IS THERE STILL A FUTURE FOR ARCHAEOLOGY AT UNIVERSITIES?

I. Introduction

Archaeometric, i.e. scientific, work on excavated objects and museum pieces with regard to origin, technique, dating and conservation has been done since the 19th century (RIEDERER 1976, 1983; MAGGETTI 1990, 1992; TITE 1991), yet the term "Archaeometry" first appears in 1958 as the title of the English periodical “Archaeometry”. In the 19th century it were mainly university scientific institutes that worked on analytical questions from people in the Arts and humanities. It was only from the end of the 19th century or the beginning of the 20th that special scientific laboratories were set up at museums or within archaeological services (RIEDERER 1976). To these there later came a third group of services specializing in the analysis, restoration and conservation of monuments.

The following remarks refer only to the position of archaeometry at universities and not to that in the other institutions mentioned above. I shall describe both positive and negative experiences gathered during 15 years of archaeometric research. In the course of many conversations with colleagues in this specialized field it became apparent that the balance presented here is, with the exception of Britain (TITE 1991), typical of the situation of archaeometry at European universities and related institutes. I shall first describe the position of archaeometry in Switzerland, with special reference to the situation in Fribourg, and then comment in general on current problems and the future of archaeometry.

II. Archaeometry in Switzerland and in Fribourg

Archaeometry is not structured in Switzerland - contrary to neighbouring countries such as France and Germany, where archaeometric activities show a certain amount of coordination (in France: GMPCA = Group of pluridisciplinary methods contributing to archaeology; in Germany: the Archaeometry Working Groups of the Society of German Chemists and of the German Mineralogical Society).[15] Many laboratories and individuals do some sporadic archaeometric work but in the course of time specialized centres have evolved, based on the interests of particular scientists, where archaeological findings are analysed using scientific methods. This decentralized structure is well suited to the Swiss federalist mentality. I cannot mention all the laboratories active in this held but good examples are the Universities of Berne and Zurich (C-14), Basle (bones, precious metals and botanical remains), Lausanne (metallurgy), Geneva (bones) and Neuchatel (dendrochronology).

The Mineralogical & Petrographical Institute of the University of Fribourg is mainly concerned with ceramics, although rocks and stones (currently mosaic cubes) and pigments (currently wall paintings) are also examined. Why should archaeometry be done precisely at the Mineralogical & Petrographical Institute of Fribourg University?
Firstly, because of their orientation, mineralogical institutes lend themselves to archaeoceramic tests and examinations, as this kind of research is indeed applied mineralogy. Secondly, such orientation has been stimulated and encouraged by the writer's own personal interdisciplinary leanings. Thirdly, the fact that 15 years ago there was no Swiss scientist working with antique ceramics and there was great demand from archaeologists.

And why should we take precisely antique ceramics as objects for study? As Maggetti has stated (1986), for the petrographer antique (and modern) clay ceramic products are artificial stones, which were subjected to high temperatures, recrystallized during the process and thus became thermo-metamorphic products, just as occurs in nature through contact metamorphism. Like the natural metamorphic rock, a ceramic object consists of a union of solid phases which are of crystalline and/or amorphic structure. The object can therefore be examined by using the same methods and under the same conditions as a normal metapelitic/metamarly rock with questions formulated as they relate to the Arts and humanities. It is therefore not surprising that antique ceramic objects have been subjected to mineralogical and petrographical examination since around 1930 (Maggetti 1992), but were already chemically examined one hundred years before then (Maggetti 1990). The archaeometric working group in Fribourg is concerned with questions of origin and technique. No dating is done.

We employ the methods normally used at a Mineralogical & Petrographical Institute, i.e. microscopy, X-ray fluorescence analysis, X-ray diffraction analysis, porosimetry, electron microscopy.

As is evident from its name, a Mineralogical & Petrographical Institute, however, does not concern itself only with archaeometry. This is also true of myself, as I lead three working groups: petrography/petrology (currently a total of 9 post docs, doctoral and degree candidates), industrial ceramics (5) and archaeometry (3).

In the past 15 years the Fribourg archaeometric working group has worked on or complied the following:
- Data bank: ca. 3,200 chemical analyses (ca. 200/year), ca. 4,000 petrographical analyses (ca. 260/year)
- 41 reference groups
- 111 publications
- 10 diploma theses
- 2 PhD theses

We were pleased to receive financial support from various sources and could purchase an X-ray fluorescence apparatus and an X-ray diffractometer for working on archaeometric projects. The institute also received substantial funds for staff and infrastructure. At present emphasis is on the following research programs: Neolithic pottery (PhD thesis), Colour changes in ceramic manufacturing using seawater (PhD thesis), Mosaics from the gallo-roman villa of Vallon (FR), Roman wall paintings in Switzerland.

III. Problems in Switzerland

Although interdisciplinary research is up-to-date and highly praised from all instances, people working in this sector do indeed face difficulties.
For instance, it is hard to obtain funding, as questions pertain to historical disciplines, whereas answers and methods pertain to the sciences. In the quest for funds for research, we may find that a scientific body declines to take on a project because questions are of a historical nature, or pass it on to an Arts or humanities body, which in turn also declines the project, considering it to be of a scientific nature!

An attitude of this kind also creates difficulties for students working towards a diploma or doctorate degree with an archaeometric subject. Although there would be a lot to do, there are virtually no permanent positions for trained archaeometrists at the universities, in the cantonal archaeological services or elsewhere. It clearly does not make sense to train archaeometrists who are then unable to find suitable jobs. It is equally clear that in such a situation motivation is poor and that one is unable to interest young students in this rewarding and exciting field of research. Archaeometry can also harbour risks for the professor, as many colleagues regard such work as inferior and archaeometric publications do not appear in indexed journals. More and more frequently a professor's or an institute's reputation is measured by the number of publications indexed, i.e. referred papers!

As Maggetti (1990) has stated, archaeometry got off to a hopeful start in Switzerland 15 to 20 years ago.[17] For this impetus to continue, though, we should take the following measures:

1) Additional funding

Due to the current lack of public funds, cantonal and federal instances have had to cut back funding of archaeometric research. Thus more funds have to be obtained from the Swiss National Fund (SNF) for the Promotion of Scientific Research, but because archaeometry is in fact interdisciplinary it is hard to obtain financing from this channel. As previously mentioned, because questions are of a cultural and historical nature, applications for funding cannot be made to scientific bodies. On the other hand, the credit framework allotted to archaeology within the SNF is so tight, it is understandable that archaeological projects are the first to be supported.

Either the archaeological credit framework should be considerably topped up or a separate archaeometric discipline introduced (with sufficient funding) and/or the criteria for allotting cantonal funds should be revised.

2) Structural reform

In Switzerland a number of archaeometric research and service groups have been established in the science faculties of universities and related institutions. This is due to the initiative of individuals and there is a great danger that once these individuals are no longer around (due to retirement, for instance) the activities of these groups will cease. It is imperative that we avoid things coming to such an end, because without continuity the experience gained through much hard work, which in many cases has spanned decades, would be lost and would later, if at all, have to be regained elsewhere and at great financial cost. In order to ensure continuity, the currently active archaeometric working groups should be supported both financially and with personnel, and new centres established. Only in this manner can we ensure that dynamic young people take an increasing interest in this work and take up positions at one of these centres.

3) Archaeometric training
Throughout Switzerland opportunities to take a course in archaeometry whilst studying archaeology range from insufficient to nonexistent. A course at propaedeutic, preferably subsidiary (minor) subject level should be realized and offered by at least one university. Similarly, part-time courses should be offered for the further training of archaeologists. Modern archaeology makes increasing use of conclusions reached by the sciences. Today's archaeologists must be familiar with the basics of these disciplines in order to be able to exchange views with scientists (see below for details).[18]

IV. Basic problems of archaeometry throughout Europe

The writer is convinced that the problems listed under III) are not related specifically to Switzerland, but apply throughout Europe. In addition there are the following:

1) Archaeometry as a hobby

Archaeometry is no longer a hobby! Unfortunately there are far too many people doing archaeometric research on the side, as a leisure-time activity so to speak. There is thus a danger that it is a long time before results are obtained and mandators, i.e. the archaeologists, turn away from archaeometry because they are disappointed. Many of these leisure-time in the meantime has reached considerable proportions. They often work in vacuous rooms, so to speak, lose far too much time and believe that before them no one has concerned himself with a specific problem.

2) Quality control of archaeometric publications

Anyone looking through the many archaeometric publications with a critical eye will soon notice that in addition to many good to excellent works, there are - when compared to other disciplines - far too many of a questionable standard. This is because many archaeometric results appear in archaeological publications, without critical review by an expert. It seems that an archaeological publication is deemed all the more "serious" and respectable, the more charts and tables of scientific findings are contained in the appendix. It is regrettable that in Europe there are only two archaeometric journals with a reviewer system - “Archaeometry” and the “Revue d'Archeometrie”. On the other hand one might well ask whether it would not be better to include archaeometric publications in archaeological journals, but on condition that a competent archaeometrist has a seat on the editorial board. This would reduce the often lamented gap between archaeology and archaeometry.

3) Dialogue between archaeology and archaeometry

Any scientist engaged in archaeometry has at some time to explain to the archaeologist the range and implications of his results, the limits of the methods he has used and the statistical problems. He will certainly find that this takes a lot of time, because generally the archaeologist will quite justifiably not understand very much of these aspects, as he has heard nothing of them during his or her curriculum. The archaeometrist may also find that his archaeological partner is only interested in
the results and balks at lengthy discussion.[19] The same applies to the archaeologist if he should come across a scientist who indeed "extols" his method, but does not wish to argue with questions formulated from the point of view of the Arts and humanities. A fruitful, interdisciplinary exchange of views is thus rendered impossible. This is, however, the basic requirement for carrying out genuine archaeometry. How can such frustrations be reduced and a lot of working time be saved, so that things do not have to be newly explained time and time again?

There is only one solution: Archaeologists ought to take a course in archaeometry as part of their studies and archaeometrists ought to take a course in archaeology. It is not a matter of making archaeometrists out of archaeologists or vice-versa - training time is far too short for that. No, but an archaeologist should have a knowledge of the materials, methods and thinking of a scientist and an idea of the problems inherent to measurement and evaluation (i.e. the possibilities for error), so that he can discuss with the archaeometrist and to some extent evaluate the scientist's statements. The same naturally applies in reverse to the archaeometrist.

4) Archaeometry curriculum

In Europe there are two concepts for the training of archaeometrists: On the one hand, in the second (degree/diploma) or third (doctorate) cycle, scientists are trained as archaeometrists for a specific method or a specific group of materials. On the other hand, archaeologists in the third cycle are trained as archaeometrists. I am totally convinced that an archaeometrist should come from the scientific disciplines. Only an expert who has studied science for four to five years can apply his methods to an interdisciplinary questioning. This is the only way for him to keep up with new and further developments. It is, for example, impossible to train an archaeologist (during the course of his studies or whilst he is working towards a doctorate) even in the geological and mineralogical sector in such detail and as thoroughly as a geologist/mineralogist. This is, however, a basic requirement for the competent execution of geological/mineralogical oriented archaeometry. A person from the Arts or humanities would also not much enjoy a very intensive geological/mineralogical training, as he or she is studying archaeology and not geology/mineralogy. For this reason a course of archaeological studies can contain at most only one subsidiary subject level - archaeometry - which should then cover all important aspects (material groups, methods and statistics). On the other hand, it must be stated quite clearly that the scientist should enjoy the interdisciplinary work and be interested in questions relating to the Arts and humanities otherwise there will not be good results.[20]

5) Archaeometric centres

It is well known that "professionally" active archaeometric centres in Europe are thin on the ground. This is decidedly too few in comparison with the many tasks at hand and the scientific problems that need solving. Just as in Switzerland, these centres are often highly "people-related" and are not provided for institutionally. Remedial measures must be taken, so that existing centres can carry on their work and new centres can be created.

6) European network
The large number of archaeometric, i.e. scientific results are very often published in journals and periodicals which are not easy to obtain. There is unfortunately no All-Europe compendium which contains all previous results, and for which yearly supplements are issued containing new results. This would enable all archaeometrists to keep up with the current status of research. It would also avoid annoying duplications as in the case of the Terra Sigillata of Arezzo, where reference groups were repeatedly set up, evidently because the researchers were unaware of results obtained by other working groups. In view of the current shortages of staff and funds, this should be avoided at all costs!

V. Archaeometry: Will it soon come to an end at European University Institutes?

Most archaeologists today are certainly aware that their particular sphere has made enormous strides, thanks to help from science. For instance, where would dating be without C-14 and dendrochronology? The answers to many questions could not even be found without collaboration with archaeometrists. From that point of view one would think that archaeologists would keenly advocate the keeping and extension of archaeometry. Unfortunately, only in a few places is this the case. It is surprising, because it is clearly up to the questioner to provide funds and staff, and up to the Sciences to provide premises, apparatus and young researchers. The current stand taken by many archaeological and other decision makers leads one to fear for the future of archaeometry. Just consider the situation in Italy, Lyons (Laboratoire de Ceramologie) and Berlin (Archaeometric Working Group at the Freie Universität). I am convinced that, with the exception of Britain (TITE 1991), where there has fortunately been a longstanding tradition of archaeometry and where archaeometry is structurally better anchored, there is no future for archaeometry under present-day conditions.[21] Purely service operations such as the C-14 dating laboratory will certainly continue to exist, but archaeometric centres oriented to specific materials will probably close. A pity for archaeometry!

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Bibliography

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