

COLLABORATION BETWEEN ARCHAEOLOGISTS AND NATURAL SCIENTISTS IN SWEDEN

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Swedish archaeology has during the period after the last world-war passed several phases. Strongly simplified you can say that an archaeology centered to artifacts, especially studying artcriteria was followed by a so called settlement-archaeology in the end of the 50's and the 60's. Settlement-archaeology has been strongly focused on administrative variations during the iron-age. Settlement-archaeology was followed by a so called ecological archaeology during the 70's, then during the 80's succeeded by an intense study on economical, social and political behaviours during pre-historic times. Even the techniques of excavation were influenced by the variations in the scientific goals. The artifact-specialists were focused on the artifacts, the settlement-archaeologists focused on the totality of an area with ancient monuments, for example number of graves, their forms etc. The ecological archaeologists became strongly influenced by natural scientists because their archaeological results had to be completed with paleobotanical studies etc. It was during this period that the archaeologists really noticed the value of collaboration with natural scientists. Even the »social archaeologists» today are depending on natural scientists to reach their goals.

Of course collaboration between archaeologists and natural scientists isn't something quite new. As all know the pioneers of archaeology in Scandinavia many times collaborated with nature scientists in order to get as much information as possible from for example mesolithic sites. This situation is well described in for example Gad Rausing's books on archaeology and science. But, as mentioned, the interest for collaboration is just now growing very strongly, not only in Sweden but also in other parts of Europe and in the United States. In older days there were of course no firm organization for collaboration between archaeologists and natural scientists. When necessary a suitable University department was contacted. Sometimes they had the special knowledge needed, sometimes not. Just this lack of firm routines made it impossible for archaeology to get important information out of the sites many times when the archaeologists really needed this special information. During the artifact-epoch and settlement-archaeology-epoch this fact wasn't very important. Of course this is very simplified. There are lots of so called settlement archaeologists really interested in for example paleobotany. But during the following epoch, the ecological, the situation became more and more frustrating. The excavation-methods began to change. Not only the artifacts were interesting but also different types of preparations, for example samples from old soilsurfaces, layers from bogs, situated near the excavation area etc.

The archaeologists became from the beginning quite frustrated by all this, but of course they soon got some help from the natural scientists. But the organization was still quite unsettled with exception from some special areas where service was guaranteed. Within some fields such as C 14 there is already a long time firm organization, which means that archaeologists can get their datings from established laboratories. In Sweden there are such laboratories in Uppsala, Stockholm and Lund. But when we now are trying to establish accelerator-datings we have to start a new discussion how to solve the problems. In that field we still lack a firm organization.

Also within TL a new organization is growing, based on Nordic collaboration around the Risø nuclear laboratory in Denmark. And we know that TL-work is going on in Helsinki. Possibilities for dendrochronological datings are also increasing because of the laboratory recently built up in Lund. In Lund we can also get charcoal-determinations. Even in Uppsala the work of building up a dendrochronological laboratory is going on.

To make soil-analyses such as phosphate-analyses etc, the archaeologists can use the laboratories at the Central Board of National Antiquities. Soil-analyses can also be made at the Laboratory for Archaeological Research at the University of Stockholm or at the University of Agriculture in Uppsala. When we speak about macrofossil-analyses, pollen-analyses or diatom-analyses, different types of paleo-botanical analyses, the archaeologists have got some help från different institutions. Things have been quite unsettled. As to pollen-analyses we have had some collaboration with the Geological Survey of Sweden, especially in connection to bigger excavations. But the demand for all these paleo-botanical specialities from archaeologists has led to that we during the latest years have tried to get at least *one* firm counterpart well capable of knowing the needs of the archaeologists within the field of paleobotanical analyses.

To solve this the Central Board has recently written a contract with the Department of Quaternary Geology at Uppsala University. This has been done in order to solve all the big problems we have had in getting analyses of different kinds done until now. The contract means that the Central Board in exchange for a stipulated sum of money every year gets analyses of the above mentioned types from the Department in Uppsala. As the collaboration between the Central Board and the Department in Uppsala has just started, it is not possible to point out many results as yet, but it will certainly be a success.

We hope that this is a new way of solving collaboration problems. In exchange for stipulated sums of money, it will be possible for archaeologists to get necessary analyses from the scientists. We prefer this way of working. The scientists will still be working in their own milieu and we have no need of building up a special scientific organization within the Central Board. We know that other institutions have tried other ways of collaboration, but we think that this is the best way for us in Sweden, at least at the Central Board of National Antiquities.

Of course this doesn't mean that for example the Geological Survey of Sweden has ceased to be a counterpart to the Central Board. In special situations, as for example at the big Helgeandsholmen-excavation some years ago, the Geological Survey served the archaeologists very well. Of course this collaboration will also continue. Even between the University of Umeå and the Central Board there is a cooperation. Roger Engelman at the Department of Archaeology is a specialist in paleo-botany himself. He has also instructed the archaeologists at the Central Board within the field of ecological archaeology at courses of ecology held in Umeå.

In this article I have only mentioned some few fields of collaboration, but there are several other areas, for example such as osteology. When we discuss this we still don't

know how to continue. Many osteologists are, at the same time, also archaeologists, which means that the osteological analyses are made in the field.

But the need of osteological analyses is increasing. Because of that we even here must try to find models for firmer collaboration.

Also within the field of metallurgy we have a similar situation. At the Arkeo-Metallurgical Institute in Håksberg near Ludvika we can place our slags etc. But how to go on with analyses? How to create an economy for that purpose. The Laboratory for ceramic investigations in Lund is also in a similar situation.

The meaning of this article is to point out how important the immediate solution is of the problems of collaboration between archaeologists and natural scientists. If we can't make it now there is a big risk that the information from our excavations will be reduced dramatically.

In Sweden we have consequently tried to establish a firm and close cooperation between archaeologists and natural scientists. We think this suits us very well. But it is maybe not the right way in other countries where the structure of organizations is different from that in Sweden.

But in whatever way we will act it is very important to set the specialists at safety for the future. If we don't, we suddenly one day will stand without resources when we really need them from an archaeological point of view. Therefore it is very important not only to discuss new methods and ideas, but also how to organize these new methods to be routines within the archaeological work today. If we don't set this to safety, the scientific resources can get out of our hands some day and this would be a catastrophe for archaeology.