

# Me and You and a Case of Beer

## How the Bronze Age Barrows Were Built?

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### Abstract

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The barrows of the Scandinavian Bronze Age are often referred to as a destruction of arable land and an activity that took a considerable amount of labour away from production. Neither of these claims is completely true. The turf that makes up the barrows would most probably have had to be removed in order to cultivate the land, and a Bronze Age ard could not even penetrate the grass roots, according to practical experiments. The most commonly cited calculation of how much labour the construction of a barrow demanded is also incorrect and nearly four times the actual figure.

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## Introduction

I have for quite some time been somewhat uneasy with the so common opinion that the Bronze Age grave mounds not only ruined a lot of good arable land, but also demanded the labour of a lot of people for several months (e.g. Jensen 1998, p. 10). I could not see how this society could afford to take so much labour from production, over and over again. Even though we are aware by now that people are not “Homo economicus” and therefore very well can have engaged in counter-productive activities, ruining so much land seems suicidal. In most examples of ritually motivated destruction of the environment, the destruction is so gradual that one can understand that people did not see the relation between activity and effect. In this case, however, it would be apparent already the next spring.

## Previous objections

An article that touches upon the first problem was written by Marianne Rasmussen (1993a). In this she states that it would probably not be possible for a Bronze Age ard to penetrate the grass turf successfully without previous preparations. Another scholar who has questioned the effectiveness of the ard, with support from experiments, is Anthony Harding (2000, p. 128). The conclusion of the critique is that people probably had to remove the turf by other means before using the ard. Since they obviously had to put the turf somewhere, it does not seem such an economically bad idea to combine the field preparation with the building of a barrow. A rotation system of this kind, which also includes houses, has also been suggested for some Bronze Age sites (see Rasmussen 1993b, p. 180).

## Calculations

Even if many scholars could be convinced to accept the first objection, the second one still remains: was it really possible to take so much labour away from normal production? The most commonly cited calculation of how much time mound-building required was done by Henrik Thrane in the book *Lusehøj ved Voldtofte* (1984), where he examines one of the largest Bronze Age grave mounds by far in Scandinavia. According to the detailed calculations, this mound was made of 3,200 m<sup>3</sup> of turf, and took 129,000 man-hours to build (ibid., pp. 149 ff.). I have had a growing feeling that something is not right with this figure, and I think most archaeologists will understand the explanation. We, if anyone, should know how long time it takes to produce a huge pile of dirt.

In the summer of 1999 I was working at the Iron Age excavations in Uppåkra for the Archaeological Department at the University of Lund. Together with another student, I worked in a trench of 8 m<sup>2</sup>, where we dug with one-hand tools for about ten days. When we eventually looked up over the edge of the trench after several days, we saw how much dirt we had produced (both digging and sieving). We easily estimated that it was about 5.6 m<sup>3</sup> (8 m<sup>2</sup> and about 70 cm deep), and it really looked like a small grave mound. Naturally we felt pretty proud of this, and joked about how we would beat Bronze Age man at his own game if we could only use shovels instead, and did not have to sieve everything.

Two years later, I was digging in my own garden to clear the drain of plant roots. Archaeologists, as is well known, do not make a lot of money but they are good at digging. Therefore I did all the work on my own, by hand (with a shovel, that is). My neighbours naturally made fun of me, asking what I was excavating and, looking at my pile of dirt,

wondered if I was building a grave mound. Contemplating this, I decided to do the mathematics of a grave mound properly. When I discussed the problem with a colleague (Fred Hocker at the Danish National Museum's Marine Archaeological Research Centre in Roskilde), he said he could easily estimate how much time it would take because a few years ago he convinced some friends to help him remove a great layer of clay in 1 cm slices at an excavation, and he still had the figures. As he put it: "good friends and enough beer will make one man produce one cubic metre in a working day".

Now that I had it in black on white that a couple of archaeologists and a case of beer would beat the far more experienced Bronze Age man, I realized that something was wrong and decided to look at the existing calculations more closely.

To my knowledge there has never been any experimental construction of a full size grave mound, so when Thrane wrote his book he used an experimental reconstruction of a Roman turf rampart (see Hopley 1967; the experiment is also described in detail in the far more easily attainable Coles 1979). Volunteers from Her Majesty's Prison at Leicester, with no prior experience, built this rampart, and each man could produce on average five turfs an hour (cutting, transporting and placing them). The turfs were of Roman standard size, 44.4 x 29.6 x 14.8 cm, which means 0.0194 m<sup>3</sup>. In a working day of ten hours, one man could thus produce 0.972 m<sup>3</sup>, or nearly one full cubic metre, which nearly exactly equals Fred Hocker's figures.

## The result

To sum it up; a mound of 3,200 m<sup>3</sup> equals 164,948 turfs of Roman size. This would take 32,921.8 man-hours or 3,292.2 man-days (of ten hours) to build. Put in a more understandable way, 300 persons could build



Fig. 1. Places mentioned in the text.

it in 11.97 working days of ten hours. I assume that the type of brew that has been found in some oak-coffin graves (e.g. Koch 2003) would be as good a motivation as our modern beer when friends are called for help.

No matter how you look at it, this is a far cry from the earlier figure of 129,000 man-hours. The only thing that is wrong in Thrane's calculation, however, is that one zero is missing. His estimated time for producing 15,000 turfs really concerns 150,000 turfs. That is a small mistake, but the strange thing is that no one has questioned the numbers in all these years. Even though it has been quoted frequently, and even though archaeologists, if anyone, should be able to estimate how fast you produce one cubic metre of soil, it has not been questioned. Apparently 129,000 man-hours have been seen as reasonable;

probably impressive, but still reasonable.

### An explanation?

I have a suspicion that the reason for the lack of objections is that most researchers want to see Bronze Age society as ruled by powerful chiefs who commanded their subordinates to accomplish monumental projects. As it would seem, however, not even one of the biggest grave mounds of all needed more labour than family obligations in a more egalitarian kinship-organized society could provide. Or as Anthony Harding has put it:

The absence of communal works and the prevailing impression of a lack of larger scale communal planning in much of Bronze Age Europe suggests that rather few activities were conducted at the level of the tribe: phratry-

based action might be the most that was involved. (Harding 2000, pp. 422 f.)

So far I have only discussed one of the largest grave mounds in Scandinavia, but not even that one demanded more labour than, for example, an average Melanesian Big Man easily could gather (see Forge 1972, pp. 367 ff.). It would probably not be impossible for even less complex societies to do so. Even so, a comparison with more normal barrows might be in place. An estimate of the volumes of all the grave mounds in the area around Ystad in southern Scania was made in the 1990s (see Olausson 1993). Of 67 mounds, the largest (without competition) contained 1,700 m<sup>3</sup> (ibid., p. 107), or about half of Lusehøj. The average mound was only 431.5 m<sup>3</sup>, which according to the British experiment means 443.93 man-days, or that 44.4 persons could build a normal mound in 10 days.

I have chosen to give the numbers in terms of how many persons could build a barrow in 10–11 days, because an imagined grave ritual with a fixed time schedule gives a clearer picture of the difference in labour consumed.

## Conclusion

All in all, the conclusion must be that:

- to cultivate land in the Bronze Age, you often *had* to remove the turf before using an ard, and therefore it was not necessarily a waste, neither of time nor land, to erect a grave mound if it was combined with preparations for farming
- to build a normal mound, you did not need more than 45 persons working for 10 days, and even the largest mound did not require more than 300 persons for 11 days

Mound building did therefore not necessarily mean a ruining good farmland, and it was not

more time-consuming than that it might have been seen as a nice break from everyday activities – a chance to get together with friends and relatives you may not have seen in a long time.

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