INSIDE OR OUTSIDE: THAT IS THE QUESTION;
SOME COMMENTS ON THE ARTICLE BY H.P. BLANKHOLM

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Blankholm's critical remarks on the interpretation of the Barmose I site, originally published in my thesis (Stapert, 1992) but reprinted in this volume of *Palaeohistoria* at the request of the editorial board, ask for a reply.

The book by Johansson (1990), unfortunately, was not in our library when I wrote my paper (first half of 1991). Johansson described "two lumps of resin that show the tooth-marks of a child of approximately 7-8 years of age, and of a young person not less than 11 years of age". According to Blankholm, "this effectively refutes Stapert's notion of a men-only hunting camp". What kind of argument is this? Can children not be male? One can easily imagine that some boys accompanied their fathers during a hunting trip (e.g. Spencer, 1976 (1959): p. 241), and this possibility was mentioned in my book, though not with respect to Barmose (Stapert, 1992: p. 77). It may be of interest that the tooth-marks were found in resin, a substance often used for hafting microliths – not an unlikely activity at a hunting camp. (see also Bang-Andersen, 1988: p. 348)

One of the main problems addressed in my article is the question whether the hearth of Barmose was inside a hut or in the open air. The ring-diagrams obtained for the site convinced me that we are dealing with a hearth in the open air. Both test pits were located in the western half of the site. The eastern site-half, which was the richer in terms of tool numbers, was excavated completely. The ring-diagrams for the eastern half should therefore be given more weight than the diagrams for the western half. As can be seen in my article (Stapert, 1992: fig. 16), this half shows a classical unimodal distribution. There is no indication at all of any 'wall effects', and the mode falls between 1 and 2 m from the hearth centre – perfectly plausible in the case of an open-air hearth.

I am still somewhat baffled by Blankholm's idea that selecting a density contour line is a meaningful 'analytical method' to establish the presence of a hut outline. Of course, one can always draw a contour line, for example the one based on the mean number of artefacts per square metre (Blankholm's 'standard method for delineation of Maglemosian hut floors'). But this will never prove anything, least of all the

presence of a hut wall. Quite apart of any 'statistical' arguments, one would in any case expect such a large and messy hearth area to be located outside. Blankholm states that he also used 'other contextual knowledge' in this connection. I suppose he refers to phenomena such as the presence of bark flooring and the relatively peripheral location of the cores. In my article I discussed these, and found them inadequate as indicators for the existence of a hut (sections 2, 4, 6).

Contrary to what Blankholm states, the spatial distribution of flint waste was discussed in my article. In figure 3 a density map of flint waste is given, based on the principles outlined by Cziesla (1990). It can be seen that the material is quite tightly clustered near the hearth, and that the density gradually decreases outwards. This pattern can also be observed at many other sites, and seems to be characteristic of outdoor hearths. In the case of a hearth located inside a dwelling, one would expect a zone of richer squares accentuating the walls, as a result of the 'barrier effect' (see Stapert, 1989). One example of this phenomenon is provided by the Middle Palaeolithic site of Buhlen, where a distinct tent ring consisting of large stones was excavated (see Stapert, 1990: fig. 3). Regarding the cores, I agree that they occurred somewhat more peripherally than tools (mean distances are 2.08 m and 1.94 m, respectively; see my table 1). However, the difference is slight, and cannot be shown to be significant in a statistical sense. Moreover, in the ring-diagrams it can be seen that the two distance distributions have the same mode, in the 1.5-2 m class (see my fig. 6).

Blankholm states that "... Stapert ... forgets that some dwellings, such as tents or light structures, might not necessarily leave any archaeologically visible traces, which of course has a bearing on his grouping of hearths into open air and inside hearths". Blankholm here completely misses the point of my work. The ring and sector method produces indications for the presence or absence of dwellings independently of archaeologically visible features, and this is exactly what makes it potentially very useful. That is why I stated in my book: "An important reason why it is desirable to have an independent method for establishing the presence or absence of dwellings, based on the *structures latentes*, is the circumstance that Palaeolithic dwellings

might easily leave no archaeologically visible traces, even in sites with perfect in situ preservation" (Stapert, 1992: p. 193).

So far, archaeologically invisible tents or huts have been demonstrated at Gönnersdorf II and III, Verberie El and Etiolles P15, by means of the ring and sector method. In other cases, it has been shown that tents or huts envisaged by archaeologists probably did not exist: Rheindahlen, Pincevent, Olbrachcice 8, Orp East, Barmose. This is not simply a 'grouping' , but a result of analysis.

Gönnersdorf I was carefully interpreted by Bosinski (1979) as a large tent, on the basis of archaeologically visible features. That is exactly why this site was appropriate for testing the ring and sector method. Again the same crucial point has escaped Blankholm: this method offers an independent way of demonstrating the presence or absence of tent walls.

If one can be reasonably sure whether a dwelling structure was present or not, a whole series of other questions can be addressed, for example the possible existence of gender patterns. Therefore, as stated in my book, "... this should be the first step in any meaningful intrasite spatial analysis" (Stapert, 1992: p. 34). For this step to be taken, sound methodology is needed, not conjectures without any foundation, such as equating a density contour line with a hut outline.

The ring and sector method was designed for "... sites characterised by the presence of a hearth closely associated in space with an artefact scatter" (Stapert, 1992: p. 11). I speak of 'central hearths' in such cases, but I do not, of course, mean that the hearths were in the exact geometrical centre of the artefact scatters. The idea behind the method is that these hearths were a focal point in the daily life of a small group of people. The hearth attracted many activities, and also played an important role in social life. Blankholm seems to doubt this, but to my mind this is obvious. Blankholm asks where the centre of the ring and sector system was located in the case of Barmose I; he can find it in figure 1. I can assure him that shifting it a few decimetres would not alter the results in any significant way.

I did not attempt to 'play down' other methods of spatial analysis, although I did not see any point in abandoning simple methods in favour of complex computerized procedures. What I did criticize was Blankholm's interpretation of the patterns created by his computer programmes. In the final section of my article, I expressed my doubts about his interpretation by stating that Blankholm expects too much 'expressiveness' from archaeological sites of this type (Stapert, 1992: p. 158). Clear-cut 'activity areas' , sharply delineated in space, should not be expected to show up at such sites. This is why I emphasized that we should start by looking for global patterns, instead of expecting miracles from detailed mathemathical manipulations. Blankholm informs us that Johansson 'suggests only two activity areas' , which Blankholm

clearly thinks to be a very poor interpretation. As for me, I can only agree with Johansson, because this is a realistic assessment of what we can observe, without falling into the trap of over-interpretation, which is what Blankholm did.

Blankholm notes that the "position of the rings and sectors clearly is arbitrary, as is the selection of radii for the rings and size of the sectors". Of course it is, as I have clearly stated. It would even be an enhancement if we could vary the ring width, the number of sectors, and even the 'centre' of the whole system. In this way we would be able to find the optimal parameters of the method in every case. Note that this would not imply any manipulation of the data; it would optimalize the visibility of any patterns present in a site. It is impracticable to do this by hand; therefore, dedicated software would be very useful. For the past year and a half, G.R. Boekschoten (Groningen) has been engaged in developing a computer programme for applying the ring and sector method, which is now operational (Boekschoten & Stapert, in press).

Blankholm (and other colleagues) have wondered why I did not calculate densities per ring, in terms of numbers of artefacts per square metre, since the rings grow in surface area going outwards from the centre. I believe it is not advisable to do so. The ring approach is meant to reveal patterns in the distribution of artefacts in terms of distance to the hearth. Therefore, it would be more precise to speak of distance classes. The rings only serve as a graphical illustration of the method. "Calculating densities per ring would only transform the data, and moreover give the false impression that the artefacts are scattered evenly in the rings ..." (Stapert, 1992: p. 31). In other words, one would obtain averaged densities per ring, and these do not have much value. Imagine that a woman cleaned a hide, using five scrapers. The distance to the hearth of these five scrapers is the issue of interest here, not their averaged density over whichever ring in which they were located.

Blankholm thinks the ring and sector method suffers from 'extremely narrow assumptions' . By contrast, he believes "... that multivariate methods, such as k-means Analysis, Unconstrained Clustering, Correspondence Analysis, and Presab, based as they are on modern concepts of past human behaviour, in fact are so versatile that they can be applied to answer or elucidate a wide range of questions, and not simply one specific one". Maybe so, but we should be modest enough to admit that it can be very difficult even to answer one simple question, as for example whether the hearth of Barmose lay in a hut or in the open. This is also a very basic question, and Blankholm's multivariate methods have not provided any answer, nor were they designed to do so, as he kindly informs us. In fact, they do not give answers to specific questions at all, which to my mind makes them rather unattractive. What we need are realistic interpretive models, coupled to transparent analytical techniques.

Nothing is lost by using simple methods; much can become hopelessly entangled by the use of very complex procedures.

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