Archaeometry: quo vadis?

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Abstract: First, a brief overview of the tasks and the historical development of archaeometry will be given. Although archaeometry is generally doing well, a few issues currently faced by this discipline will be outlined. These include: (1) funding for projects and research positions; (2) the appeal of archaeometry to a new generation of academics; (3) the standard of publications; (4) the safeguarding of and the immediate access to scientific data.

Scientific study of raw materials and products used in prehistoric and historical time involves an interdisciplinary collaboration between archaeology, art history, preservation of the cultural heritage, ethnography and science. This area of research, in which these disciplines overlap, is known as archaeometry or archaeological sciences. The term geomaterials includes rocks, soils, mortars, pigments, ceramics, glass and slags. Scientific analysis of these objects aims at answering the following questions: (1) Where does the raw material come from? (2) Where was the object manufactured? (3) How was it manufactured (technique)? (4) What was its purpose (function)? (5) When was it manufactured (dating)? Scientific analysis should not limit itself to the qualitative and quantitative description of the ‘chaîne opératoire’. Rather, it should approach these questions in a holistic manner. This involves the socio-cultural environment in which the artefact was manufactured (household, workshop, etc.), distributed and used. Collaboration with archaeologists and art historians needs to show how and why a particular technique was introduced or a specific manufacturing process used. It also needs to clarify the intention behind a certain function and the choice of a particular trading structure.

In the field of preservation, material-specific properties of unweathered objects must be compared with their decay products so as to work out restoration concepts within a framework of interdisciplinary collaboration.

Methods and history


Apart from a multitude of papers published in journals or books, there are many specifically geomaterial-related monographs, as well as proceedings from conferences. We shall name only a few of these and limit them to three domains as examples, because a complete listing would go beyond the scope of this Introduction.

The first scientific analyses of ceramics, metals and pigments started early; that is, at the beginning of the 19th century (Riederer 1981b, 1987; Maggetti 1990, 1994a). The foundation of specialist laboratories at museums and universities, such as the Chemisches Laboratorium der königlichen Museen zu Berlin (Rathgen-Forschungs labor, 1888), as well as the Research Laboratory for Archaeology and the History of Arts (1955) at the University of Oxford, were milestones in the development of archaeometry. The number of similar institutions, active working groups and professional societies has increased ever since. The publication of several archaeometric journals was initiated, along with a great number of conferences. Obviously, archaeometry is an encouragingly vital discipline, but is it free of problems?

However, it appears appropriate to take on some of the points raised by Widemann (1982), Fabbri (1992), Vidale (1992) and Maggetti (1994b). They deal with the funding of projects and research positions, the appeal of archaeometry to young scientists, the quality of scientific publications and the immediate and efficient access to research data.

**Funding**

Although interdisciplinary research is up-to-date and highly praised by all entities, people working in this sector do indeed face difficulties. For instance, it is not easy to obtain funding, because problems concern historical disciplines, whereas answers and methods pertain to the sciences. In the quest for funds, one may find that a scientific body either rejects a project because questions are regarded as of historical nature, or it may pass it on to an arts or humanistic body, which in turn also declines the project, considering it to be of scientific nature.

**Citation index**

It is becoming more and more common for universities, departments and scientists to be judged by the number of scientific papers being published in journals belonging to the citation index. Many archaeometric publications, however, do not appear in such journals, a fact that must have a detrimental effect on the career and reputation of the scientist concerned, if they do not already hold a position in archaeometry. On the other hand, the archaeometric results should also be published in archaeologically relevant journals or books, to strengthen interdisciplinary collaboration. As a result, young, enthusiastic scientists will be discouraged from pursuing a career in archaeometry.

**Stable research positions**

In addition to the problem mentioned above, there are far too few permanent posts for trained archaeometrists. It is understandable that in times when jobs are cut everywhere, scientific disciplines do not appear willing to redefine a vacancy as an interdisciplinary lecturing and research position. Because the questions pertain to the field of archaeology, art history and the preservation of ancient monuments, it should be up to these disciplines to safeguard or create the appropriate posts. Without such new positions it is impossible to retain the interest of young scientists or to motivate them to undertake research in archaeometry.

**Problems faced by archaeometry**

Fundamental aspects of the status of archaeometry have been discussed extensively by Tite (1991, 2004) and Jones (2004). It is therefore unnecessary to further comment on them here.
'Hobby'

Unfortunately, there are far too many people doing archaeometric research as a 'hobby'. Many of these part-time archaeometrists are not familiar with archaeometric literature and reinvent the wheel, so to speak, i.e. they tackle questions that have been solved a long time ago. Often archaeologically irrelevant questions are investigated, insufficient numbers of samples are analysed and it can happen that 'poverty of measurements are covered up with sophisticated data processing' (Widemann 1982). Many such papers appear in unrefereed journals or books and escape the quality filter.

Databases

Often, results of archaeometric studies will not be found in relevant journals, such as Archaeometry, Geoarchaeology, Journal of Archaeological Sciences, Revue d’Archéométrie, Journal of Cultural Heritage and Marmora. Instead, they are published in books or journals that are difficult to access. Those who need to consider the citation index will be more likely to publish in journals of their specific discipline. In these journals, however, archaeometric contributions tend to disappear and colleagues cannot find them. It is therefore understandable that far too many good papers will hardly be read. As a result, analyses pertaining to problems that have already been investigated tend to be repeated, a fact that should be avoided considering the limited financial resources within the archaeometry community. In the field of ceramics, for instance, many working groups possess a large collection of chemical data and chemical reference groups, which, for the reasons mentioned above, are not readily accessible to everybody or will be lost once the group ceases its activity. Consequently, it is very important to make these treasures accessible to all people involved in archaeometry. These days, the internet provides a powerful instrument to display results periodically on the homepage of the relevant team, as is done by the Freiburg archaeometric working group (www.unifr.ch/geoscience/mineralogy/archmet). However, this applies not only to ceramics, but also to the other geomaterials. As a result, one could avoid duplicate working and save money as well as time.

Final remarks

The previous discussion has highlighted some of the problems faced by archaeometrists. What does the future of archaeometry look like? It is beyond any doubt that archaeometric research, such as precise dating, is indispensable to the fields of archaeology and art history. Also, it is impossible to make restorations without the appropriate and relevant research being done. This presents a huge opportunity for archaeometry, because, owing to its impact on tourism, the study and preservation of our cultural heritage is likely to receive sufficient financial support from governments. However, it is necessary for research in all archaeometric sectors to focus on archaeometric competence centres that provide sufficient long-term employment, knowledge and sound technical apparatus. This is the only way in which young, well-trained scientists will be willing to commit themselves to the fascinating field of interdisciplinary research.

References


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