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# Mesolithic hearth-pits: fact or fantasy? A reassessment based on the evidence from the sites of Doel and Verrebroek (Belgium)

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ABSTRACT

In this paper we contest the anthropogenic character of small and shallow charcoal-filled pits which occur in large numbers on Mesolithic sites in the coversand area of the northwest European plain. Despite uncertainties about their exact function, they have so far been generally interpreted as hearth-pits. Following this assumption, these features have been systematically used for dating Mesolithic sites and reconstructing Mesolithic settlement systems. However, chronological inconsistencies as well as the absence of in situ burning evidence call into question this anthropogenic interpretation. Based on anthracological, chronological and pedological evidence from two sites in NW Belgium (Verrebroek and Doel), it is argued that most of these features may be of natural origin. In particular there is good resemblance in morphology, distribution and content with remains of abandoned and burnt ant mounds. The paper ends with highlighting the consequences of this new interpretation, while suggesting new lines of investigation for future Mesolithic research.



## 1. Introduction

Structural features dating back to the Mesolithic are only seldom present or preserved on open-air sites (Sergant et al., 2006; Verjux, 2006). One exception is the hearth-pit, frequently attested on Mesolithic camp-sites, particularly in the Netherlands (Groenendijk, 1987), Belgium (Crombé et al., 2005) and northern Germany (Fries et al., 2013; Vollbrecht, 2003) (Fig. 1). Some isolated examples are also known from adjacent regions, such as northern France (e.g. Coincy "La Sablonnière II"; Parent, 1973) and Poland (e.g. Mokracz; Niesiołowska-Śreniowska, 1990), indicating that this type of feature may occur over a much larger area including the entire coversand area of NW Europe. A recent inventory of hearth-pits in the northern parts of the Netherlands (Niekus, 2005/2006: 25; 2011) indicates the presence of ca. 2500 such features spread over ca. 150 different sites. The number of hearths per site ranges from one to more than a hundred; exceptionally several hundreds of such features are encountered (e.g. at the site of Nieuwe Pekela 3: >530 hearth-pits and Dronten: ca. 750 hearth-pits).

Hearth-pits (Fig. 2) can be defined as relatively small (diameter generally <1 m) and shallow (depth generally <0.5 m), bowl-shaped features with a round to oval outline (Groenendijk, 1987). They are generally filled either entirely or partially with a dark greyish to black matrix. Charcoal may occur at the bottom of the pit as a dark lens, whereas the upper parts of the filling consist of lighter coloured sandy material largely devoid of charcoal. Generally only small amounts of archaeological finds, such as burnt as well as unburnt artefacts (mainly lithic waste) and carbonised ecofacts (hazelnut shells, bone fragments, plant macroremains), are found within these features. However most hearth-pits are archaeologically sterile as they do not contain archaeological material at all, except charcoal. In this respect the features discussed in the present paper differ considerably from the many cooking-pits and/or hearth-pits excavated in Scandinavia (Larsson, 2007; Loeffler, 2003). Although more or less similar in outline, the latter are characterized by the presence of high amounts of fire-cracked stones, charcoal and burnt bones, present both in as well as around the features.

On most Mesolithic sites hearth-pits are restricted to the highest parts of the landscape, i.e. the top and upper parts of coversand ridges, suggesting that the use of these features was restricted to areas with a particular soil humidity and structure (Peeters, 2007: 225). According to Niekus' spatial analysis (2011) hearth-pits may

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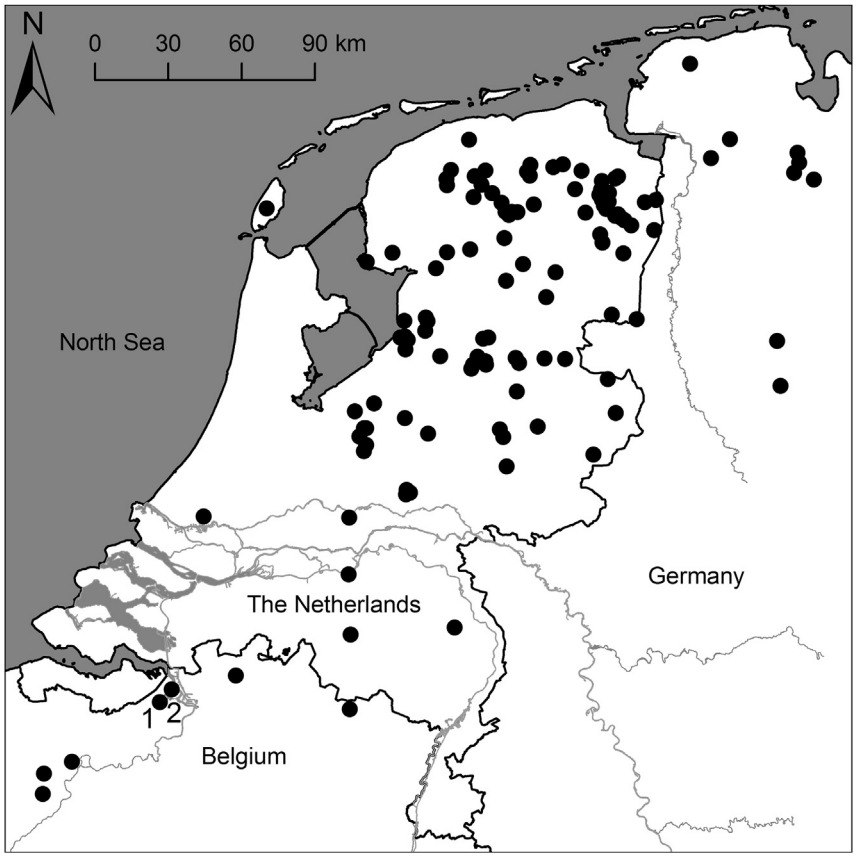


**Fig. 1.** Distribution map of Mesolithic sites with hearth-pits in the coversand area of the northwest European plain showing the location of the sites of Verrebroek (1) and Doel (2) (mainly based on Crombé, 2005; Fries et al., 2013; Niekus, 2005/2006).

occur in several configurations, ranging from isolated hearth-pits, over triangular to quadrangular and linear arrangements as well as dense clusters of dozens of contemporaneous features, the latter being exclusively Late Mesolithic in age. Remarkable is the nearly complete absence of intersections between these pits, a characteristic which is usually interpreted as proof of their contemporaneity and/or deliberate avoidance. In this sense too, the features discussed here differ from those found in Scandinavia, where overlaps occur frequently (Loeffler, 2003). Furthermore hearth-pits tend to occur on Mesolithic sites with domestic debris, such as lithic artefacts, but they are also frequently attested on locations yielding only little or no lithic artefacts at all. It is assumed that this mirrors functional differences between Mesolithic sites (Niekus, 2011; Peeters, 2007).

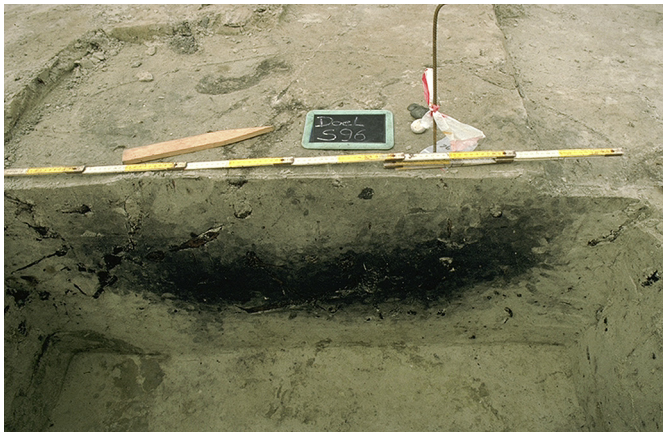

**Fig. 2.** Photo of a hearth-pit excavated at the site of Doel "Deurganckdok" (photo Ph. Crombé, UGent).

Most scholars consider charcoal samples retrieved from hearth-pits an excellent material for radiocarbon dating (Crombé et al., 2013; Niekus, 2005/2006). This assumption is based mainly on the following arguments:

1 the presumed short use-time of these hearths as there is hardly any evidence of reworking;
2 the limited contamination thanks to the deep position of the charcoal well below the level of highest bioturbation;
3 the limited effect of "old wood" due to the preferred use of branches as fuel.

Hence, charcoal from hearth-pits is commonly used not merely to date the construction and/or use of these features, but also to date the Mesolithic occupation of a site and even to reconstruct regional land-use systems and to develop typo-chronological frameworks (Niekus, 2005/2006, 2009; Peeters, 2009). In the Netherlands, for example, the chronology of the Mesolithic is almost exclusively based on hearth-pit dates (Lanting and Van der Plicht, 1997/1998; Niekus, 2005/2006). Almost 88% on a total of 414 radiocarbon dates have been obtained on charcoal samples from hearth-pits. Charcoal from hearth-pits is also frequently used as a means to reconstruct the palaeoenvironment. Since pollen are often not or badly preserved on dryland open-air sites, charcoal is