Experimental Archaeology: Methodology and new perspectives in Archaeological Open Air Museums

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Experimental archaeology has a positivist, new-archaeology public soul and a post-processualist private soul. (adapted from Giannichedda 1999: 19).

Introduction

This article is based on a presentation given at the 8th *live*Arch Conference themed "The dialogue of knowledge" held at the Matrica Múzeum és Régészeti Park in Hungary (October 7-11 2009).

The starting point of this work was my final dissertation for a Master of Arts in Experimental Archaeology (*Comis 2002*, unpublished, University of Exeter, UK) on the methodology of experimental archaeology in Northern Italy. Qualitative analysis was carried out to survey the application of the term *"experimental archaeology"*[1] in different contexts and to assess what it actually means. This paper will firstly deal with observations regarding that chosen geographical area. The second section will consider academic perspectives on what "experimental archaeology" means within archaeological research, whilst the third section will deal with the use of the term "experimental archaeology" in relation to Archaeological Open Air Museums and the application of it in the recent Guide to European Archaeological Open Air Museums.

In conclusion, I will attempt to unify the concepts and define the meeting point of an apparent dichotomy, and discuss new perspectives on the use of "experimental archaeology" in Open Air Archaeological Museums with respect to different areas of application.

"Experimental archaeologies"?

The research in northern Italy was done a few years ago and was not intended to be an exhaustive work. Direct observations and interviews with people involved within the wide array of experimental archaeology activities were carried out.

■ **Fig. 1** This hut, being a construct, is a question about the past. A standing hypothesis

Some of its results are nonetheless still valid today. "Experimental archaeology" as a term was found to apply to many different activities, such as:

- Replicas of archaeological artefacts
- Re-enactment or living history
- Experiential activities and demonstrations of ancient technology
- Simulation of production procedures
- Didactics
- Performances

The common background of all these activities was the source from which they got their essential information: the archaeological record. In other words, archaeological data were used to build replicas, to reconstruct material culture to be displayed for first-person interpretation, to demonstrate or experience ancient technologies, to investigate archaeological interpretations, to aid educational programmes or to perform entertainment shows.

How come there are so many "experimental archaeologies"? Why is it not possible to "see" a clear and unique, defined picture of experimental archaeology? To answer these questions it is useful to take a step back and investigate in which fields these activities are carried out. "Experimental archaeology" is used in three main spheres:

- Research,
- Education,
- Tourism.

This combination of 'study fields', and the consequent defining and use of the term as applied to diverse activities, has led to a level of confusion not only in the public eye, but also in the academic world, and the connections between these three spheres are not clear.

If we take yet another step back, we might try to reach the core of the question in a rational way. Considering all the activities described before, we assumed that the information needed to perform them came from archaeological data and research results. Primary data come from research institutions such as Universities through their publications and communications to the wider public. To detect what "experimental archaeology" is within the framework of research could, therefore, be of importance in assessing the core of the problem.

The academic perspective

In recent years, discussion in the academic world regarding a proper definition of experimental archaeology has produced a good number of papers, of which here I refer to a limited selection taken from texts in English (*Outram 2008, Shimada 2005; Hurcombe 2004, Mathieu 2002*). Below, I will summarise and simplify meaningful concepts to determine a possible definition of experimental archaeology within the academic world.

1 In this article, when the word experimental archaeology is found in inverted commas, it is only the actual term which is referred to. When without, it refers to the research tool used to aid archaeological interpretations.

The term "scientific" is widely used in many different contexts, but what is "science" and what does "scientific" mean in experimental archaeology? It seems the key-concept to be discussed in defining this crucial aspect of experimental archaeology is the term *experiment*, and not archaeology itself.

An experiment, according to the philosophy of science, is a process designed to test a hypothesis. After having conceived a hypothesis, an experiment can be designed that has the ability to refute the premises of the hypothesis through the systematic investigation of the many variables entangled in the phenomenon under scrutiny. When the experiment is carried out, everything is documented to ensure repeatability. At the end of the experiment the initial hypothesis may be falsified, i.e. the results could prove it is invalid. If this happens, the results can be evaluated to assist the creation of a new and better hypothesis, that can be then tested in a new experiment. If the results are positive, the hypothesis can be considered valid (a provisional acceptance, unlike "truth"). The results and details of the procedure adopted, even if the initial hypothesis was falsified, are then communicated to the scientific community.

This procedure is called "falsification" and belongs to Karl Popper (*1959*). There will be no definitive "YES" at the end of an experiment. Popper's theory changed the *"I already know exactly what I want from my experiment"* to *"It might be possible to falsify my hypothesis, but even so, I will get and share information about it"* (see also *Coles 1979*: 46-48; *Ingersoll and Macdonald 1977*: xvi; *Mannoni and Giannichedda 1996*: 58).

The goal of an experiment is *always* the enhancement of knowledge: getting new data, falsifying hypotheses, giving shape to new ideas. There is much to learn from an experiment, even more if the results utterly destroy the first hypothesis. It is hard to shoot a clear image of an experimentation, because it represents a dynamic process of thinking, questioning and testing.

It is this "scientific" framework that is then applied to archaeology. Different definitions have been written and debated, but it is possible to ascertain 5 points of agreement on the protocol of an experiment within archaeology:

1.Experimental archaeology's primary aim is the enhancement of archaeological interpretation. If what is done does not help us interpret archaeological data, then we are not doing an experiment in archaeology. We might be trying to experience something, such as an ancient technology (whose primary information nonetheless comes very often from experimental archaeology: *Reynolds 1999*: 157). Therefore, at first, we need to be quite sure of WHY we are engaging in this and shape a research question.

2.The means through which this can be obtained is the testing of hypotheses through experiments. The hallmark of experimental archaeology is the attempt to replicate past phenomena to get better understanding of the past. This is just the means through which we wish to gain new data or information. Replicating past objects or phenomena is therefore just the tool of experimental archaeology, not its purpose. Therefore, a reconstruction is by no means an experiment.

3.Pilot experiments (*Mathieu 2002*: 7), **and "Actualistic" experiments** (*Outram 2008*), **are the most imitative in that they try to assess the importance of unknown variables and set of protocols.** Through pilot experiments we try to get a general better understanding of the procedure we need to investigate and therefore frame future research. It is like a first in the interpretation problem we would like first to understand and then to solve (*Richter 1991*: 19-49). In actualistic experiments an attempt is made to encompass all the variables that would be involved in a real life activity in the past (*Outram, pers. Comm.*). In this phase, then, we need to stay as close as possible to the original procedure as it might have been. These experiments are very difficult to control but they are needed to assess the procedure, the meanings and relationships between the variables involved. They can be used to design hypothesis testing experiments ("second generation") in which variables can be actually tested. This does not hinder the scientific value of pilot and actualistic experiments: the fact that they are not viable to obtain an actual falsification of the hypothesis under scrutiny does not mean they have to be devoid of careful designing.

4.Second generation experiments have to follow a protocol which ensures repeatability and allows measured results (*Richter 1991*: 19-49; *Mathieu 2002*: 8). These experiments can be carried out in the laboratory using materials which can be of a different nature to the original ones, depending on the aim of the experiment. In fact, the variables have been evaluated before and can now be tested in relation to one another. These are the experiments which can yield the soundest data for the falsification of an hypothesis. This procedure can go on, returning again to the actualistic part of the research question and back again to the laboratory until the hypothesis is falsified or verified (*Ingersoll and Macdonald 1977*: xii).

5.Every experiment (both "actualistic" and second generation) has to be carefully documented. This helps to prevent information loss and ensures the validity of the procedure. The whole process has to be communicated to the scientific community and cannot be changed during the experiment. Changing the protocol during an experiment would invalidate the scientific validity of the procedure (*Reynolds 1999*: 157). Lack of communication would prevent knowledge spread among scholars and researchers with considerable waste of effort in trying, for example, to replicate a procedure already done but not published.

What happens when an experiment is carried out in archaeology?

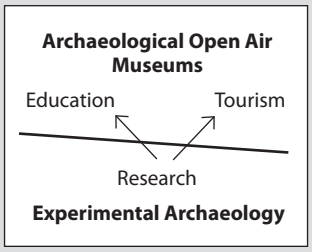
We end up with huts, houses, kilns and *constructions* of a whole series of artefacts, although we must remember that an experimental artefact in its physical dimension precisely represents a hardware model useful for archaeological interpretation (*Coles 1979*: 33). In other words, it is a hypothesis about the past that is embodied in matter. It is a question, not a statement (**Fig. 1**).

Actions, activities and processes are clearly involved in the attempt to answer these questions. If we move back to the initial list of activities labelled "experimental archaeology", we would be noting that just "simulation of production procedures" would belong to experimental archaeology if its aim was the enhancement of an archaeological interpretation. Experimental archaeology has a tremendous benefit on research about the past, because it gives new insights and has a great potential in developing archaeological interpretation and method. The spill-over effect on archaeology and research is extraordinary (see *Outram 2008*). How does the approach, as defined above, compare with the actual use of the term?

Anatomy of a fracture

"Experimental archaeology" is extensively used in education and tourism. This is be-

cause the actions used in the experimental process and the resulting artefacts represent an important source within these fields. Archaeological Open Air Museums are the main sites in which "experimental archaeology" activities are, if not directly carried out, made visible to the public. Although the aim of them, in some cases, has been transformed or never even intended to serve research, but to assist educational programmes which sometimes also become tourist attractions. This shifting of aims from research to education and tourism, while using the same term, has led to a fracture between the academic world and popularization within the field of "experimental archaeology" and open air museums (*Mannoni and Giannichedda 2001*). Since primary data used to build Archaeological Open Air Museums are taken from research anyway, we now understand why scholars are trying to claim back the term experimental archaeology to its source: research (**Fig. 2**).



■ **Fig. 2** The fracture between research and popularization within the tenets of Experimental Archaeology and AOAMs

A matter of words

The definitions given above, supported by publications and discussed among scholars are not just words, but a problem arises from the use of those words in a wider setting. A great deal of confusion can be expected if, for example, the term "hands on activities" is translated and represented as "experimental archaeology". In the valuable guide of AOAM, the term "experimental archaeology" is used in many different ways. In the description of each museum we find again a variety of terms which range from "experimental archaeology" to "experimental criteria", "experimental activities" and so on. Some of the museums described had or still have direct links with research institutions, and a great deal of experimental work is being done all across Europe and abroad. But could it be said that there is a spill-over effect on archaeology from those research activities? It is significant to note that only Sagnlandet Lejre meets the standards of the academic point of view when describing the use of experimental archaeology within the park (*Pelillo 2009* - ad vocem).

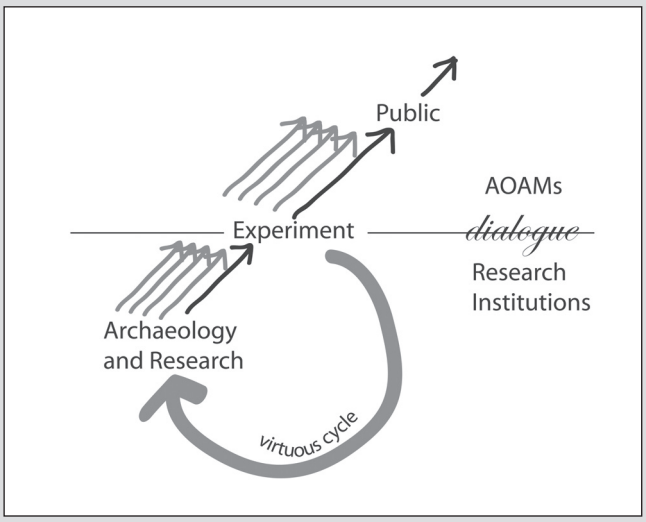
The Exarc definition of Archaeological Open Air Museums uses the term or refers to it generically speaking. In point C we find "strictest scientific method" (from the ICOM declaration) put side by side with "authenticity of materials" in the description of the constructions exhibited in the Museum. If we are to consider experimental archaeology in terms of "strictest scientific method" we must not forget that the aim of it is not building a perfect replica. Replicas are just the tool that experimental archaeology uses to gain knowledge. If a replica has to be built for display in the museum and no knowledge is derived for archaeology from the construction or is not communicated in a proper way, it is simply not experimental archaeology. In point E it is stated that there should be a link with scientific research, but there is no actual link given with experimental archaeology. Should it not then be that the archaeological researchers linked to the museum are aware of the method of experimental archaeology and are therefore able to plan and design proper experimental work that can be expressed in proper scientific fashion? This is all the more important when "experimental archaeology research presentations" appears in point F, when describing activities used to provide interpretation of the past to visitors.

In some examples, activities labelled as "experimental archaeology" within the framework of Archaeological Open Air Museums are replicated and offered to the visitors as a product. Market laws tend to consider them as specific activities belonging to the single museums, almost totally losing their scientific or educational value. This has resulted, in some cases, in a detrimental competition among museums regarding the "ownership" of specific activities in order to maintain an exclusive market position. This means that activities which may have had, at the beginning, a firm connection with researching the past are transformed into a theatrical screenplay that is rigid and fixed. There is no space for communication of competences or of research results in this framework. Research is halted completely with great loss both to the scientific community and museums themselves.

Discussion

Issues of the sort illustrated above could conitinue, but is it really useful? To search for a solution that divides fields of meanings that overlap in the same process is useful, especially if different concepts are physically embodied in one place or one object, like an AOAM or a *construct*. But, having clarified these superimpositions, we cannot take apart reality. What we can do is keep the clarifications in mind and perhaps move to consider something else, if we intend to speak about quality.

Would it not be more useful to all the parties involved to build a virtuous circle of exchange among research, education and tourism that has its centre in experimental archaeology in AOAM? As stated above, experimental archaeology is a dynamic process which produces new information continuously. Data coming from the archaeological record can be subjected to experimenation and then presented to the public, but if the results of the experiments are communicated back to research institutions, the process could provide a continuous stream of information useful in producing new activities for the public and enhancing their quality (**Fig. 3**). This might seem rather oversimplified, and there are surely many aspects to be considered in enacting such a transformation. Yet the potential is there, and first steps could be taken in that direction.



■ **Fig. 3** Scheme representing the proposal for the dynamics implied in a virtuous exchange between Experimental Archaeology and AOAMs

New perspectives

One of the first observations regarding steps toward resolving the apparent dichotomy between experimental archaeology and Archaeological Open Air Museums is the need to acquire its method and define a common terminology with a capillary action. The importance of words should imply attention in translations and communication to both the visitors and research institutions. As for the contents, one possible way to reassess the meaning of experimental archaeology within AOAM is the re-evaluation of "actualistic experiments" from the academic perspective. These experiments are essential in the building of structures and activities in every AOAM, but maybe the research meaning of them needs to be considered and communicated more attentively. As Hurcombe points out, in her extraordinary example of the use of experimental archaeology in research, "it is also notable that, while many aspects of the activities reported here would have made excellent demonstrations or even interactive public presentation opportunities, they were instead entirely research-led" (*Hurcombe 2008*: 107). The opposite may as well be true: demonstration activities or public presentations can have a return for research.

Another aspect which is of vital importance for all the points suggested above, is the evaluation of the intangible heritage of experimental archaeology. One thing is difficult to measure and has troubled the most rigorously scientific experimental archaeologists: the human being (*Reynolds 1999*: 158). But what meanings have the by-products of experimental archaeology left with the visitor? Very poor, for it is not easy to understand the questions, the actions and the procedures laying beneath objects. We, as archaeologists, know this very well. What is intangible about experimental archaeology has to be valued as the fable telling, the sharing of experiences with others and the dialogue that it allows with people and the past. And the possibility, not the certainty, of enlightening our past. If we turn experimental artefacts into mute objects to be exhibited in a showcase as in a classical museum, we return to the difficulty of the original archaeological artefacts. According to Gibbon, since humans have some distinctive features like consciousness, will and reflective abilities, they cannot be treated like stones or rabbits (*Gibbon 1989*). The "human factor", as defined by Roberto Deriu, has to be taken in account in the right respect and coherently valued and approached; rationality does not exclude creativity in the human being. Dynamic interaction with experimenting may also give back some insights into what the intangible heritage of the past was. If the dynamic process of questioning the past, with its continuous innovation of information and activities could be embedded within AOAM, an ever growing seed could be planted in them with profitable return for research.

Epilogue

This article has been framed within the structure of the dialogue between experimental archaeology and Archaeological Open Air Museums. Some aspects formerly conceived as controversial or, at worst, hostile between the academic perspective and the actual use of the term "experimental archaeology" were shaped to highlight the meeting points and the common aims that could build a virtuous cycle of exchange. Addressing the problems from this perspective has allowed the discussion to delve into conceptual clarifications while building pathways for profitable communication. To achieve this aim, it was necessary to lay bare the apparent fracture between the meaning and the use of the term "experimental archaeology".

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Summary

Archéologie expérimentale: méthodologie et nouvelles perspectives pour les Musées Archéologiques de Plein Air

La signification du terme "archéologie expérimentale" dépend du cadre dans lequel il est utilisé, que ce soit dans un contexte de recherche scientifique pour confronter des interprétations, ou dans celui de la pédagogie et du tourisme pour montrer les processus de création et les objets obtenus. Bien que citée pour des activités très différentes, l'archéologie expérimentale a toujours pour point de départ le matériel archéologique.

Experimentelle Archäologie: Methoden und neue Perspektiven in archäologischen Freilichtmuseen

Die Anwendung des Begriffs „Experimentelle Archäologie" variiert in seinen jeweiligen Zusammenhängen. Dabei kann es sich um die Forschung handeln, welche die Verbesserung der archäologischen Interpretationsmöglichkeiten zum Ziel hat, oder um Pädagogik und Tourismus, für welche die experimentellen Aktionen und die dabei hergestellten Artefakte wichtige Grundlagen sind. Auch wenn die Experimentelle Archäologie zu verschiedenen Aktivitäten eingesetzt wurde und wird, ist ihr gemeinsamer Hintergrund doch immer die eine Quelle, aus welcher die wesentlichen Informationen stammen: die archäologischen Fakten.

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