Piledal Revisited

A Test of Metal Detectors on a Bronze Age Site

BY ANDERS BERNTSSON & JONAS PAULSSON

Abstract

Berntsson, Anders & Paulsson, Jonas. 2003. Piledal Revisited: A Test of Metal Detectors on a Bronze Age Site. Lund Archaeological Review 9 (2003), pp. 25–31.

Metal detectors are increasingly coming to use in Iron Age and medieval archaeology, but in theory it should be possible to use them on some Bronze Age sites as well. This article is a presentation of a test of detectors on a Late Bronze Age urn cemetery. The cemetery is situated near Ystad in Scania and was, due to destruction by ploughing, excavated in the 1970s. Most discovered urn graves in Scania from recent decades have been equally damaged, and the grave goods are therefore often missing. In just a few days of work, the experiment recovered as many objects as the excavation, objects of better quality and better preserved then these as well. We also tested if the method can help to determine whether a small hill is a ploughed-out grave mound or not, and discovered that it could.

Anders Berntsson, Mantalsvägen 9, SE-244 66 Furulund, Sweden.
Jonas Paulsson, Department of Archaeology and Ancient History, Sandgatan 1, SE-223 50 Lund, Sweden

Introduction

In the last few decades, especially in Denmark and partly in Great Britain, the metal detector has made a remarkable entry into the archaeological world and has revolutionized research on the Iron Age and Middle Ages. It has been fully realized there that the detector, in the right hands, is an important resource. In other countries there has been something of a mental blockage against the instrument, because it was first used to plunder prehistoric sites and monuments. Questions have also been raised about how useful the material from plough soil is, since it has been said to lack context (see Paulsson 1999, pp. 45 ff.). In Sweden, however, and perhaps more slowly in other countries, archaeologists have started to realize the potential of the metal detector both as a prospecting method and for use in excavations.

Metal objects have a great value when it comes to dating and are often an important indicator of the function of a site. Metal detecting in the right way is also a non-destructive archaeological method that can cover large areas efficiently at a minimum of cost and effort and localize places where activities that include metal have taken place. A well-tested method to cover large areas is to walk the field in systematic lines (e.g. every 20 metres), and then to scan more intensively

where positive results are obtained.

Metal detecting can be compared to sieving the topsoil for metals, so after many years of regarding plough soil as destroyed layers and simply removing it, one now has to accept that metal objects from this layer can easily be found and that, with the right critical approach (physically and methodologically), it has great information potential.

Since the method had proven successful on a variety of Iron Age sites, we started discussing why it had not been applied to the Bronze Age as well. Since Bronze Age metal consists mostly of an alloy that gives a strong distinct signal in the detector, in theory the prospects for an experiment were at least as good as for the Iron Age. In England metal detectors have been applied to some extent with success on Bronze Age sites (see Dobinson & Denison 1995, p. 40). Since bronze is rarely found at settlement excavations in Scandinavia, the traditional view is that these never contain more than very few and very small pieces of metal. If this is true, a detector would naturally be of less use in that kind of site. However, since there has never been any real test, it might be that one would find a lot more metal if detectors were regularly used before the entire topsoil is removed. What we do know is that some metal is almost always found, despite the lack of detectors and regular sieving.

When we decided to conduct a small experiment the first category of finds we came to think of was not settlements, however, but urn graves. The burials of the Late Bronze Age are exclusively cremations that were placed in ceramic urns. In Scania they were often placed in flat-earth cemeteries, but also as secondary burials in grave mounds from

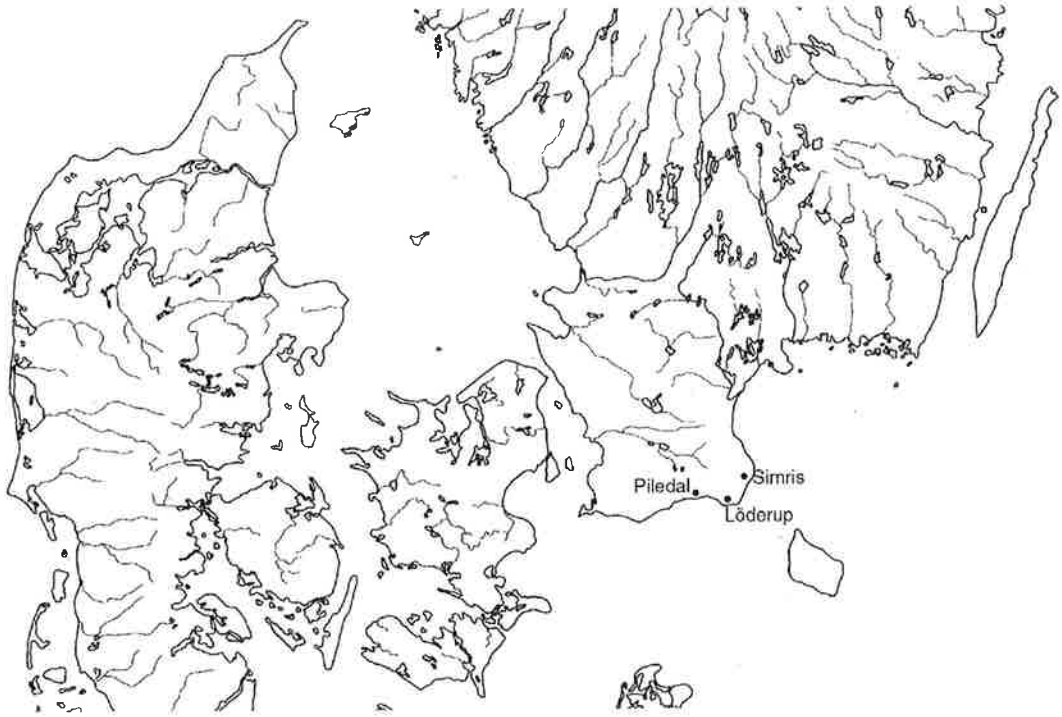

Fig. 1. Places mentioned in the text.

the Early Bronze Age. This kind of secondary burials was the normal treatment in Denmark during the period, and flat earth cemeteries are mostly missing there, despite other apparent similarities in culture. In 1975 the number of recovered urn graves in Scania was estimated at about 1,000 (Strömberg 1975, p. 211).

The choice of location

In the last 15–20 years, almost every urn grave discovered in Scania has been partly or totally destroyed by modern farming. Since the grave goods were most often placed on top of the cremation debris, these are the first things to be spread by modern deep ploughing. Urn cemeteries that were discovered before the 1970s are therefore a lot more intact (see a comparison in Olausson 1987, pp. 121 ff.). Because of this, a place where one or a couple of damaged graves have been found would most certainly have a significant proportion of the grave goods spread in the topsoil, thus giving excellent circumstances for detectors. Our motive was therefore to a great extent that the urn graves are a find category that is seriously threatened. There are even reasons to fear that we will never know the extent of some cemeteries. If metal detectors could help to recover graves and to determine the size of cemeteries and their relative richness, it would consequently be of great scientific benefit. This would also, as the Iron Age projects have shown, be done without damaging anything in situ and without more time- and money-consuming excavations.

To test the method, we choose to work on a cemetery that was (a) damaged by ploughing and (b) already excavated. We wanted the first test to be on an excavated and thereby removed site to eliminate any possible conflict with future fieldwork. The excavation methods used today could not be affected by our recovering what is spread in the ploughing layer, but we do not know what will come in the future.

Piledal

We found a perfect object in Piledal, which is a Late Bronze Age cemetery north-east of Ystad in southern Scania. In the 1950s Bertha Stjernquist and Märta Strömberg investigated a couple of graves at the location, but the major part of the cemetery was totally excavated in 1973–74 under leadership of Sten Tesch. There is as yet no report from that project, but Deborah Olausson made a very thorough analysis of the material in 1987 (Olausson 1987).

One of the primary reasons for the later excavation was that urns were starting to be destroyed by ploughing and so a rescue operation was badly needed. During the excavation, 69 Bronze Age burials were found, but very few were intact and a lot of them were badly damaged in the upper part (ibid., p. 128). This seriously affects the impression of the site since grave goods, as mentioned, in this period were placed on top of the cremation debris in the urns. This means that the metal in this case was mostly lost before the excavation. Piledal has, for this reason, a comparatively very low percentage of graves with bronzes: only 15 of 69, or 22%, compared to other Scanian urn grave fields like Löderup (41.3%) and Simris (50%) (ibid., pp. 138 f.). These were both to a much lesser degree damaged by farming.

Unfortunately the damage means that a lot of the comparisons archaeologists would normally like to make are not possible. Obviously, there are reasons to suspect that the poverty of the site is an illusion, caused by the destruction and lack of modern archaeological methods.

The total number of bronze objects from

the site was no more than 28, but even this low number can be misleading. In the cemetery, there were three small tumuli and two ship-settings; structures that would give some extra protection to the graves. This gives them a higher proportion of artefacts that should not be explained only by the fact that the structures in themselves make them more exclusive. Looking at the list of finds, we see that this appears to be more than a possibility since 13 of the 22 bronze objects found came from these structures (see list in Olausson 1987, pp. 142 ff.). This leaves only 15 recovered objects from urns that were buried in the more common fashion, without structures on top of them.

One obvious disadvantage of our choice of location is that all the topsoil of the cemetery had been removed and replaced during the excavation, and so the normal possibility of connecting finds to specific graves did not exist. It is also quite possible that artefacts, after the replacement of the soil, have ended up in the lower part of the excavation pits and thereby out of reach of the detectors. For a first trial of the method, however, the site's positive qualities clearly predominated.

The site also gave a bonus we initially did not consider. During the 1970s excavation, a ploughed-out grave mound was also excavated only a few tens of metres from the cemetery (it has been treated as a part of the cemetery). We could therefore also test if the method is of assistance when one is in doubt as to whether a low rise in a field is a ploughed-out mound or not. We thought that this should be possible since Bronze Age mounds nearly always contain secondary urn burials. These are placed at such a shallow level that they are always destroyed if the mound is ploughed-out. In the same way as an urn field, it would therefore, in theory, be possible to find metal objects and thereby confirm graves. In the Swedish Register of Ancient Monuments, which in part was compiled after impressive field surveys, there are a lot of phenomena in Scania that are described as "possible ploughed-out mound" and "possibly a natural low hill". To determine which is which can be of great importance in the planning of rescue excavations. Worth mentioning here is that one of the wealthiest burials by far from the period in Scania was in fact classified as a natural hill before stone structures started to appear during ploughing (Strömberg 1988, p. 125).

Method and results

We were two persons, working for four days (approximately 20 hours per person in total), including determining the exact location of the excavation and examining the grave mound with detectors. In this systematic survey, we found 19 fragments of objects that, with some certainty, are of prehistoric origin. We have divided them into three categories according to how certainly their age can be determined.

Most of the objects are too fragmented for us to say what they have been, but for four of them it is possible. These are called category one and are made up of numbers 5, 16, 19 and 20 (see list below), of which number 20 is a pair of tweezers of a more elaborate kind than any found during the excavation. Category two comprises objects that cannot be identified, but gave the right reaction from the detectors, have the right surface and some identifiable characteristics, i.e. similar decoration or parts, or the metal is worked in a way similar to known Bronze Age artefacts. Category two is thereby convincingly Bronze Age, although we cannot say exactly what function the objects might have had. The category contains numbers 1, 2, 3, 10, 13, 14, 15 and 18 (see list below). Our third group (the rest) is made up of objects that have no

identifiable characteristics, but gave the right reaction in the detectors and have the right surface. In this case we have chosen to treat only categories one and two as Bronze Age artefacts.

Our little experiment has thereby yielded 12 certain objects from the excavated graves. This means that we found approximately as many grave goods as an excavation managed to recover from a ploughed-out cemetery, and this in just one survey. According to Danish experience it can take as much as ten years to "empty" a plough layer (Watt 1999, pp. 3 f.). If one detects annually after ploughing, the quantity and size of the objects will diminish over time, but nevertheless; the amount of artefacts from the plough soil is many times greater than what the first survey will find. In this site we would not expect continuous findings for ten years, but we would certainly find just as much a second and a third time. Also worth mentioning is that none of our fragmented finds could be fitted with each other or with artefacts from the excavation, which means that every fragment found still has at least one counterpart in the ground. Our fragments were also generally of a better quality and better preserved than those from the "non-protected" graves in the excavation.

The spread of the finds suggest that they mostly come from different graves, but this cannot be certain since the earth has been removed and replaced and thereby been severely distorted. If we hypothesize that they do come from different graves, and that those graves are represented in the excavated material, we have possibly almost doubled the number of graves with bronzes. This would give Piledal 39% grave goods containing graves, which suddenly makes it comparable to Löderup (Olausson 1987, pp. 138 f.). The poverty of the cemetery can thereby certainly be said to be an illusion, caused by modern farming and the lack of suitable methods.

List of finds

1 Probably part of a tube from a belt, like "Minnen" 937 (i.e. Montelius, 1917). In use both Early and Late Bronze Age.
2 Fragment of a spiral of unrecognizable type.
3 Thin, hammered bronze sheet, decorated with dotted lines. Somewhat resembling the "Bjärsjöholm kettle" ("Minnen" 1167) from period IV. The same general type of ornamentation is also found on some neck ornaments (collars) like "Minnen" 1300 from period V.
4 From the mound. A small, unrecognizable bronze fragment.
5 From the mound. A double-button with two concentric circles. Like "Minnen" 1376–78. Period V.

Fig. 2. Find no. 3.

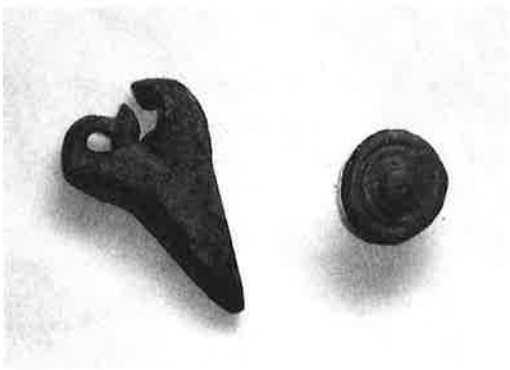

Fig. 3. Finds 14 & 5.

Fig. 4. Finds 16, 20 & 19.

6 Fragment of thin sheet of unrecognizable type.
7 Fragment of slightly thicker bronze sheet of unrecognizable type.
8 Rivet head, similar kinds are found on spears, 600–800 AD.
9 Small bronze bar of unrecognizable type.
10 A thin and bent piece of bronze sheet. Possibly from a pair of tweezers of Late Bronze Age type.
11 Bent piece of bronze sheet of unrecognizable type.
12 Bronze fragment of unrecognizable type.
13 Bronze fragment of unrecognizable type. Seems to be part of a circle with two smaller circles on top of it, rather like a Mickey Mouse head.
14 Unrecognizable object. Resembles an arrowhead, but rather sturdy.
15 See 18 as well. Fragment of a sheet that is bent in a pattern.
16 Fragment of a pair of tweezers. Ornamentation like "Minnen" 1122, but slightly smaller.
17 Fragment of bronze sheet of unrecognizable type.
18 Another part of 15.
19 The point of a knife with a decorative groove along the back on one side. The type is known mostly from period V. (A similar fragment from a smaller knife was found during the excavation.)
20 Half of a pair of tweezers with ornamentation. Period V.

Conclusions and summary

The benefits of using metal detectors in archaeological projects have been proven in a number of Iron Age sites. Working with the plough soil gives a chance to outline settlements without damaging anything that is not neglected by traditional excavation methods, and at a minimum of cost and effort. However, this is only true if a fixed procedure is applied and repeated and the finds are mapped.

In Scandinavia this method has not been really tested on Bronze Age sites, but since the metal of this period gives a clear signal in the detectors, the prospect of success was good. In our experiment, in only 20 hours' work, we found as many objects as the total excavation in the 1970s. The conclusion must therefore be that the test was a success and that the method could be of great help in Bronze Age projects. It would seem that it would be most beneficial when rescue excavations discover fragmented urn graves and do not have other means to map the total outline of the grave field. According to our

test, ploughed-out graves can be detected this way and, according to previous experience, since objects are not spread very far, it will also show how big a cemetery is (Paulsson 1999, pp. 46 ff.).

In addition to this, our test also revealed that metal detectors can be used on ploughed-out grave mounds as well. This could be of great interest since we have a lot of mounds that are only classified as "possible graves". This uncertainty could be eliminated with a minimum of effort since almost all grave mounds contain secondary urn burials that must have been destroyed during the levelling of the mound. If the preservation factors for bronzes are good, objects from these secondary graves would certainly be found during a few hours of work with detectors and immediately confirm that a small hill is really a grave mound.

All in all, the experiment shows that the method is not only applicable on some Bronze Age sites, but also highly recommendable since the reward in relation to time, cost and negative effect is of such magnitude compared to excavations.

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