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Knowledge and know-how in experimental archaeology

Lars Larsson

The article is a self-centred presentation of different aspects of experiments that the author has been involved in. These started with some less successful attempts at a young age. When starting out as a student of archaeology I sensed a lack of knowledge and also a lack of interest in tool manufacture in the literature. For me, knowledge read and listened to was of interest, but know-how, practical exercise with the motion of your

hands, muscular knowledge, provided an important contribution to the understanding of past societies. This is exemplified by several cases, such as building houses, rolling stones for reconstructing megalithic tombs, heating flints, sorting garbage as well as conducting various tests on animals and on oneself. Unexpected occurrences during experiments can provide insights into animal as well as human behaviour.

Introduction

An important part of Anders Ödman's research deals with experimental archaeology. He has been a most devoted and much appreciated teacher of courses on the subject. This effort, combined with others, resulted in his election as lecturer of the year within the faculty. I do not intend to comment on Anders' contribution but instead present some perspectives from my own experiences in this area of archaeology, a very self-centred presentation.

Experimental archaeology is for me the essence of archaeology. My object with this presentation is not to try to present a survey of the last few years' research in experimental archaeology, nor to get into any complicated theoretical discussion as to why one should or should not engaged in the often dirty work of conducting experiments. I intend to present some personal experiences relating to experimental archaeology in the hope of providing some perspectives on this very important part of archaeology.

As soon as I became interested in archaeology, at the age of ten, I also tried to knap flint in order to make comparisons with the artefacts I had found during fieldwalking. However, with no knowledge and very poor flint the sole result was a sore thumb and blisters on two other fingers. But this experience did not made me less interested in experiments. I also tried to obtain some practice engraving on stones. On the farm where I grew up it is still possible to find some very special runic engravings on large stones.

However, back to the title of this article. Objects and how they were used in a functional but also a social perspective have been of special interest to me. Knowledge in this sense

is the information that you read about, listen to and that you can form into new ideas, different forms of communication (Pelegrin 1990; Högberg 2009). Know-how is how this information is used in practical exercises, not least how knowledge is tested, mainly by the motion of the hands, i.e. this is muscular knowledge. In some cases there is a slight difference between experimental archaeology and excavation that may also include experimental achievements.

But how were they made?

To me, the initial university studies in prehistory in the mid 1960s were like entering paradise. However, I was missing one ingredient – the experimental perspective in the studies on how artefacts were made and used. I soon got hold of the book *Mand og flint* by Anders Kragh (1964), which provided me with the basics of flint knapping and allowed me to obtain answers to some of my questions.

But my interest in the fabrication and use of objects was not shared by many archaeologists. Rather, early in my studies I attended a seminar where an expert in horse-riding presented his experiences of riding with different kinds of saddles from late prehistory. In the discussion after the presentation a senior archaeologist made the comment that, based on the accepted typology, a couple of his saddle designs were totally wrong. Therefore, his experiments could not be trusted. He replied that he had also tried the two saddle types indicated in the typology to which the critic was referring and had found that they were impossible to use, but this response made no impression on the audience. Typol-

ogy was a more reliable method than these strange experiments. At that time, late in the 1960s, experimental archaeology was mainly the realm of amateur archaeologists, some of them with strange ideas about prehistoric people, which did not make the topic easier to include in ordinary education or research. In the case described above, the presenter was a well-known archaeologist, but his experiment with the loading and unloading of Viking ships not only with horses but, according to gossips, with elephants as well did not make his results more acceptable.

Building houses, rolling stones and angry bulls

My major project in experimental archaeology, undertaken in the mid 1980s at a local zoo (Skånes Djurpark) and involving a number of archaeologists as well as amateurs, was the reconstruction of Mesolithic houses and huts along with different techniques used at that time. Other

colleagues were building a Neolithic house and a megalithic tomb. We were asked to reconstruct structures from the Mesolithic as well as the Neolithic based on excavation results within Scania, the southernmost part of Sweden, including a couple of my own excavations. In this work I obtained insights into how difficult or easy different tasks might be. To keep moisture away from a seasonally used house was almost impossible. A wooden building used only for a relatively brief part of the year, such as special-purpose building, a cult house or church, will decay much faster than a house in continuous use.

We reconstructed a house that had been excavated at the late Mesolithic site of Skateholm, at the south Scanian coast. We built it like a huge upside-down basket with a couple of large trunks as supports in the middle. The roof was covered with reed (Larsson 1985) (figure 1). With a fireplace and a number of skins, it was very suitable for living even during the cold winter. The reconstruction site was situated rather close to the animal park, which caused some sleepless nights because of howling wolves.



Figure 1. The reconstruction of a Mesolithic house based on the excavation of a feature at Skateholm, southernmost part of Sweden. Photo: Lars Larsson, 1984.

In addition to the house we also reconstructed a hut of the kind that was supposed to have been built on the Early Mesolithic bog sites. Some flint knapping was carried out there. Later, the hut was set on fire in order to observe the effect on the refuse. Flints are not affected as easily as was expected by the burning of the structure.

By contrast, moving large stones turned out to be much easier than expected. Thanks to instruction and help from a team member experienced in working and handling stones, boulders of 3 to 4 tonnes could be moved by a group of ten persons without major effort. This was a good example of how to incorporate people with no experience of archaeology but with a lifelong knowledge acquired within ordinary rural society into a group of archaeologists. Various handicrafts or everyday activities some sixty years ago were in many respects not so different from behaviour hundreds and even thousands of years ago. People are still alive today who can, for example, plough with oxen or make waterproof containers of bark. But they will soon be dead, so it is very important to get in contact with these experts within the coming decade.

A couple of events on the same day of the reconstruction project mentioned above might be worth mentioning. A Late Neolithic house built by the staff of the Museum of Malmö was ready to be officially opened. I was asked to perform this ceremony by cutting a rope in front of the house entrance with a Late Neolithic flint dagger. The media were present when I cut the rope with a couple of strokes. However, there was a general commotion among the photographers, as they had not got their pictures. They knew that the rope would be cut with a knife more than four thousand years old and their expectation was that it would take a long time to cut using such an old and primitive dagger. According to one of the photographers he had expected me to be working with the rope for minutes and not for a few seconds. Old tools were expected to work much less efficiently. So I had to cut the rope a second time.

The second event took place just a few minutes later. Among performances related to the prehistoric reconstruction, music made with different pipes and drums was heard. The instruments included a bronze lur exactly resembling the ones from the Late Bronze Age. After a few minutes' performance a park official came running, shouting that we had to stop the lur player before he caused a major accident. It turned out that the park had acquired a bull and a cow from what was assumed to be a close breed to the aurochs. When the bull heard the sound of the lur it reacted as if there was a terrible hullabaloo going on in the neighbourhood and started to attack the fence. Later we tested the sound of the lur on a domesticated bull and it reacted exactly the same way (Larsson 2011). Lurs could have been used for bull fighting, especially as they were most numerous during the Late Bronze Age, when there was a high percentage of cattle. Thus, occasionally a sudden reaction



Figure 2. Burning at the experiment centre at Lejre, Denmark. Despite the intense heat, the oxen reached for the grass just outside the pyre. Photo: Karin Rogius, 2000.

‘out of the blue’, something that is not foreseen, might happen when you work in experimental archaeology.

Heating flints and sorting garbage

Something of the same kind but not as dangerous happened several years later when we made experiments by burning flint axes at the experimental centre of Lejre in Denmark. The transformation of flint axes by using fire is common in the Neolithic of southern Sweden (Larsson 2000; 2006). Close by, there were a couple of grazing oxen, which were to be trained for dragging stones as building material for a megalithic tomb. They remained unconcerned about our burning experiments until the fire was almost extinguished. At this point they both started becoming very obtrusive. Despite the intense heat, they reached for the grass just outside the pyre (figure 2). The reason might be that this grass was mixed with ash containing minerals that made it extremely tasty. We tried to chase them away without much success. It all ended with us sleeping around the fire so that we might test our expectations without interference from the two oxen. I wonder if a forest clearing made in the Early Neolithic might have attracted wild animals. The aurochs was already extinct, but others might have shown the same interest. So, forest clearance might have been combined with hunting. Later I was told that forest fires attract moose populations. Domesticated animals such as sheep are also fond of grass that has been burned.

Sometimes you have to ask yourself what is experimental archaeology and what is ordinary archaeology. Here is an example. Together with the staff of the University of Technology in Lund we carried out a project studying the decomposition of garbage at a couple of garbage dumps in southern Scania. Our task was to study the composition of refuse as well as date it. It turned out to be easy, as decomposition was very slow, due to the compression of the garbage.

At the same time a seminar excavation was taking place at an Iron Age settlement. In order to try to give the students a different perspective on refuse from that offered by the prehistoric material, they were brought to the garbage pit and asked to sort the material in a way they thought could be useful for studying the society. It should be added that the finds were of the same age as most of the students and the numerous nappies smelled as if they might have been deposited just a few days previously. There was an interesting reaction to this task. A number of students performed their task with great interest, discussing and testing different modes of sampling and sorting. Another group absolutely refused to take part in the work. Was it the smell of the garbage or some other aspects that caused these reactions? I was not able to get a full answer from the students.

Bone chewing, surgery and excrement

Another aspect of experimental archaeology is to use animals in order to solve certain tasks. Most common is the use of draught animals such as oxen or horses. However, other animals may be of interest, too. During the excavation of Mesolithic bog sites I tried to use bones for radiocarbon dating. The old processes of dating, used at the time, required large samples. In order to destroy as little as possible you tried to be as certain as possible that the sample you were submitting for dating actually contained enough collagen for a positive result. In many cases it was not possible to meet this requirement. My Newfoundlander Urax took part in most of the excavations, and would normally crawl into a muddy ditch close to the excavation area. As an experiment, I presented him a number of bones. From his expression I could discern an interest in chewing some bones, while other samples aroused no noticeable interest. It turned out that his interest or lack of interest fitted very well with the result of the suitability of samples for radiocarbon dating. Those he showed an interest in were usable for dating, while the others were not. This experiment went on successfully for several years, except for one occasion, when Urax reacted too fast for me, grabbed the bone and ran away. He lay down at some distance from his master and chewed the 8000-year-old bone with much delight.

I will conclude my presentation with another kind of experience – some things you could try out on yourselves. One originates from my participation at the Summer Flint Knapping Field School near Pullman in Washington State some thirty years ago. The famous flint knapper Don Crabtree visited us and took part for a few days. Probably due to flint knapping he had contracted silicosis and had undergone several operations. He showed us his chest and drew our attention to one of the scars in particular, which turned out to have almost faded away. After a couple of surgical operations he had asked the surgeons to use an obsidian

blade instead of an ordinary scalpel. Initially they refused. However, when they were confronted with pictures of the edge of a scalpel blade and an obsidian edge magnified 1000 times they changed their opinion. The edge of the scalpel was almost rounded while the obsidian edge was still sharp. The surgeons agreed to work with a blade made of obsidian and after the operation they all agreed with Crabtree's statement that obsidian was by far the best material. But how do you explain to people that you would like them to cut you with a stone knife? Later I was informed that obsidian flakes are now used in eye surgery. During the knapping of obsidian and flint we cut ourselves from time to time. The wounds from flint edges hurt and healed slowly. The cuts from obsidian were rarely noticed until blood flowed out, and they healed within a couple of days. In Maya illustrations people are depicted cutting tongues with obsidian knives. It looks very dangerous, but based on our experiments it might not have been that serious.

During the excavation of a Mesolithic cemetery we found several concentrations of fish bones in the stomach areas of several of the interred. These finds were assumed to be remains of their last supper (Jonsson 1986). But some colleagues questioned this hypothesis. Normal humans could not eat such big bones and the bones should also be much more damaged than the ones we had found. I have subsequently learned that other archaeologists have tested this on dogs. I did it once myself. I will not go into details concerning the method I used, but I was very surprised at how much food gets through the digestive system without alteration. It was easy to swallow bones along with fish meat, and they ended up totally unchanged.

Experimental archaeology can and should be fascinating.

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