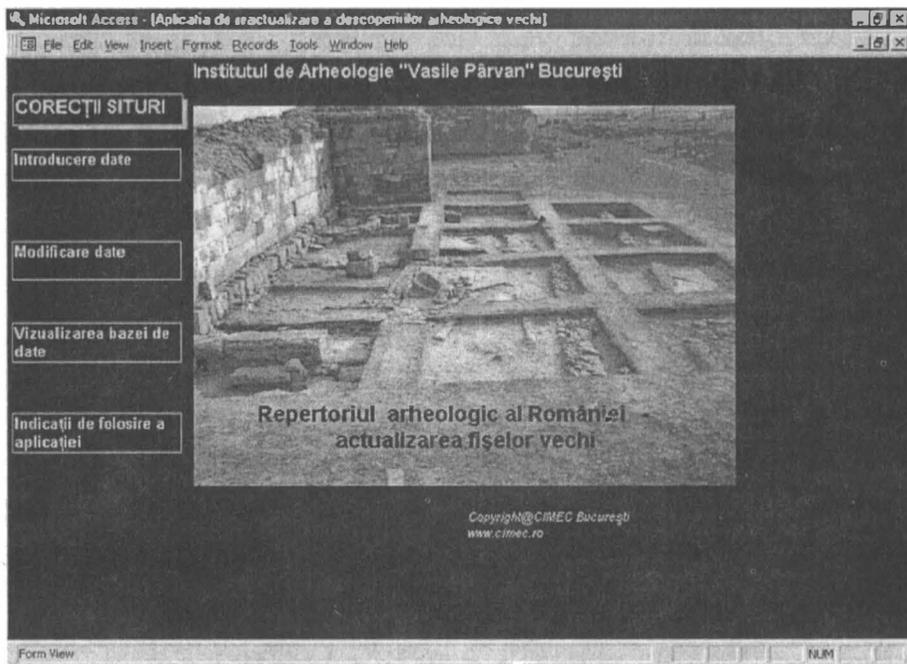


Fig. 8. The RAR Database designed by CIMEC: main screen.

Epiphranta magorum Calan-findon.
1868-1869-1870-1873.

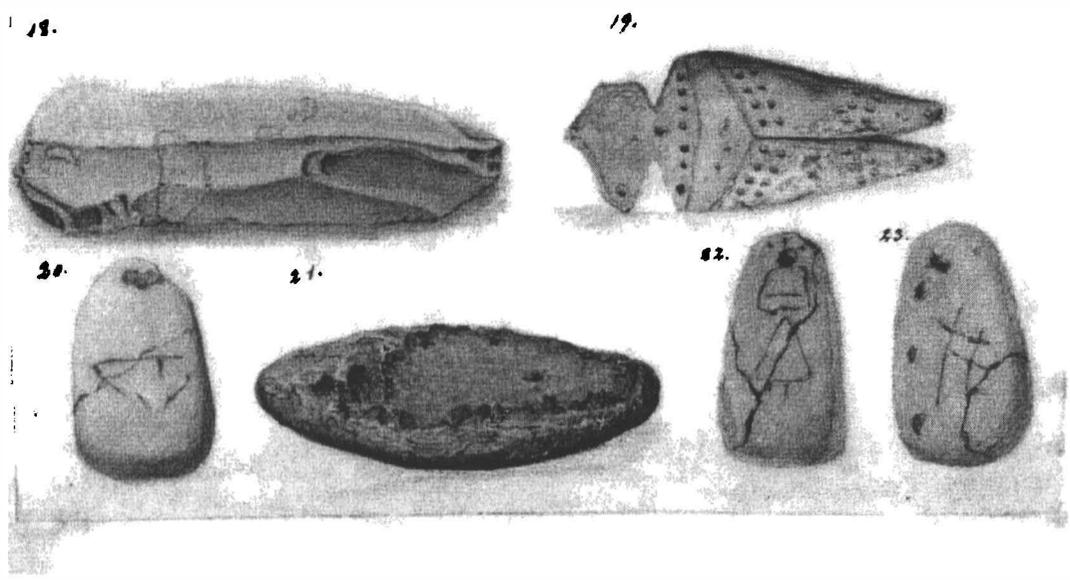


Fig. 9. The Coloured Drawings (“Desemnurile colorate”) of archaeological finds by I. Butculescu, 1868 – 1876; prehistoric finds (from the archive of the ‘Vasile Pârvan’ Institute of Archaeology, Bucharest).

Exploratiunea Măgurei Calomfirescu.
1868-1869-1870

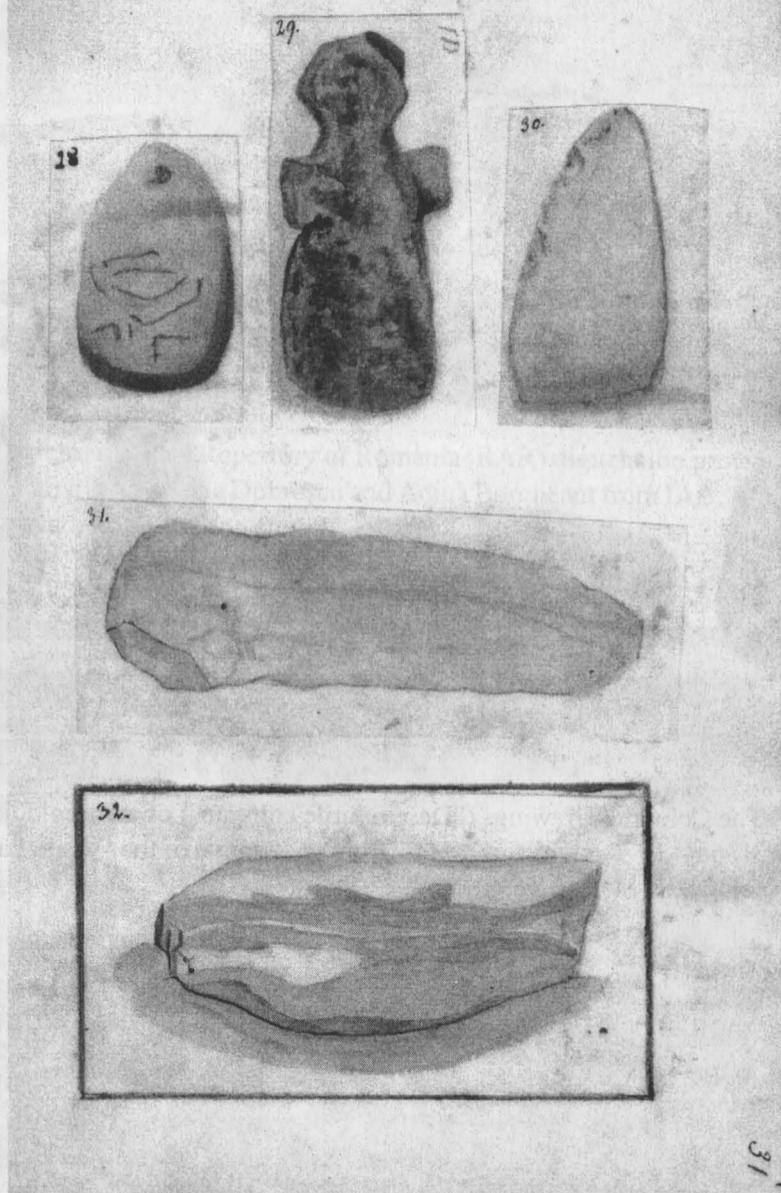


Fig. 10. The Coloured Drawings (“Desemnurile colorate”) of archaeological finds by I. Butculescu, 1868 – 1876; prehistoric finds from “Măgura Calomfirescu” (from the archive of the ‘Vasile Pârvan’ Institute of Archaeology, Bucharest).

Colectiunea unificată

Folclor Obiectelor

*De unificarea provinciei
Obiectelor*

Tesaurul de aur de la Pietroasa

1. Tava de aur, lavată cu săpunul în partea bucată;
2. Urmă de aur în formă de elipsă în două bucată și partea sfârșită;
3. Vasă rotundă, pusă înșurubată cu figuri mitologice și în mijlocul
unui studiu sculptat;
4. Un vas de aur Pădășogan;
5. Idem Idem categoric;
6. Un Colțic de gală de aur, cu câte un pietru și granat;
7. Un belciug în formă de brățară cu inscripție gotică;
8. Idem Idem mai subțire formă înverzită;
9. Un Lămpă în formă de Sormă sau Copulă sculptată;
10. Două elixir în lăncetă și cu câte un granat;
11. Un agrafă cu granat;
12. Câte multe cutiere și deslute cu fragmente de aur și granat de la
acest Tesaur.

*Accesta Tesaur, în
găsit la Pietroasa pe
la Paraula la
an 1859, sau puțin
de foaie Floric și Hol-
tănu și de la lăncetă
sau aici Floric cu
doar. Alu Căluțel
și lăncetă, și de
fus la Husca.*

Fig. 11. National Museum of Antiquities: Inventory from 1870: the famous Treasure of Pietroasa (from the archive of the 'Vasile Pârvan' Institute of Archaeology, Bucharest).

ALTAR DE JERTFA
ALTAR MINIATURAL
ALTORELIEF
AMFORA
AMFORA DE LUX
AMFORA STAMPILATA

Fig. 14. Unique terms extracted from the database, and changed/ corrected

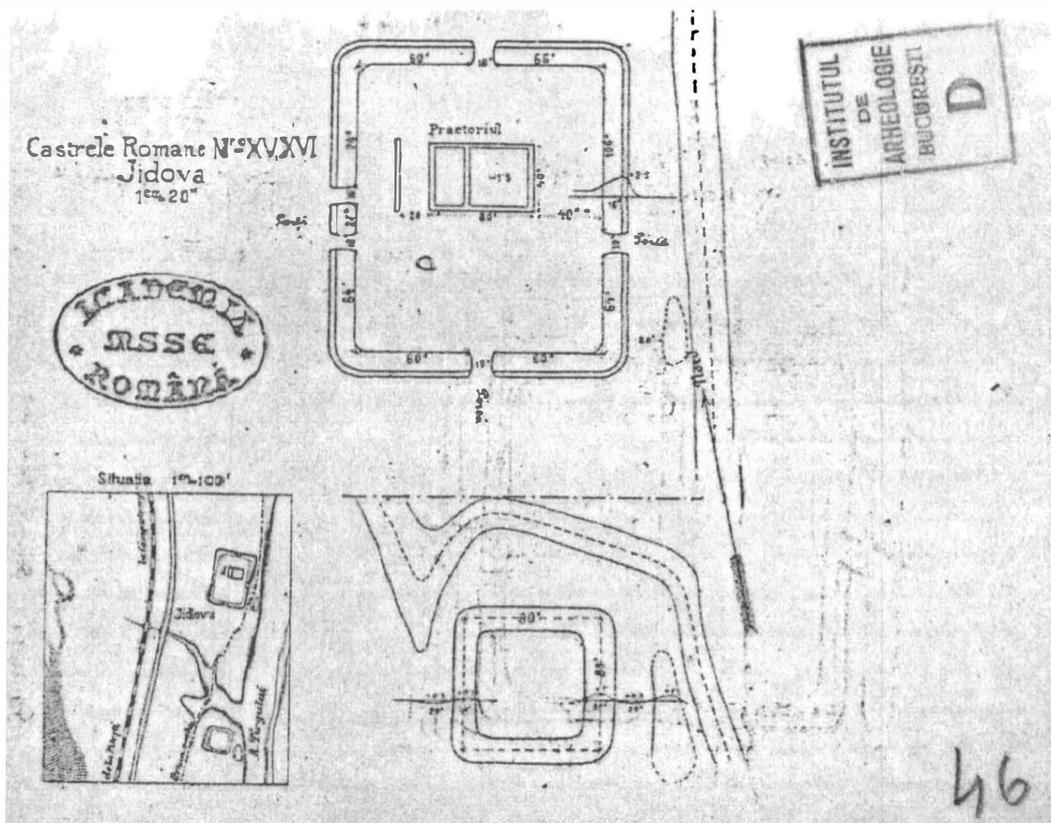


Fig. 12. Pamfil Polonic - plan of the Roman Camps at Jidava (from the archive of the 'Vasile Pârvar' Institute of Archaeology, Bucharest; the original is at the Library of the Romanian Academy).

Referinta	Cod detina	Tip categ	Titlu / Tezaur	Autor / Epoca
ARH4AB0015	801003	CELT,*	DEP.FIZESU GHERLII III/1894	HALLSTATT;B2
ARH4AB0015	801003	CELT,*	DEP.FIZESU GHERLII III/1894	HALLSTATT;B2
ARH4AB0015	801003	CELT,*	DEP.FIZESU GHERLII III/1894	HALLSTATT;B2
ARH4AB0015	801003	CELT,*	DEP.FIZESU GHERLII III/1894	HALLSTATT;B2
ARH4AB0015	801003	CELT,*	DEP.FIZESU GHERLII III/1894	HALLSTATT;B2
ARH4AB0015	801003	CELT,*	DEP.FIZESU GHERLII III/1894	HALLSTATT;B2
ARH4AB0015	801003	CELT,*	DEP.FIZESU GHERLII III/1894	HALLSTATT;B2
ARH4AB0015	801003	CELT,*	DEP.FIZESU GHERLII III/1894	HALLSTATT;B2
ARH4AB0015	801003	CELT,*	DEP.FIZESU GHERLII III/1894	HALLSTATT;B2
ARH4AB0015	801003	CELT,*	DEP.FIZESU GHERLII III/1894	HALLSTATT;B2
ARH4AB0015	801003	CELT,*	DEP.FIZESU GHERLII III/1894	HALLSTATT;B2
ARH4AB0015	801003	CELT,*	DEP.FIZESU GHERLII III/1894	HALLSTATT;B2
ARH4AB0015	801003	CELT,*	DEP.FIZESU GHERLII III/1894	HALLSTATT;B2
ARH4AB0015	801003	CELT,*	DEP.FIZESU GHERLII III/1894	HALLSTATT;B2
ARH4AB0015	801003	CELT,*	DEP.FIZESU GHERLII III/1894	HALLSTATT;B2
ARH4AB0015	801003	FIBULA,*	FIBULA OCHELARI;DEP.FIZESU GHERLII III/1	HALLSTATT;B2
ARH4AB0015	801003	FIBULA,*	FIBULA OCHELARI;DEP.FIZESU GHERLII III/1	HALLSTATT;B2

Fig. 13. National Cultural Heritage Movable Database: records before migration.

Old term	count	New term
AKINAKES	28	akinakes
ALABASTRON	13	alabastron
ALABASTRU	1	alabastron
ALMANDINA	7	almandină
ALMANDINE	1	almandine
ALTAR	360	altar
ALTAR DE JERTFA	3	altar de jertfă
ALTAR MINIATURAL	6	altar miniatural
ALTORELIEF	1	altorelief
AMFORA	1322	amforă
AMFORA DE LUX	3	amforă de lux
AMFORA STAMPILATA	4	amforă stampilată

Fig. 14. Unique terms extracted from the database, and changed/ corrected.

Microsoft Access - [fis_a_AFD]

File Edit View Insert Format Records Tools Window Help

NATIONAL ARCHAEOLOGICAL DATABASE

Reference	ARH2CS001611	11-Place of Discovery	CS:O:Băile Herculanei:L:Stabilimentul de hidroterapie - zidit în peretele vestic
5-Type	Altar votiv	12-Material/ technique	Piatră;sculptată
6-Title	Dedicat lui Hercule	14-Inscription	Herculi Invicto Lucius Pompeius celer praefectus Cohortis I Ublorum votum solvit.
7-Period	Romană	Description	Altarul votiv prezintă ornamente la capitel și bază într-o tehnică rudimentară, cu linii și brăile în formă de gruur. Libelele înalte de 6 cm.
9-Dating	sec. 2 -3	Owner Code	6920500
Start Date	101	21-Acc. No.	BU.116
End Date	300		
Image			
Date	12/06/82		

Record: 1 of 2

Form View

Archaeological Record after treatment.

Fig. 15. Database records after migration: new form.

Fisier Introducere Modificare Selectă Validare Rapoarte Utilizare Actualizare termeni Ajutor

Fișa de obiect arheologic

Nr. inventar	112485	Tip eşă:	individuală (n)
Nr. inv. vechi:		Referință:	
Nr. inv. colecție:		Cod deținător:	7300100
Colecție:		Tezaur:	
Tip categoria:	Strachină		
Tip specific:	Strachină cu marginea răstrântă în interior		

Epoca/Perioadă	Hallstatt	Nr. piese:	1
Cultura:	Basarabi	Datare:	650/800 - 650/600 a. Chr.
Fază culturală:	Hallstatt C	An început:	-650
Mediu cultural:	Basarabi	An sfârșit:	-600
		Autor:	

Fragment Parte păstrată: fragmente de buză și din corpul vasului

Apartenență la grup Fișa de tezaur: _____

Marcaș de material: _____

Record: 1 of 5

Form View

Fig. 16. DOCPAT application for museums: data entry screen.

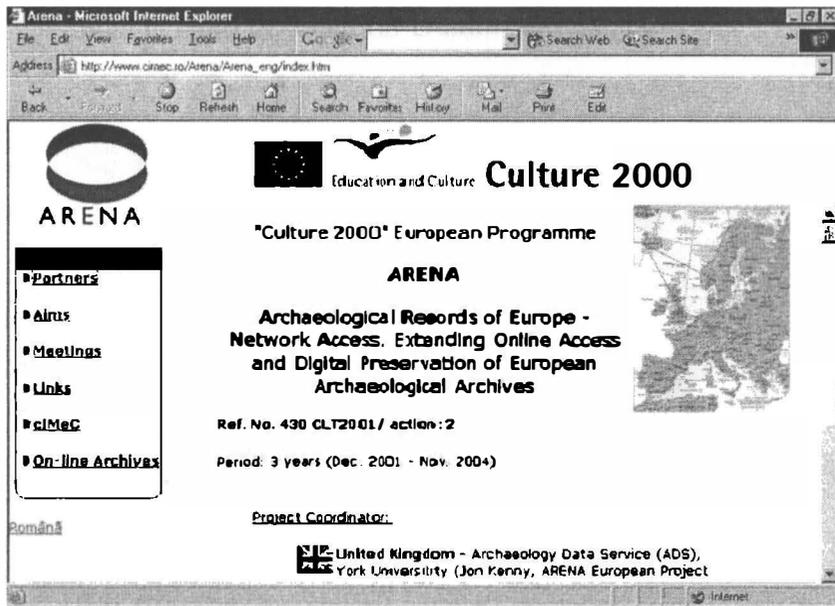


Fig. 17. ARENA European Project – Web Homepage on CIMEC web server.

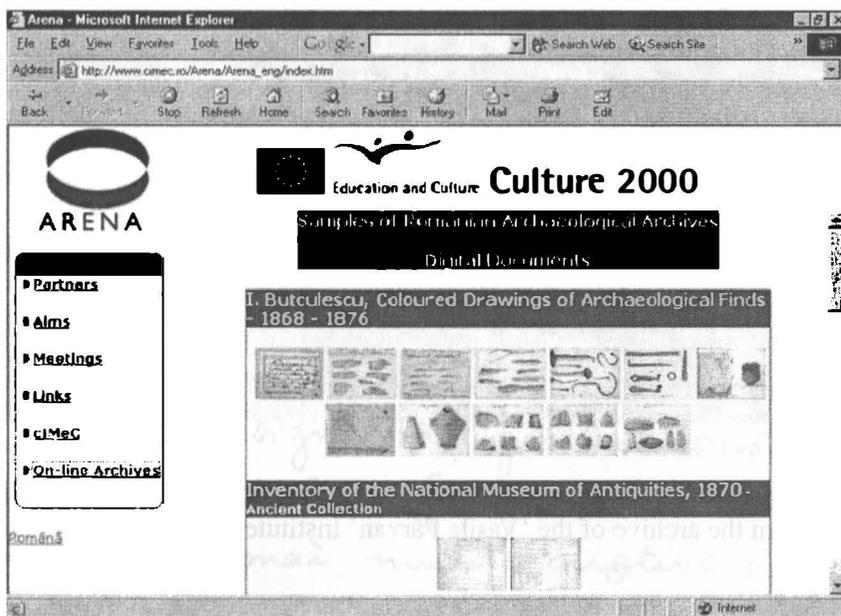


Fig. 18. Documents from the digital archaeological archive made available on-line on the Internet (ARENA European Project)

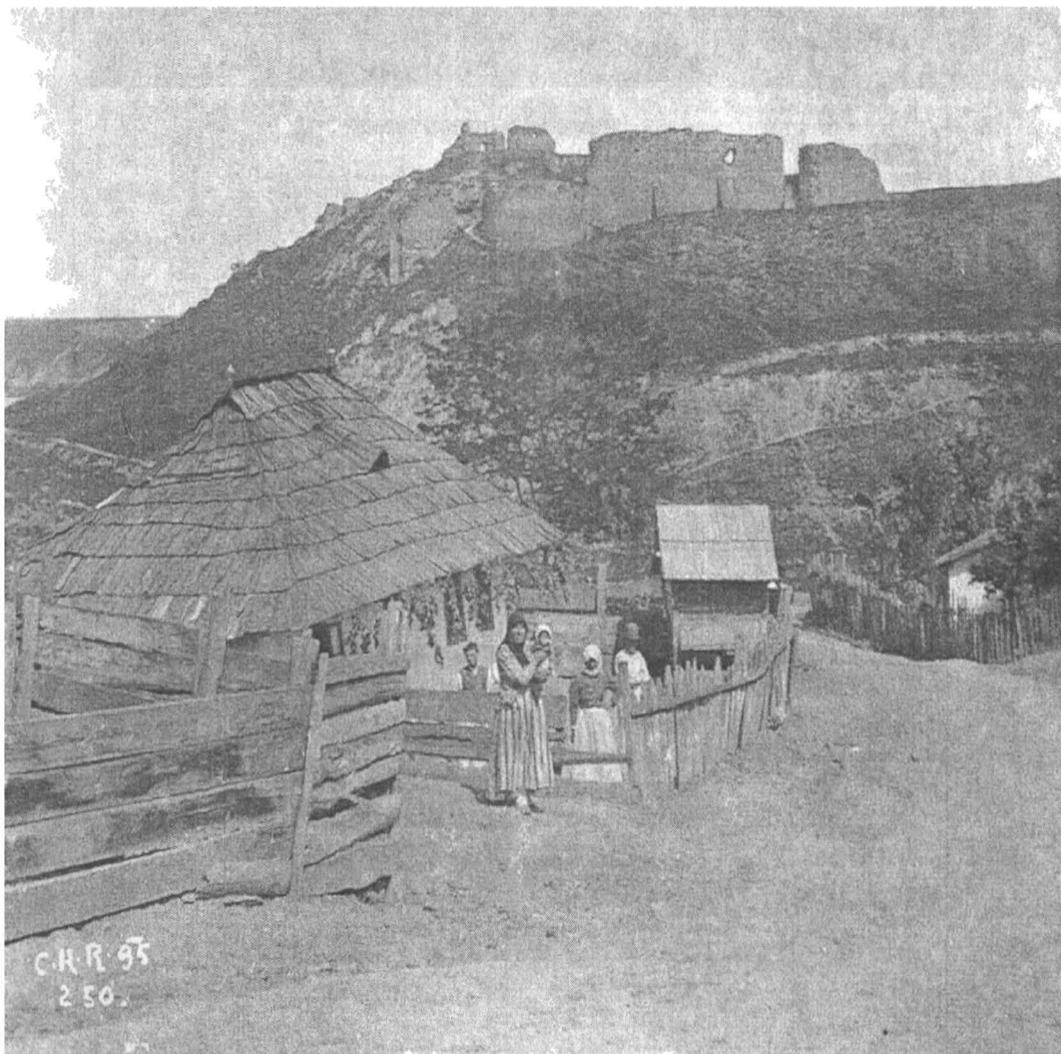


Fig. 19. Suceava Mediaeval Fortress, digital image of the original photo dating from 1900 (from the archive of the 'Vasile Pârvan' Institute of Archaeology , Bucharest).

Importanța cercetărilor și săpăturilor arheologice în România

na 21

5 minute

W

de sergent Vladimir Dumitrescu

onțor-delegat al Muzeului
Național de Antichități din

București

Pentru noi unul din specialiștii din
țară și din străinătate, importanța cer-
cetărilor și săpăturilor arheologice în
România nu mai este un subiect care
poate fi pus în discuție. Însă pentru
toți cei ce ^{nu} fac parte din rândurile
specialiștilor, această importanță
rămâne desigur să fie demonstrată
de acum încolo. Și e nevoie de acest
lucru din mai multe motive: printre
acestea, și nu în ultimul rând, vine
și faptul că interesul marelui

2

public trebuie neapărat îndrăgint pentru această problemă, fără acest interes, eforturile specialiștilor nu pot da toate roadele dorite, pierzându-se în lumea pante fără ecoul ~~scut~~ ^{astăptat} și cred că pentru a atrage atenția publicului asupra acestei probleme, tocmai vacanța de vară este cea mai nemeșită perioadă, pe de o parte fiindcă aproape toată lumea este acasă mai sermă, depărtată de la preocupările zilnice, și apoi pentru că - de fapt - vacanța tuturo coincide cu perioada de lucru a arheologilor, cărora, ca să deogroape de-mult-uitatele urme ale trecutului nostru, le trebuie tocmai licile și frumoasele zile de vară.

Să pături arheologice în România s'au făcut cu mulți ani înainte de sfârșitul secolului trecut, așa că se poate spune că ele își au acasă o tradiție la început nu au avut, și nici nu puteam avea, specialiști calificați,

ci numai intelectuali amatori.

Strălucitele rezultate ale săpăturilor întreprinse în secolul trecut în Grecia, Italia și Asia Mică, descoperirile cari au fascinat prin bogăția lor neasteptată și au dărâmat chiar rezervele celor mai sceptici, nu se putea să nu-și aibă ecoul, modest dar sigur, și la noi. Dămeii de cultură, entuziașmăți și ei de cele ce citeau că se găsește aiurea și altăzi de ceiace vedeau că se găsește întâmplător în diferitele regiuni ale țării, au purces la săpături ici-colo, denigr fără pregătirea necesară și fără metoda specială: dar pentru acea vreme, aceste lipsuri sunt și explicațiile și scuzabile — așa cum nu mai pot fi astăzi, când avem nenumărați specialiști.

Cezar Boliac, N. Beldiceanu, Butculescu, Antureanu, Diamandi și apoi Alex. Odobescu și-au legat numele lor de aceste modeste, ^{totuși} frumoase ~~statui~~ începuturi. Cei dintâi s'au preocupat

în special de descoperirile preistorice, răpând așa cum s'au priceput diferite măguri și stațiuni preistorice din Oltenia, Muntenia și Moldova: Vădara în jud. Romanat, Calomfiri și Țigănești în Teleorman, și celebra Stațiune Căpățeni, la Ajus de Iasi.

Al. Odobescu, primul specialist intru ale arheologiei, s'a ocupat în special cu arheologia clasică, dar nu în chip exclusiv, lăsând chiar ca opera principală, studiul său asupra tezaurului gotic de la Pietroasa (Cloca cu pui de aur). După el, Grigore Tocilescu - profesor la Universitate și director al Muzeului Național de Antichități din București - a fost cel dintâi care, ocupându-se de altfel și el aproape numai cu arheologia clasică, a urmărit metodic și constant, timp de trei decenii pline și rodnice, diferitele probleme care se puneau încă de pe atunci în domeniul arheo-



În anii liceului

În anii studenției



1982 cu Radu Vulpe și C-tin Preda



1983 cu Silvia Marinescu - Bîlcu



În curtea Institutului cu Dorin Popescu și Hortensia Dumitrescu. 1958



Împreună cu profesorul Schahermeier

În anii '40 la București



↓

logiei clasice pe teritoriul României: Fără teamă de greșală putem spune că el este părintele arheologiei științifice în România; desigur nu părinte și nu maestru meștri contestat, ca cei mai mulți meștri - dar recunosc în chip unanim de către toți cei, cari ne trecem viața, cu desteluirea vâștilor îngropate de milenii. Urmasul său la catedra de la Universitate și la Direcția Muzeului, venitul Varile Păvru, a împlinit toate lipsurile, depășindu-l pe Sr. Toiculescu și prin metodă și pregătire, și prin vâștele sale resurse spirituale și ca ctare, în chip firesc, și prin realizări.

Cu Varile Păvru arheologia română încetează de a mai fi activitate izolată, de unul singur, pentru a deveni ade-vărată școală și cu strălucit maestru și sângăriosi elevi. Înainte de Război și câțiva ani după, până la 1921, preocupările sale au umbritizat

numai arheologia clasică, cercetând și dezvoltând câteva cetăți din Delta Dunării, între care cea mai însemnată prin munca depusă ca și prin rezultatele obținute este în același timp și cea mai veche dintre cetățile fondate pe litoralul românesc al Mării Negre - cetatea Histria, la sud de Gjurile Dunării. Oela 1921 este - cunoscut de primul pionier al preistoriei românești, de Prof. I. Andreșescu și apoi de o întreagă școală de 'tineri' - Vanile Dărușan și-a lărgit sfera preocupărilor, întregind-o în chip armonios, trecând la cercetări și săpături preistorice în diferitele regiuni ale țării și cuprinzând astfel într-un cadru unitar întregul complex de probleme arheologice ale României.

În acest fel, pentru a schița în fața microfoniului, importanța cercetărilor arheologice din România, ar fi suficient să arătăm care sunt

problemele urmărite de Vanle Păvan, care sunt rezultatele la care s'a spus ca și cele care se întindec pentru cel mai apropiat viitor, și apoi — urmând de fapt tot gândul marelui și neuitatului magistru — să vedem ceiace mai este de făcut. Și, de fapt, elementul esențial din care poate regei importanță acestor săpături și cercetări arheologice stă în însăși însemnătatea problemelor pe care arheologia mai are încă să le rezolve pe pământul saciei și al obștegii — căci ceiace s'a făcut până acum, trebuie socotit totuși ca un simplu început. Căranile au fost numai sclitate, destelenia ogonului abea începe să adăvărut și multe dintre problemele de cea mai procesi- onantă însemnătate științifică și națională, sunt încă nelămurite, sau abea luminate de zonele cari totuși încearcă să cuprindă tot orientul. Pentru că, spre descriere de ceiace se petere

vitoare, va reesi în chip clar ciciace
 vianu să precizăm rezultătoilor noștri
 de astă seară, adică tocmai impor-
 tanta acestor cercetări și săpături
 pentru știință în general și pentru
 istoria noastră natională în special.
 Căci Istoria Românilor nu mai poate
 fi începută astăzi dela Traian și
 Decebal, datorită noastră fiind să
 cunoaștem în întregime istoria teri-
 toriului României; această îndatorire
 ne duce cu multe zeci și chiar sute
 de secole înainte de Christos, în regu-
 rile încă insuficient risipite ale pre-
 istoriei.

Fapt. astăzi necontestat, dar abea
 banuit acum 2 decenii, teritoriul
 țării noastre a fost locuit încă din
 paleolitic. Totuși descoperirile de până
 acum, în Transilvania, Moldova,
 Basarabia și - în ultimul timp -
 chiar în Dobrogea, nu sunt toate
 suficient de concludente și ca atare

noi cercetări și săjături se curvin în-
trepiuse pentru ca problema intensi-
tății vetui și a gradului de civilizație
a omului paleolitic pe meleagurile
noastre, să fie cât mai deplin clarificată.

Epoca următoare, reprezentată la
noi, după cercetările de până acum,
o lume fără continuitate directă de la
paleolitic. Înti' adevăr, descoperirile
care aparțin epocii neolitice și mai ales
perioadei eneolitice — când s'a început
prelucrarea și întrebuintarea primelor
metale, aurul și arama — nu dovedesc
absolut nici o legătură de civilizație
cu paleoliticul. În schimb în această
epocă întreg teritoriul țării noastre a
fost intens locuit (bine înțeles cu
excepția regiunilor muntoase) de o
populație de rasă neariană, probabil
mediteraneană - anatoliană, care no-a
lăsat cele mai strălucite urme de
civilizație preistorică nu numai din
România, dar — pentru această epocă —



Căscioarele - Ostrovel - cu P. Damian,
S. Marinescu-Bîlcu și V. Sârbu



În curtea Institutului de Arheologie



Popina Burdușani, jud. Ialomița cu Gh. Matei,
D. Popovici, S. Marinescu-Bîlcu și G. Trohani



Căscioarele, 1968. Echipa



Pe șantier la Căscioarele

din întreaga Europă: civilizația ceramică pitată din Ardeal, Moldova, Bucovina și Basarabia, ca și civilizația înrudită dela Dunărea de Jos — din Muntenia și Dobrogea —, căreia, specialității îi spun „civilizația de tip Gumelnita”.

Bine înțeles, nu toate problemele în legătură cu aceste civilizații au putut fi lămurite până acum. Lipsesc, în special, o concluzie sigură cu privire la originea acestor civilizații, origine care pare să fie orientală, din Asia Anterioară. Numai cercetări și săpături pe scară mare în stațiunile acestor civilizații, vor putea lămurii această importantă problemă.

Epoca bronzului, care cunoaște, în Transilvania în special, o neasemuită strălucită înflorire a metalurgiei, prin prelucrarea măiestră a bronzului și a aurului — dela care ne-au rămas splendide exemplare de arme și vase din toate perioadele —, are încă multe puncte obscure. Dintre acestea nu

lipsește

12
2

nici acela al originii directe a metalur-
giei bronzului transilvănean și nici
acela al originii populației respective,
chiar dacă în ultimele perioade ale
epocii bronzului se pare că avem de
afacere cu Tracii : strămoși noștri direcți.
Acum lucrurile se poate spune și cu
privire la protoistoria teritoriilor româ-
nești, cu cele două perioade ale
epocii fierului, când la Tracii
autohtoni - Geto-sacii din nordul
Dunărie - se adaugă elementele aduse
de diferiți năvălitori și în primul rând
de către Sciti. Influențele Orientului
se întâlnesc și de data aceasta cu cele
ale Occidentului și se alătură pe
elementele autohtone. Dar și aici trebuie
noi și îndelungate cercetări și săpături,
pe care se putea vedea doară localul
a fost sau nu copleșit de noile
aporturi, sau a reușit să-și mențină
și ființa spirituală, după cum și-a
păstrat-o pe cea etnică.

În această vreme a ultimului mileniu
dinaintea erei creștine, istoria se îm-
pletete cu preistoria și pe teritoriul
României: Aproape odată cu primele
valuri de năvălitori Sciti - revărsate
din stepele de Sud ale Ucrainei -
și, spintecând talazurile neospitali-
liere ale Mării Negre, primii colo-
niști greci din Asia Mică. Porniți
dela Milet, s'au oprit și la Sud de
Gurile Dunării, unde este astăzi Lacul
Sinoe, și au fondat acolo vestita
între toate, cetatea Histria. Alții ur-
mează treptat, întemeind Tomis (Constanta
de azi), Callatis (Mangalia), Dionysopolis
(Balchicul) și alte cetăți pe țărmul
Dobrogei și Basarabean și înălțând
aci în roarele "Nordului", din
aceiași marmură străvezie a Sudului,
aceleși mărețe temple zeilor nemu-
ritori și nemădormiți.

dar cât de puțin din ciăce a fost



Hăbășești, 1949 - la lucru



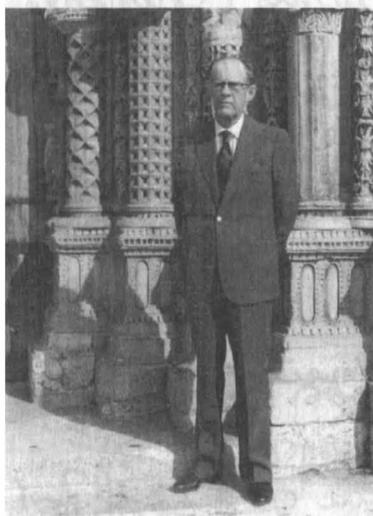
Cârna, jud. Dolj



La Iași cu M. Petrescu-Dâmbovița și prof. Schahermeier



Noiembrie 1983. Încadrat de Alexandra Balomey și Silvia Marinescu-Bîlcu



1986. Chartres



Noiembrie 1983. Acasă la biroul de lucru

a rămas până în noi ! Peste 2000 de ani
 au trecut și cele mai multe urme au
 dispărut odată cu oamenii. Sunt însă
 totuși multe cari au rămas, mai ales
 la Histria, dar și în alte locuri, care
 trebuie cât mai neîntârziat - prin
 săpături de mare importanță - aduse
 la lumina zilei și redată civilizației.
 Mai ales că, în aceleși cetăți sau
 în altele noi - cum este Tropaeum
 Traiani, dela Adamclissi - s'au așezat
 apoi viața organizată a nouilor stă-
 gători, Romeni,

Paralel, în Transilvania, săpăturile
 începute tot din îndemnul lui Vasile
 Pă unu, au dus la descoperirea unor
 cetăți dacice, abea bănuite până
 atunci; și duri și turnuri ~~de piatră~~
 încunună și acium cu vîntul alb
 de piatră, vînturile dealurilor și ale
 Munților din valea Orăștiei, în juđ.
 Hunedoara, unde a fost desigur ade-

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vârâta capitală a lui secolul și centul
de rezistență al sacilor.

Cei care s'a săpat este însă aproape
nimic: Abia una din aceste cetăți a
fost parțial desgroapată, în timp ce
numărute altele — dovadă de forța
sacilor, de gradul de civilizație și
de organizația de stat la care ajunseser
strămoșii noștri — așteaptă gadarnic
tânărul arheologului. Sela o sis-
tematică cercetare arheologică a întregii
regiuni, prin săpături în toate punctele
importante, se poate opera o adevărată
revelație în privința ultimelor secole
de viață dinaintea înstăpânirii Romanilor.

Și nici pentru vremea romană
nu s'a putut face prea mult: doar
Sannigetusa — capitala sacilor romane
— este mai bine cunoscută, în timp
ce multe dintre castelele romane din
restul sacilor, ca și valurile de
apărare ce străbat țara în lung și
în lat, sunt încă necercetate.

Concluzia care se impune este

o intensificare a cercetărilor și săpăturilor
 arheologice din România. Dacă
 deocădată în prejurările nu permit
 înființarea unui Institut arheologic
 al României, cercetările și săpăturile
 trebuie conduse mai departe pe liniile
 largi, trasate în duș magistrat și
 cu priegător de Vanle Părvan, neputân-
 du-se omite nici o epocă și nici o
 regiune, și îmbrățișând astfel întreaga
 evoluție în timp și spațiu, a civiliza-
 ției, pe teritoriul de azi al României.

Cu atât mai mult cu cât
 pentru vremea preistorică, dela care
 nu avem nici un fel de mărturie
 scrisă, singura posibilitate de cunoaștere
 a trecutului nostru ne-o dau ~~scrierile~~
 săpăturile arheologice, prin rezultatele
 lor; fiecare stațiune preistorică săpată
 ridică un colț din valul de întineric
 ce ascunde - apăsându-le greu sub
 țărniță - secolele și milenii de viață
 pe teritoriul național. Tot mai mult

se dovedește că nu numai în ciace
 privește năvălirile de popoare, dar și
 din punct de vedere al curentelor de
 civilizație, țara noastră a fost, din cele
 mai îndepărtate timpuri - răscrucea
 drumurilor dintre Orient și Occident,
 dintre Asia Anterioară, peste Balcanii
 și țara noastră, în Centrul și Apusul
 Europei.

Îar pentru vremurile istoriei
 antice, este aproape inutil să mai
 amintim că izvoarele literare sunt
 prea puține și că numai monumentele
 epigrafice - inscripțiile - descoperite în
 săpături, dau posibilitatea să se studieze
 și să se lămurească multe probleme
 ale vieții romane și ale începutului
 popoului daco-roman în acest atât
 de agitat celt extrem, al lumii romane
 din Europa răsăriteană.

Întreaga lume științifică din
 străinătate așteaptă cu cel mai mare

interes rezultatele cercetărilor și săpăturilor arheologice din România, folosindu-le cu prisosință în diferitele năzdrăvuri și tratate cu privire la preistoria și la istoria veche a Europei răsăritene. Cu atât mai mult cu cât ~~și~~ rezultatele dovedesc că și aici a fost căndra un adevărat centru de civilizație care a iradiat asupra regiunilor înconjurătoare.

În aceste condiții importanța atribuită de noi cercetărilor și săpăturilor arheologice în România nu credem că poate fi socotită o simplă marșă de specialist, căci ~~se încadrează perfect printre~~ continuarea activității arheologice se încadrează printre planurile imperative ale culturii naționale.



