

An Odyssey along the river Meuse New perspectives on old Dutch LBK research (1925-2001)

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1. Introduction

Archaeological investigations of the Linearbandkeramik culture in the Netherlands are rooted in a long tradition of research. From 1925 onwards professional and amateur archaeologists have expanded our knowledge of these early farmers, both by field surveys and small or large-scale excavations in the Netherlands and abroad. Of crucial importance to LBK research in Europe were the investigations by prof. dr. P. J. R. Modderman at Leiden University from 1967 until his retirement in 1982 (Modderman, 1970; 1988). His large-scale excavations in the Bandkeramik settlements of Elsloo, Sittard and Stein provided the basis for developing our knowledge of the settlement system, chronology and house architecture. They were also the starting point for subsequent technological, ecological and social studies (e.g. Bakels, 1978; de Grooth, 1994; van de Velde, 1979). It is, however, remarkable that apart from Modderman's investigations, publication of earlier and later field research has been relatively limited, with the exception of the larger-scale excavations at Geleen-Janskamperveld (van de Velde ed., 2007). More generally, since the 1970's the emphasis in Early Neolithic research has gradually shifted away from the Low Countries, with important investigations taking place in Germany (Aldenhovener Platte and elsewhere) and France (Aisne valley).

As a result much knowledge regarding LBK settlement in Dutch Limburg has been 'locked away' in depots, amateur collections and unpublished field reports. While this often relates to older research or limited excavations, probing this reservoir of data is more than just scraping the barrel. Current investigations into the LBK are in need of a more detailed picture going beyond the well published settlements of the Graetheide cluster. Bandkeramik settlement on the loess soils was probably more complicated, diverse and interesting than the uniform picture that is often invoked. This is why it is important to 'dust-off' these 'forgotten' results, analyse them and make them accessible (see van Wijk & van de Velde, 2007).

To this end a grant was obtained within the Odyssey programme of the National Science Foundation (NWO). A project, titled 'The LBK revisited: 'forgotten' research into the Bandkeramik occupation of the Low Countries', was started in 2010 by Archol, the National Museum of Antiquities (RMO) and the Faculty of Archaeology of Leiden University (UL), in cooperation with a number of museums, amateur archaeologists, municipalities and the Cultural Heritage Agency (RCE). The main aim of the project was to resuscitate fourteen unpublished Bandkeramik excavations from between 1925 and 2001 from both sides of the Meuse river. The project (see Fig. 1) covers but a selection of a larger set of investigations that have not, or to a limited extent only been published. The overall aim of the project is to analyse and make public the information from these sites, and provide content to what were previously merely dots on a map. This serves a two-fold goal. These sites constitute a complementary perspective for the well-known settlements from the Graetheide cluster, since they provide a more elaborate, detailed and diversified image

of the settlement history of the earliest farmers in southern Limburg. This, in turn, may have considerable importance for regional comparison, in particular for the adjacent Belgian Hesbaye area. The first results of this project are briefly introduced in this paper.

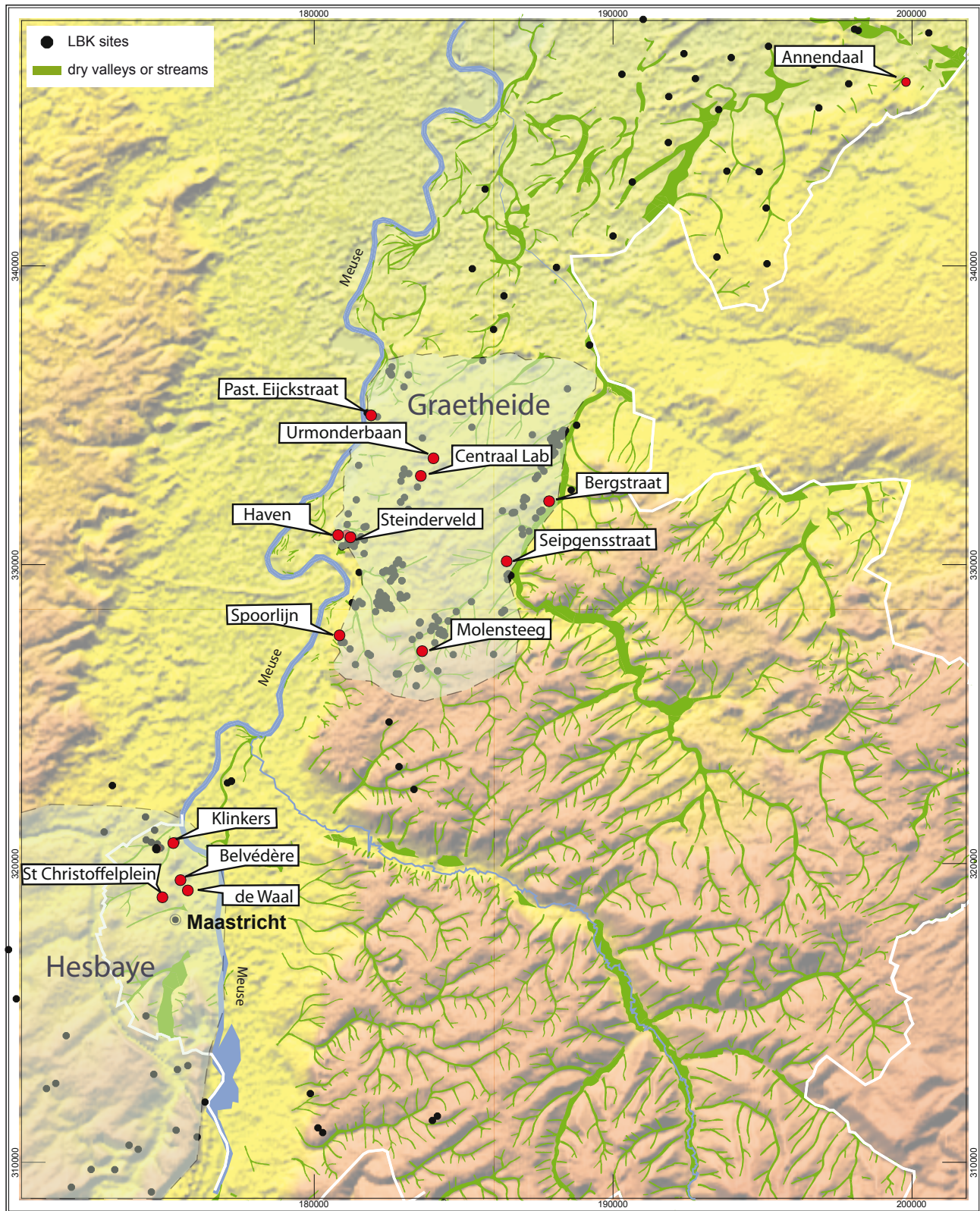


Fig. 1 – Geographical map of Dutch southern Limburg with the location of the 14 excavations studied in the Odyssey research programme.

2. Research aims and methodology

'Maastricht, 1 november 1925'

'De culturresten boven op den löss van de steenfabriek Belvédère ten N. van Maastricht blijken veel ouder te zijn dan ik dacht. Een dezer dagen bracht de pastoor van Caberg mij scherven van vaatwerk, die in aschgaten waren aangetroffen. Ze droegen de kenteekenen van de z.g. Bandkeramiek. Daarbij zaten vuursteensplinters, nuclei, krabbers enz... Ook zat er roode oker tusschen. Dat alles leek precies op hetgeen de Belgen vertellen van hun fonds de cabanes de la Hesbaye. Ik meen, dat hier de overblijfselen gevonden zijn van de Donaucultuur, die u in het heuvelland van Z. Limburg verwachtte. Het is wel nog op de Linkermaasoever, op den rechter hoop ik ze ook nog eenmaal te vinden.'

Translation

'Maastricht, November 1st 1925'

'The cultural remains on top of the loess of the Belvédère brick works, north of Maastricht, appear of an older date than I expected. A few days ago the village priest of Caberg brought me some sherds of vessels found in ash pits. They bore the marks of the so-called Bandkeramik. Accompanying the finds were flint spalls, cores, scrapers etc. Red ochre was also found amidst them. All of this corresponded exactly to what the Belgians tell of their fonds de cabanes de la Hesbaye. I am of the opinion, that here the remains of the Danubian culture have been found, which you expected in the hills of S. Limburg. It is still on the left bank of the Meuse, though I hope to find them also on the right.'

The fragment above, written by State Archivist dr. J. W. Goossens to the director and curator of the National Museum of Antiquities, prof. J. H. Holwerda was the first in a series of letters (see Fig. 2) and subsequent excavations in Dutch southern Limburg at, amongst others, Maastricht-Caberg, Geleen, Elsloo and Stein which uncovered the first finds and settlements of the LBK in the Netherlands. These and other documents have been incorporated in the Odyssey project as well.

A first step in the project was to assemble and review the available documents and reports regarding the earlier excavations. The aim was to pinpoint the sites, to provide new digitized excavation plans and to establish the correlation between features and finds. Especially for the older cases from before the 1960s it was often difficult to locate the necessary information if only because those involved have all passed away. Also, when browsing through the archives of the National Museum of Antiquities, it appeared that certain aspects of recording such as field reports and notes now deemed indispensable, had in those days often either not been made or destroyed after publication. This sometimes resulted in a laborious puzzle with missing pieces in our interpretation of the excavation plans and features. While there are therefore restrictions to the information recovered, the archive investigations provided interesting insights into the history of research and the cooperation between the museum and local archaeologists, among whom the well-known dr. Beckers (see Beckers & Beckers, 1940). For the period of the 1980s

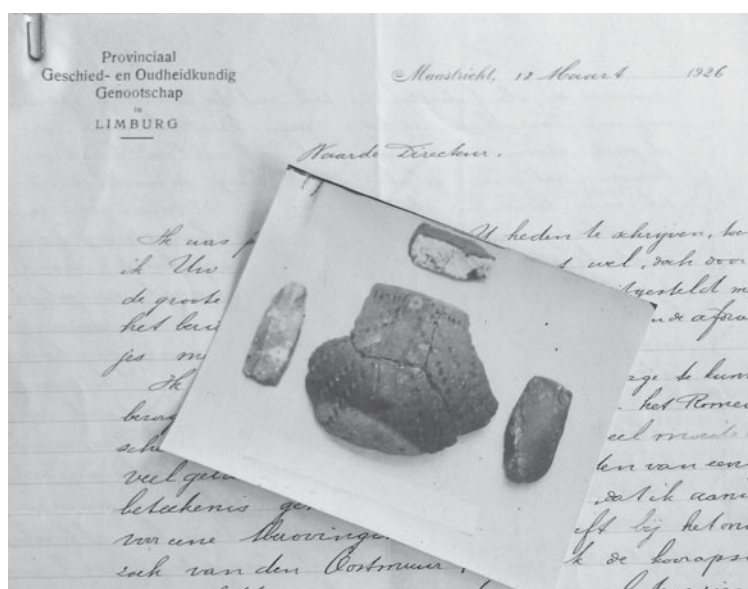


Fig. 2 – Letter from dr. Goossens to prof. Holwerda containing the oldest known picture of LBK pottery in the Netherlands (photo: National Museum of Antiquities).

and later the project has also created records of many of the amateur excavations that took place then.

Simultaneous to this background research the finds from fourteen excavations were collected and brought together. The finds, of course, derived from investigations dating to different periods of research executed by different institutes or individuals and encoded in qualitatively divergent recording systems. This meant that in order to be able to compare the data they had to be re-recorded in a uniform system, re-labelling finds and securing attribution. This served also one of the project's by-goals which was to prepare a selection of the find complexes for official deposition in regional depots. Naturally this phase proved laborious and time-consuming but in the end more than 15000 sherds, 12000 pieces of flint and 5500 pieces of stone have been documented anew.

Within the structure of the project the next step was to distribute the different categories of finds to a number of specialists for analysis. The LBK pottery was studied by Piet van de Velde (Leiden University), while XRF-research on the composition of LBK and early Neolithic non-LBK sherds was conducted by the RCE. The flint component was investigated by Marjorie de Grooth. Non-flint lithics were studied by Annemieke Verbaas, while hematite finds were studied at labs in Delft and Leiden. Fred Brounen examined all the Early Neolithic non-Bandkeramik finds. Settlement structure and dynamics were investigated by Ivo van Wijk (Archol) and Luc Amkreutz (RMO).

To guide research by the specialists a number of questions was formulated to enable a synthesis of their findings; they covered the following topics:

- Chronology: can features, houses and settlements be (relatively) dated, both with respect to each other as well as in relation to the settlement history of the LBK in Dutch southern Limburg;
- Function: is the composition of the different find categories and the excavation data informative on the function and character of the sites;
- Intersite networks: to what extent are there differences in the composition of raw material networks, in source areas and in the distribution of material resources;
- Relationships: to what extent do non-LBK finds, such as Limburg and La Hoguette ware form part of the assemblages. Are there idiosyncratic aspects to the settlements and features that do not fit the 'classical' LBK pattern;
- Settlement dynamics: is there information on the character of the individual settlements, on differing location choice and on the dynamics of intra- and intersite settlement;
- Regional perspectives: to what extent do the 'new' sites complement or nuance the information from the well-known quartet of Graetheide settlements. Is there a difference in the nature or temporality of settlement on either side of the Meuse. To what extent does the new information correlate to settlement further west, most notably the Belgian Hesbaye cluster.

At this stage the analytical phase of the Odyssey-project is completed. The definitive results will be published in a report due in the first half of 2013. In the following the preliminary results from the various specialist investigations will be presented as well as a brief conclusion which will reflect on some of the research questions introduced above. The individual specialists contributed on these topics in this paper.

3. LBK ceramics: on chronology

The ceramic analyses of the various sites have focused on a number of topics, including style, technology etc.. Since not all aspects can be discussed here, we focus on the important topic of chronology and the new perspectives offered in that respect by the sites studied in the project.

The disclosure in this Odyssey-project of the old and as yet unpublished Bandkeramik excavations on the Caberg plateau, the Dutch left bank of the Meuse called for a comparison of these with the larger, published excavations on the Graetheide plateau, on the right bank of that river some twelve kilometres downstream.

A first and major step towards this comparison was the development of a sharper and better chronological scheme than the Modderman/Dohrn-Ihmig one, currently in use (discussion in Jadin, 2003: 208-220). The methodologically incoherent nature of that scheme (e.g., the two independent fields of house construction and pottery decoration to define the two periods separately is an inconsistent basis; also, house construction does not change synchronically as implied in the scheme) suggested a re-conceptualization of it.

With flint, ceramic sherds are vastly more numerous than are house plans or any other feature in settlement excavations, and the decoration on the sherds offers a conveniently accessible field of analysis. Of course, this has been recognised also by previous researchers, from Werner Buttler through to Petar Stehli and including Modderman and Dohrn-Ihmig. Their approach to the decoration is quite phenomenological, though, whereas here on methodological grounds an aprioristic and systematic approach of that decoration is favoured.

By-passing the details of this dissection (*cf.* van de Velde, 1979: 13-20; in press - 2012 - and in prep.) statistical analysis reveals two different sets or levels of variables in the LBK's pottery decorative repertoire, one set having an invariant presence in all larger complexes, the other showing systematic variation on its component variables. That first set groups the two main motifs and their four logically possible permutations (Bell, 1966: 112-119; Shepard, 1954: 269; also see Houbre, 2011), also secondary motifs and some less important variables belong here; this set appears to consist of badges linked to (the identities of) major groupings in LBK society like kin and moieties (van de Velde, 1979: 112; Fridrich, 2003; Claßen, 2009). The second and for present purposes more important set of variables has to do with the technicalities of the execution of the motifs, in its variations linked to changing habits of decoration –and thus potentially indicative of relative chronology (Rogers, 1962; Shepard, 1954; a basically similar approach is advocated by van Berg, 1983, and elsewhere; also see Ilett, 2012). From this second set the clearest/best observable variables are selected in this analysis: shape of the spatula, components of the strips, and zonation of the decoration. Then, on a basis of 168 find complexes with the remains of at least ten pots each, a relative chronological scheme has been computed –and validated through comparison with Modderman's earlier findings (e.g., Modderman, 1970). Against this scheme, individual find complexes in the Dutch LBK can be chronologically positioned in one of the arbitrary 20 ceramic phases.

In the accompanying figure (Fig. 3) the chronological spreads of 23 settlement complexes in the Dutch LBK have been grouped according to their left or right bank positions. One unexpected but indubitable conclusion emerges: both banks have been settled/colonized simultaneously; it also appears that the two areas have been deserted quite simultaneously.

This brings up the question of relations between the Dutch sites situated on the Caberg plateau and the Belgian Hesbayan and Limburgian LBK settlements along the Jeker or Geer stream to the southwest and west of that plateau, with their generally substantially later beginnings even for their pioneer phases (Jadin, 2003; Bosquet & Golitko, 2012). If it be true, as most Belgian authors suggest that "Omalien"/LBK pottery decoration compares well with Dutch data, then by means of the proposed scheme it should be possible to derive sharper chronological fixes for the several Hesbayan and Limburg sites, and postulate or negate a colonization radiating from the left bank of the Meuse into Hesbayan territory, just like, or distinct from the originally territorially restricted Graetheide cluster which later expanded to the south and still later into the Meuse valley in the west.

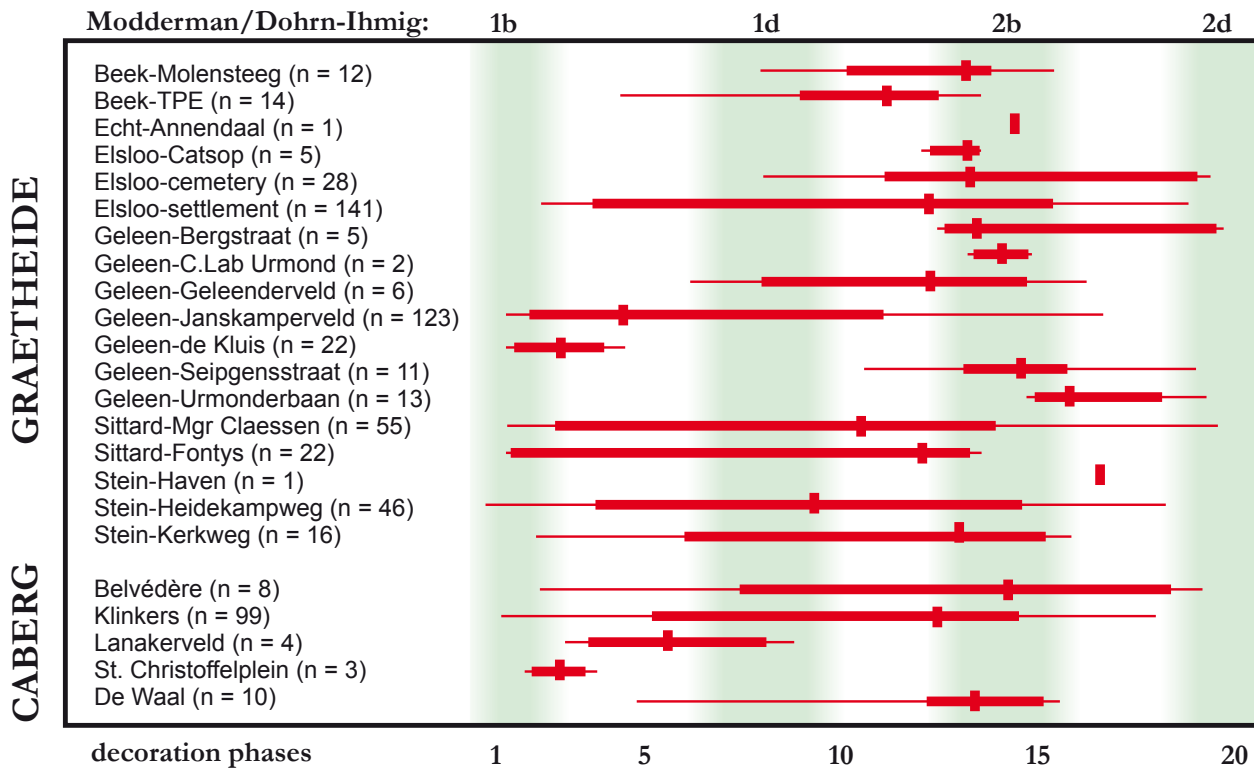


Fig. 3 – Graetheide and Caberg LBK sites chronologically compared.

Thin lines: all finds; thick lines: 80 % of the finds; cross lines: site median chronological position.

4. Non-LBK pottery

The decades since the 1970's of the 20th century have witnessed the identification of several Early Neolithic non-Bandkeramik pottery groups, some of them contemporaneous with the LBK, one maybe predating it in part and others continuing after the disappearance of the LBK. Though there appears to be a consensus of opinion that the producers of e.g. La Hoguette and Limburg pottery were not a Bandkeramik people, questions about their identity, livelihood, etc. are still open to debate (see Constantin *et al.*, 2010).

The Odyssey project did not come up with answers to the matter, as was to be expected, since the majority of finds are more or less 'bycatch' in the excavation of LBK settlement sites. La Hoguette sherds are absent, which neither comes as a surprise considering the number of La Hoguette sites in the Netherlands. Being the next best thing, one small fragment is likely to qualify as a cannellured version of *Begleitkeramik* (Brounen & Hauzeur, 2010). The remainder are sherds that for the greater part fit in with the Limburg pottery range, displaying characteristic decorative elements such as herringbone, tree motifs and shaded narrow bands. As for the morphology, bowls are present as well as pots with a more narrow opening. Limburg pottery often is tempered with varying amounts of burnt and crushed bone, but in the ceramics studied, those admixtures sometimes can be hard to find or even be lacking.

Most sites yielded fragments of one or two Limburg pots only. Maastricht-Klinkers however stands out for its relative abundance, especially with regard to the limited number of features examined. The sizes vary, while the shapes more or less comply to the spectrum known. However, a few morphological or decorative details catch the eye (Fig. 4). Noteworthy are the thick sherds of a pot with a subcutaneous perforated lug reminiscent of a Michelsberg culture vessel. Apart from the context they were found in, it is the red-

dish colour of the inner and outer surface and the peculiar temper that give them away as non-Bandkeramik. The temper deviates from the usual. The sherds contain recognizable bits of charcoal and quite some whitish fragments that seem to be bits of tooth (enamel and dentine) rather than bone (identification Frits Laarman; Cultural Heritage Agency).

Another site, Echt-Annendaal, that briefly has been brought to the attention before (Brounen, 1985), is notable for another reason. Being situated in the coversand area of the Limburg province it is the only site studied that cannot be classified as a regular Bandkeramik settlement (see discussion about the settlements below). A small-scale excavation uncovered a partially dispersed cluster of sherds belonging to several Bandkeramik and Limburg pottery vessels. Though their co-occurrence may be interpreted in various ways, the site is an example of what may lie hidden in soils beyond the loess zone and its potential contribution to the afore-mentioned debate. In fact the time might be right to pick up the threads and follow up the international survey started in the early 1980's (Cahen *et al.*, 1981). The Odyssey project aims to provide a basis and stimulus for finding new sites.



Fig. 4 – Two examples of Limburg pottery from Maastricht-Klinkers. Left: findnr. 516 (5,3 x 3,9 cm); right: findnr. 004 (5,3 x 4 cm).

5. XRF-research on ceramics

Another avenue of research with respect to the identification of LBK and non-LBK ceramics was the X-ray fluorescence research (XRF) conducted by the Cultural Heritage Agency of the Netherlands (analysis by Hans Huisman and Bertil van Os). Sets of LBK sherds from a number of sites on both sides of the Meuse were measured as well as sherds of Limburg, La Hoguette and Begleitkeramik ware. The general aim was to detect similarities or differences in the composition of the clay mixture and therewith point out differences in technology and perhaps clay source areas. Similar research had been conducted earlier on sherds from a number of Hesbayan sites (Golitko & Bosquet, 2011). The results of this research are still pending, but the initial data indicate at least a distinct difference in the composition of the clay mixture used for La Hoguette vessels.

6. Flint procurement strategies

For this research project, the flint assemblages of 15 sites were studied. Eight of these contained sufficient Bandkeramik artefacts for further evaluation. Geleen-Janskamperveld (de Grooth, 2007) and Elsloo-Koolweg (de Grooth, 1987) served as a frame of reference. In this report some preliminary observations on flint procurement will be presented.

6.1. Raw material sources

The most important type of flint used by LBK inhabitants of both the Graetheide and the Caberg settlements has its origin in the Lanaye Member of the Gulpen Formation (i.e. the lower part of the Late Cretaceous Maastrichtian (cf. Felder & Bosch, 2000). By archaeologists this flint type is commonly called ‘Rijckholt flint’ (e.g. Löhr et al., 1977), after the Middle Neolithic underground mining complex at Rijckholt-Sint-Geertruid. A detailed description of its macroscopic characteristics is offered by de Grooth (2007; 2011). Lanaye flints closely resemble the Belgian flint types known as “Silex grenu de Hesbaye” and “Silex de Orp/Jandrain-Jandrenouille”.

During the Early Neolithic, extraction of Lanaye flint focussed not on primary outcrops, but on slope deposits and on nodules embedded in the Tertiary residual loams from the

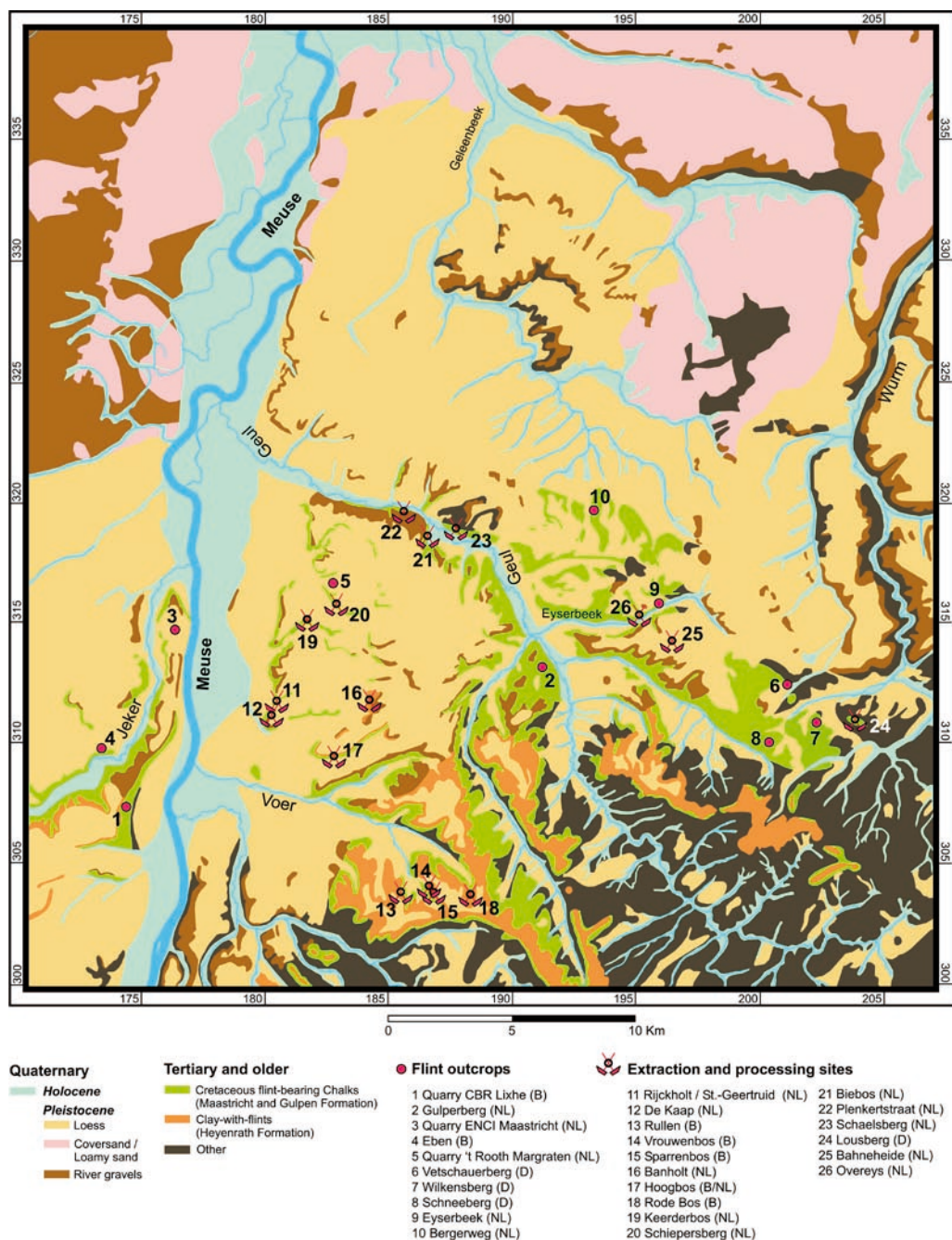


Fig. 5 – Map showing the distribution of flint-bearing sediments and of Early Neolithic extraction sites (De Grooth, 2011: Fig. 1).

Heijenrath Formation (also known as eluvial deposits or clay-with-flints). Finally, most LBK assemblages comprise some Lanaye flints collected in Pleistocene gravels deposited by the Meuse all over the study area (see Fig. 5).

Flint extraction in slope deposits has been observed both in the Schone Grub dry valley at the Rijckholt mining complex and in the steep slopes between the Upper Terrace and the Middle Terrace surrounding the plateau known as De Kaap, located some 500 m further to the south. At present these activities cannot be dated, but some Bandkeramik artefacts have been found on the Rijckholt plateau (Brounen & Peeters, 2000/2001). West of the Meuse, Lanaye flints may be found exposed in the slopes between the Pietersberg and Caberg plateaus and the rivers Meuse and Jeker (or Geer). There, no extraction sites are known.

Early Neolithic eluvial extraction sites are located at Banholt and Mheer (mun. Eijsden-Margraten, NL) as well as at Rullen and Sint-Pietersvoeren (mun. Voeren, B). Because the residual loams in part were mixed with Oligocene sands, rich in iron oxides, the flints underwent considerable alterations, not only in the colour and texture of the cortex, but also in the colour and translucency of the interior. These phenomena often make it possible to distinguish material from different eluvial extraction points (de Groot, 2011). This holds especially true for Banholt and the Rullen/Sint-Pietersvoeren sites. However, material from Banholt in most cases can only be recognised on artefacts with cortex, whereas a Rullen origin may often even be established when cortex is absent. A river gravel origin also may be identified only for cortical artefacts.

In addition to Lanaye flints, most LBK assemblages also contain varying amounts of flints from the Emael Member of the Maastricht Formation (i.e. the upper part of the Maastrichtian). This material, known to archaeologists as Valkenburg flint, also has a regional origin.

The last relevant flint type originates in the Belgian Hesbaye region. This vitreous material, is known as “fine-grained Hesbaye flint” (*silex à grain fin de Hesbaye*; Allard, 2005) or “hellgrauer ‘belgischer’ Feuerstein” (Löhr *et al.*, 1977).

6.2. Spatial relationships between settlement clusters and flint sources

The Graetheide sites and the Caberg sites differ as regards the location of the available flint resources. On the Graetheide, flints from river gravels were the only locally available material, better quality flints were located at a distance of some 25 to 30 km to the south. The inhabitants at the Caberg, on the other hand, could have found Lanaye flints in slope deposits in the direct vicinity of their settlements, with the Banholt and Rullen extraction sites at a distance of some 10-15 km. Moreover, vitreous Hesbaye flints could be easily reached upstream of the Jeker.

6.3. Discussion

At the two Graetheide reference settlements, Lanaye flints were the predominant resource. The majority of them is thought to originate from eluvial extraction sites, especially Banholt (de Groot, 2007). At Geleen-Janskamperveld (dating to Modderman’s phases Ib-c), Emael, Rullen and vitreous Hesbaye flints comprised less than one per cent of the assemblage. At Elsloo-Koolweg, these percentages were 1.1 % for Modderman’s phases Ib-d; and 4.1 % for phases IIa-d. The locally available river gravel pebbles were utterly unimportant (0.2 % at Geleen-Janskamperveld).

Whilst considerable amounts of Lanaye flints were present in all of the sites now ana-

lysed, some remarkable divergences appear as well (Fig. 6). The Graetheide sites presented in this study are roughly coeval in terms of decorated ceramics, all belonging to Moddermans phase II. Only Stein-Steinderveld conforms to the previously established pattern. Geleen-Seipgenstraat relied heavily on Emael flints (35.1 %), even more so than Beek-Kerkeveld (de Grooth, 1987) and Beek-Molensteeg. At Geleen-Urmonderbaan and Geleen-Bergstraat, on the other hand, amazing amounts of vitreous Hesbaye flints were recovered. Moreover, gravel flints were abundant at the former site as well.

The Caberg sites seemingly did not rely on the exploitation of the local slope deposits, but also favoured the Banholt resource. In addition, their assemblages contained a surprising quantity of gravel flints, as well as considerable amounts of vitreous Hesbaye and Rullen flints.

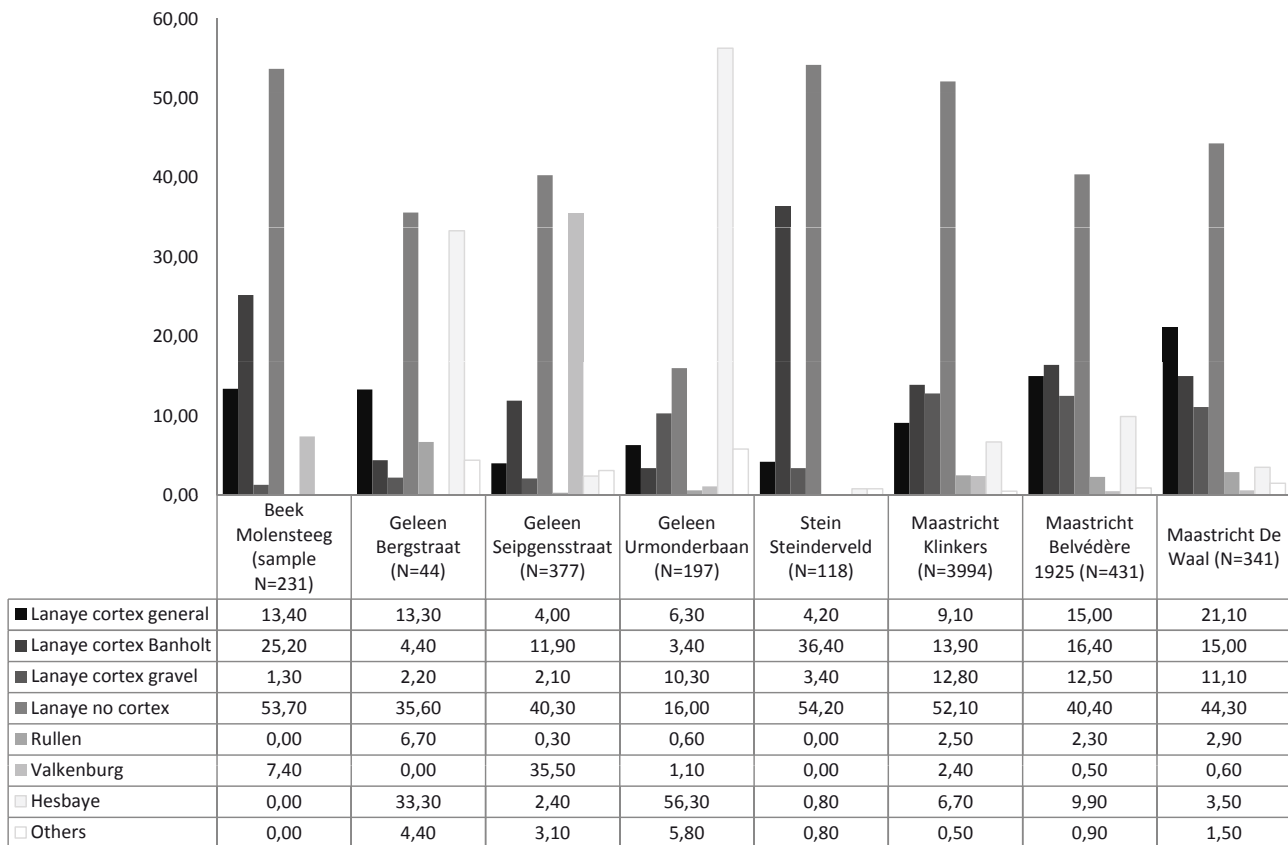


Fig. 6 – Variation of flint raw materials per site.

7. Lithics: natural stone

Apart from flint the natural stone assemblage of the selected sites was analysed as well. Within the Odyssey project a total of 2347 stone artefacts from 12 sites were analysed. Artefacts from other periods do not form part of this project and were therefore disregarded. The excavations of the selected sites differ in size and approach and therefore also in the amount of material that was found. The smallest site yielded only 9 stone artefacts; from the largest site 1056 artefacts were retrieved. The stone adzes are not included in this analysis. The fragments of red ochre (hematite) were studied as a trace element analysis by using X-ray fluorescence research and an analysis of the crystal structure by using X-ray diffraction (XRD). The results of this are pending but already show that there is a great variety in sorts of red ochre which indicates that multiple sources for red ochre could have been used.

All artefacts were catalogued in an access database, which was specifically designed for this project and in which a basic description of their characteristics was made. All stones without traces of modification other than breakage or burning were described in groups per find number. These groups consisted of stone artefacts which are similar in respect of primary classification, raw material, original surface, breakage and burning. They were counted and weighted and their characteristics were described. All artefacts with traces of modification were described individually. They were measured, weighted and all their characteristics were described. Use wear analysis was not performed.

The tool percentage of the different sites is surprisingly similar (see Tab. 1). The only sites that deviate from the general average of 20 % tools and 80 % unmodified material are the sites with only very few artefacts and the site f Beek-Molensteeg where all stones were collected, even the small rolled pebbles that are naturally present in the subsoil. It appears that despite the fact that the sites were excavated over the last 100 years with different excavation strategies, there seems to be a similarity in their composition and the sites are therefore comparable.

The tools found at these sites show homogeneity in the use of raw material, tool types and the visual characteristics of the tools. The special treatment of querns involving the intentional fragmentation and treatment with ochre such as seen on the assemblages of Geleen-Janskamperveld (Verbaas, 2005; van Gijn & Verbaas, 2009), Beek-Molensteeg (Carlier, 2008) and Elsloo-Koolweg (Carlier, 2010), is evident for all the sites. The only exception is formed by the pieces of ground ochre. These show a great variability in shape and size; no two pieces of ochre are the same.

In contrast to the site totals the individual tool types per site demonstrate variability (Tab. 2). It is to date not yet clear how to interpret these differences although they may be influenced by the low counts at some of the sites. The preliminary conclusions that can be drawn from the analysis of the Odyssey sites are that there is a great similarity in tool type and tool design between the different sites, but that the percentages of tools per site differ. As soon as all the site data are available an analysis will be made of the different find circumstances and site types.

8. Settlement structure and characteristics

Almost all sites discussed are located on the loess soils of Southern Limburg on both sides of the Meuse. Together with the well-known settlements of Elsloo, Geleen and Stein, the sites of Beek-Molensteeg, Berg aan de Maas-Pastoor Eijckstraat, Catsop-Spoorlijn, Geleen-Bergstraat, Geleen-Centraal Laboratorium, Geleen-Seipgenstraat, Geleen-Urmonderbaan, Stein-Haven and Stein-Steinderveld are all situated on the Graetheide plateau.

	Total artefacts	Total tools	Percentage tools
<i>Caberg sites</i>			
Maastricht Belvédère 1925	48	10	20,8
Maastricht de Waal	61	10	16,4
Maastricht Belvédère 1988	141	30	21,3
Maastricht Klinkers	1056	185	17,5
<i>Graetheide sites</i>			
Stein Haven	16		
Elsloo Spoorlijn	80	11	13,8
Beek Molensteeg	579	46	7,9
Geleen Urmonderbaan	228	27	11,8
Urmond Centraal Lab	9	2	22,2
Berg aan de Maas	10	-	-
Geleen Seipgenstraat	115	29	25,2
Total/average	2343	350	-

Tab. 1 – Total number of artefacts and tools found at the Caberg and Graetheide sites. Echt-Annendaal is not included in this table as from this site only four pieces of ochre could with certainty be assigned to the LBK occupation.

	Flake		Core		Possible tool		Hammerstone		Grinding stone		Querns grinding slab		Querns handstone		Combinatin tool		Adze(fragment)		Stone with flakes		Polished ochre		Total		
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
<i>Caberg sites</i>																									
Maastricht Belvédère 1925	-	-	-	-	3	33,3	1	11,1	-	-	4	44,4	-	-	-	-	-	-	-	-	1	11,1	9	100	
Maastricht de Waal	1	10,0	-	-	3	30,0	1	10,0	4	40,0	1	10,0	-	-	-	-	-	-	-	-	-	-	10	100	
Maastricht Belvédère 1988	6	20,0	1	3,3	5	16,7	1	3,3	1	3,3	9	30,0	-	-	-	-	-	-	-	-	7	23,3	30	100	
Maastricht Klinkers	46	24,0	1	0,5	16	8,3	11	5,7	12	6,3	74	38,5	1	0,5	1	0,5	5	2,6	-	-	25	13,0	192	100	
<i>Graetheide sites</i>																									
Stein Haven	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Elsloo Spoorlijn	2	18,2	-	-	3	27,3	-	-	1	9,1	3	27,3	-	-	1	9,1	-	-	-	-	-	1	9,1	11	100
Beek Molensteeg	15	28,8	1	1,9	4	7,7	5	9,6	6	11,5	14	26,9	1	1,9	-	-	-	-	1	1,9	5	9,6	52	100	
Geleen Urmonderbaan	3	11,5	-	-	-	-	1	3,8	2	7,7	16	61,5	-	-	-	-	1	3,8	-	-	3	11,5	26	100	
Urmond Centraal Lab	-	-	-	-	2	100,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	100	
Berg aan de Maas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	
Geleen Seipgenstraat	7	24,1	-	-	1	3,4	1	3,4	7	24,1	11	37,9	1	3,4	-	-	-	-	-	-	1	3,4	29	100	
Total	80	22,2	3	0,8	37	10,2	21	5,8	33	9,1	132	36,6		0,8		0,6				0,3	43	11,9	361	100	

Tab. 2 – Amount and percentage of tools for the Caberg and Graetheide sites. Echt Annendaal is not included in this table as from this site only four pieces of ochre could with certainty be assigned to the LBK occupation.

Bordered by the Meuse and the Geleenbeek, this remnant Middle Terrace of the Meuse became the main LBK settlement area in about 5220 BC, until around 4950 BC (van de Velde, 2007; Lanting & Van der Plicht, 1999) when occupation ceased rather abruptly. The dense concentration of settlements on the Graetheide plateau is known as the Graetheide cluster. Geographically it is situated on the north-western fringe of Bandkeramik territory, separated from neighbouring clusters by a relatively empty landscape. Apart from this apparent isolated position, in comparison to adjacent settlement areas its situation seems to be different. The landscape with its distinctly visible Meuse terraces and the clustered (non-linear) settlement pattern differs substantially from the Aldenhoven Plateau to the east where settlements are generally situated along streams (Claßen, 2011; Kalis et al., 1997) as is also the case for the Hesbaye region to the south-west (Jadin, 2003).

The sites Maastricht-Belvédère, Maastricht-Caberg, Maastricht-Klinkers and Maastricht-Sint-Christoffelplein are all located on the Caberg plateau, west of the Meuse and presumably belong to the Hesbaye cluster (Bakels, 1982) although it is suggested that these may form a cluster on their own (van Wijk & Meurkens, 2008). The site Echt-Annendaal is situated on the sandy soils just northeast of the Graetheide cluster. Geologically the majority of sites is located on the Caberg-1-3 Terraces, a Middle Terrace formed by the Meuse during the early Pleistocene and covered with loess in the Saalian and Weichselian Periods. Two sites stand out: Beek-Molensteeg located on a (older) Upper Terrace of the Meuse (Pietersberg-1 Terrace) and Stein-Haven on a (younger) Lower Terrace (Geistingen Terrace).

Except for Echt-Annendaal, all sites analysed in this project seem to represent (parts of) Bandkeramik settlements characterised by pit features, posts holes and occasionally (parts of) house plans in combination with typical Bandkeramik lithic tools and sherds. These sites broadly reflect Dutch Bandkeramik site distribution on both sides of the Meuse. They therefore provide an opportunity to make some remarks about site location choice, site characteristics and relationships between sites of both the Graetheide and the Hesbaye cluster.

8.1. Avenues for settlement research

In 1978 Bakels constructed an elaborate basis for the study of Bandkeramik site location choice, but she also pointed out that more valid statements about the relationship of inhabitants with their environment were needed. Generally LBK settlements were dependent

on natural resources and raw materials situated mostly in the vicinity of (fresh) water sources (Bakels, 1978, 1982; Lüning, 1982). Such site catchment analyses have been criticized as being ecological determinist, yet they do provide testable hypotheses for future studies. Ongoing research demonstrates that other locations than postulated have been selected, tested and used for settlement as well. Not only the Late Glacial loess covered Middle Terraces such as the Graetheide plateau, in the vicinity of larger rivers and streams were inhabited, but also seemingly less favourable locations were used, for example on the clay in the river valleys (Amkreutz, 2010) or on the high terraces (Bakels & van de Velde, 2002). Apparently, the generally acclaimed relationship between settlements and loess all over Europe is less strict on the north-western edge of the Bandkeramik settlement distribution. Recent studies also demonstrate the importance of dry gully systems in the vicinity of settlements (e.g. van Wijk, 2011; van Wijk & van Hoof, 2005). The semi-periodic water-carrying dry valleys and natural springs on the edge of Meuse terraces seem to have provided enough water to sustain Bandkeramik settlement. This allowed them to cultivate formerly non-typical Bandkeramik settlement locations, such as those on the Lower Meuse Terraces or high terrace without the need for digging deep wells. It also demonstrates that the inhabitants had profound knowledge of the landscape. Apparently, other aspects than the geological location and distance to water have to be taken into account as well.

With the aid of LIDAR and GIS modelling, the reconstruction of Early Neolithic landscapes has become an important tool in our understanding of the colonisation and settlement system of the LBK farmers in this area. A new grant proposal following the Odyssey project aims at modelling these aspects of settlement dynamics, by focusing on understanding the cultural landscape in terms of agricultural possibilities, social networks, infrastructure and availability of raw materials. The current results, however, already provide ample reason for such a project.

8.2. Aspects of the Odyssey sites

The different, sometimes small, excavations discussed here provide a glimpse of the diversity in site characteristics. Concerning site location choices, these settlements add diversity to the existing spectrum. On the right side of the Meuse sites such as Geleen-Urmonderbaan and Urmond-Centraal Laboratorium point out that habitation on the middle of the loess covered plateau was not exceptional (see Bakels, 1982). It appears that the afore-mentioned dry valleys and natural springs may have played a role of significance here. Other sites such as Geleen-Bergstraat take up a position very close to streaming water, while Stein-Haven, although situated slightly higher up, connects with the recently discovered sites in the Meuse valley (e.g. Amkreutz, 2010). On the left bank of the Meuse some of the sites on the Caberg plateau demonstrate characteristic LBK settings in the vicinities of the streams of the Heeswater and Zouw. Furthermore the promontory position of Maastricht-Klinkers on the Middle Terrace overlooking the Meuse valley appears a striking choice.

With regard to settlement structure most sites seem to be of a domestic nature. Although clearly visible houseplans are limited to a number of sites (Beek-Molensteeg, Geleen-Seipgensstraat, Maastricht-Klinkers and Stein-Steinderveld) the first impression does indicate that settlement structure on the left and right banks of the Meuse was largely similar. Previously (van Wijk & van de Velde, 2007) it had been suggested that especially the intensity of habitation on the left bank of the Meuse might have been less pronounced and the spacing between individual houses wider. Further research may however point out the exact differences (and similarities) in occupation characteristics.

Concerning features and other site elements, some aspects may already be mentioned. A first one concerns the variation existing in pit features. Of distinct importance in this re-

spect is pit lh excavated on the site Maastricht-Klinkers (de Warrimont, 2003; Theunissen, 1990). The big oval bowl-shaped pit (5 x 4 m in size) was located on the eastern edge of the settlement only meters away from a steep drop to the Meuse valley floor. The filling of the pit was divided into two very rich find layers (40 cm) separated by a 20 cm thick layer of clean loess. In total more than 3700 finds (over 46 kg) were recovered from the pit. Especially the contribution of deviant fine decorated pottery, such as pots with wart decoration (Fig. 7), or all-over decorated beakers emphasize the special nature of this feature. At the moment it is still not clear why so many vessels were deposited in this pit and, moreover, why so many of them were decorated in widely diverging, non-local styles. Maybe we have to assume a ritual motif such as a “potlatch” ceremony, which involves the ceremonial display, distribution and often destruction of valuable objects. Another feature, the impressive double ditch at the Caberg sites, which was already excavated in the 1920’s was also re-examined. Although there is distinct evidence for LBK occupation at the site and also of LBK finds in the ditch, no conclusive evidence has been found that may unambiguously attribute it to the Early Neolithic.

9. Conclusion

An Odyssey is also in part about returning home. What we hope to demonstrate is that it is worthwhile to examine older excavations and re-interpret the data deriving from them. One goal has been to provide a more detailed context for sites that were previously known as “dots on a map”. In doing so the main body of well-known, well-excavated sites from the 1950’s to 1990’s: Geleen, Elsloo, Stein and Sittard have now received company from a wider variety of sites. Although the latter often lack in size or detail of information, as a group they provide a welcome and complementary addition. This is now offering a more diverse image of the LBK occupation in Dutch Limburg.

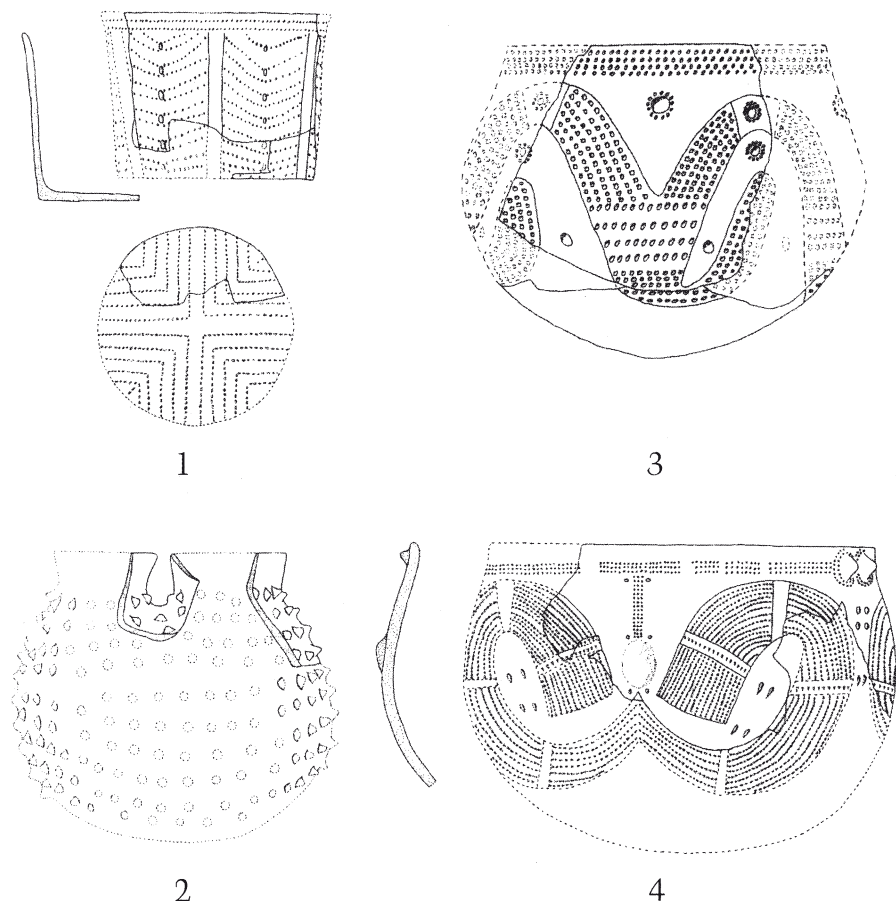


Fig. 7 – Decorated pottery from Pit lh.

In this preliminary communication a number of aspects have been discussed that offer new perspectives for research. With regard to the ceramic research in particular the more detailed chronological resolution enables a more precise comparison and dating of pottery in and between sites and features, which offers new ideas on settlement dynamics and the route of colonization on either side of the Meuse. The non-LBK pottery and in particular the XRF-based research highlights the contribution, diversity and deviating nature of these pottery types to the assemblages.

With respect to the lithics and flint in particular the main gain of the wider data-set that has become available is that it offers the opportunity to detect similarities and differences in raw material preference, use and therewith in the exchange networks. This is especially interesting when comparing sites across the Meuse.

Similar aspects also colour the contribution of these sites with regard to settlement structure and dynamics. Although some of the sites are of a limited size they do add insights into the diversity of site location choice and offer a glimpse of the, at this time, limited diversity in settlement structure. At the same time, individual finds and features (such as the Maastricht-Klinkers pit) indicate that everyday Bandkeramik life was more complex and perhaps not all that uniform as commonly supposed.

On a larger scale, perhaps the most interesting aspect of the project is that it provides more detailed information, not only on the range of sites in the Graetheide cluster, but in particular also for the other side of the Meuse. The addition of information provided by the Caberg sites now enables a better comparison between these nearby clusters. Moreover, it also provides a background for comparison with the Belgian Hesbaye cluster in order to seek out similarities and differences in occupation type and dynamics. While Dutch LBK research previously often looked east to the Rhineland for comparison, the view to the west is becoming increasingly more alluring and interesting.

Finally, the scope of the research has been so as to include older excavations as well as fieldwork done by amateurs (Fig. 8). The benefit of this is threefold. First it gives insight into the historical networks of research and the institutes and individuals involved, enabling a better understanding of the types and location of research that led to the data-set currently available. Secondly, it shows that the data from these “old” excavations is still valuable for “new” research. And last but not least, it effectively brings together current



Fig. 8 – A rescue excavation by amateur archaeologists in progress at Geleen-Urmonderbaan (1982), on the left Harry Vromen and on the right Wim Hendrix.

archaeologists, amateurs included as well as different research institutes and museums on both regional and national levels. The project has further stimulated this cooperation by the production of a small exhibition (The First Farmers/De eerste boeren) in the National Museum of Antiquities and by the development of a website and blog (www.bandkeramiek.nl) with active feeds on progress and discoveries. This has brought the LBK back to the attention of outsiders.

A last word may be said on the nature of the data. While elsewhere new research into the LBK, based on isotope and aDNA data, provides hitherto unknown insights and information into past early farmer lifeways, this information needs to be embedded in 'classical' LBK data sources. The complementary and contrasting use of new information and discoveries derived from these latter sources may provide a cautionary tale for the many methodological pitfalls and biases surrounding both genetical and isotope studies and illustrates the complexity of interaction and mobility that existed. Ideally a recoupling of information from these two avenues of research will also substantiate, refine and balance our perspective on LBK settlement dynamics and lifeways. Apart from this there are, of course, also vast stretches of LBK territory where organic preservation is limited and these are in need of contextualization as well. The questions and answers arising from renewed regional research from such a methodological and geographically comparative perspective is likely to bring us closer to the complex diversity of the LBK.

The Odyssey project shows the importance of small rescue-type research carried out by enthusiastic amateur archaeologists in the eighties and nineties as well as excavations in the pioneer years of LBK research but also shows the need for publication of these sites and the relevance of a uniform way of describing features and finds as is done within this project. Since full-scale excavations like those on the Aldenhovener Platte increasingly become unlikely in today's built-up landscape and with today's scarce financial resources, we are dependent on making the most of the limited sources available. Combined these provide us with valuable information on the Bandkeramik cultural landscape on which we hope to report again in the nearby future.

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Abstract

Research into the Early Neolithic bandkeramik occupation in Limburg has long been characterised by the well-known excavations of Geleen, Stein, Sittard and Elsloo. Apart from these sites however, more sites have been excavated and investigated over the past century. A new research project funded within the NWO-Odyssey program enabled the study and publication of these sites, some of which were excavated in the first half of the 20th century. Settlements on both sides of the Meuse river were studied both with respect to site location and settlement structure. Next to this all the ceramics, flint and stone material were re-analysed. The new results enable a more complete and diverse picture of LBK settlement in Dutch Limburg. They also provide an interesting perspective for future research into the relationship between the Graetheide cluster, the Caberg sites around Maastricht and the Hesbayan group in Belgium.

Keywords: Neolithic, LBK, bandkeramik, settlement structure, Maastricht (NL), Odyssey, Hesbayan (B), Graetheide, Caberg, flint, chronology.

Zusammenfassung

Niederländische Untersuchungen zur Bandkeramik wurden lange dominiert von den weit-bekanntesten Ausgrabungen in Geleen, Stein, Sittard und Elsloo. Doch wurde außer diesen Grabungen noch an anderen Stellen gegraben, jedoch ohne oder fast ohne Veröffentlichungen. Ein neues Untersuchungsprojekt im Rahmen des "Odyssee" Programms der NWO-Stiftung gestattete Aufarbeitung dieser fast verlorenen Funde und Befunde aus dem letzten Jahrhundert. Zum ersten Mal wurden Siedlungen auf beiden Ufern der Maas untersucht hinsichtlich Platzwahl und Siedlungsstruktur, zusammen mit ihrer Keramik, Flint und Stein-Bearbeitung. Diese Analyse erlaubt ein vollständigeres und differenzierteres Bild bandkeramischer Besiedlung auf niederländischen Boden. Außerdem eröffnet sich eine neue Perspektive auf die Beziehungen zwischen der altbekannten Siedlungskammer am Graetheide, den Siedlungen auf dem Caberg (nahe Maastricht) und den belgischen "Omaliens" Fundplätzen im Haspengau.

Stichwörter: Neolithikum, Bandkeramik, Siedlungsstruktur, Haspengau, Graetheide, Caberg, Maastricht (NL), Haspengau (B), Silex, Chronologie.

Résumé

La recherche néerlandaise sur l'occupation néolithique danubienne a été dominée longtemps par les célèbres excavations de Geleen, Sittard, Stein et Elsloo. Toutefois, à part ces sites, nombre de fouilles ont été conduites le siècle passé. Dans le cadre du programme "Odyssey" de la *Nederlandse Organisatie voor Wetenschappelijk Onderzoek* (NWO), il fut possible d'étudier et finalement publier ces recherches, quelques-unes datant de la première moitié du XX^{ème} siècle. Des implantations rubanées sur les deux rives de la Meuse ont été analysées avec le souci du choix de la localisation et du type de la structure du village. De ce point de vue, toutes les céramiques, tout le silex ou tout le matériel lithique utilisé ont été étudiés. Les nouveaux résultats de ces études présentent des vues plus complètes et plus diverses sur les aires de peuplement rubané du Limbourg néerlandais. Ils apportent aussi des perspectives pour des prospections futures sur les relations entre le groupe d'habitat de la région du Graetheide, entre des sites sur le Caberg (près de Maastricht) et entre des villages omaliens de la Hesbaye belge.

Mots-clés : Néolithique, rubané, structures d'habitation, Graetheide, Caberg, Maastricht (NL), Hesbaye (B), silex, chronologie.

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