

COMPUTER... WHAT FOR? VIRTUALITY VS. REALITY IN ARCHAEOLOGY

ABSTRACT

PAULA CAMPO

ENDESA SCHOLARSHIP -
INSTITUTO DEL PATRIMONIO HISTÓRICO ESPAÑOL
(SPANISH HERITAGE INSTITUTE), MADRID, SPAIN

During the last decades, computers and the programs that give them "virtual life" have been used as powerful research tools, even in developing countries. Moreover, the narrow availability of some devices, such as neutron activation analysis, or the high investment they involve do not represent an excuse for avoiding their application in archaeological issues, mainly thanks to encouragement of multidisciplinary research teams.

Constraints of finance, manpower staff and time all conspire to limit what may be achieved, and compromises are inevitable. In this sense, computers and the Internet offer the easiest and most economic means to communicate our research results, both, within the academic community and to the society. However, their "virtual nature" is still argued against "reality" when archaeological interpretations are evaluated by a scientific committee.

It is the wide spread of computers in archaeology and the conservative attitude of academic institutions in South American centres that are of most interest here since they show the "biases of integration" of this facility and the possibilities of avoiding them in the future.

The strength of this paper lies upon the concepts and issues improving the relationship between Heritage and Public through Internet. Over the past few years, Computers and the programs that give them "virtual life" have being brought to the attention of the archaeological community as powerful research tools, even in developing countries. No scientific fieldwork can be imagined without the aid of GPS or GIS, no laboratory results can be managed without the use of statistical tools or computerized typologies or classifications, and no information can be shared without the existence of specific archaeological databases. Furthermore, some analytical methods applied to pottery for its mineralogical characterisation, for instance, the neutron activation analysis widely used for provenance studies, require very sophisticated software and equipment. This situation is solved with the emergence of multidisciplinary research teams, providing a place where chemists, physicians, architects, anthropologists and archaeologists work all together for common interests. So, the narrow availability and/or expensive costs of some analyses are set aside if only by prompting the scholarly investigation. Anyway, these new technologies have been well accepted as research tools and ignored as scientific communicators.

Since the developments in science and technology introduce more comfort to the modern life, Society invests on those branches of knowledge rendering evident benefits. Among Social Sciences, disciplines related to Heritage have recently acquired social relevance, however, the benefits obtained for the ordinary life are not so immediately evident and the government investments are not so generous. Therefore, constraints of finance, manpower staff and time all conspire to restrain what may be achieved in Humanities, and further compromises are inevitable in pursuit of scientific aims. Here, the problem refers partly to the social role of Archaeology. As a discipline interpreting material culture of past societies in order to understand present social diversity,

Archaeology should assume its role as a nexus between the Public and their Heritage making more evident the benefits of knowing our past for a present identity building. In this sense, Computers and the Internet offer the easiest and most economic means to communicate the insights resulting from long-term research work, both within the academic community and to the society.

In spite of the advantages of using Information Technologies for communicating archaeological insights about Heritage, main Argentinean government scientific committees are still reluctant to accept the "virtual nature" of these devices as a suitable reference of the "more real" publication in archaeology. Moreover, electronic publication via Internet is regarded as a non-scientific press, and therefore few archaeologists spend their efforts in this media. As a result of this, Archaeology is not able to show the social benefits of fulfilling the gap between Society and its Heritage, and the archaeologists are not allowed to go beyond the academic "bubble".

WHAT IS ALREADY KNOWN?

We order the world in terms of the things it represents and we order things surrounding us in terms of our points of view. Our points of view depend on our previous training and education, and so they are as diverse and changeable as the identities built up by distinct human groups. Thus, Heritage can be an object, custom, or quality, which is passed down over many years within a nation, social group, or family, and is thought of as something valuable and important which belongs to all its members. This feeling of belonging is the very root of the resulting identity. In other words, Heritage is the meaning traditionally borne by any object instead of the object itself, hence the sciences dealing with the Past should

assist in the construction of the present identity of any particular group.

Our career in Humanities teaches us that Archaeology is the study of the past as evident in the material remains available to us. But, does it matter who we are and how we see ourselves? Yes, because we can not assist in the construction of any identity if we are not able to identify ourselves. As Fagan (1996:vii) points out "Archaeology in the popular imagination is the stuff of which dreams are made, a world of adventure, and romance, of golden pharaohs, and long-vanished civilisations. Many people still believe archaeologists are tough, pith-helmet-clad men and women slashing their way through clinging jungle or penetrating the secrets of ancient pyramids... The transformation of archaeology from an amateur pastime into a sophisticated, multidisciplinary area of study is one of the great triumphs of twentieth-century science". Fortunately, we are scientists in Humanities but it is still remain to define our social role for the Society whose citizens we are.

Then, what is the place of archaeology in the contemporary world? On the surface, its small place is clear enough. Archaeology consists of noticing, preserving and rescuing buried fragments from ancient and not-so-ancient times, and then striving to understand earlier peoples and societies from those fragments. However, we think that its scientific process include three compounds. The mechanics of archaeology - finding old sites, preserving them, digging and recording and interpreting what is found - are the routine procedures of a field science. The people who perform these tasks - academics in universities, bureaucrats in historic preservation offices, field workers out in the mud - are engaged in the routine of work in our society. The means of communicating their findings - archives, database records, specialised books, magazine articles, and television programs - are the routine ways of dealing with knowledge. And all these three exist in order to reveal the real place of archaeology in the contemporary world (Fagan 1996). Although, as professionals in Humanities, we are able to manage these mechanics and to define these people, little interest is paid on establishing these means of communication (cf. Wolle 2002). This fact leads to the current situation figuring the scientists as people dealing with odd topics completely useless for the society.

COMPUTERS AND PROGRAMS AS RESEARCH TOOLS

As Archaeology is about the physical side of our history, it suppose the use of Natural Sciences techniques to process, order and transmit data with regard to the distinction quoted above. For example, multivariate statistic analyses, GIS applying statistical tools and spatial analyses, CAD simulation, tessellations and triangulations procedures, computerized classifications and typologies, and specific database are widely used for accomplishing current archaeological praxis. Sometimes, this implies the emergency of multidisciplinary research teams in order to achieve the appropriate data.

In the level of data processing, multidisciplinary teams offer the possibility of applying high technology to archaeological

material with well-trained staff and low costs. Neutron activation analysis, for instance, would be impossible without the laboratory equipment and the computer program (Jones 1991). In the level of data ordering, the task of computerising the collections of a museum or a public institution is a long-term solution for a good housekeeping, i.e. DOMUS is an ambitious program co-ordinating collections from all main Spanish museums (MARQ 2003). Moreover, some projects using virtual infography or 3D reconstruction such as ORION or PEREGRINUS (MARQ 2003) provide the means of avoiding the handle of inaccessible, fragile or minute objects by researchers or visitors.

Now, Computers and programs are confined to serve only as research tools? No. In the level of data transmission, nowadays, computers and the Internet are vital even as teaching tools for long-distance training and updating courses hosted by Universities or Academic Institutions all over the world, including developing countries (cf. Grupo NAYa 1996-2003, Martín Guglielmino 1996).

WHAT IS ALWAYS FORGOTTEN?

At the beginnings of Archaeology as a Human Science, the romantic school had established scholars should be in complete isolation to understand the general laws ruling the world. This requirement was suggested to guarantee the scientist's objective interpretations. What was then forgotten referred to our condition of citizens. Since the early '80s, the critical theory has promoted the social consciousness of actors in the present and their relations to the past, fostering important changes into the scientific ontology. After defining our discipline as a Social Science, what is always forgotten is to establish our role in the society. In this direction, archaeologists should be regarded as social technicians assuring the link between Society and Heritage. That is, Archaeology plays a leading role in defining what the Society would like to know through its past, in order to understand its present, giving so the categories to deal with and communicate Heritage (cf. Martín Guglielmino 1996).

The scientific isolation produces the illusion that a few bits of history are possessed as "heritage", because the rest is just something that happened a long time ago and has not much to do with the real and contemporary world. The twenty-first century society is largely persuaded that the world is - or should be - a rational place directed by the logic of scientific reasoning and based on the tested facts of gathered data. So, we are in charge of ourselves, not determined by where we come from, nor driven by the beliefs we have carried along. Therefore, defining Heritage may give place to problems related to its possession, signification, management and preservation (Fagan 1996). This definition varies from people to people and time to time. To this sense we have to know how homogeneous is the society whose heritage is under study because heritage is a social construction based on the meanings people gives to things, facts or feelings in order to build up its own identities. And this is what we should never forget.

THE LINK BETWEEN SOCIETY AND HERITAGE

Thinking on Archaeology, as one of the sciences dealing with Heritage capable of shedding light upon certain past meanings and so assisting in the construction of present identities, it is obvious that it should facilitate the link between Society and its Traditions. That is the reason why archaeological knowledge would not be restricted to the academic community. Nevertheless, government scientific committees will have an important part in this enterprise, since they own the criteria to discriminate rigorous interpretations from fiction re-creations of what had happened long time ago. Therefore, Society would acquire appropriate information upon which rely its memories. In this respect, George Henri Riviere (quoted in Martín Guglielmino 1996:16) asserted in particular that Heritage is "all those material and immaterial goods on which, as a mirror, society looks at in order to recognise itself, where it searches for the reason of the landscape where its roots are and where the ancestors lived before it. A mirror that society offers to its guests to make sense, on respect to labour, ways of behaviour and its intimate". Why don't we help to clear up this mirror?

The current social, cultural and political trends encourage society to search for the ways of knowing more and more about its past and present. In addition, Information Technologies improve their performance and increase the number of users daily. And the Internet seems to be a low cost-effective media to communicate whatever it should be known, because the information can be download freely from the World Wide Web. Since archaeologists are not computer specialists a new kind of multidisciplinary team would arise; but this time to solve problems related to the third compound of the scientific process mentioned above, that is, Internet as a scientific knowledge communicator. It must be understood that this new kind of publication in Archaeology would not necessary replace the traditional one but complement it in order to achieve the social role of archaeologists as technicians assuring fluid dialogue between Heritage and Society (who would become the Public of the new development).

STATE OF AFFAIRS IN SOUTHAMERICAN ARCHAEOLOGY. THE CASE OF ARGENTINA

Nowadays, Argentinean Archaeology follows the precepts of American and British Archaeology. However, it faces major finance constraints, less manpower staff and minor time to achieve the ordinary praxis due to its situation of developing country. So, initiatives such as ECAI, or programs as ArchEd, the S-Plus package, TotalStation devices, or facilities as Orthophotomosaics are not widely spread in Argentina. Anyway, the more traditional analytical methods, such as NAA or DXR, are accomplished by the emergence of diverse multidisciplinary research teams. Hence, Computer and programs have shown to serve as effective research tools even when they are a still a non-so-common equipment.

As the cultural process of globalisation goes on, the reality of societies in developing countries are not so different as those in developed ones. The main distinction between developing

and developed countries refers to the purposes of the inquiries prompted by the Society to the Science about the Past. Nowadays, the Past has become part of the Argentinean tourist government projects due to the cultural and landscape diversity of the country-side, rendering a vast tourist offer. Anyway, society is eager for learning about its pre-Columbian or Historic times promoting the advancement of new ways of attaining it.

Citing examples of the social need of a fluid dialogue between Society and Heritage, CICOP or the International Centre for Heritage Conservation in Argentina appeared as a result of the interests of a group of professionals concerned with architectural heritage of modern American cities. Argentinean society suffers a traditional scarcity of archaeological knowledge because it is always kept away from the massive media in order to maintain its "scientific character". As we mentioned above, this fact isolates the scientists from their society and their social role are then completely erased from their academic agenda. Consequently, although heritage projects such as CICOP have good reasons for their existence, the not-yet-resolved lack of Humanities scientists taking part in these endeavours constrains their concept of Heritage to the materials themselves; and so the present identities building introduces some inevitable biases.

Meanwhile, ethics in Archaeology gained great attention improving the process of scientific knowledge and giving place to the rise of specific professional associations. In 1997, APRA or the Professional Archaeologists Association in Argentina established the Ethics Code and the Professional Praxis Standards as its main goals. Although this current trend in determining the ways of doing Archaeology, the main government scientific institutions and research foundations still show a little conservatism about communicating the archaeological knowledge to Society, therefore the debate about Heritage is restricted to academic meetings. For instance, CONICET or the National Committee for Scientific and Technological Investigations is the main Argentinean institution that controls and promotes Science improvement. Its conception of academic excellence increasingly makes null and avoid the social role of heritage technicians that archaeologists should soon start to practice. Thus, the absence of stimuli for social commitment that funds the projects produces a difficult gap to be filled in for an individual scientist. And then the social need of archaeological knowledge is wrongly satisfied by other related disciplines. Frequently, government archaeology departments are headed by architects or engineers because the social benefits of their disciplines are evident for the society whilst archaeology looks like a hobby. Of course, our isolation is the only responsible of this situation.

It is possible to think that the reluctance of the academic community to spread the scientific knowledge to society bases on the high costs of the traditional publication and of the propaganda needed to attract the public. But this is not the case due to the widespread of Internet throughout the academic domain. For example, since middle '90s University of Quilmes offers long-distance curses for those students that can not attend normal classes. Anyone even can complete the

inscription on-line, and some tutorial chats are also foreseeable. By the same time, University of Rosario launched a place in Internet where to meet old students and inform themselves about the social and cultural activities promoted by this institution. Moreover, projects such as the Virtual Anthropological Museum of San Luis shows the availability and well-acceptance of Internet as an useful educational tool. In this sense, NAYA or the Anthropology and Archaeology Virtual City has proved to be vital to the development of certain issues such as Cultural Tourism offering the second Virtual Congress for this topic next October (Grupo NAY A 1996-2003). Unfortunately, the government scientific committees do not support these results and the possibility to evaluate the knowledge communicated to the Society is lost.

As a conclusion, Computer and Internet have shown to be important research and training tools in Argentinean Archaeology; even their communicator capability is well accepted. The problem remains in what we think we are and what we must do as social actors. Heritage is vital for the Society identity building and maintenance, so without a thorough knowledge about the past our present is somehow blurred. Our academic committees should get out of the "bubble" they are immerse, and the only mean to achieve this change is showing the benefits of it. We are aware about "how to do scientific archaeology" and now we should learn about "how to communicate this scientific archaeology to the Society". As Information Technologies are versatile tools there is no necessity of searching for new software or equipment, we only have to use them properly. Therefore, the dialogue between Heritage and Society through Internet is the possible way to do so, mainly in developing countries.

FINAL WORDS ABOUT VIRTUALITY AND REALITY

The virtual character of most research and teaching tools, specialised websites and cyber-meetings is a challenge to the reality of specialised books, academic papers and oral presentations. The Internet has shown to be a low-cost fast device to spread knowledge inside the academic community, in developing countries such as Argentina.

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As the means of communication are available, the scientific community in Humanities needs to take into account their social consciousness in order to preserve the Heritage constituting its study case. Archaeologists want to study past human lives, but those lives are gone. We see them only by proxy; they are shadows we strain to see from the artefacts, so often worn and broken, they chanced to leave behind. The archaeologists' is a strange view of the world, with its odd basis looking at artefacts in quest of the essence of human lives. It is a view congruent with our society - so cluttered by artefacts, yet so uncertain and so ignorant of how those artefacts may direct our lives and how we define what is Heritage (Fagan 1996).

If Heritage lays the basis of social memory, the ways by which the social group recognises itself and apprehends its social values should be under scientific study. Education in Heritage is a cultural management strategy bridging Heritage and Society (cf. Martín Guglielmino 1996, Wolle 2002), in such a way, that it will help to fill the gap between Heritage Associations and the academic community.

Thus, what should be done? In a word, to assume our social consciousness of cultural heritage technicians and our scientific commitment to the society, encouraging the routine way of dealing with knowledge. This is not a hard task. And Internet offers the tools to achieve these aims.

ACKNOWLEDGEMENTS

I should like to thank CAA 2003 Organisation Committee for the financial support to present this paper. I am indebted to Ignacio Jimenez, Scholarship Co-ordinator at Instituto del Patrimonio Histórico Español, for his opinions on the importance of internet in Cultural Heritage Research and Management which gave place to the discussion presented in these pages. I acknowledge this topic deserves a deeper treatment than the brief one introduced here, and wish further contributions to the issues considered.

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