Bandkeramik pit contents and stratification: a relational analysis investigating structured deposition

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CONTENTS

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ABSTRACT

A linear relationship between pit volume and sherd content can seemingly be easy to accept. In fact, scatter diagrams relating pit volume and sherd quantity show that such linear relationships can be inferred on a logarithmic scale. However, data analysis from this research attempts to show that it is not necessarily pit size, but its stratification, that dictates the quantity of material found therein. In an inter-regional study of Bandkeramik sites, stratification concurrent with high sherd to volume ratios can be seen to indicate the presence of deliberate and structured deposition, whereby former inhabitants made non-accidental and possibly ritual deposits into specifically located pits, according to variable social practices. The phenomenon will be investigated at three sites: Neckenmarkt in Austria, Kompolt-Kistér in Hungary, and Bylany in the Czech Republic.

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Declaration

No material contained in this thesis has previously been submitted for a degree in this or any other University.

Statement of Copyright

I. INTRODUCTION

Research into the relationship between pits and their contents is not a new idea. Variation in artefact assemblages has been used to infer pit function (Stäuble 1997) and discard patterns (Last 1998) in Linearbandkeramik (LBK) settlement sites, as well as to ascertain the possibilities of ritual in Iron Age Wessex (Hill 1995). The intention of this study is to combine these old theories and apply a new outlook on early and middle Neolithic assemblages, hopefully resulting, via site comparisons on a large geographical scale, in a new approach to looking at Linear Pottery cultures. The source of the study shall be the unassuming pit. Pits are principal to the study of material culture in the Neolithic. Not only are they important to the archaeologist as the largest producer of artefacts, they were likely to carry some significance to the individuals and communities that created them, for reasons more complex than the simple and random deposition of rubbish.

The goals of this research are to point out and provide further insight into a pit's relation to its contents and its stratification, with an extension into its relative vicinity to the settlement's households. The theory proposes that it is not size that reflects the amount of ceramics deposited into a pit, but the stratification. Where stratification exists, there may also exist a preference to the deliberate deposition of certain artefacts, such as animal bones, stone tools, or decorated ceramics. This can be compared to the deliberate deposition of grave goods, in which it is noted that, while artefacts are minimal in Bandkeramik graves, the fills are homogenous, suggesting the possibility that the deliberate deposition of ceramics in pits is not related to the ideologies surrounding death and burial. Furthermore, the location of the pit in relation to the settlement is an indicator of structured and deliberate deposition. It is widely accepted that pits in the direct vicinity of houses were for the deposition of daily rubbish. This should be reflected in homogenous fill of such pits. Those pits in isolation or in specific places may have been created for some alternate purpose.

Analyzing the above necessitates a discussion on a number of key points, which have a direct effect on the interpretation. As an initial step, it was necessary to control for three factors prior to site selection. The first of these was to isolate the study to one culture to account for similar depositional practices. By doing so, site selection was limited to a large but minimal geographic region in order to make similar the environmental surroundings, thereby controlling for one variable in a multitude of systems that would affect social reasoning. Lastly, the quality of the data needed to be high and consistent, and therefore excavation methods and recording techniques were examined per site.

After controlling for these factors, a further number of issues were essential to understand prior to interpretation and analysis. First and foremost, formation processes are key and of the utmost importance in a study of pit deposition. It is most important to know whether the deposits were made via natural or human agencies, and to understand the potential misunderstandings that can be created by the immense variety of combinations that can occur. A thorough understanding of these processes will help to ascertain the probability of deliberate deposition. Secondly, while artefacts buried into the depths of Neolithic pits have a high probability of survival, differential erosion and other factors affecting horizontal and vertical displacement will shape the database with which we work. Further to these influences, the various underlying principles surrounding deposition, i.e., social factors, must be discussed. There are various reasons for deposition. Artefacts could have been disposed of accidentally or non-accidentally, or could have been part of the simple and random disposal of rubbish. On the other hand, it is quite possible that a number of pits were filled deliberately, possibly with a ritual purpose in mind, with artefacts specific to the ideologies surrounding such a ceremony.

The basis of this analysis will be on three sites, namely, the LBK settlement sites of Neckenmarkt in Austria and Bylany in the Czech Republic, as well as the Neolithic 'pit field' in Hungary, Kompolt-Kistér, belonging to the Alföld Linear Pottery group (AVK), a closely related but distinct neighbour of the LBK in Central Europe.

Pits in context

Historically, much of the interpretation surrounding pits on LBK or AVK sites conformed to the idea of the 'rubbish pit'. Pits were dug for such purposes as clay extraction and construction, but once empty, were filled with rejected material no longer of any value. The 1980s, however, brought a fundamental change in the consideration of settlement refuse, as they were considered participants in complex cultural and natural formative processes (Pavlů 2000:3). Assuredly, the rubbish pit did exist, and some material may have been simply disposed, yet much rubbish disposal is deliberate in itself, purposely placed in a particular location. It is reasonable then, to assume that much of the artefacts recovered from pits were of a non-accidental nature. However, the debate remains as to whether or not these deposits were simply filled for the sake of disposing of refuse, i.e., 'rubbish pits', or were filled according to a higher social purpose.

When trying to understand the social practices of prehistoric people, we must account for the fact that the refuse from enumerable meals had to be disposed of somewhere. However, it would be incorrect to assume that the disposal of such refuse was of a single category, dispersed across time and space and carrying the same value and connotations as in modern societies. Refuse is the product of interaction between functional requirements and cognitive categories (Moore 1982:75-76) and must therefore be studied within a cultural context. While the term 'rubbish' has been noted as a '20th century term with quite specific connotations' (Chapman 2000a:61), its modern implications of simplicity, randomness, and zero value are not always applicable and, therefore, do not cancel out its social relevance.

Ethnographic studies reveal the possibility that even rubbish, or particular categories of it, can be laden with meaning and require special care in its disposal (Russell 1994:428). The Marakwet in Kenya distinguish between three types of rubbish: ash from the fire, goat faeces, and chaff (Moore 1982). There is distinct spatial separation between these groups, with the chaff always separating the ash from the goat faeces, and the latter two never being adjacent to each other. When asked for the reasoning behind this rigid separation, the reply was that 'one should not mix good things with bad things' (ibid:78). Other ethnographic studies show the deliberate disposal of certain types of artifacts, such as animal bones, whereby their distribution cannot be explained by functional practice, i.e., activity areas, or by post-depositional processes (Bulmer 1976, Hodder 1982b). There must have been, therefore, special significance assigned both to particular types of refuse and to its disposal.

It is proposed here that many of the pits that have been identified as rubbish could, in fact, have been subject to social practices and, therefore, to structured deposition. A particular category of rubbish is that of the garbage resulting from feasting. At the Neolithic site of Opovo (Tringham *et al.* 1992), the lower levels of most of the larger pits (a metre and more) are filled with general garbage, including large amounts of bone. In these levels, most of the roasted and carved bones were recovered, implying that these bones may have been the result of feasting (Russell 1994:428). Nine pits at Opovo are regarded as having evidence of feasting, the results of which are found primarily in ashy levels and in the *in situ* burning layers.

It is important to note that the evidence of feasting must coincide with the accumulation of refuse resulting from a single event (Chomko and Gilbert 1991), not from the accumulation of many years. It is possible to examine the pattern of seasonality determinations of the fauna, counting the annual cycles represented in each pit in order to arrive at the number of years the pit was in use. However, these patterns can be obscured by a number of factors: the use of arbitrary excavation levels as the units of analysis, inadequate sample sizes leading to insufficient precision in estimating season of death, and imprecise seasonality estimates (covering six or more months) which make interpretation difficult (Russell 1994:429-430). Nevertheless, one may be able to attribute refuse to feasting by examining the minimum number of individuals found in each cultural layer. Surely, one cultural layer containing refuse from a pit will have a significantly higher number of animal bone in comparison to layers resulting from the accumulation of daily meals. Further, if a major cultural layer was not the result of feasting but of daily meal consumption, there should, ideally, be lenses of other material deposited between times of refuse disposal. These issues will be discussed in the ensuing chapters.

Environment and settlement context

In 1951, Childe declared that 'a culture is the durable expression of an adaptation to an environment' (Childe 1951:45) and that 'material culture is... largely a response to an environment: it consists of the devices evolved to meet needs evoked by particular climatic conditions, to take advantage of local sources of food and to secure protection against wild beasts, floods or other nuisances in a given region' (Childe 1948:28). Similarly, Clark identified culture as 'essentially no more than a traditional medium for harmonising social needs and aspirations with the realities of the physical world, that is with the soil and climate of the habitat and with all the forms of life, including man himself, that together constitutes the biome' (Clark 1968:175). These statements are not here to imply an environmentalist viewpoint. In fact, environmental determinism must be ruled out as the major factor conditioning settlement location in this period (Kruk 1980:vii). Such factors are only the background within which change occurs (Hodder 1982a:3). As Ashmore and Knapp (1999) point out, 'landscape is neither exclusively natural nor totally cultural: it is a mediation between the two and an integral part of Bourdieu's *habitus*, the routine social practices within which people experience the world around them. Beyond *habitus*, however, people actively order, transform, identify with and memorialise landscape by dwelling within it' (Ashmore and Knapp 1999:20).

Neolithic societies made a conscious choice of the most desirable habitats (Kruk 1980:vii). The choice, however, was made according to uniform prerequisites that allowed for optimal exploitation of the natural surroundings. This can be seen in studies of LBK and AVK groups in recent past, where groups seem to have chosen to live in and subsequently adapted to similar environmental conditions, even when compared across large geographical regions (Lenneis 1982, 2001, 2003; Modderman 1988; Kosse 1979). It seems that the LBK selected living places that were most suitable for agriculture, defined by low-level regions with light and highly fertile soils, i.e., loess, a relative proximity to a water source, and a very dry and warm climate.

It has been acknowledged that climatic conditions were optimal for the post-glacial period, with average temperatures warmer than the present and a higher annual rainfall average (Modderman 1988:80). Hungary lies in the temperate climatic zone, where the average temperature of the coldest month is below 18° C but above –3° C and the average temperature of the warmest month is over 10° C. In Eastern Hungary, the average temperature of the warmest month is over 22° C, whereas in Western Hungary (Transdanubia), which is grouped together with western Europe in one climatic region, summers are generally cooler, with the average temperature of the warmest month under 22° C (Kosse 1979:16). In Austria, available data show LBK sites with a tolerance to a maximum 7° C recent average annual temperature (Lenneis 2001:101).

In addition to these climatic preferences, a limit and likeness to a certain amount of precipitation was also found. In Austria, a tolerance border of 900 mm recent average rainfall per year was found in an in-depth survey of LBK sites (ibid). Due to the greater distance to the Atlantic, plus the rainshadow effect of the Alps, precipitation in Hungary is much more irregular and infrequent than in western Europe. Annual precipitation varies between less than 500 and more than 900 mm. While there are regional variations, there is a noticeable steady decrease of precipitation from west to east, with annual means in the Alföld lower than 600 mm, and in the central parts of the plain, below 480 mm (Kosse 1979:19).

The most striking and common element in a discussion of Neolithic settlement is the preference for good, arable soil. Prehistorians very early acknowledged that the oldest agriculture in Central Europe shows a close relationship with the best soil that is found in that region (Modderman 1988:80), that is, those that developed from loess (discussed elsewhere). The importance of the loess areas in the spread of the LBK in central Europe has often been emphasised by archaeologists (Childe 1929; Clark 1952; Whittle 1996) for reasons of high fertility, good drainage, and ease of working (Kosse 1979:85). Loess-derived soils are rich in minerals, only dry out under very extreme conditions, and their ideal water economy means that no control measures need to be taken (Modderman 1988:2). In Austria, 72% of the settlements were situated on loess soil, while in Hungary and Bohemia, this statistic stands at 50%, and in Slovakia and the Lower-Rhine-Meuse region, 80 and 99% respectively. Despite these variations, research has shown that one of the factors in settlement was a high degree of fertility amongst the soils in a region (Modderman 1988:85). Kruk's (1980) study of Poland shares similar conclusions, with areas occupied by the LBK found to be covered by brown loess-derived soils.

Three types of soils developed from loess: (1) alluvial soils, formed by the annual deposition of fresh alluvium and favoured by early farmers for its high fertility, (2) diluvial soils, formed by downwashing of loose hillslope sediments, with a range in quality from good and cultivable to poor and dry, and (3) chernozems, or black earth, considered one of the most fertile soils under modern agricultural conditions (Chapman 1992:17). Chernozems can become degraded under progressively wetter climates and with a more varied topography, changing its texture and/or its colour. This occurs in two ways. The first is leaching of calcium carbonates, which leads to a heavier soil that is lighter in colour. The second is browning, the process whereby increased moisture leads to accelerated mineral and humus decomposition, replacing the black colour with brown in the form of iron minerals and resulting in a range of soil types from true chernozem to brown forest soils (ibid.).

AVK settlements are found on a variety of soil types – 23% on alluvial soils, 17% on alkali soils, 16% on hydromorphic soils, 14% on meadow chernozems, 25% on forest soils, 2% on chernozems, 2% on rendzinas, and less than 1% on windblown sand. If we discount the latter three, which are of limited value for agriculture, we see that 95% of AVK settlements are on soil types that are rich in nutrients and valuable for agriculture (Kosse 1979:110), a number of which are derived from loess.

It has been suggested that, at the time of the LBK, soils were poorly developed and decalcified (Langohr 1990:122), and that, although most LBK sites are on loess-derived or other fertile soils, it would have been very difficult to avoid such soils in most areas, once valley locations had been chosen (Bogucki 1988:73). Differences in relief have played a part in the deposit of loess soils, but it did not change the main contours of the landscape (Chapman 1992:15). Loess grains were mainly deposited where the wind no longer had much effect, i.e., low-lying areas such as river valleys and basins. Topography, therefore, seems to have been concurrent with loess in the choice of settlement location.

An in-depth survey of LBK sites in Austria shows a preference to elevations between 200 and 300 metres above sea level (m a.s.l.), with 65% of sites lying in this topographical range (Lenneis 2001:101). In Hungary, most of the Alföld and Transdanubian Bandkeramik sites were also found to be in areas of low elevation, in level plains or low foothills (Kosse 1979:91). Although 84% of Hungary is naturally low-lying level and hilly terrain (ibid), settlers seem to have been in search of an ideal level of terrain where it was likely that arable farming could be practised (Modderman 1988:81).

While the aforementioned statistics are not in the lowest zones of the country, it can be theorized that many of the choices for slightly higher levels of terrain may have been a response to high water tables and repeated flooding. Prior to recent findings, prehistorians had agreed on the likelihood of 30 – 50% of plains land being seasonally if not perennially flooded (see Bognar-Kutzian 1972; Kosse 1979; Sherratt 1983; Jankovich *et al.* 1989). Annual, decennial and secular flooding of the Tisza, Maros, and Körös rivers meant that there were many areas that were at least seasonally, if not permanently, flooded, as well as boggy areas that were too wet to even walk across (Chapman 1997:145; see also Gillings 1995, 1997). However, these previous conclusions were based on post World War II palaeoenvironmental reconstructions that were unsubstantial, and, therefore, estimates of flooding have now decreased to covering only 20 – 25% of the plain, with another 20% of seasonal flooding creating further wet zones (p.c., J. Chapman).

This evidence leads to the suggestion that, while water was an important resource, it was not a restricting factor. In fact, archaeologists now suggest that, instead of vast areas of floodplain, there was a much bigger network of little streams and hydrologic mosaics that stop major flooding (ibid.), a hypothesis that can be corroborated with previous analyses. For example, t-tests correlating settlements to the average distance to the nearest river or lake in early Neolithic sites in Hungary show that it is extremely unlikely that the location of settlements near rivers and lakes could be the result of chance distribution (Kosse 1979:74). Floodplains were avoided and there was a preference to the upper parts of streams (Lenneis 2001:101; see also Lenneis 1982, 2003).

Not all LBK sites, however, were close to water. At Erkelenz-Kückhoven in the Rhineland, a large LBK settlement was revealed to be on a dry loess plateau fully 3 km from the nearest watercourse (Weiner 1992). Evidence has shown that where sites were not in close proximity to a natural water source, wells supplied water for its inhabitants. Such wells were discovered in LBK contexts at Mohelnice in Moravia and Most in Bohemia (Rulf and Velímsky 1993).

In general, farming communities do not normally resort to mobility to alter the relationships between them and their resources. Instead, they develop social structures which permit adjustments in these relationships without the need to relocate or fission on an annual or seasonal basis (Bogucki 1988:118). Before we turn to the social side of archaeology, it is important to discuss the contexts in which the archaeology is actually found, specifically in relation to the sites included in this study.

Archaeological context

In Austria, Quitta (1960) published the first fundamental study on the 'Earliest Linear Pottery Culture' and, since then, the number of excavated sites has increased, enhancing the knowledge of LBK houses and settlements, economy and trade (Lenneis in press:99-100). The Austrian sites are theorized to be the eastern group within LBK territory, possibly even the forming region of the LBK itself. Such theories are the result of a growing number of find spots that has grown in number from six in 1960 to 80 in the present day. Of these, 25 have been excavated, 17 of which were rescue excavations (Lenneis 2001:115-116, Annex). As for the remaining surface and single finds in the catalogue, it is quite probable that further investigation will reveal an even greater wealth of information.

As for Hungary, prior to extensive plans in the early 1990s to improve the country's infrastructure, excavations were limited to small-scale studies. Archaeologists believed that large settlements, especially those of the LBK, did not exist past the eastern borders of Austria (p.c., K. Orossz). In the early nineties, however, the Hungarian government gave official approval for the extension and construction of a series of motorways. Between 1993 and 1996, rescue excavations were conducted prior to the construction of the M3 motorway, roughly 100 m wide in the foreground of the Northern Mountain Range. Some of these excavation surfaces covered some 30,000-40,000 m^2, which were previously unknown in Hungarian archaeology (Raczky *et al.* 1997:12).

One of the excavations that resulted from the planned motorway is that of Füzesabony-Gubakút. Until this excavation, archaeological research relating to the early Neolithic was primarily restricted to the excavation of single pits (Domboróczki 2001:200). The discovery of regularity in the settlement structure contradicted the previously held views of a mobile, nomadic or semi-nomadic population living in small, unstructured, farm-like settlements (ibid.). Further, it is believed that this site is important in providing important clues for solving the debate regarding the function of pits. Unfortunately, the data was still in its preliminary stages; however, limited data from one pit will be discussed in a later section.

In 2000, rescue excavations began at Balatonszárszó-Kis-erdei-dűlő as part of rescue excavations along the planned route of the M7 motorway in Somogy county, near Lake Balaton in Hungary (Honti *et al.* 2002). Excavation revealed Neolithic finds belonging to the LBK, with 40 longhouses, 50 graves, 150 metres (m) of a Neolithic ditch, and approximately 4000 pits (p.c., K. Orossz). Such discoveries dispelled the myth of strictly small-scale settlements in Hungary. The data, however, was in too preliminary a state to be used for this study. This was unfortunate, since a number of the pits could be interpreted as 'suspicious' (ibid.). For example, one pit revealed a partial skeleton, with only the remains of the upper torso, and there were numerous pits with intact vessels. Future research using data from this site would be highly beneficial to the theories surrounding deliberate and structured deposition.

While sites like Balatonszárszó should make an immense contribution to Hungarian archaeology, not all of the sites excavated as part of the motorway construction were as large. Kompolt-Kistér was also a rescue excavation, but is not considered to be a settlement site, or at least not of the settlement proper, nevertheless revealing a significant amount of Neolithic features. Other 'pit fields' are known throughout southeast and central Europe, but their function remains a mystery (p.c., J. Chapman). Detailed analysis of their contents should provide important clues.

At Bylany, excavations began in the 1950s, at a time when Neolithic sites were excavated randomly and on a limited scale (Zápotocká 1986:288). Through Bylany, however, Bohumil Soudský undertook a project to understand the problems relating to the settlement, economic and social organisation of the first agricultural settlers in the Czech countries (ibid). It was unique, with the large area involved, and the newly conceived methods of fieldwork, documentation, and finds assessment. The completeness and detail of the data allows use of the material for theses and research projects to this day.

Figure 1. Map showing sites used in analysis and sites mentioned in text.

A note on the data

Detailed inventories of artefacts found at our sites were not available. Unfortunately, a complete inventory, as this author would have liked, was not available. Finds at Kompolt-Kistér were not weighed, as it is not in Hungarian tradition to do so. Furthermore, finds were recorded per feature, and not per context or excavation unit, so contextual analysis of the finds was subsequently impossible. With the influences of post-depositional processes and displacement, this type of data would have been useful in analysing the artefacts and the processes by which they were deposited.

Brief description of sites

Neckenmarkt

A settlement of the earlier LBK, Neckenmarkt is at the western edge of Transdanubia, a few kilometres west and southwest of the Hungarian border. It is in one of the driest and warmest regions of Austria, with good, but not top quality arable soils. The site lies in a flat basin, with wooded hills to the south and west, the Ödenburger mountains to the north, and a brook to the south, and is the most westerly of ten find spots; therefore posited to be part of a settlement cluster in the area (Lenneis and Lüning 2001:221). Excavations revealed seven houses, some of which were only partially excavated, and 22 pits, from which archaeologists were able to retrieve samples for radiocarbon dating, placing the site within the range of 5450 to 5000 CAL BC.

Kompolt-Kistér

This multi-period site was excavated in anticipation of rescuing archaeological materials prior to the construction of the M3 Motorway in the Alföld plain of eastern Hungary. The area is flat today, and is bordered by the Tarna River on the east and the Kígyós and Tarnóca Creeks on the west. The soil is black, obdurate riverine loam and the historical natural environment is characterized by a large and humid, amorphous black soil that had dried up by the end of the Avar Period (Vaday *et.al.* 1999:351). No radiocarbon dates have been published, but analysis of the finds dates the Neolithic portion to a late phase of the AVK (ibid:352).

A total of 73 Neolithic features were excavated, suggesting the presence of a single component settlement that had significant dimensions. However, the lack of recognisable houses further suggests that the excavation itself was outside the settlement's centre. Excavators posit that the subsequent 'pit field', present over an area of 3400 m^2, was chiefly a refuse area, with fireplaces, workshop refuse, and clay extraction pits, with the addition of eight Neolithic graves (ibid:351-352).

Bylany

The site of Bylany is 68 km east of present-day Prague, on the boundary between central and eastern Bohemia, covering the southern lowland edge of the Elbe River and on the route linking Central Bohemia with Moravia (Zápotocka 1986; Pavlů and Zápotocká 1983). Neolithic Bylany represents the first six centuries in the cultural history of this region (Pavlů 2000:285), with radiocarbon dates placing it within the range of 5600 to 5000 CAL BC (ibid:317-318). The site is at an elevation of 280-340 m a.s.l.; the cover consists of a fertile thin layer of brown soil on the loess, gneiss and limestone strata (Pavlů and Zápotocká 1983:97).

Excavations on Section A began in 1955 and remain today the largest opened area on a Neolithic site in Bohemia. Section B was excavated in 1956, partly under rescue conditions, as the area was designated a building area for the local co-operative (Pavlů 2000:1). Section F, excavated in 1966-1967, was the earliest part of the site, and was selected to represent the site for this study. With the vast quantity of features recovered at Bylany (*Table 1*), it was felt that using only a portion of its data would suffice. Section F was selected for the completeness of its data, its size relative to the other sites in the study, and for the fact that it was excavated most recently, relative to the other areas.

Table 1. Counts of individual types of features in Sections A, B, F at Bylany

Feature	*Section*			
	A	*B*	*F*	*Total*
House	87	28	32	147
Oven	38	10	5	53
Silo	27	2	5	34
Small pit	142	44	15	201
Pit + complex of pits	536	163	124	823

(From Pavlů *et.al.* 1986:294)

Excavation methods and recording techniques

> 'There is no right way of digging but there are many wrong ways'.
> (Wheeler 1954:1)

Archaeologists will continue to debate about the best way to excavate. For some, it is tradition that teaches methodology, passed down through the learning processes of archaeology. With the advancement of computer technology, however, new generations of archaeologists are becoming accustomed to a level of precision and totality even higher than the calls of post-processual methods. The standards for 'how' and 'how much' have risen dramatically, as new tools and equipment allow for an expediency and efficiency not rivalled by the past. These concepts of excavation methods and recording techniques are the subject of this discussion.

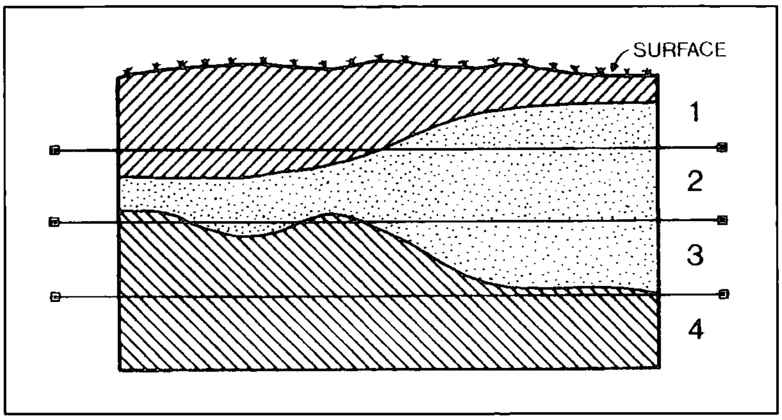
Pits at all sites were excavated similarly, that is, they were sectioned and excavated in two halves, allowing the use of the subsequent profile drawing to determine stratigraphy. (Neckenmarkt is an exception, having been excavated using a checkerboard method, thus creating multiple sections and profiles.) Such methods are used for its practicality, especially on rescue excavations. Whilst rescue excavation has allowed for larger excavations and revealed a wealth of new information, the inherent expediency necessitates the use of the above methodology.

For a study based on stratigraphy, however, it must be taken into account the possible misconceptions surrounding this technique. Analyzing a pit based on one profile taken in the centre assumes that the deposition of each stratigraphic layer exists and is uniform throughout. Pits are not uniformly filled, and understanding it through a single section will delete the existence of other strata that possibly lie near its edges. Sections only record the physical relationships of the stratification at a given point, and away from this point, different relationships can be found. Sections therefore give a simplistic, rather than a representative view of the stratification (Harris 1979:51). While archaeologists learn from an early stage in their career to beware of this falsity, this method does not allow for any other interpretation.

In an attempt to solve this problem, archaeologists have divided pits in sections, just as they divide a site. Neckenmarkt is an example of this, using a checkerboard methodology to understand all parts of the pit, thus allowing for multiple profiles to be analysed post-ex. While this allows for a more detailed understanding of the pit, it seems to lose its advantage of expediency, especially considering the fact that profile drawings are created on-site with pencil and paper.

Accompaniment to this method is the use of arbitrary excavation units. For example, at Neckenmarkt, features were recorded by metre squares and ten centimetre-thick layers (Lenneis and Lüning 2001:222). The difficulty with this method, however, is not to confuse arbitrary layers as representing the time dimension of the buried objects (Harris 1979:95). If artefacts are collected per arbitrary layer, the possibility arises that artefacts from different stratigraphic layers will be mixed (*Figure 2*). This can occur if the shape of a stratigraphic layer is not of uniform thickness, encompassing possibly two or more arbitrary units on one edge but covering less than one unit on the other edge. This is predicament is not a new concept, but continues to be used to present day.

Figure 2. A diagram illustrating how arbitrary and stratigraphic layers do not share temporal space (From Deetz 1967:Fig. 2)

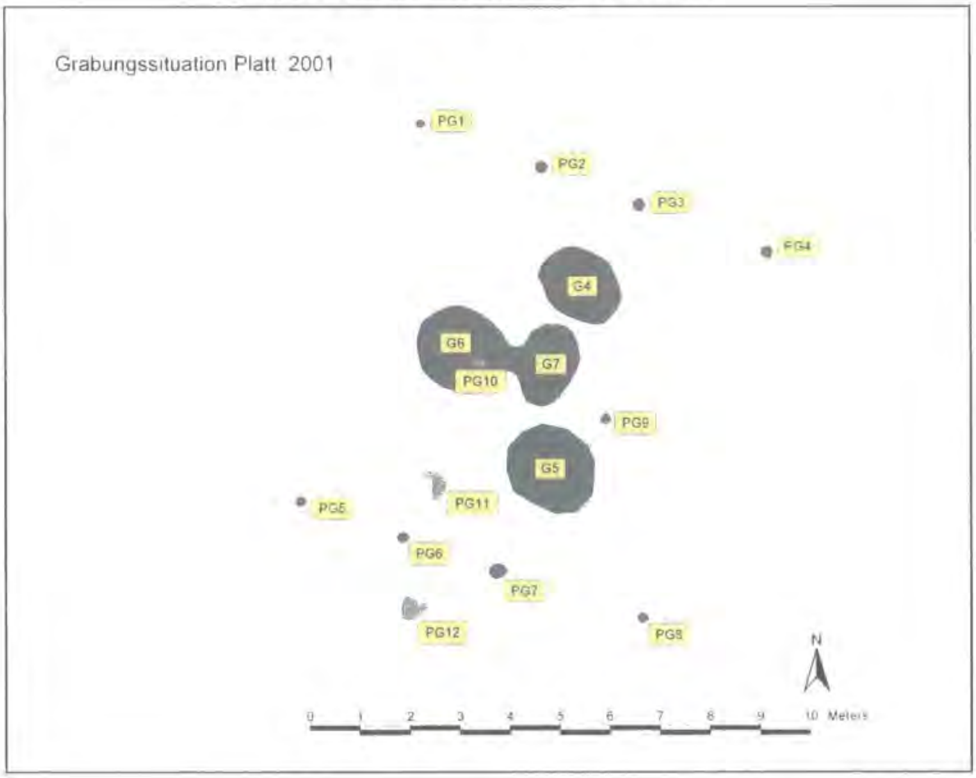


Arbitrary units are often used and this author is not one to say that it is necessarily incorrect, as long as archaeologists bear in mind its disadvantages. I will, however, propose that, when looking at the bigger picture, and when faced with the constraints of time and resources, stratigraphic excavation, combined with digital recording techniques, will produce better results. The results of this methodology can be seen in the excavation of Platt-Reitlüsse in Lower Austria (Doneus and Neubauer, unpubl.). Open area stratigraphic excavations adhering to methods using the principles of Harris (1979) allowed digital documentation of every surface and interface, taking polygons and surface points of each context, as well as taking digital photos. Computerized recording methods and post-excavation processing of the data negate the problem of misleading pit sections, as any section can be created with an extension in ArcView.

The site of Platt-Reitlüsse is situated on a north-facing slope, at the southern edge of a basin-shaped valley opening towards the river Pulkau. Preliminary analysis of the artefacts dates the site to the Middle Neolithic, and preliminary interpretation of the pits indicates that the site was a working area of the Lengyel culture (p.c., M. Doneus). Excavation of four pits and ten post holes (*Figure 3*) took place in July 2001, with a team of six archaeologists working for a period of three weeks, which included a number of rainy days that both flooded and halted excavation.[1]

It can be seen that excavation of the pits via traditional pit sectioning would have yielded only one of the three reproduced profiles (*Figures 4 and 5*). All three of these diagrams reveal different basal shapes and different stratigraphic contexts. Taking any one of them as a single representative of the pit in its entirety would be erroneous. While the computer-generated sections are theoretically equivalent to what a checkerboard excavation would have produced, as these drawings were created post-ex, the archaeologist was able to focus on the stratigraphy at hand, interpreting it with every stroke of the trowel.

Figure 3. The site of Platt- Reitlüsse



[1] Data from Platt-Reitlüsse is not yet published but was kindly given for use in this thesis by Wolfgang Neubauer and Michael Doneus.

Figure 4. Pit 4 from Platt- Reitlüsse

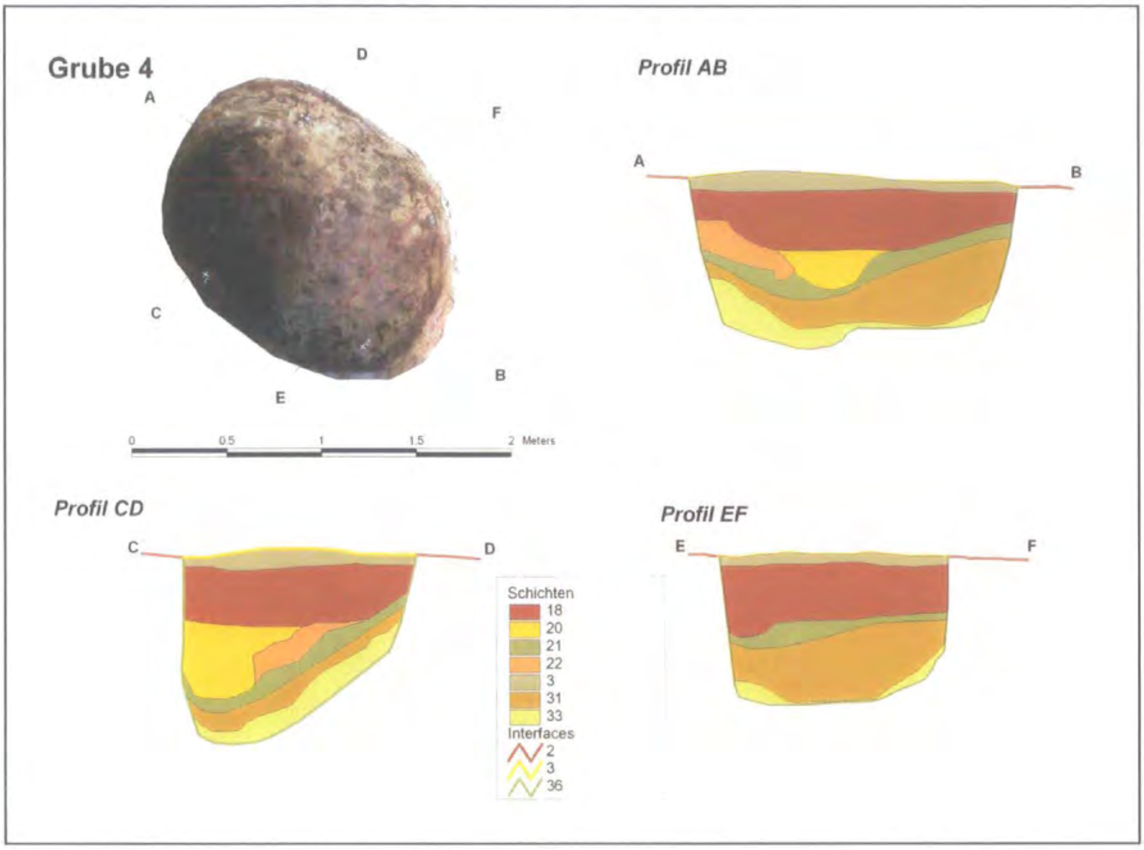
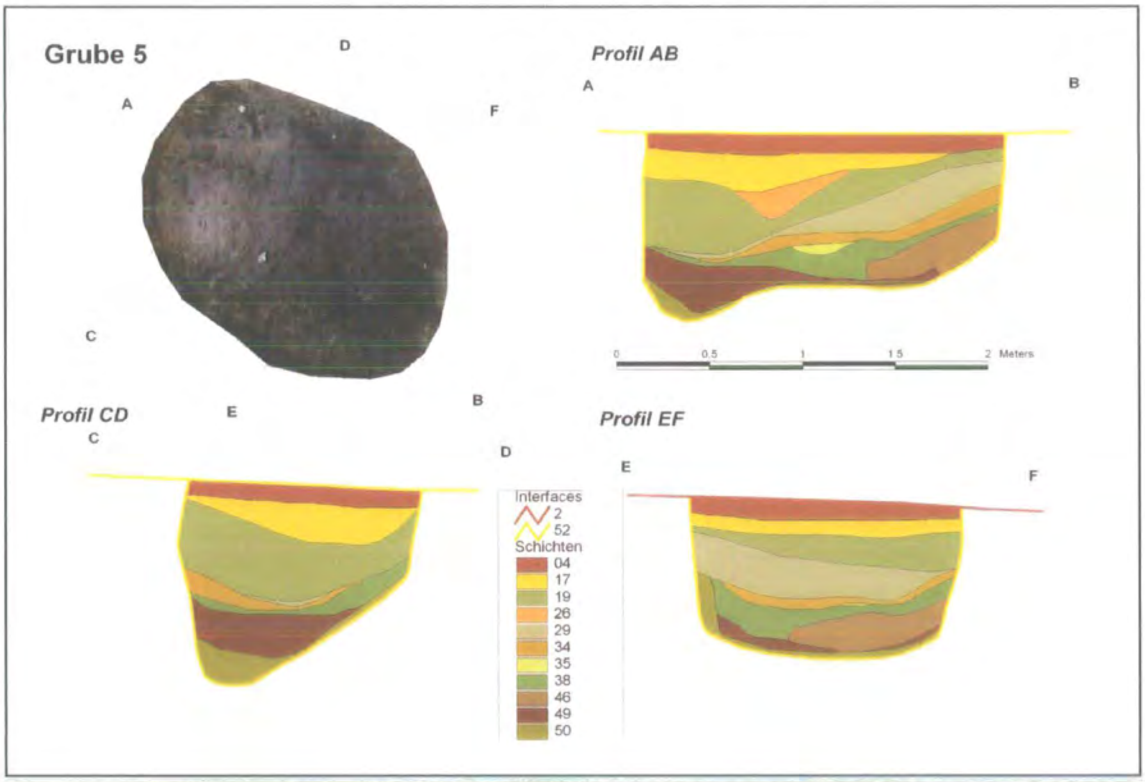


Figure 5. Pit 5 from Platt- Reitlüsse



Furthermore, comparison of Pit 4 with the adjacent Pit 5 reveals highly similar pit shapes. It was this clue that indicated contemporaneous usage of Pits 4 and 5. Without these multiple pit profiles, Pit 4 could have been misconstrued as a possible sacrificial pit, as an isolated cow skull was found at the base of the pit, in the area of greatest depth. The presence of such skulls has been interpreted as special deposits (discussed elsewhere), most often through their associations with other bones or by the manner and site of deposition (Grant 1984:533). However, in this case, it has been posited that the skull was thrown in, finally resting in the deepest portion of the pit (p.c., M. Doneus). Only further analysis of the pit contents will provide a more definite answer.

This discussion not only demonstrates the archaeological context within which we should understand and accept the data that is presented in this paper; it also shows that necessary improvements need to be made in archaeological methodology. While there is no 'right' way to excavate a site, the ideal methodology described above, coupled with detailed find inventories, will allow future generations of archaeologists to use existing data in the application of new ideas to find solutions to the many questions that are still unanswered. As archaeology is a destructive discipline, only meticulous methods will allow the complete rescue of the material.

Summary

Pits have often succumbed to the traditional interpretation of being for dumping refuse, and for this reason have not been closely scrutinized in terms of social complexity. More recent work, however, has revealed a greater quantity of LBK and AVK pits, further proving that they fulfil more functions than mere detritus. The goal of this study, therefore, is to explore the relationship between pit contents and their stratigraphy in order to investigate the existence of structured deposition, taking into account a number of factors. First, as discussed in Chapter 2, it must be determined whether the deposits recovered in pits are of a natural or cultural nature, as at the core of structured deposition is deliberate human action. Such anthropogenic influence is discussed in Chapter 3, where the varying levels of human attitude and action will be discussed in relation to the final deposits that archaeologists come to uncover. These are the core theories behind structured deposition: human behaviour as deliberately displayed in archaeological remains. By isolating the data collection to a minimal geographic and cultural region, it is possible to more closely scrutinize the social factors at play. It is hoped that the extension of this type of research into a culture not studied before in this respect will help to further distinguish and identify social practices as they apply to artefact and pit deposition, showing that structured deposition is more prevalent than had been formerly thought, and further isolating the categorization processes and symbolic ideals carried out by Mature Farmers.

II. INTERPRETING PIT DEPOSITION

In order for archaeologists to understand the social factors behind depositional practices, it is important to first understand the processes by which objects were deposited and the events and disturbances that affected the contexts in which they were found. For the included sites, it is unclear in which stratigraphic layer all the artefacts were found and, therefore, it cannot be said with complete certainty that all of the artifacts were deposited deliberately through anthropogenic means. Even if the contextual information were available and complete, the questions of time and reason remain unclear. However, at the very core of archaeology is the attempt to answer questions whilst lacking a complete record. This is especially true in prehistory, as many disturbance and erosion processes have interfered with the assemblages, leaving behind features and artefacts whose functions and lives we can only infer. With the use of experimental studies, micromorphological analyses, and the refinement of thought throughout the history of archaeology that subsequently becomes the mindset of every archaeologist, strong and profound inferences can be made. These inferences arise first from a thorough understanding of how the archaeological record came to light; in other words, the formation processes that have created and disturbed the record that we study.

The tests of time

The infilling of pits is a very ambiguous subject. It is extremely difficult to say whether the deposits were made over the course of a week, a year, or over a great number of years. Archaeologists have estimated that some pits, up to 1.5 m in depth, can fill up in one or two years while shallower pits can silt up completely after one or two rainfalls (Domboróczki 2003:15). Yet experimental results contradict these estimates, extending the timeline up to 20 years (Petrasch 1991). Wheeler (1954) demonstrated this problem on a regular basis to his students, whereby they were persuaded, towards the end of a day's work, to cut a section through the dump that was the outcome of their digging. Normally, the section cut is replete with stratification, with tip-lines, streaks of variant soil, and an assortment of the materials through which they have been working in the course of the day. 'Nothing is more calculated to disturb their faith in the time-significance of stratification' (Wheeler 1954:45).

For archaeologists, the differentiation of strata signifies a temporal sequence. The notion was derived from geology, whereby strata were identified as layers of rock formed by changes in the type of materials in the process of deposition or in the circumstances of deposition, stratification being the mass of layers and interfaces formed through time (Dunbar and Rodgers 1957:97). These sedimentation units were seen to have formed under essentially constant physical conditions (Reineck and Singh 1980:96), and as long as the specific history of the sediments in the deposit remains the same, the resulting deposit represents one depositional event. However, the duration of such a depositional event is not often known. A single deposit may represent either continuous or abrupt deposition over either long or short periods of time (Stein 1987:340). In archaeology, the task is made even more difficult, by the variety of factors that interfere with deposition, making the so-called 'history of the sediments' highly varied and difficult to interpret.

Experimental work has attempted to answer the temporal questions associated with deposition. At Overton Down in Wiltshire, attempts were made to simulate a prehistoric earthwork, with the task of discovering the exact sequence of changes brought about by weathering; the main method of investigation to be period excavation at two, four, eight, 16, 32 and 100 years after construction (Jewell 1960:iii). After eight years, primary fill, defined as coarse material derived from rapid weathering of the ditch sides, had accumulated and been stabilized by vegetation. Within this fill, there were five bands of coarse chalk rubble separated by finer material with humus staining (Crabtree 1971:239-240). This was stated to 'clearly represent deposition respectively in winter and in summer' (Jewell and Dimbleby 1966:316), with the coarse bands resulting from frost weathering in winter and the finer bands resulting from sedimentation in summer (Bell 1990:239). After only the 32nd year, however, the bands were much less distinct than they were in earlier sections, owing partly to compaction but mostly to the activity of earthworms, which seem to have blurred the banding (Bell 1996:72; Macphail and Cruise 1996:103). It is evident, therefore, that while such stratigraphic components were evident after less than a decade, it is unclear how they will appear, or whether they will even be present, in 100 or even 1000 years. At Overton Down, archaeologists expect that long-term weathering and reworking by biological activity will transform the presently heterogeneous ditch fill into a homogenized soil (Macphail and Cruise 1996:106). This statement has high significance when relating experimental studies to Neolithic features, as six to seven millennia have already passed, allowing a maximal level of chemical and biological activity to disturb the features that we now come to study.

Russell (1994) attempted to answer this challenging question as well, using seasonality indicators in the faunal material to perhaps demonstrate a passage through time. However, seasonality estimates were often too imprecise (covering six or more months) as to make interpretation difficult. Ideally, it was conceivable that one might be able to see deposits of animal remains progressing through the year as one looks from the bottom to top of the pit, and be able to count the annual cycles represented to arrive at the number of years the pit was in use (Russell 1994:429-430). However, assigning levels of pits to individual years or seasons is highly dependent on rapid accumulation to achieve sufficient separation of seasonal remains. A number of problems were hence encountered. First, patterns were obscured by use of arbitrary excavation levels as the units of analysis, and second, problems of sample size meant that only very few of the bones could be aged with sufficient precision to estimate season of death (ibid.). In central Europe, such analyses are often improbable, as the high acidic levels of loess-derived soils leave nominal bone samples (p.c., J. Chapman).

The question thus remains open. How do we assign measures of time to deposits of strata when there are so many variables and unanswered questions? The fact is, there is no answer – yet. Without rigorous and expensive testing of separate components of the pits, i.e., the soils and sediments that create its stratification, it is not possible to assign the amount of time that passed during the infilling of a pit. It is, however, possible to show, with strong probability, the processes that were actually at work during the time of a pit. That is, it is possible to differentiate between natural and cultural processes and, subsequently, to confidently apply theories of a social nature.

> 'The recognition of man's purposeful arrangements depends on *distinguishing between* the action of natural agents and the action of human agents.' (Ascher 1968:47)

Soils and sediments

Patterns of fill are best considered against a model of successive phases of activity and inactivity. Activity is evident in a number of ways, as trampling, the deposition of special deposits, the dumping of domestic detritus and the tipping of redeposited natural bedrock, or, in more general terms, cultural processes. These are discussed in the next section. Our present focus is based on the phases of inactivity, recognized as layers created by processes of natural silting and erosion (Cunliffe 1992:74). Generally, these layers will consist mainly of dirt, or, more properly, soil or sediment.

Sediments are the basis of soils, and without them, there would be no archaeological site. They enclose artefacts and features, maintain relationships among objects, and protect buried materials from a range of disturbances (Dincauze 2000:259). By definition, sediments 'are collections of mineral particles that have been weathered from an original source and redeposited' (Whittlesey *et al.* 1982:28). The sediment base of most soils in central Europe is loess, an Aeolian dust transported mainly by wind, and redeposited on the surface (Courty *et al* 1990:81), creating a fertile base ideal for subsequent agricultural practices.

Over time, pedogenetic processes have taken place, transforming sediments into soils. These physical or chemical alterations are part of a process, representing a period in which deposition occurred slowly, if at all – a depositional hiatus and a time of relative stability (Dincauze 2000:261). The process begins with the coincident formation of a stable sedimentary surface, and ends, typically with an environmental change that leads to burial or removal of the sediment supporting the soil (ibid.). However, this endpoint is naturally unclear, often being attributable to cultural rather than natural interference, in which case interpretation becomes increasingly difficult.

Where human agents have played no role in deposition or disturbance, true soils are formed, produced by natural formation processes of physical and chemical weathering on the parent material (Whittlesey *et al* 1982:28). When human activity becomes a disturbance, these soils are behaviourally altered (ibid:29), adding to the biological and chemical processes already at work. The result is a mosaic of soils with a range of characteristics.

The most highly developed soil on central European loess is Chernozem, its name having been derived from the Russian term for black earth (Cornwall 1958:95). Rich in nutrients, Chernozem is the soil of the finest wheat-lands of Europe (ibid:96). Also beneficial for cultivation, brown earths are also loess-based, derived from Chernozem in temperate deciduous and mixed deciduous / coniferous forest zones (ibid:103), with its colour lightening from biological activity. Loess-derived soils range from alkaline to acidic, with the latter characteristic applicable to most central European soils (p.c., J. Chapman). Therefore, botanical remains and carbonaceous organic matter, i.e., bone, are often few in number, and sometimes rarely preserved (Modderman 1998:85).

Generally, soils are identified and distinguished based on their profiles, and are done so on the basis of three distinct horizontal zones or horizons (Schiffer 1987:201). The A horizon is the uppermost zone, where plants contribute decaying organic matter and where there is a great deal of microbiological and chemical activity; this horizon is generally dark because of a high organic content. The soil is often damp, and, regardless of its acidic or alkaline character, the reactive compounds found within are conducive to many deterioration processes (Greathouse *et al.* 1954:109). The B horizon is next, composed of the smaller particles and chemicals moved downward from the A horizon by the percolation of water. It is likely to be lighter in colour, more compact, and less organic than the A horizon. The C horizon is the zone of parent sediment that has been little altered by those chemical and biological processes active on and near the surface (Schiffer 1987:201).

Variations of these horizons in soil compositions have been characteristics affecting the typology and classification of soils themselves. The increased presence of organic material, i.e., a thicker A horizon, as well, will contribute to the state of archaeological sites upon excavation. Depending on the time of abandonment, sites situated on highly acidic soils, soils with high salt contents, and/or soils that are welcome homes to small fauna, can be highly eroded and its features highly disturbed. An exception to the rule is Balatonszárszó, where the forest cover had actually preserved the Neolithic features beneath (p.c., K. Orossz).

Studying these soils in thin section has had an increasing role in relaying the stratigraphic questions of time. When sediments have been transformed by only one agent, the analysis is generally easy. However, as is more often the case, when a number of post-depositional processes occur, features can often be blurred and juxtaposed, and the effects of earlier post-depositional processes can often be erased (Courty *et al* 1990:139). One of the principal aims then, of soil micromophology, is 'to recognise, isolate and interpret all the post-depositional features recorded in a thin section and to organise them chronologically' (ibid.). Such studies, when combined with archaeological data, can help estimate the rate of natural processes, possibly assessing whether depositions occurred rapidly, i.e., over the course of a few years, or slowly, i.e., over 100 years (ibid.).

Natural Processes

Archaeological features, therefore, are not in the state in which they were left upon abandonment. They will have been subject to a number of processes that contributed to erosion of its defining edges, i.e., pit walls, and to redistribution of the soils and artefacts that are buried within. Understanding these processes is pertinent to interpretation.

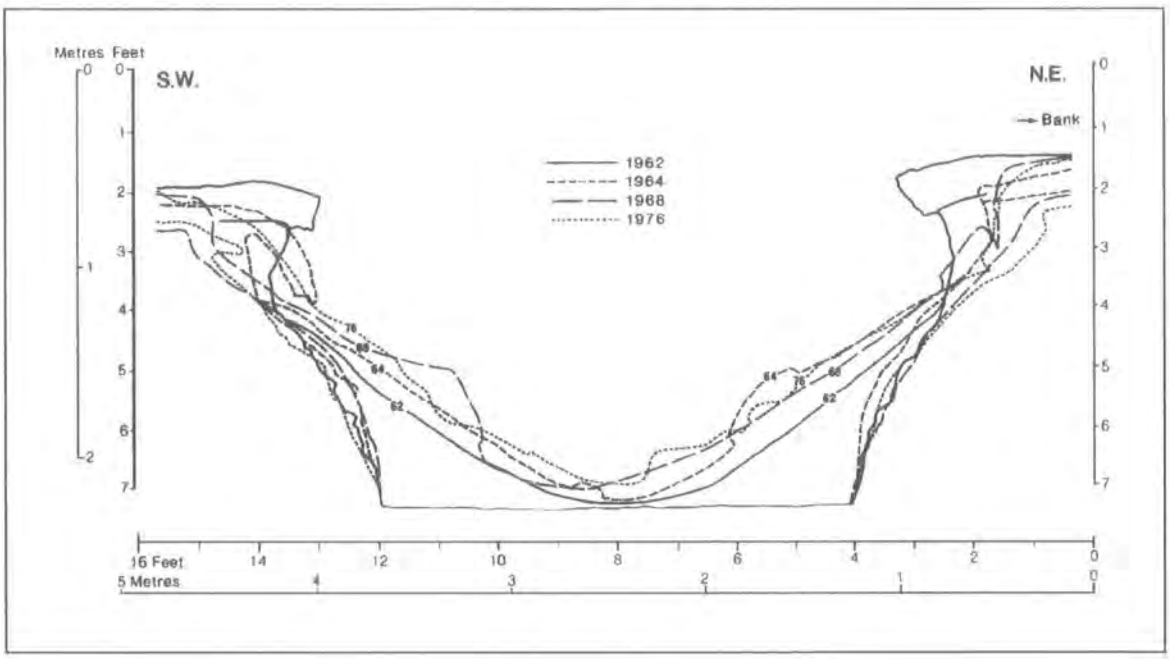
Pit erosion will mostly be affected by its immediate environment. One inherent factor is the topography of the site itself. Sites situated on valley bottoms and footslopes are frequently well preserved, whereas sites on hilltops and upslopes can be severely eroded, eroding archaeological features in the process (Boardman and Bell 1992:5). Weather will also play a role, succumbing archaeological features to the forces of wind and rain.

Weathering is a critical factor if pits are left open to fill naturally, as the sides will accumulate and collapse into the depths of the pit. Edges of such features as they are found in excavation usually do not correspond to the original shape (Jewell and Dimbleby 1966:291). Though the sides are not directly attacked by wind and rain, the overhang and the partly unsupported soil at the edge of the mouth are susceptible to damage and falling away (Limbrey 1975:305). Figure 6, a section of the ditch at Overton Down, shows how eight years of weathering affected the original shape. After 32 years, this profile has become noticeably assymetrical, with greater deterioration resulting from the probably greater susceptibility of one side to frost weathering (Bell 1996:70). These results are applicable to pits, and may occur more rapidly because of the smaller ratio of volume to sides (Limbrey 1975:304).

A pit exposed on the surface for some time will be badly eroded, whereas a pit that is buried deeply will be well protected against most agents (Schiffer

1987:220). Experimental work has shown that shapes of pits will deteriorate and change over time, with greater variability at the top since it is affected more directly by variations in ground temperature and rainfall (Reynolds 1974:126). Where erosion does occur, it is often due to agents of deterioration, and is generally in the uppermost part of the pit. In extreme cases where a site is highly eroded, it is quite probable that these upper layers were lost in the process. Even if pits were culturally filled to the surface, contents settle and expose the area to processes of erosion and attrition. Pits that fill slowly through alternating episodes of cultural and noncultural deposition will probably undergo considerable deterioration (Schiffer 1987:220), having repeated surfaces exposed to natural agency.

Figure 6. Ditch sections at Overton Down, superimposed after 2, 4, 8, and 16 years.
(From Crabtree 1971:Figure 1)



While weather and erosion are inherent factors in site survival, of great concern to studies of stratigraphy, and to archaeologists in general, are those processes which mix the soil; that is, processes of pedoturbation (Buol *et al.* 1997:133). Depending on time and the levels at which inactivity take place, detrimental processes can, theoretically, occur at any level. Certain processes are more common in some regions than in others, while others may be only local in their occurrence (Wood and Johnson 1978:317). The main processes that would affect the region under study are listed in Table 2; a more in-depth discussion can be found in Wood and Johnson (1978), Schiffer (1987), Holliday (1992) and other studies relating soils to archaeology.

Table 2. Pedoturbation processes

Process	*Defining cause*	*Effects on archaeology*
Faunalturbation	Animals (burrowing)	▪ Decay of organic matter ▪ Vertical movement of sediment ▪ Krotovinas (filled-in burrows) ▪ Artefact displacement
Floralturbation	Plants (root growth, treefall)	▪ Root casts ▪ Site obscurement ▪ Artefact movement
Cryoturbation	Freezing and thawing	▪ Artefact movement, usually upward ▪ 'Contortion, deformation, and displacement of soil and sediments' (Wood and Johnson 1978:341) ▪ Patterned ground
Graviturbation	Mass wasting (solifluction, creep)	▪ Downward slope movement ▪ Artefact movement
Argilliturbation	Shrinking and swelling of clays	▪ Artefact movement

(from Buol *et al.* 1997:133, Schiffer 1987:207-17)

- *Faunalturbation*

Because of their high nutrient content, archaeological soils and sediments are an attractive setting for biological activity (Courty *et al* 1990:140). This is especially the case in pits, which, because the soil is often softer, warmer, and deeper than average, have become preferential hosts to such activity (p.c., J. Chapman). There are a host of animals that spend the majority of their lives in the soil, turning and displacing sediments and disturbing the archaeological record. Subsurface foragers are dependent on underground sources such as roots and other burrowing animals for their nutrition. They tunnel for food incessantly, decaying organic matter in the process, and have exhibited disturbance extending from the surface to a depth of more than 40 cm (Schiffer 1987:207-208). The danger of their presence is such that soil could become widely diffused in deposits originally laid down, and, upon excavation, its subsequent appearance and composition can be mistaken as indicative of its original state (Jewell and Dimbleby 1966:340).

Surface foragers, such as rodents and rabbits, burrow to depths ranging from about 17 centimetres to almost a metre (Szuter 1984:153), leaving behind filled-in features otherwise known as krotovina. Because surface foragers do not completely churn the deposit, these features are filled by surface materials and adjacent parts of the deposit, introduced by wind, water, and other depositional processes. Archaeologists can often mistake such features as anthropogenic, especially when undertaking stratigraphic excavation of small features such as postholes.

The effects of smaller fauna are actually more devastating to archaeological features. Earthworms have been concluded to move great amounts of soil, penetrating to a depth of six feet and more (Darwin 1898:111). They colonize soils or sediments, producing voids and cavities, and bringing vast quantities of soil to the surface. When vertical movements are intense, faunal action can result in complete homogenization and destruction of original soil or sedimentary fabrics (Courty *et al* 1990:142). At Easton Down, biological activity had finely integrated the different soil elements, much of it attributed to earthworms as well as enchytraeids, slugs, and snails (Macphail 1993:219). Furthermore, upon excavation, smaller artefacts can be mistaken as *in situ*, but movements through the soil by any of these animals, be it earthworms, ants, rabbits, or foxes, will cause movement and displacement of the artefacts they may inadvertently transport.

- *Floralturbation*

Floralturbation will also displace artefacts. A fallen tree, for example, may bring to the surface materials that adhered to its roots. Roots will also apply great pressure, and have been known to crack modern sidewalks and move buried artefacts (Schiffer 1987:212). If a root decays in place after the death of a tree, it will leave a krotovina-like feature known as a root cast (Schiffer 1987:210); these can appear 'pit-like' but are, in fact, due strictly to natural processes. The process of decay will create a network of voids, pushing away soil material and creating mechanical disturbances such as compaction (Courty *et al* 1990:144). While these main disturbances are similar to animal burrowing, the effects are gradual, owing to slow root growth, and are limited mostly to soils and sediments very close to the root (ibid.).

- *Cryoturbation*

Cryoturbation refers to a range of disturbance processes caused by the alternate actions of freezing and thawing (Schiffer 1987:213). Its main effects are frost heave and thrust, involutions, and patterned ground, displacing artefacts and soils and sediments, and sometimes fooling the inexperienced archaeologist. Artefacts subject to this effect suffer vertical movement upward, at a varying rate of movement dependent on many factors, including soil texture, soil moisture, rate of freezing, shape and orientation of the artefact, and its thermal conductivity in relation to its surroundings (Wood and Johnson 1978:339-341). Frost heave can occur rapidly, with appreciable effects with an increasing number of cycles, not only on artefacts but on soils and sediments as well. Stones can also be displaced through frost heave such that regular geometric patterns can be seen on the surface, often mimicking cultural features (Schiffer 1987:215).

- *Graviturbation*

Graviturbation includes processes that create downslope movement, varying from quick-acting processes, such as landslides and rockfalls, to slow-acting processes such as solifluction and soil creep that disturb sites over long periods of time. Solifluction, 'the slow downslope flowing of water-saturated soil and regolith' (Wood and Johnson 1978:346), can occur in all environments and can wreak havoc on archaeological deposits. There are very many settlement sites where a layer several decimetres thick has disappeared by solifluction, making the chance of finding traces of shallow pits, or upper layers of pits, quite slim in areas of high precipitation and/or repeated flooding (Schiffer 1987:149). This fact is highly significant on Bandkeramik sites, as the majority of settlements were situated on loess. Loess is easily displaced by water, and only a slight gradient is needed for the loess to wash off, i.e., a gradient of three to five degrees, provided there is no dense cover of vegetation (Modderman 1988:82). Of significant note is that, on gradients greater than five degrees, deposits can show hints of stratification, due to the higher ratio of fluid to sediment (Courty *et al* 1990:90).

Soil creep, downslope movements not caused by frost action or other known processes (Wood and Johnson 1978:349), can cause mass movements, albeit slow and imperceptible, entailing downslope movement of materials under the influence of gravity (Chorley *et al* 1984:238). The effects of soil creep have often been ascribed to other natural processes, such as freeze-thaw and swelling (Courty *et al* 1990:90), but these are often disruptive effects of relatively minor amounts of water and ice (Chorley *et al* 1984:238-9). As well, faunal activity, such as that of moles at Overton Down, could account for substantial soil movement that is seemingly ascribed to soil creep (Jewell and Dimbleby 1966:340).

- *Argilliturbation*

This process is defined as the mixing of materials by the shrinking and swelling of expansible clays as they wet and dry in the water exchange cycles within the soil (Buol *et al.* 1997:133). In dry seasons, the clay shrinks, forming large vertical cracks, whereas in wet seasons, the clays absorb water and expand, closing the cracks. Artefacts can fall into the cracks and be trapped upon closure, and the soil pressures resulting from these movements create upward movement of larger particles (Schiffer 1987:216). Furthermore, these cracks become susceptible to currents of water, mixing the soil and further trapping and displacing artefacts. If we were to consider a pit as a large crack open to the surface, we can expect that repeated flooding and rain would allow the seeping of water into its fill, such that materials from the surface would be displaced into the contexts of the pit.

The above processes are not an exhaustive list. For example, additional processes are identified in the literature (Hole 1960, Buol *et al* 1997, Courty *et al* 1990, Schiffer 1987) but are not necessarily applicable to the investigation at hand. Mother Nature also has significant effects on artefacts themselves, dictating rates of survival and, therefore, the quantity and quality of material that enters the archaeological record. Excavations show that sherds found in deeper contexts are generally in better condition than those in upper layers, leading to statements such that, 'the LBK was pre-eminently a pit-digging culture, and therefore relatively much has been preserved' (Modderman 1988:88). However, as this study was unable to take into account the exact positions of the finds, erosion processes on the artefacts themselves must be taken into account, regardless of level.

Erosion

In a study of densities of surface ceramics, Bintliff and Snodgrass (1988) found that, in a comparison of intensive systematic surveys of seven regions located on a southeast-northwest transect from Oman to Essex, England, sherd densities declined from 3000 per 100 m^2 in medieval Oman to 0.7 per 100 m^2 (Bintliff and Snodgrass 1988:347, Figure 2). They identified differential soil erosion and differential soil levigation as two geographical reasons for this result (ibid:347). For purposes of this study, much of the humus layers were removed by means of an excavator (JCB), so much of the soil and artefact subject to soil levigation would have been removed. Artefacts buried deeper, however, would have been affected by the former reason.

Chapman (2000a) suggests that deliberate, structured deposition, leads to the incorporation of large quantities in contexts favouring excellent preservation (Chapman 2000a:61). That is, those materials that were deposited in pits were done so deliberately, therefore allowing a higher probability of preservation for those materials in comparison to others discarded on or near the surface. Hill (1995) agreed, stating the assumption that there is little deterioration of pottery after deposition (Hill 1995:20). It is reasonable to assume that artefacts, once buried, are less exposed to elements of erosion and deterioration than those left on the surface and therefore have a higher rate of survival and preservation. However, once an object is buried, it will undergo modifications in an attempt to establish a stable relationship with its new environment (the soil), which is a different microclimate from its previous surroundings (Dowman 1970:4). Ground-water saturation of pottery can result in the leaching of particular elements such as sodium, potassium, magnesium, and calcium (Freeth 1967).

Furthermore, because ceramics are a porous medium, they will be affected by the many chemical agents active in most depositional environments (Schiffer 1987:161). Carbonates in pottery, such as limestone or shell temper, are especially vulnerable to acid attack, often leading to a highly porous appearance, as the temper may completely dissolve away (Dowman 1982:22). In a wet environment, the rates of ceramic loss and abrasion are even greater with wetting and drying cycles creating pressures within pores that contribute to ceramic disintegration (Skibo and Schiffer 1987:83-85).

There is much research that still needs to be done before definitive answers can be given as to the natural formation processes that affect archaeological material through the millennia. Because more than one process can be at work at any time or space, it is difficult to isolate the features and their direct effects, especially when combined with anthropogenic interference. It is this subject that we turn to next.

Cultural Processes

Archaeological deposits are defined as anthropogenic soils (Dincauze 2000:261). In other words, they are deposits in which signs of human activity, i.e., artefacts, are found. Objects found in archaeological deposits will have been originally deposited, at least in its vicinity, through discard, whether it is through loss, random disposal, or deliberate disposal. Throughout this present discussion, these objects will be referred to as refuse. (Although, as previously mentioned, all objects cannot be considered refuse, or 'rubbish', for danger of attaching modern interpretations, especially in cases where material is deliberately placed.) Schiffer (1987) identifies four categories or contexts in which refuse will be incorporated into a deposit, summarized in Table 3.

Table 3. Categories of Deposition

Context	*Definition*
Primary refuse	Artifacts that are discarded at their locations of use
Secondary refuse	Artefacts that are redeposited in a different place from where it is used
De facto	Artefacts, although still usable, that are left behind upon abandonment of settlement or activity area
Provisional	Refuse, having a potential re-use value, is stored

(From Schiffer 1987)

These categories imply a cycle of waste. Primary refuse will be found in activity areas that are used repeatedly. Large quantities of such are highly uncommon, as accumulation would eventually interfere with the activity area itself; an interference that will necessitate clean-up or maintenance. These objects will be removed and deposited elsewhere as secondary refuse, with objects having potential re-use value stored in a separate place (Schiffer 1987:59).

De facto refuse consists of 'the tools, facilities, structures, and other cultural materials that, although still usable (or reusable), are left behind when an activity area is abandoned (Schiffer 1977:24). This category is very large and is determined by a great number of factors, such as rate of abandonment, means of transport, and distance to next settlement, as well as artefact size, weight, and function (Schiffer 1987:90-91). The range of materials in this category alone is so wide that it can hardly be compared (Chapman 2000b:348).

Schiffer's categories are included in many studies that include formation processes, but other than a concentration of material that will signify an activity area and therefore primary refuse, distinction between the categories is difficult and unclear. In terms of Hill's provisional model (*Figure 7*), the majority of 'average' layer assemblages entered pit fills only after the second stage of discard or as background material, and therefore only exceptional assemblages will be primary or secondary refuse (Hill 1995:44). In this model, a number of stages are identified that an artefact can pass through before finally being deposited in a pit. It is stressed that, '*the vast majority of all material was never finally deposited/discarded in pits*' (Hill 1995:44, original italics).

Needham and Spence (1997) identify four broad and non-exclusive categories under which refuse-rich deposits, or middens, can fall. The first category is that of economic function, i.e., the midden was once a resource. This equates to Schiffer's provisional refuse, considered by Needham and Spence to be a stock-pile of broken artefacts for other uses. The second is one of production and processing, i.e., the midden consists of material created by a particular activity, equivalent to Shiffer's primary refuse. Third, is the function of site clean-up and maintenance, i.e., creating rubbish-free zones and route-ways. This category is the basis of the rubbish pit, consisting of items resulting from either preventative maintenance (away from intensively used spaces) or post hoc maintenance (the actual cleaning up of areas and the transport of refuse to special dumping areas) (Binford 1983:189). The last category discusses the midden as symbolic structure (Needham and Spence 1997:84) and is discussed elsewhere.

While the categorical debate surrounding refuse continues, there is general agreement that an object is created, used, and, somehow enters the archaeological record, if recovered, through discard. Discard can be accidental or intentional, and can occur at any place on a site. This is demonstrated by Needham and Spence (1997), where various modes of deposition can result in the burial or deposition of artefacts in almost every area of a settlement *(Figure 8)*. These modes are encompassed by two categories of cessation – accidental and deliberate (Needham 1993:166). Deliberate deposition encompasses a range of social factors and is discussed in Chapter III. Accidental deposition, however, has no social bearings, and can be otherwise termed as loss.

Figure 7. Hill's provisional model, describing the stages through which material may have passed before final deposition or incorporation into features. (From Hill 1995:43)

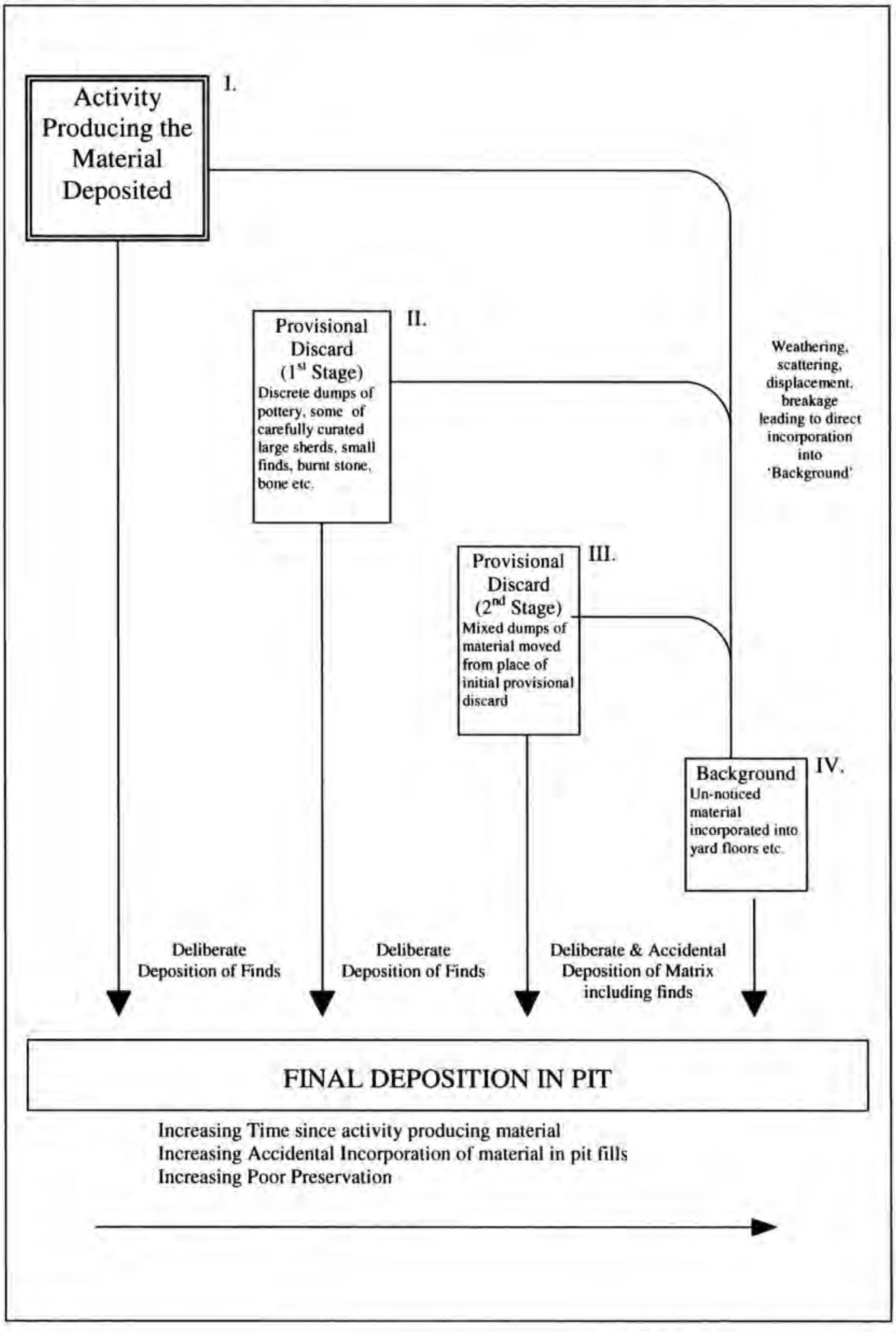
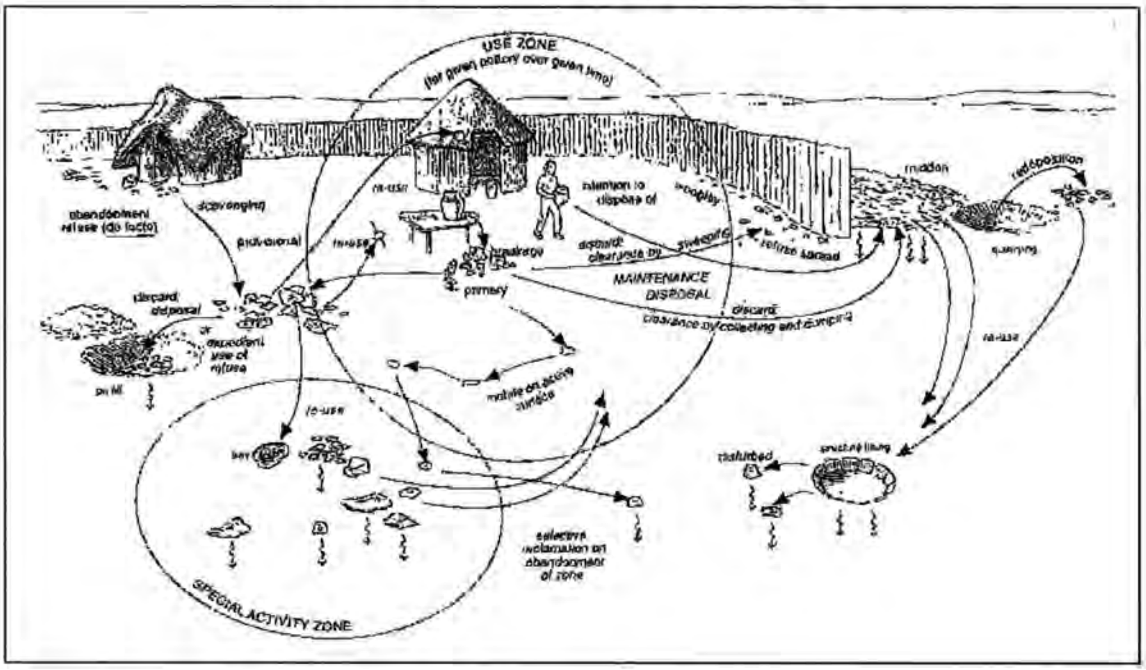


Figure 8. Various activity areas illustrating the diversity in refuse histories. (From Needham and Spence 1997:Fig. 2)



Loss

Loss is another depositional process that contributes to the archaeological record. It can be defined as the unexpected 'dissociation of an object from its user' (Fehon and Scholtz 1978:271); an unconscious abandonment. Instances of such are generally random and unpredictable, but studies in the aggregate have led archaeologists to identify determinants of loss, for example, an object's mass (an inverse relationship), its relative portability, and its permeability (Schiffer 1977:23). Permeability is important in the discussion of pits, as owing to their shape and size, if they are not filled to the surface, can be artifact 'traps' (ibid.).

Evidence of these 'traps' have been noted in ethnographic studies in Western Zambia (Hodder 1982a), where pits were often left open before filling up completely. This frequent and early abandonment left slight hollows in the ground, allowing elements of wind and weather to whirl in the small depressions. These activities resulted in deposits of a range of small fragments, representative of the smaller material lying around the settlement (Hodder 1982a:52). This is further evident upon excavation, where marked differences, i.e., a disproportionate amount of objects, can sometimes be seen in the material at the top of the pit in comparison to the rest of the pit (Schiffer 1977:23).

The recognition of disproportionate amounts, however, discusses only quantity, and, therefore, could be explained by processes that induce breakage of larger pieces into smaller ones. These same processes also contribute to notable changes in vertical distributions of artefacts.

Displacement

A variety of factors to explain vertical displacements have already been mentioned, such as faunal activity, tree roots, and other pedoturbation processes. According to Cahen and Moeyersons (1977:813-814), alternate wetting and drying of sediments by an oscillating water table or by percolating rainwater will cause vertical descent of artifacts into the soil. Biogenic activity, i.e., faunalturbation, and differential stresses in the soil column (due to consolidation) can also lead to vertical movement of artifacts both upward and downward (Villa 1982:283). Outside of these natural processes, however, are the effects of human activity.

A number of experimental studies have demonstrated the effects of trampling. At Fontbregoua Cave in southern France, preliminary analysis showed that sherds belonging to the same pot can have a vertical separation of up to 25-30 cm, a significant vertical dispersal that can be achieved even with a limited amount of trampling (Villa and Courtin 1983:271). Experimental observations by Stockton (1973) also suggest that trampled material will sort itself according to size, with the larger pieces occurring on or close to the surface while small objects may be downpressed to a depth of up to 20 cm (Stockton 1973:115). Furthermore, a systematic study of the reassembly of the worked stones of Gombe in Central Africa has shown that fitting artefacts were found at several depths from which different radiocarbon dates have been obtained, the vertical distance between joining pieces sometimes exceeding one metre (Cahen and Moeyersons 1977:813). These vertical movements, however, cannot be solely contributed to trampling, as it is quite possible that these sherds were not deposited at the same time but were deliberately fragmented and deposited in different layers (p.c., J. Chapman). Nevertheless, while some vertical movements can be considered deliberate actions, the effects of trampling can still be seen. Even if the effect is a number of centimetres, it is enough to be misconstrued between stratigraphic layers.

Of significant interest is an experiment conducted from 1985 to 1987 alongside an excavation to examine the effect of trampling, albeit on cobbled layers, and to see if the movement of small objects could change their stratigraphic relationships (Adkins and Perry 1989). An area was excavated and backfilled with soil and a cobbled layer containing a number of different artefacts, including plastic markers, coins, and flowerpot sherds. The area was subject to daily trampling, unbeknownst to the archaeologists and workers who acted as agents of this investigation, and was excavated after 17 months. We shall discuss the results of the ceramic portion of the experiment.

Of the 42 flowerpot sherds that were originally buried, 37 were recovered, 31 of which were recovered precisely during excavation. Of these, 12 were found not to have moved at all, however, 19 sherds had moved distances of between 20 and 80 mm. One sherd broke into two pieces, which moved 20 and 70 mm from their original positions. It was concluded that these displacements were insignificant, with a maximum distance of 80 mm (Adkins and Perry 1989:124), an inference which is arguable, especially in the displacement of pieces that were formally one.

As well, 15 sherds were deposited on the surface area, also with differential recovery rates. After erosion analysis, it was found that some of these later deposited sherds showed as much abrasion as sherds in the lowest layers, where movement and compaction might be expected to be less than at the surface. Erosion analyses revealed no particular pattern, other than that the sherds with the worst damage were in the upper layers. However, many sherds in the soil immediately below the stone layer suffered more damage than some sherds in the soil above. Therefore, while it can be assumed that sherd size decreases logarithmically through time until burial (Bradley and Fulford 1980:86), it cannot be assumed that abrasion increases with the same scale and in the same direction. Artefacts exposed on the surface for a longer period of time, i.e., had usage value even after breakage, can exhibit similar erosion patterns in comparison to objects that were buried immediately after breakage, depending on a number of natural disturbance processes. There were no other general conclusions to be drawn from the experiment, except that 'potsherds do not need to be buried for very long in such a situation for them to become quite badly abraded or crushed' (Adkins and Perry 1989:127).

These factors and experiments explain *real* vertical movement of artifacts cutting across visible, natural or cultural, stratigraphy. *Apparent* displacements can also be found, when archaeologists misunderstand contacts between adjacent levels (Villa 1982:285). Villa cites 'excessive subdivision of the deposits' as a factor in such misunderstandings, stating that the 'extreme subdivision of deposits into levels which in fact do not correspond to occupation units should be avoided *at the* *interpretive stage'* (ibid:286, original italics). However, Villa also states the obvious, that 'artifacts scattered through a considerable thickness of sediments may belong to just one occupation episode', and that 'vertical displacement can occur both *within* relatively homogenous layers and *across* seemingly different geologic layers.' These statements suggest to this author that extreme and excess subdivision of deposits is necessary, and that other terms, without negative connotations, should be used in the microidentification of stratigraphy. The term *in situ*, used to denote undisturbed artifacts, is probably more optimistic than realistic (Wood and Johnson 1978:317). With the aforementioned factors in mind, archaeologists should divide strata whenever factors of colour, texture, etc., identify themselves, so that not only are we making interpretations at every stage of excavation, we are also leaving room for subsequent analyses after excavation ceases.

Identifying Formation Processes

In areas that have cold winters and abundant precipitation, such as Central Europe, a two-stage process seems to characterize the natural infilling of pits (Limbrey 1975: 292-299; Schiffer 1987:218). The first stage is the most rapid and involves the deposition of 'primary fill', sediments derived from the weathering of the sides of the pit, which will reflect the makeup of the surrounding matrix at the top of the pit (Jewell and Dimbleby 1966). The second stage of infilling, that of 'secondary fill', primarily involves the accumulation of fine particles, often of eolian derivation. Build-up of secondary fill occurs under the conditions of slower processes, such as surface washing, soil creep, and wind deposition, as opposed to the primary fill, which is much the subject of weathering and mass collapse, and therefore is also subject to the development of vegetation cover. (Limbrey 1975:294)

Secondary fill, therefore, usually has a high organic content, and so becomes a favourable habitat for earthworms. (Schiffer 1987:218)

As previously mentioned, these events will have an impact on the resulting stratigraphy that is revealed upon excavation. Shallow pits may have their entire fill within the zone of worm mixing through the subsequent history of the site, so that the fill is identical to, and continuous with, the surface soil. On sloping ground, where the entire level has been reduced by ploughing and features truncated, fills formerly below the zone of worm mixing may come back into it and their stratification be destroyed. (Limbrey 1975:305)

The sequence of primary and secondary fill deposition, however, only account for natural processes. Furthermore, these processes will have their greatest effect after abandonment of not only the pit, but the settlement itself, such that human, cultural and social, activities no longer have a role. For those rare pits where slow natural processes are the cause of a small amount of finds, it is likely that these finds were naturally transported via in-washing from the surface (Stäuble 1997:23). These events are important to keep in mind when interpreting pit contents and stratigraphy, stressing that what is finally revealed upon excavation is not the original state in which it was abandoned.

How then must these facts bear into the analysis? In principle, formation processes are identifiable because they have regular and predictable physical shapes (Schiffer 1987:265). However, the variability in both natural and cultural processes means that the analysis is often difficult. In the case of Bandkeramik pits, Stäuble (1997) states that, while both natural and cultural processes exist, pits are subject only to anthropogenic processes or the combination of anthropogenic and natural processes, and these can occur either slowly or quickly.

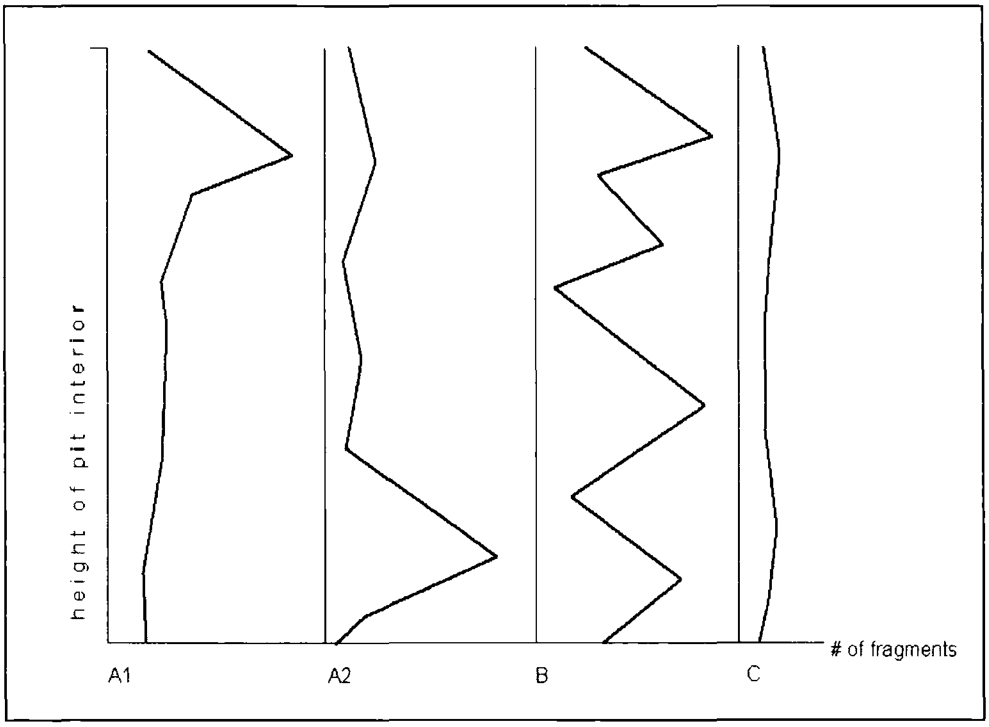
If pits were filled solely through anthropogenic means, it would have to have been a rapid process. That is, there would have to be a lack of sufficient time for natural processes to occur. This is the best-case scenario for preservation with regard to a pit's original form. Three possibilities have been identified for this case (Stäuble 1997:25). First, if the purpose of the pit was to extract loam or clay, i.e., for the increase of house soil, for disguising house walls, or for the production of raw material for ceramics, *and*, there was sufficient loose soil in the periphery of the pit, then the backfill of the pit will be homogenous, consisting of the surrounding humus. The second case is the possibility that there was not sufficient loose soil, and therefore all the materials available were used in order to smooth out the surface (fill the pit), including broken sherds, animal bones, etc. that were no longer of any use or value. Find preservation would be very good in this case. In the third scenario, pits are filled to the surface with material from an older waste zone, or dumping area from an old house. This material would be numerous and varied, with varying preservation rates depending on the find category and the amount of time in which the material was exposed to natural processes, including scavenging and gnawing of animals.

A combination of anthropogenic and natural backfilling processes can occur rapidly as well. However, this occurs quite rarely, with catastrophes such as earthquakes and volcanoes creating a natural cover over material that was culturally deposited. A slow combination of these processes, however, is the most frequent hypothesis for the filling of pits (Stäuble 1997:24). This scenario concerns occasions where pits do not need to be covered and filled to the surface, are continually backfilled periodically, and, therefore, become exposed to natural conditions between periods of activity, for example, clean-up and maintenance. These pits, which fulfilled no further function other than refuse disposal, will probably have been backfilled over many years. Preservation of material will be variable, and, therefore, fine archaeological units are necessary for precise analysis.

Buko (1987) makes similar propositions, looking at the quantities of ceramics found in pits, proposing four scenarios. The first is that a pit carried out a different function, i.e., a smoking-room for fish, prior to being used for refuse. The stratigraphy would show two levels, each representing their separate functions. The lower level will have a small number of ceramics, being used for smoking, and the higher level will have relatively more abundant materials, being used as a dump. The second scenario proposes the opposite, that the pit was initially used for refuse but later fulfilled a different function. The third case is where a pit was used solely as a rubbish pit, in which case the vertical section will show increasing and decreasing amounts of fragments, coinciding with periods of fill. (This would coincide with Stäuble's scenario of slow anthropogenic and cultural backfilling.) The fourth and final case is where the filling of a pit occurred only once, for the sole purpose of levelling the ground. One would expect in this scenario that the fragments are limited in number and their distribution is more or less similar. These scenarios can be represented diagrammatically in Figure 9.

These situations are not, of course, the only possible circumstances under which cultural processes attribute to the infilling of pits. However, they do encompass the scenarios in which artefacts and layers will be found, allowing the discernment between natural and cultural processes, and possibly the rates at which they would have occurred. Such inferences can only be made through micro-stratigraphic and -morphological investigations, as well as artefact analyses, that will aid in the distinction between the various biological, chemical, and anthropogenic disturbances that will have affected the features and artefacts buried within. Subsequent theories will encompass the information that contributed to the histories of the objects as their use-lives came to an end. Outside these scenarios, is the realm in which social factors come into play. This is the topic of Chapter III.

Figure 9. Buko's theories relating the filling of pits to its ceramic quantities
(From Buko 1987:Fig. 1)



Summary

There are many processes that affect the infilling of pits, both natural and cultural, that can contribute to misunderstandings of social practice upon archaeological discovery. Weathering, erosion, and biological activity can turn what was once stratified fill into a homogenous one, mixing soils and artefacts within pit walls, further contributing to the categorical debate surrounding refuse. Such factors are of utmost importance in an investigation of deliberate deposition. The combination of these natural processes with anthropogenic processes of loss, displacement, and deliberate discard are the subject of many theories surrounding the rate in which pits can be filled. It is difficult to determine the contribution of these processes; without the use of further scientific analyses, it is impossible to derive such conclusions using the present data. For purposes of this investigation, we must simply bear in mind the influence that these factors have on archaeological interpretation.

III. INTERPRETING STRUCTURED DEPOSITION

The aim of archaeology is to investigate and identify the social practices which led to the deposition of particular material residues in specific places (Chapman 2000a:348). Previous discussions on deposition were limited to loss and discard, where the variables contributing to an object's final resting place were mostly of an accidental nature. There are, of course, many incidences where deposition was not accidental, where there was deliberate intention both to discard specific materials, and to discard materials in a certain place. These examples are presented in no particular chronological order, but are mere exhibits to support certain sociological ideas that related to deliberate deposition. It is noted that varying life strategies and circumstances will contribute to differential attitudes to deposition, and that such chronological structure may be beneficial for future research. For this present study, however, these examples are stated simply to support the varied attitudes towards discard.

Discard is not necessarily a process that needs much premeditation, nor is it a simple or random event. In fact, the long accepted theory noting the existence of the rubbish pit is well acknowledged and received. There is no doubt that generations of prehistoric inhabitants created refuse and needed to discard it somewhere. However, discard can be dictated by ideological and symbolic factors. 'Attitudes to refuse vary from society to society, and from group to group within societies... There can be no simple functional links between refuse and types of site, lengths of occupation or forms of society, because attitudes and conceptions intervene' (Hodder 1982:24). Hippies and gypsies are classic examples of defying the traditional connotations surrounding rubbish and cleanliness; they use dirt as a symbol of rejection of the control and authority of dominant groups (ibid:25).

The deposition of refuse can often be highly patterned, revealing certain regularities that are seemingly symbolic. This is demonstrated in numerous cases throughout southeast Europe, which have formed the basis for theories of social practice leading to structured deposition. It must be recognized, however, that not all discard is rubbish. Furthermore, the symbolic behaviour that may be recognizable through the material culture is not necessarily ritual behaviour. Ritual has often been associated with religion, but, by definition, can encompass such basic activities as regular clean-up or maintenance. The ideologies surrounding deliberate deposition are highly variable, and create a range of values that are inherently applied to deposited material. The events leading to an object's final burial place are key, in personifying and objectifying material, and in transferring varying levels of value.

Patterns of deposition

It has been suggested in the previous chapter that patterns of deposition could be inferred from refuse pits, simply by quantifying the ceramics found within. This is demonstrated by Buko (1987), where, in scenarios A1 and A2, duplicate function would reveal two distinct layers, and in scenario B, increasing and decreasing amounts of fragments would be revealed in the stratigraphy, coinciding with periods of fill deposited over long periods of time. The former scenarios would reveal two definitive layers, representing two functions, whereas the latter would reveal numerous layers in a complex stratigraphy. If the deposition of this latter scenario was regular, the ensuing stratigraphy could seem patterned. As the material within is not of an 'exotic' nature, however, the feature is categorized as a rubbish pit.

There are a number of cases where the fillings of pits are highly regular and patterned such that they are too curious to be explained in an unstructured way by natural or random process. One example is pit 2 at the settlement site of the Neolithic Szakálhat group at Csanytelek-Újhalastó in Hungary (Hegedűs 1982-3:9,12). Within the pit, ceramic material was extremely rich, including several fragments of a vessel with human face representation, as well as loom weights, painted and incised pottery sherds, and fragments of a clay bench with an incised geometric design. The fill consisted of a dark brown sandy earth and bright red fragments of burnt wattle and daub, followed by sterile layers of yellow clay alternating with fill layers of brownish fragments of burnt wattle and daub and charcoal. Six such linings were excavated prior to reaching the floor of the pit, at a maximum depth of 1.75 metres.

A further example is pit 1 at the Körös settlement of Endrőd-Öregszőlők 119 (Endrőd 119). Located in the middle of another pit (pit 5), the fill of this deep and round but narrow pit consisted of successive repeated layers of 'sacrificial' deposits, each covered with a thin layer of yellow clayey soil (Makkay 1992:123). With regard to this alternating deposition, the question of natural processes, i.e., erosion, is disregarded. A number of sacrificial pits contain sterile material, and the fact that the top fill of pit 6 at Endrőd 119 is of almost purely yellow clay contradicts the theory, as such material could not have been directly available on the surface and must have been brought there artificially (Makkay 1992:124).

In other cases, dense layers of material, often burnt, such as pottery sherds or animal bones, contributed to a pit's patterned deposition. At the Körös site of Röszke-Ludvár in Hungary, a total of some 33,000 sherds were recovered from a single large pit, with some layers so dense so as to contain more pottery than soil

(Trogmayer 1968, *as cited in* Chapman 2001). A number of large pits at Lepenski Vir were also found to contain a total of some 200,000 sherds (Srejovic 1969). Furthermore, in what is posited to be a ceremonial pit at the Starçevo site of Lánycsók-Bácsfapuszty in western Hungary, pit 2/9 was both stratified and found to contain the largest number of pottery fragments on site – 1,658 sherds, from which it was possible to reconstruct seven pots (Kalicz 1990:34).

It is the discovery of these types of pits that have led archaeologists to propose theories of a social behaviour beyond that of daily activity. The underlying commonalities of these pits is the high degree of repetition and structure, as well as the use of material symbols, both defined by Richards and Thomas (1984) to be of critical importance to the archaeologist in researching the structured nature of ritual action (Richards and Thomas 1984:191). Chapman (2000a) notes that alternating deposition is suggestive of a broader pattern of *structured* deposition in which 'cultural renewal… may have been replaced by practices more closely related to the structures which were central to Neolithic households' (Chapman 2000a:73). This formalized repetitive behaviour, however, can involve a range of activities. While ritual activities incorporating deposition of material items may be expected to be even more structured in form and spatial pattern, domestic activity itself often involves a high degree of repetition and structure (Chapman 2001:145).

The question of ritual

Pits of this type have often been deemed 'sacrificial', defined to have a context that is unusual, and fill that is normally stratified (Colpe 1970:32). These sacrificial pits were peculiar, but not limited to the Neolithic in Europe (Banffy 1990/91:225), and have been hypothesized to fulfil a variety of functions relating to religion and sacrifice, the likely basis for ritual. This confusion between ritual and religious beliefs, arising from the fact that so much ritual action is connected with religion, is incorrect (Richards and Thomas 1984:189). As Hill (1995:98) points out, neither the content nor location of ritual need be clearly distinct from profane activities; it is perfectly possible to have ritual practices in daily activities as well.

Archaeologists have defined and redefined the materials and events surrounding ritual (Barrett 1991; Garwood *et al* 1991; Hodder 1982a; Levy 1982; Cunliffe 1992; Clarke 1997; Willis 1997; Brück 1999), stressing its regularity and patterned activity, as well as its formality and its characteristic symbolism (Firth 1951; Radcliff-Brown 1952; Leach 1964). There is no argument in the existence of ritual, especially in obvious circumstances such as those surrounding religion and sacrifice. Debates ensue, however, in the attempt to categorize wider groups of activities within the ritual sphere, understanding that all activities can be encompassed in such a general definition of the term (Brück 1999; Barrett 1996; Hill 1995; Richards and Thomas 1984). The confusion surrounding ritual has gone so far as to be described as an 'all-purpose explanation used where nothing else comes to mind' (Bahn 1989:62). The centre of the debate, I believe, lies in the range of events that can be classified as being regular, formal, or patterned, and the range of material that can be classified as symbolic and non-technological; many can be found in non-ritual contexts as well.

'Ritual' behaviour

One of the problems is the question of what constitutes an 'overtly ritual function' and how it is represented in the archaeological record (Richards and Thomas 1984:189). By definition, the disposal of refuse as well as maintenance and clean-up could all be posited to be ritual events. They are all regular events that fill the pattern of daily, weekly, or monthly maintenance, which, unbeknownst to the archaeologist, could well have been a formal rite in the attempt to keep the home free from dirt and odour. Indeed, repetition and routinization (whatever is done habitually) are the character of everyday activity (Giddens 1984:xxiii).

Hill (1995:98) notes that the distinction between ritual (exclusive from the everyday) and daily activities is the level of consciousness and awareness behind the actions performed. In the mundane regularities of daily activity, people are usually only tacitly aware of the skills and procedures involved, and are largely in the realm of *practical consciousness* – non-discursive, but not unconscious, knowledge of social institutions (Giddens 1979:24). This can be distinguished from *discursive consciousness*, that which can be brought to and held in consciousness (ibid:75), signifying a level of knowledge that is expressed on the level of discourse (ibid:5). In routinized social circumstances such as those actions which maintain the house and home, individuals are rarely able, nor do they feel the need to, respond to the inquires they make of one another in the course of social activity; they need not supply reasons for behaviour that conforms to convention (Giddens 1979:219). Therefore, behaviour that is ritual in the sense that is regular and patterned is not the same as ritual traditionally identified. The difference is in the emphasis on performance – ritual is usually odd and alerting, attracting attention because it is special and not mundane (Hodder 1982a:159).

The definition of 'odd', however, is a subjective one. Prehistoric features may be described as ritual because their function and use cannot be identified; no adequate explanation can be given and so the features are considered odd and of a ritual nature (Hodder 1982a:171). However, our lack of reasoning and compliance with the lack of evidence signifying a definitive function does not constitute features or behaviour as being odd (ibid:166). The oddness is one which is meaningful within a social context, its meaning and significance derived from, and central to, society (ibid:171-172), whose social construct archaeologists can only infer.

One type of ritual behaviour distinguishable from the mundane in the archaeological record is that of feasting. Feasting, on a large scale, is an activity which is generally thought of as renewing and reinforcing social relations and obligations (Richards and Thomas 1984:215). Through this sort of ritual activity, social unification is confirmed and restored, leaving behind an archaeological record replete with finds that exhibit clear-cut spatial patterning (ibid). A number of pits at Opovo show a distinctively patterned structure that is beyond the simple interpretation of rubbish (Russell 1994:428). The large amounts of bone found in the lower levels of general rubbish are roasted and carved, and above them are multiple layers of ash and one or more levels of *in situ* burning (ibid.). These burning layers were hypothesized to either reduce the volume or smell of refuse as the pits get full, or were part of a ritual of purification marking the end of their use (ibid:429). The latter is concurrent with the architectural remains, which indicate that the houses were burnt separately and deliberately (Tringham *et al.* 1992:382). It was likely that at least some of the feasting at Opovo occurred in the context of a ritual of house destruction (Russell 1994:429), possibly to eradicate pests, or, to mark symbolically the end of a domestic cycle with the death of the head of the household (Tringham *et al.* 1992:382).

The incorporation of burnt material or *in situ* firing of fill is a widespread practice in Neolithic and Copper Age pits (Chapman 2000a:70). Most curious is an example from the Starčevo site of Lánycsók in western Hungary (Kalicz 1990:33-34), where multiple layers of burning sealed levels of mixed finds, in one case being a sterile layer followed by soil discolouration before being capped by charcoal. This example exhibits episodes of burning, sealing the event by the use of fire. This ideology surrounding fire is perhaps similar to the deliberate burning found at Opovo.

At Csanytelek-Újhalastó, an extremely large amount of burnt wattle and daub fragments were found in pit 3, as well as a thick burnt layer found at the base, at a depth of 1.58 metres (Hegedűs 1982-3:12). Further examples are found at Divostin (Bogdanović 1988:44), where, in pit 19, a few lenses of scorched earth and fine broken stone were found in the centre of the pit near the bottom. Ash and charcoal were also found in pit 20 and pit 22, while a zone of scorched soil and broken stone were found at the southwest edge of pit 27.

Residues of burnt material, however, are not immediate indicators of ritual behaviour. It could be posited that pits with such evidence of burning, especially when including heat-cracked stones and charcoal, could be the remains of feasting; such pit-hearths are known in various parts of Europe (Gomez de Soto 1993:191). On the other hand, such remnants can simply indicate the use of a pit as a hearth or fireplace. Only detailed analysis of the feature, inclusive of the finds, will reveal a more definitive answer. Pit 51 at Füzesabony-Gubakút, for example, contains a thin burnt, black layer. There was no observable stratification and the fill was generally homogeneous (Domboróczki 2001:203). The main question of the chief archaeologist was whether this pit served as a fireplace, as was the initial interpretation, or if the refuse from a fire was thrown into the depths of the pit itself (p.c., L. Domboróczki). Further questions arise, however, in the fact that both an altar and an anthropomorphic idol, clearly symbolic materials, were found in direct vicinity of the burnt surface (*Figures 10 and 11*).

Figure 10. Plan of pit 51 at Füzesabony-Gubakút
(numbers represent depths in cm) (courtesy of L. Domboróczki)

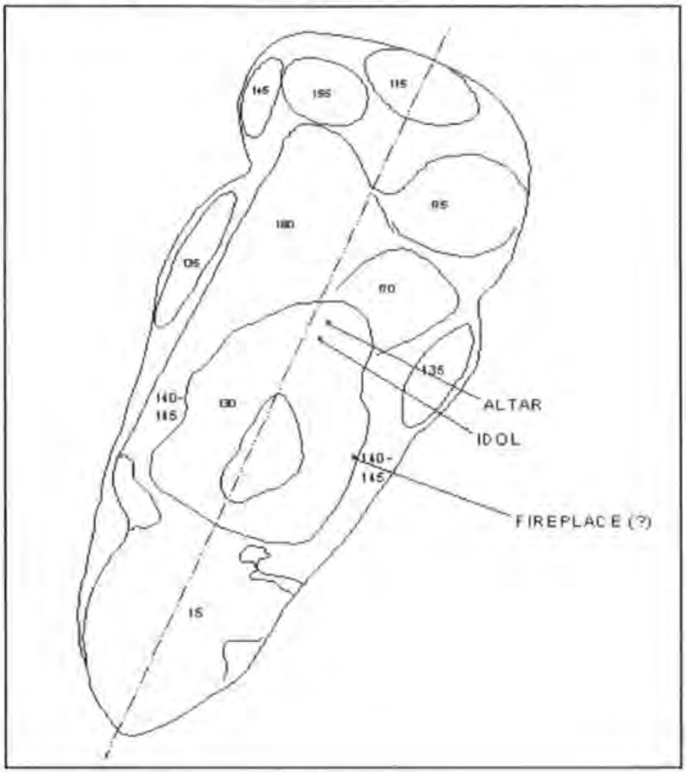
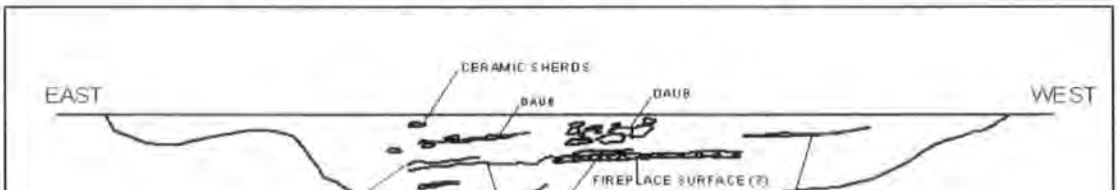


Figure 11. Vertical profile of pit 51 at Füzesabony-Gubakút.



Ritual behaviour can include a range of offertory and burial rites, signified not by the unusual features they leave behind, but by the special deposits that are left behind. Items of the mortuary realm are easily identified by the presence of inhumation burials. Outside of funerary practice, however, is a range of events likely to have occurred around the burial of special material. It is the task of the archaeologist to distinguish such contexts on a case by case basis, and infer whether or not the events that took place prior to burial were of a simple or symbolic function.

'Ritual' material

It is therefore not only in patterns of fill that archaeologists come to identify features of a ritual nature. Ritual is also often applied when the material is obviously symbolic or expressive (Renfrew 1985). Barrett (1996) argues that there are no such things as 'ritual objects', as ritual is made up of actions, not things, and such 'things' would not necessarily reflect the occurrence of ritual activity (Barrett 1996:396-7). However, there are too many notable cases where exotic or special goods signify an unusual event. These features are often the only means by which archaeologists can set a backdrop to the ritual realm. In cases where other indicators such as human burial are present with seemingly mundane material, the presence of the same mundane material in other contexts can lead to further clues about ritual in daily contexts.

Special deposits are most notable when found on pit bottoms, where great care was evidently taken by the relatively undamaged state of many materials. Such objects have been placed in a special location, perhaps as an offering (Schiffer 1987:80). Principal deposits so far identified include groups of intact or near complete ceramic vessels (Cunliffe 1992:75). Excavations of the Iron Age hillfort of Danebury, England (Cunliffe 1983), show special deposits on bottoms of storage pits, to which archaeologists have suggested propitiation beliefs as an explanation. 'The pit had penetrated the domain of the deities of the underworld and the seed corn was being placed in the preserve of those powers' (Cunliffe 1992:71). In such a context, it would seem appropriate to leave an offering once storage had ceased (ibid.).

Owing to the fact that complete and in-tact vessels are a rarity on archaeological sites, the discovery of such often contribute to further hypotheses of a ritual nature. At Endrőd 119, pit 8 contained a large vessel, only slightly dug into the sterile soil, accompanied by a four-legged cup found in an upside-down position and a couple of animal bones (Makkay 1992:123). At the same site, a large vessel was found by one of the northeastern post holes in house 2, pointing to the possibility that it could have been placed in order to aid in fixing the post itself (ibid). While this may also be a coincidence, the possibility is ever-present that the object could be of ritual significance. Many pits at Balatonszárszó also contained large, complete vessels, citing a curiosity which merits ritual interpretation (p.c., K. Orossz).

Special types of ceramics have also often been hailed as items of a ritual nature. These include, but are not limited to, the anthropomorphic figurines and vessels, clay altars and house models, as well as decorated vessels; their contexts not always deemed overtly ritual. Refuse pits have yielded well-burnt idols with painted, incised or burnished decoration, and features readily described as overtly ritual, also termed 'sanctuaries', have included primitive, sun-burnt clay figurines (Bánffy 1990/91:204). At Füzesabony-Gubakút, trenches revealed a number of pits and interesting material, including stone and bone tools, idol heads, altars, miniature vessels, and a huge quantity of potsherds (Domboróczki 2001:199). Pit 51, as mentioned, is a particular example. Pit 53 also contained altars, statuettes, figurine fragments, and painted pieces of pottery.

Such unusual and special deposits are often categorized as dedicatory caches, defined as an object or set of objects deposited ceremonially at the dedication of a construction site (Rathje and Schiffer 1982:114). For a deposit to be called a ritual cache, it must be a reasonably discrete concentration of artefacts, usually not found in secondary refuse deposit (Schiffer 1987:79). The discovery of complete and special artefacts often falls into this category.

At Platia Magula Zarkou in Greece, a house model was found buried in a pit, below the house floor, and in close proximity of the most sacred, intimate feature of the house – the hearth (Gallis 1985:24). The model included eight figurines representing three generations of a nuclear family and is posited to have been deposited at the time when the embodied young couple decided to build a house for its own use (ibid:22). The purpose of these offerings must have been to serve the well-being of the dwellers (Bánffy 1990/91:215). This pit has also been interpreted as a construction offering or foundation deposit; however, such offerings were normally placed in pits which builders had dug prior to the commencement of building operations, often being placed straight into the foundation pit itself (ibid). The particular pit bearing this house model was dug next to the fireplace – and this could only be done subsequently (ibid).

Foundation pits were common practice in the Iron Gates Mesolithic, the mature Neolithic, and the climax Copper Age, with the deposition of infants or children in small pits under houses or in the foundation trenches of houses (Chapman 2000a:66). In such burials, the deposits of seemingly regular material increases its significance when found in context with inhumations. A complex example is grave 1 at Traian, in Moldavia (Dumitrescu, H. 1957:99-102). At the base was a 3-4 cm layer of burnt earth and ash, onto which 28 pots were placed, all containing ashes, some with charcoal and burnt animal bones. At the south part of the pit, an almost complete skeleton of an 18-year-old was found, covered from chin to pelvis and at the feet with large sherds. The body and the pottery were then covered by redeposited earth and then sealed by an ash layer containing sherds from a single large vase. These deposits demonstrate the close links between burning, burial, and pit filling (Chapman 20001:69). The symbolic value given and radiated by the pottery is only evident in its funerary context. The facts surrounding its discovery and context inherently imply that regular and non-exotic goods can also represent high levels of symbolism.

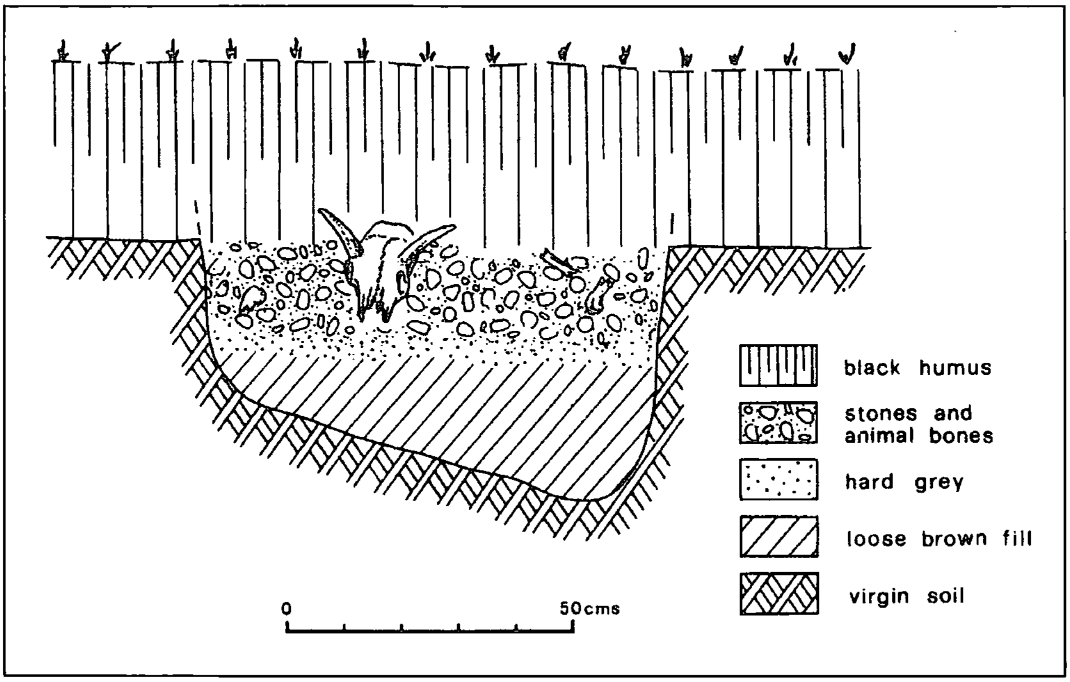
A further example is pit 8 at the Moldavian Criş site of Poieneşti, found directly under the floor of house 3, containing a complex deposit of mixed material (Mantu 1991:175-9). At the base was an anthropomorphic figurine, followed by a horned pendant, a pintadera (stamp seal), and obsidian and flint flakes at a slightly higher level. Above these, the skeleton of a young male, in a strongly contracted position, was buried, covered with sherds. The final vessel placed above the body was a carinated cup full of sherds and burnt daub. These sherds, found in separate context, would have carried a completely different meaning to the archaeologists upon discovery, and may also have been replete with symbolism throughout its use-life, even prior to deposition.

This inference exists not only with common ceramics, but extends to special deposits of stone, Spondylus, and decorated fineware, confirmed by its discoveries in numerous burials. Spondylus is well cited in a number of graves in the LBK and

AVK, albeit its quantities are not vast. Grave 54 from Kompolt-Kistér yielded two Spondylus beads (Vaday *et al* 1999:42-43), while at Füzesabony-Gubakút, in more than half of the burials, the dead were wearing strings of white stone or Spondylus beads (Domboróczki 2001:210). Three of the six Szakálhát graves at Csanytelek-Újhalastó also yielded finds: a small clay cup, a necklace, and a Spondylus breast pendant and necklace, all from separate graves (Hegedűs 1982-3:21). Despite its rarity, Spondylus seems to indicate high status individuals (Gronenborn 1999:175), representative of the small percentage of the dead that were treated in such a way to have left an archaeological trace (Nieszery 1995:15-18).

Animals also played a significant role. In southeast Europe, since the times of the Körös, the bull cult was common, often represented by the practice of applying animal (mostly bull or ram) heads in particular places, usually on gables (Bánffy 1990/1:225). In pit 13 at Káloz-Nagyhörcsök, a site of the Zseliz group of the LBK, archaeologists distinguished two strata (*Figure 12*) (Makkay 1983:161). Above the lower layer of loose brown fill was an ashy soil, mixed with a variety of unburnt animal bones and stones, embedded into a hard grey earth. On top of this layer, a goat skull was found. As well, in the upper layer of a pit near the houses at the Neolithic site of Bicske, excavators discovered two complete ox skulls, lacking only the mandible, above which were two polished stone axes (Makkay et.al 1996:34). This feature has been interpreted as a sacrificial pit 'probably connected with some foundation rituals and the cult of the bull' (ibid).

Figure 12. Vertical profile of pit 13 at Káloz-Nagyhörcsök
(From Makkay 1983:161)



There are also unusual cases where animal skeletons were found, unexplainable by natural means. Pit 3 at Endrőd 119 contained the bones from the cranial half of a sheep skeleton, and in pit 1, the cranial half of a dog's skeleton was found at the bottom of the pit in an *in situ* position (Makkay 1992:123). Above this skeleton, among a mass of fish bone and burnt remains, was a clay lamp and a fragmented cup (ibid). At Herpály, in a deep, regular-shaped and isolated pit, the skeletons of eight dogs were found lying along the pit wall (Kalicz-Raczky 1984:135), perhaps evidence of the symbolic metaphor they may have been to their owners (Radovanović 1999).

Objectification

What then is the meaning or purpose behind the deposits of these distinct materials? It can be argued that much of the deposition described above can be contributed to accidental or random events, to post-depositional natural processes, or to activities of a functional nature. Refuse from feasts, for example, could have been treated differently simply because of the troublesome nature of the large amount of rubbish that is created (Russell 1994); visible patterns of discard of animal carcasses may be purely functional and/or casual (Maltby 1985:52,56). However, ethnographic studies have shown that refuse can carry symbolic value and therefore receive preferential treatment (Davenport 1986). Refuse from such a communal and significant event will have an inherently different and deeper history than regular domestic refuse. Indeed, artefacts constitute the only class of historical events that occurred in the past but survive into the present (Prown 1993:2-3); thereby being the principal means of objectifying that sense of the past which it represents (Miller 1987:124).

In many cases of deposition, not only was the space significant, but the actual object was highly important in the construction of social identity, relating one to the past, to the present, or to the world beyond. Humans often identify with their material possessions; their identity is connected to the material world in which they live (Chapman 1996:206). Frequently, this identity signifies a connection with the past, or a certain place, for reason of a history that is shared and experienced both by the object and the owner themselves. By objectifying the past, claims of self-development and self-created change are validated (Miller 1987:125). Such claims give value and significance to even the most mundane of objects, inherently categorizing all types of material according to their objectified history.

Some objects are highly valued for their function, such as vessels or containers which carry implications of plenty, but its symbolic value need not be reflected in its practical use or economic value (Clarke 1997:75). An object does not even need to be complete in order to be symbolic. The graves at Traian and Poienești are but two examples confirming this notion. In fact, the destruction of items prior to their deposition is a well-known feature of Bronze Age and Iron Age activity throughout Britain (Clarke 1997:75), and is also well-noted in prehistoric southeast Europe (Chapman 2000c).

Causewayed enclosures in the middle Neolithic are replete with cases of structured deposits, with finds of complete pots with elaborate decoration and vessels which had intentionally been smashed (*see* Anderson 1980, Madsen 1988; cf. Bradley 1990:61). Furthermore, in addition to grave 1 at Traian, there are four more graves and two pits from the same site where broken sherds are associated with human burials, disarticulated human bones and animal bones (Chapman 2000c:49). Chapman sites two more examples outside the mortuary realm where similar deposition of sherds took place. These are the Lengyel pit at Bakonyszücs (Regentye 1994) and the Ludanice pit at Szigetszentmiklós-Vismutelep (Virag 1992). Further examples include special pits at the Parța tell, both pits full of sherds, mostly one from each vessel (Germann and Resch 1981; Resch 1991). In one particular grave in the AVK region, 64 sherds were refitted into one single vessel, standing at a height of only 10-15 cm (p.c., L. Domboróczki). Such sherds, intimately associated with burials, 'presence' the persons who deposited them in the domain of the newly-dead and their ancestors, extending this reference to other vessels made in the same tradition within the settlement (Chapman 2000a:73).

These examples exhibit the incorporation of incomplete objects into culturally significant contexts, where deliberate fragmentation and the accumulation of sets of objects contributed to cultural and social change. While breakage may be accidental, deposition is usually anything but accidental (Chapman 1996:211). Hill (1995) concludes, simply by the relatively small amount of artefacts recovered on sites when compared to the length of time sites were in occupation (Hill 1995:1), that much of the material finally deposited / discarded in pits, particularly the non-average layer assemblages, were not accidental incorporations' (ibid:44). Indeed, the accumulation of waste is a random and unstructured event, however, the decision to clear up this material and move it elsewhere is one that transforms such refuse into a culturally significant deposit; this material will be deposited according to certain depositional constraints (Chapman 1996:211).

The categories of deposited material, therefore, are highly varied, and include a range of meaning that can be applied to the same object. Domestic wares discovered in context with human inhumation burials immediately signal elevated levels of symbolism and prestige, whereas similar sherds found in mixed and random contexts will be regarded with lesser value. However, the range of potentially symbolic objects means that we cannot easily identify social practices by analyzing the artefacts themselves, nor can we limit ritual behaviour to features that are overtly identifiable. The interpretation must be flexible enough to include the possibilities of a range of ritual behaviour, and a range of symbolic material stretching from the odd to the ordinary.

Identifying structured deposition

The importance of the material just presented is not to give new rise to the recent debates surrounding ritual, but to show that higher levels of social behaviour and impact were present in greater numbers than previously thought. That is, a rubbish pit is not just a rubbish pit, and grave goods are not necessarily the epitome of symbolic material. Seemingly special material can range from figurines to stone tools, from coarse wares to fine wares, and these materials can all be found within a range of contexts outside mortuary and spiritual realms. In taking a step back from the ritual debate, Hill (1995) notes that 'rather than consider whether these deposits were the result of ritual, it is easier to ask if this is 'structured deposition'' (Hill 1995:95). It is not out of indolence, however, that investigations into structured deposition should be done, but out of necessity, such that the possibilities of the wide range of materials that can be considered as significant to its original users are not discluded.

> 'What is significant is that when the material was deposited, it was done in a particular manner, obeying certain rules which were important to the actors involved' (Richards and Thomas 1984:215).

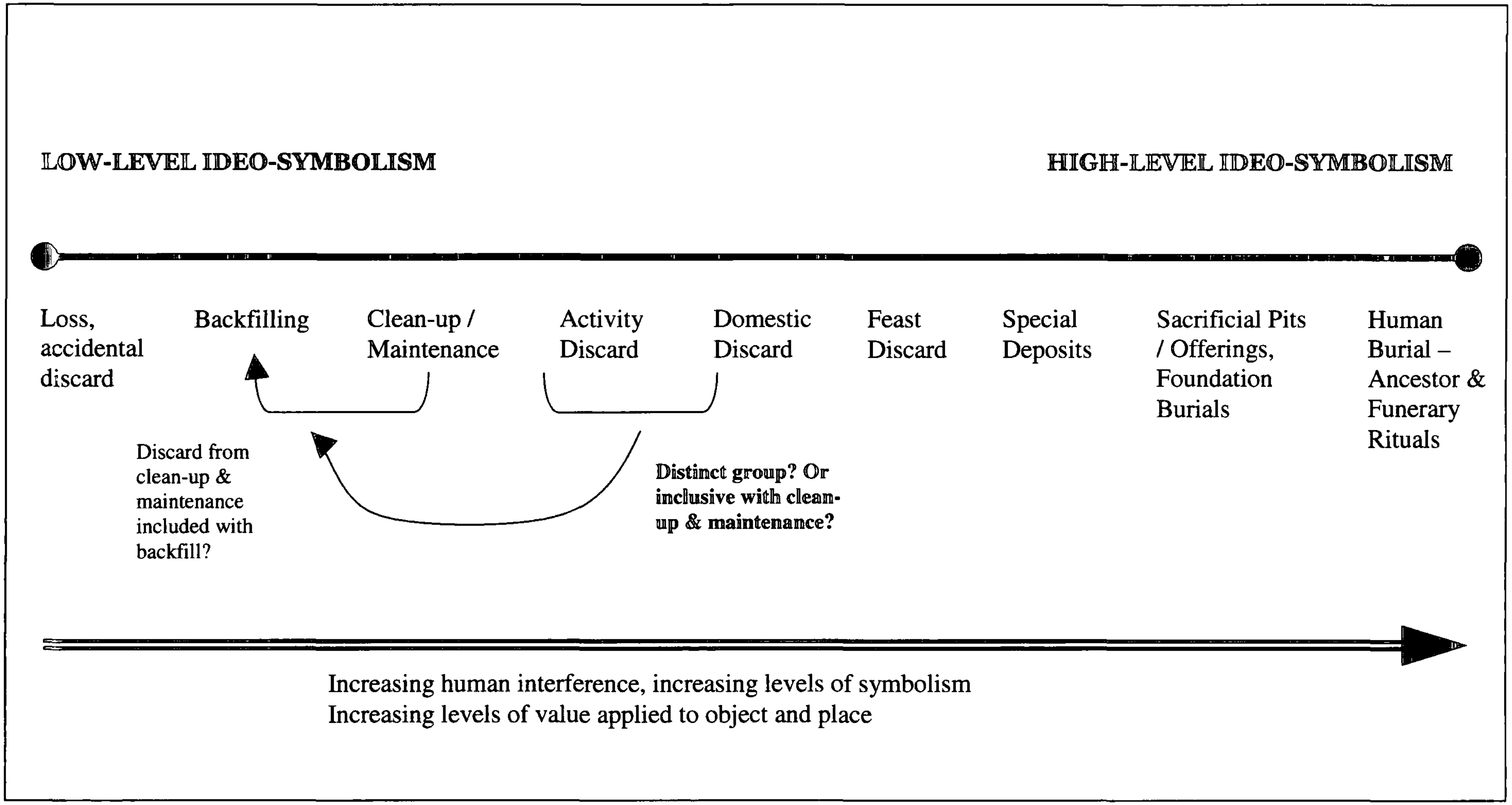
A provisional answer

There are, then, opposing ends of a scale of human interference in which attitudes and social practice play large roles in the discard and survival of material. Hence, archaeologists distinguish not between instances of ritual and non-ritual, but between those instances where the remains represent both low levels and high levels of symbolism and ideology. At one end of this scale is backfilling and refuse, with low levels of ideo-symbolic influence, and at the other is a range of social practices to which we can include sacrificial rites, cultic rituals, and the rituals surrounding human burial; at every step of the way are instances of structured deposition (*see Figure 13*).

At the lowest level of discard resulting from cultural processes are those that were accidental, i.e., loss or displacement, as discussed in the previous chapter. Stäuble (1997) and Buko (1987) provided theories on the next level, where pits were filled rapidly, possibly for the purpose of levelling the ground, once building materials, i.e., clay or loam, were extracted from the ground. For this purpose, the backfill could have consisted of the surrounding material which was no longer of any value, including excess amounts of soil or accumulated refuse.

Refuse can also be categorized as being the result of varying activities, which may inherently apply different levels of value and symbolism. Activity refuse, for example, in the case of butchering or slaughtering, could be held at a lower level. Halstead *et al* (1978) suggested that distinct proportions of meat bearing (skull and limb) bones in any assemblage reflected the different stages of carcass processing from butchery to consumption, recognizing three types of waste ranging from the more offensive slaughtery and butchery waste, to 'kitchen' waste resulting from food preparation, and finally to inoffensive 'table' waste arising from food consumption (Halstead *et al* 1978:123). Pottery, although less easy to distinguish for reasons of its ease of deposition and its multiple uses even after breakage, can be categorized by basis of coarse ware or fine ware, where the latter is notably related to central domestic activities and associated with activities of eating and drinking (ibid:124).

Figure 13. Model showing cultural processes and their varying levels of symbols and value resulting from ideological influences



Alternately, refuse from toolmaking could have been held in high regard as a result of the effort that was exerted in creating both the resulting product and its residue. Makers embody qualities of skill and resourcefulness in the objects that they create; these objects take on part of the qualities of their makers and become valuable items (Chapman 2001:149). Domestic activities, being closely connected with the household, will create refuse held at a higher value. The refuse created from these activities will be put in distinctly separate places.

Refuse from feasts, however, would be the result of significant community activity, and therefore would be regarded with an even greater value than domestic or activity refuse. Ethnographic studies in the Eastern Solomon Islands reveal that such communal items are treated with deference after being utilized in a social or religious ritual (Davenport 1986:107). Embellished objects, created with the use of exceptional talent above the level of mere human talent, are confined to a limited set for use only in ritualised or sacred contexts. Once used in the social or religious realm, there is no desacralizing them. Dispensing such material, including leftover food, trash, and garbage from sacred meals, is to isolate them and allow them to disintegrate.

Where special and exotic deposits exist, such as figurines and decorated or complete vessels, and the context is seemingly unstructured, we can presume a higher level of human interference. In these cases, special materials were selected to be deposited in particular locations. At a slightly higher level are scenarios where more care and purpose was taken in the deposition of not just the artefacts themselves, but also the material with which they were to be buried. It can be argued that formation processes may have disturbed what was once structured deposition, homogenizing the soil into an apparently single layer; however, such processes are mainly confined to upper levels of pits, where exposure would have been greater and more susceptible to biological activity.

At the highest level of this scale are the events surrounding human burial. Human life has always carried great value, and, therefore, great thought and care was taken in the burial of the deceased, as well as the material deposited with them. Even animal burials carry high significance – the most symbolic species are biased toward the deeper pits (S. Clarke 1997:76). The corpse, and the way it was treated, presents a powerful symbolic medium by which the transition from life to death can be represented, a process during which the living reconsider their own legitimate claims of social position and inheritance (Barrett 1996:396). It was important, therefore, that treatment of the deceased was done with meticulous thought and care, so as to maximize social position for both the dead and the living.

Structured deposition

All of these activities are symbolically structured, as are all levels of human performance; therefore, any human activity is open to symbolic analysis and interpretation (Hill 1995:96). By similar reasoning, the residue from human activity will be structured in the same way that the events themselves were structured. The deep-rooted cultural norms that form the basis for daily behaviour will be evident in structured deposition, even if such patterning will be quickly broken down as material is subjected to a range of natural processes (ibid).

At East Chisenbury (McOmish 1996), initial analyses of the stratigraphic sequence revealed that much of the excavated deposit occurred as a series of associated events since a number of conjoining sherds of pottery were from divergent layers. These sherds are large, in an unabraded condition, and have not been subjected to the normal processes of decay and damage. 'Taken together, these groups of pottery display characteristics which are entirely consistent with structured deposition' (McOmish 1996:70).

In Hill's analysis of pit fills in Iron Age Wessex, a cluster of associations were found that demonstrate 'special' deposition, created as people chose to place certain types of material together with others, according to a sequence (Hill 1995:73-74). Analysis of individual pits reveal a clear ordering in the sequence of deposition, where animal bone groups had to be placed early in the sequence, whereas human remains were placed much later, and often only after several 'exceptional' deposits of bone, pottery, and other small finds (ibid). The contextual analysis further demonstrated patterning between groups of finds that were traditionally studied in isolation, revealing intentional deposition in a structured manner.

Analysis of Neolithic pits at Cranborne Chase also suggest a considerable degree of selection in pit deposition, with the deliberate inclusion of cattle and pig skulls, deer antlers, decorated potsherds and other artefacts in purposeful arrangements (Legge 1991:67-68). In the west ditch at the Dorset Cursus excavation, primary and secondary fill seems *in situ*, with evidence for deposition in a controlled manner (Brown 1991:103). There was some patterning in the distribution of different human bones, with layer 3 containing six fragments of limb and vertebrae accompanied by only one tooth, and layer 2 including associations of rows of cattle and pig teeth with distinctive pottery and a polished flint knife (Cleal *et al* 1991:72-3). It was noted that these deposits were not a result of differential survival, since extremely friable pottery survived in layer 2 (ibid:72). Furthermore, the primary fill contains freshly flaked material, involving the production of higher than usual quantities of preparation flakes and large cores which had not been exhausted (Brown 1991:104). Examination of the flint material shows a degree of structuring of deposition, reflecting an awareness of symbolism that measured social importance (ibid:130-131).

Oftentimes, cases of structured deposition are seemingly obvious. Such is the case where sterile layers of yellow clay alternate with layers of ash or dark soil. As well, when the material culture discovered is particularly and unusually dense, or has previously been linked to symbolic contexts, i.e., anthropomorphic figurines or clay altars, or, as demonstrated, is in clear association with certain artefact groups, it is safe to presume a state of purpose and intention, where human attitudes and social behaviour played a role in the deposition of material. It must be remembered, however, that these cases are representative of a unique set of cultural norms. Demonstrating the existence of structured deposition does not demonstrate the existence of ritual deposits, and vice versa, nor does it demonstrate that such cases of deliberate deposition can be found in high frequencies across prehistoric sites. Structured deposition is often not so obvious, i.e., where deposits include apparently (broken) domestic / agricultural material (Hill 1995:96). Further analyses are necessary, keeping in mind the natural processes that will have affected each deposit at every stage in time.

Investigating Place

It is posited in this study that structured deposition is an identifiable social practice, one which may be secular and/or domestic and therefore not easily recognizable. When making the distinction between features that are a result of either symbolic or rational behaviour, we can rely on certain factors previously identified, i.e., elements of repetition, structure, and the presence of material on a peculiar scale (see Renfrew 1985). In many cases, these elements need to be separated from those which are part of daily rational action. Renfrew (1985) notes that, in practice, this is only possible when two conditions are filled: a specific place is set aside, and well defined forms are employed for symbolic focus (Renfrew 1985:22). Structured deposits can be considered to fill the latter prerequisite. As for defining a specific place, however, investigation is necessary.

Place can be defined as 'the point where something is' (Tuan 1977), but it is much more than a specific space. It is something individual with a specific meaning, gained only through human action (Gramsch 1996:26). Place is a function of time, representative of pause in movement and time made visible (Tuan 1977), fulfilling practical needs while gaining identity through representing the past. It is also a 'sense of place', formed through the sedimentation of symbolic and emotional meanings, memories and the attachments to people and things which arise out of past practices and their underlying power relations (Pred 1986). The effort to evoke this sense of place is often deliberate and conscious, and arises out of a passion for preservation, which in turn arises out of the need for tangible objects that can support a sense of identity (Tuan 1977:179). Hence the occurrence of symbolism and representation within material objects both in the landscape and within the site.

While many significant places are more obvious in the landscape, others have little visual prominence but are still profoundly significant to particular people (Tuan 1977:162). Place, therefore, is an equally important factor in the confirmation of structured deposition as a part of ritual practice. Significant places contain within them the mechanism through which people define their community's place in time and space, especially in relation to their past (Chapman 1997:141). By maintaining memories of the past in places of the present, sanctity of place is achieved, and people are able to put down their roots (ibid). Objectified material already carries with it certain significance, and to deposit such material in any random space would disqualify its value to both owner and creator. The locations thereby selected for deposition must have some value. In order to test the significance of pits filling the prerequisites for structured deposition, that is to say having a high sherd density and complex stratigraphy, these factors were coded and mapped per site to test for spatial patterning.

Summary

It is not the task at hand to categorize the activities which the features in the present database represent. That is, not in the contexts of ritual or non-ritual. The range of events which occur prior to the final deposition of material objects are too wide and too varied for archaeologists to give definitive interpretations regarding the nature of such behaviour. There are too many examples that defy the traditional definitives that render a feature or artefact as overtly ritual. It can be demonstrated that the objectification of material culture, as well as the deliberate deposition of its coinciding material occur in the full suite of identifiable activities. The task, therefore, is to prove the case where such events have not been so obvious to interpret. That is, deliberate and structured deposition occurs not only in overtly ritual contexts, but in features created from everyday and mundane activities. Symbolic objects encompass a range of material, and are found in an array of features which even include the rubbish pit. The present analysis will attempt to add to the dataset that emphasizes this theory, further looking at the importance of place within the settlement.

IV. METHODOLOGY

In an attempt to investigate structured deposition on a regional scale, it was necessary to adjust and adhere to certain limitations in the dataset, whilst controlling for a number of factors, in order to maintain consistency and statistical integrity. It was hoped that restricting the sites to a culturally related geographic region isolated the influences of three key factors: (1) similar depositional processes, (2) similar environmental surroundings, and (3) similar excavation methods and recording techniques. Adherence to this criteria allowed for an ideal set of data which would truly compare like with like, and limit, as much as possible, the influence of other factors, maintaining focus on the possibilities of deliberate and structured deposition. Whilst this ideal dataset was not achieved, controlling these factors to the highest possible standard meant that an adequate and feasible collection was realized.

Adherence to the first criterion is realized generally by limiting the study to one particular culture group. By confining the data to sites of the LBK and its closely related neighbour, the AVK, similar depositional practices could be assumed. Furthermore, limiting the sites to a relatively small geographical area controlled for similar environmental surroundings and therefore similar subsistence strategies, thereby controlling for similar refuse and discard material.

Problems arose, however, when trying to maintain a high level of quality in the data. Investigations into structured deposition demand detailed recording both of the stratigraphy and of the finds. Such detail has only been practised recently in Hungary with the instigation of motorway rescue excavations; much data was still in preliminary stages and therefore unavailable. Furthermore, attempts to include sites in Slovakia were proved impossible, with the lack of stratigraphic recording, due in part to inadequate funding for archaeology as well as different research foci within the academic community (p.c., J. Pavúk.).

The dataset was restricted to three sites: the LBK settlements sites of Bylany in the Czech Republic and Neckenmarkt in Austria, as well as the AVK site of Kompolt-Kistér – a so-called 'pit-field' which lacked evidence for housing. The basis of the analysis was a comparison of pit contents in relation to stratigraphy, with the hypothesis that more, and sometimes special, artefacts would be found in pits of complex stratigraphy, as higher purpose and ideo-symbolic emphasis were placed within the deposit. This can be contrasted to the general assumption of a direct relationship between pit volume and material quantity. The question of place was also investigated, with the second hypothesis that pits with structured deposition occurred in specific areas, separate from the traditionally identified rubbish pits.

Calculating Pit Volumes

In order to make sound comparisons, it was important to derive sherd quantities in the form of densities, rather than sheer numbers, in order to defy the assumed volume-quantity relationship and truly compare like with like (see Figures 4.1 to 4.3). Sorant and Shenkel (1984) found that the calculation of volumes of irregular shapes was easiest when first calculating between contour intervals and then adding successive contour interval volumes (Sorant and Shenkel 1984:599). This places complete reliance on accurate field data, if and only if such data was actually collected. While this was seemingly an ideal process, the data was incomplete, and the method left was the time-consuming process of triangulation. This involved drawing each individual pit to scale on graph paper, and then dividing each into geometrically feasible shapes from which accurate volumes could be calculated.

With the amount of pits in the database, it was felt that a more expedient but efficient process was necessary.

Figure 14. Graphic relationship of the number of sherds to the relative volume of pits at Neckenmarkt (logarithmic scale on both axes)

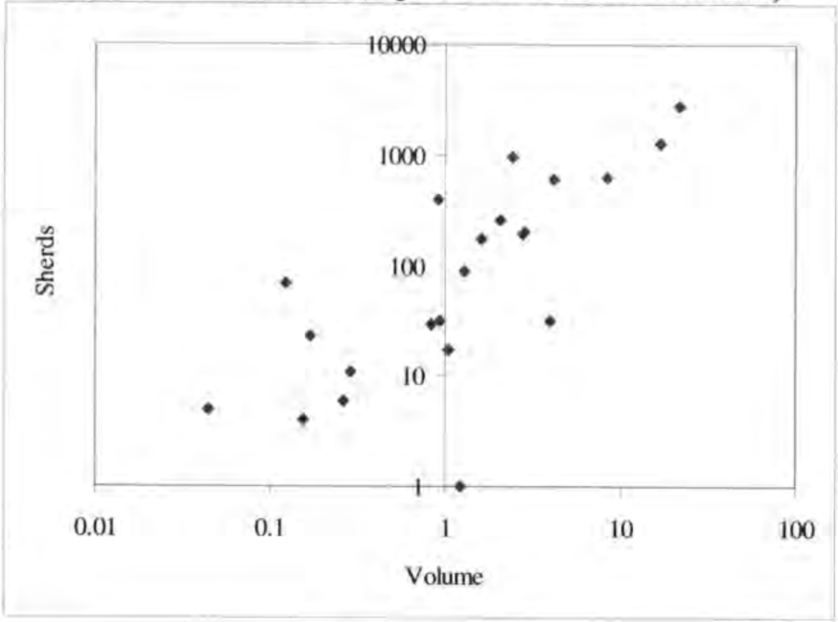


Figure 15. Graphic relationship of the number of sherds to the relative volume of pits at Kompolt-Kistér (logarithmic scale on both axes)

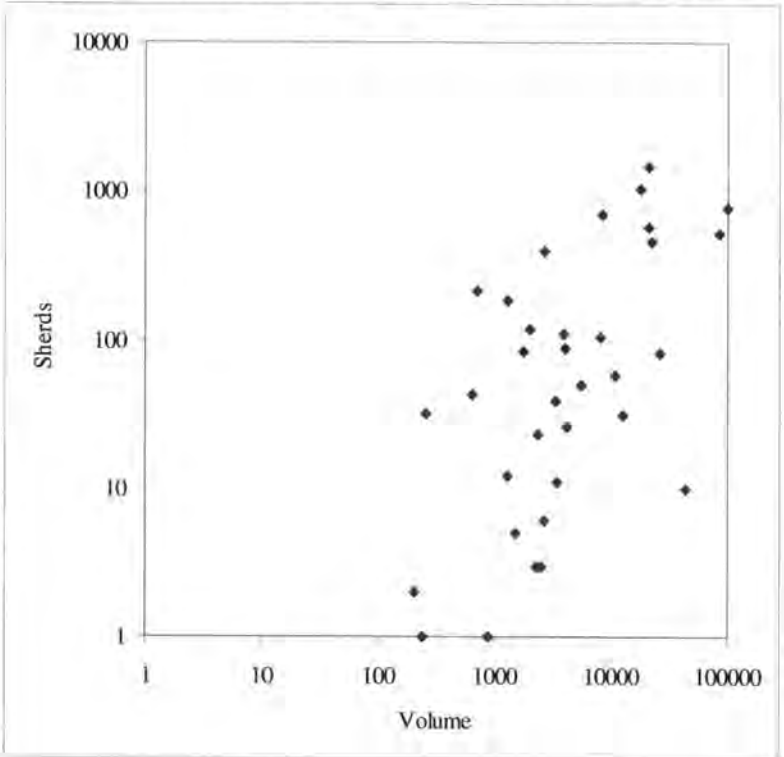
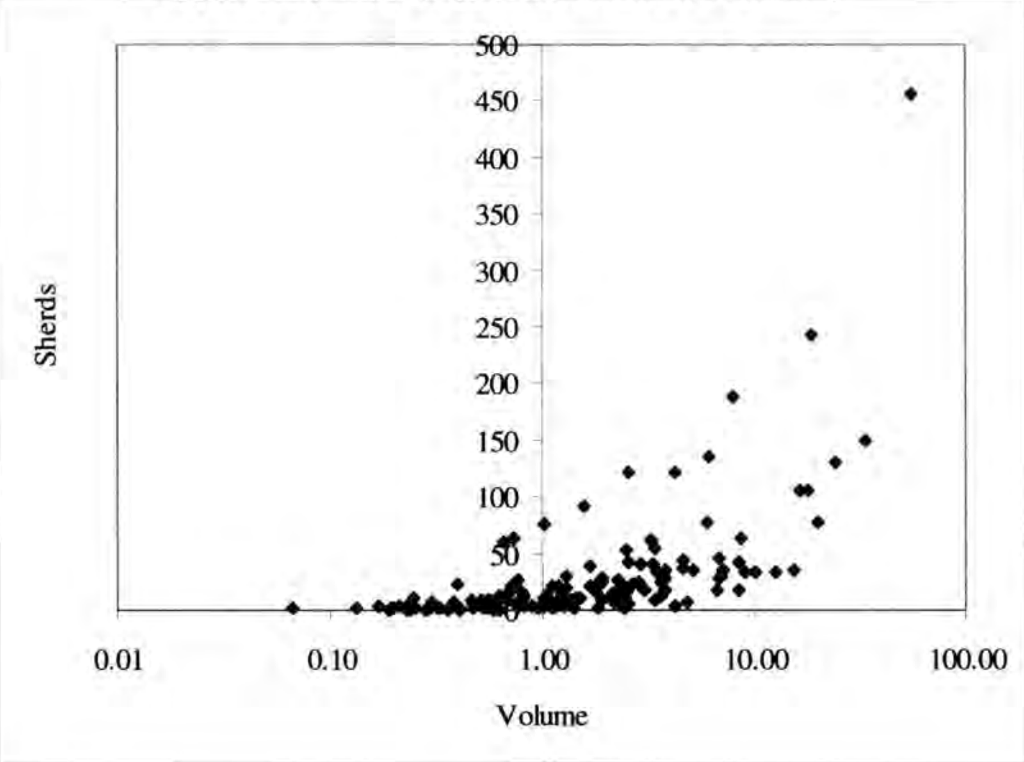


Figure 16. Graphic relationship of the number of sherds to the relative volume of pits at Bylany F (logarithmic scale on both axes)



Rulf (1986) estimated pit volumes for an analysis relating features and finds at Bylany. It was felt that, at that time, a reliable mathematical method was not available to make possible the accurate calculation of such irregular bodies as pits (Rulf 1986:296). Pit volume was therefore calculated as maximum length (L) x maximum width (W) x maximum depth (D), which was felt to be adequate for the analysis at hand. Kazdova (1984) attempted to correct for the irregularity by adding a coefficient, ½, to the standard formula (Kazdova 1984:166). The accuracy of these formulas, however, was questioned.

In a multiple regression analysis comparing length, width and depth to the dependent variable, volume (V), Stäuble (1997) found that the three measurements did not have equal influence on calculating the estimated capacity of pits. Carrying out a Student's t-test, a significant relationship was found between the variables D, L, and V on a 5% significance level (Stäuble 1997:47). It was therefore proposed that a standard formula with each variable, L, W, and D, carrying equal weight, was not sufficient. A coefficient was indeed necessary.

Calculating volumes for the pits in this particular database meant that the basis of the calculation was only on surface plans and, usually, one section, most probably made in the centre of the pit. Calculating pits on this basis carried the assumption that the pits were symmetrical, which is often not the case. The best-case scenario, however, was having multiple sections of each pit, in which case it was possible to ascertain the regularity or irregularity of the shape of the pit. With such data, it was viable to calculate a coefficient on the basis of deviations from actual volumes.

Multiple sections were available from the site of Neckenmarkt, from which precise pit volume was calculated using triangulation on each of the 22 pits. Correlation coefficients were then derived, separately testing the linear relation between volume and each of the variables, length, width, and depth (Table 4). Subsequently, estimates were made using four different formulas. Estimate 1 (L x W x D) based on the standard formula for deriving volume of a regular shape. Estimate 2 (0.5 L x W x D) was based on the usage of the coefficient, ½, as per Kazdova (1984), to account for irregular depths. Estimate 3 was a formula derived through the process of calculating the precise volumes of pits at Neckenmarkt. A coefficient was added to each variable to account for its irregularity, with a smaller coefficient being used with depth. This is contrary to Stäuble's findings, where width was seen to have an insignificant impact on calculating volume (Stäuble 1997:47); however, it was felt, and discovered through trial and error, that width was indeed correlated. Depth seemed to carry the highest degree of variability per pit. The formula thus stood at 9/10 L x 9/10 W x ½ D, or 0.405 L x W x D.

Testing these formulas on the pits at Neckenmarkt showed that Estimate 2 had the least deviation from the calculated volume on pits of somewhat regular shape, i.e., oval or elongated oval, and of a regular basin-like shape in section. Estimate 3, however, proved more effective on pits of irregular shape, i.e., irregular depths in section and irregular shape in plan. Estimate 4, (0.405)(0.5) L x W x D, which equates to 0.4525 L x W x D, was therefore derived from the average of the coefficients used in Estimates 2 and 3, in an attempt for greater expediency. This did not prove more accurate.

Table 4. Statistics of each estimate used in deriving formula for calculating pit volume.

	Estimate 1 $(L \times W \times D)$	*Estimate 2* $0.5(L \times W \times D)$	*Estimate 3* $0.405(L \times W \times D)$	*Estimate 4* $0.425(L \times W \times D)$
Mean	8.218	4.109	3.328	3.719
Median	2.563	1.282	1.038	1.160
Standard Deviation	13.979	6.989	5.661	6.325

These observations, together with the small sample size (n=22) and the amount of variation inherent in pit size and volume, created the necessity to categorize each pit as either being regular or irregular. This was based on surface shape and the shape of their profile. Once this was achieved, pit volumes could be calculated. This theory was tested using the same pits from Neckenmarkt, confirming the observation that a categorization process prior to volume calculations was necessary to maximize accuracy. Standard deviation of this set, 5.640, was the lowest of all estimates.

Stratigraphy

Having compiled pit volumes, the next step was to categorize each pit according to its stratigraphic content. Intra-site comparisons, however, revealed differences in excavation and recording methods that would create bias in statistical examinations of pit contents and stratigraphy. As the basis of the initial analyses in this research is the stratigraphy itself, it was noted that differing archaeologists and interpretive methods came into play. Layers were differentiated to diminutive detail at Bylany, with decreasing precision at Kompolt-Kistér and then at Neckenmarkt. The first two sites contained pits with highly complex stratigraphy, even those that were interpreted to be of homogenous fill (Pavlú and Zapotocka 1983). At Neckenmarkt, the majority of pit profiles revealed only one layer, and only on rare occasions would two or three layers be identified.

Normally, archaeological strata are differentiated by variations in colour, material, content, texture, and relative moisture (Wheeler 1954:43; Michels 1973:25). Often times, these variations present difficulty, as the resulting sequence could be subdivided by different excavators in many different ways. Even after individual strata have been delineated, a problem of interpretation is a continual challenge. Schiffer (1972, 1977, 1983, 1987) emphasises that the differentiation of strata be based on the objects found within the deposits and not on the physical characteristics of the deposits themselves (Stein 1987:347). Harris (1979), on the other hand, believes that strata be delineated on the basis of temporal significance. Regardless of theoretical discrepancies in strata, the reliance of this study on published data equates to the acceptance in differences in excavation methodology.

While these discrepancies will create biases in statistical analyses of the region as a whole, it would not affect contextual analyses of sites when studied as separate datasets. It was best, therefore, to analyze each site individually, and then compare them on a contextual basis, rather than a statistical whole. The inherent biases would skew the statistics if the sites are taken as a single entity. Furthermore, with the differences in stratigraphic discrimination, it was felt that each site needed its own strata groups, in order to account for diversity in the records. These groups are outlined in Table 5.

Table 5. Stratigraphic groupings for each site included in the analysis.

	Neckenmarkt	Kompolt-Kistér	Bylany F
Group 1	One strata and therefore homogeneous	One or two strata and therefore homogeneous	One or two strata and therefore homogeneous
Group 2	Two strata	Three strata	Three strata
Group 3	Three strata	Four to five strata	Four strata
Group 4	Four and therefore stratified	Six or more and therefore stratified	Five or more and therefore stratified

The Data

Differential recording procedures and techniques were also present, meaning that find inventories between sites were inconsistent. Distinctions between decorated and undecorated sherds were made at all sites, but differentiating between fine wares and coarse wares was only done at Kompolt-Kistér (from personal study). As well, zooarchaeological material, which, as mentioned, has been seen to be deliberately deposited on some sites, was never weighed and not often analyzed in great detail. While quantities of bones were recorded at Neckenmarkt and Bylany, such finds were only noted as being present or absent at Kompolt-Kistér. This data, therefore, can only be taken quantitatively for each feature as whole. Moreover, the lack of specific contextual data for recovered artefacts denied the possibility of making more discrete analyses between layers and fills, which would have been ideal in a study of deliberate and structured deposition. In Hill's (1995) study of ritual and rubbish in Iron Age Wessex, similar criteria and problems were encountered. However, it was noted that 'when approached critically and in conjunction with other sites, we can squeeze useful information from the most poorly recorded archives or reports' (Hill 1995:33). This fact summarizes the feasibility of this research.

Statistical analyses were carried out using the available data; the results are presented in the next chapter. It should be noted, however, that these results will only show that deliberate deposition was a definite occurrence in the Neolithic, but was not structured in every case. Deliberate deposition is proved by a greater density of ceramics, especially decorated or fine wares, as well as the significantly higher presence of bones and stone tools in pits with stratified fill. Similar results were achieved by other studies of structured deposition (i.e., Hill 1995, Russell 1994, Brown 1991, Richards and Thomas 1984).

This particular analysis was carried out at Bylany by Rulf (1986) in a study of refuse and discard patterns, using general and initial stratigraphic interpretations by Pavlú and Zapotocka (1983). The results show, on average, features with stratified fills contain more pottery than features with a uniform, lighter filling (Rulf 1986:297). Ceramics were in great number in features with heterogeneous fill (expected due to the inclusion of large pit complexes) and those with stratified fills, and in non-ceramic features, there is a marked predomination of unstratified fills (ibid). We shall attempt to discover if this pattern applies when pit volume is taken into account, and if it exists at other sites across central Europe.

Summary

After accounting for environmental, archaeological, and depositional factors, intra-site comparison of pits should reveal instances of structured deposition, whereby such cases will exhibit high values for sherd density, both in quantity and weight, *and* will be stratified, i.e., having high numbers of stratigraphic layers. An analysis of these factors should reveal certain patterns in the data that can be applied to other sites. Such patterns will be visible in the identification of pits with deliberate and structured deposition, as well as in the importance of place, whereby pits fulfilling these prerequisites will be in places more significant to the site's inhabitants. It will further be revealed that material deposited within these pits were not simply discarded, but objectified and placed deliberately in a resting place of consequential significance.

V. INTRA-SITE RESULTS

The theory as previously outlined stated that pits with structured deposition can be identified on the basis of both their stratigraphy and their finds density. Unusually high values for the latter, coupled with complex stratigraphy would indicate structured deposition. The main criterion used, therefore, was ceramic density, particularly due to its common presence in pits, citing cases with complex stratigraphy as more definitive cases for such deliberate deposition. This is especially the case where there is evidence of burning, and where other finds such as grindstones, flint, and animal bones are found. While valid, other factors such as finds diversity, unusual finds combinations, and location of finds in special places were difficult to use, as these were not recorded in great detail unless they were considered to be outright unusual.

The data used for the analyses are presented in Appendix B, with the exception of pit profiles; only a selected few are presented in this thesis. Readers should refer to the site reports for the complete data (Lenneis and Lüning 2001; Vaday *et al.* 1999; Pavlů *et al.* 1987a,b). The results presented here are in the order of quantitative detail as recovered by archaeologists in the course of excavation and interpretation. Of note is the fact that analyses were done using both counts of ceramic sherds as well as weights (with the exception of Bylany where sherds were not weighed), in order to account for the variation in size and weight of finds. Where data concerning animal bones and other finds were available, they are presented both in Appendix B and discussed in the present chapter, with particular reference to their deliberate deposition in pits with stratified fill.

Neckenmarkt

Pits at Neckenmarkt were divided into four groups according to the number of stratigraphic layers identified by archaeologists upon excavation. Results show that, with regard to the average number of sherds per pit in each strata group, stratified pits with four layers exhibit higher values. This result is consistent with the original hypothesis that pits with stratified fill contain more ceramic finds. However, when taking volume into account, on average, there were more ceramics deposited in pits with two layers. This is evident in mean sherd to volume ratios (s/v ratios), as calculated by sherd count and weight. This could be accounted for by the following facts. First, Group 4 consists only of two pits; namely pit 16 and pit 113. These pits were found to contain 1,253 and 256 sherds, weighing 20.179 kg and 3.590 kg respectively. An average of these s/v ratios is one of two extremes, and therefore does not reveal any patterns or exhibit any clues to the theories surrounding deliberate deposition.

Table 6. Statistical results of sherd to volume ratios per strata group at Neckenmarkt, compared to its average total quantity of ceramic sherds.

Group	*Mean*	*Median*	*Maximum*	*Minimum*	*Standard Deviation*	*Average quantity*
1	71.71	61.31	152.06	0.81	52.614	299.33
2	182.30	54.59	552.88	7.80	230.781	288.00
3	106.77	106.77	142.89	70.65	51.080	399.50
4	98.81	98.81	124.55	73.08	36.397	754.50

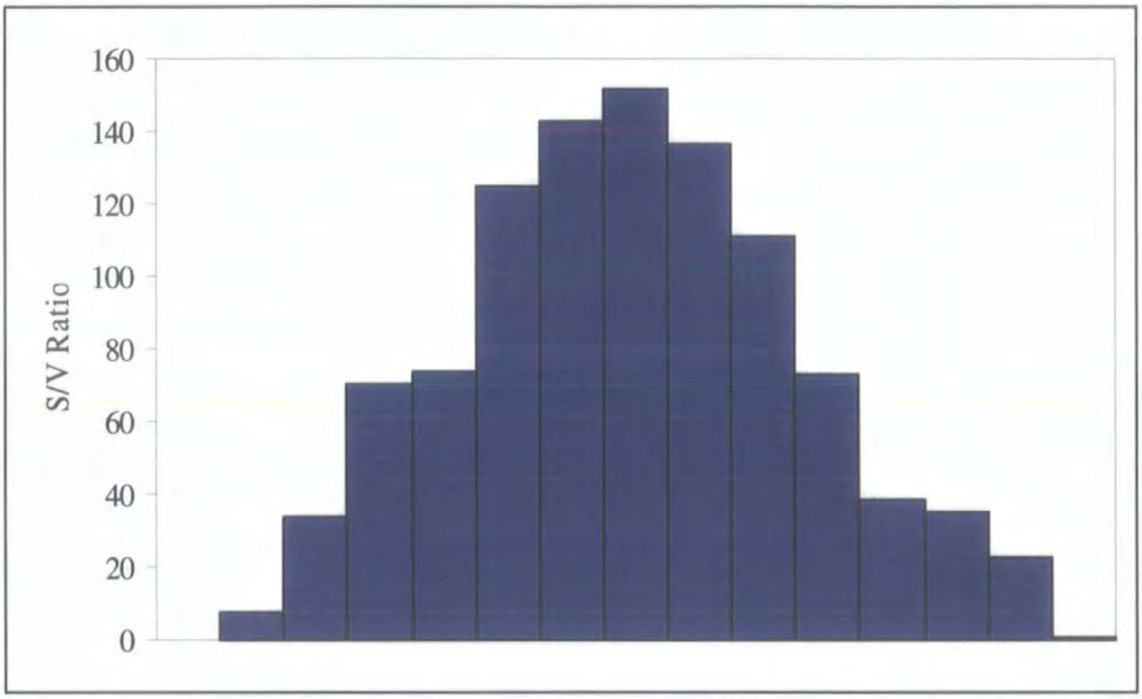
Table 7. Statistical results of sherd weight to volume ratios per strata group at Neckenmarkt, compared to its average total weight of ceramic sherds.

Group	*Mean*	*Median*	*Maximum*	*Minimum*	*Standard Deviation*	*Average weight (g)*
1	13027.24	2079.11	77427.65	24.90	23572.170	7544.17
2	16124.24	1697.91	100520.83	24.90	30649.974	4711.00
3	41.60	41.60	82.01	1.19	57.149	118.00
4	240.53	240.53	438.36	42.69	279.781	816.50

On average, stratified pits can be seen to contain higher amounts of ceramics; however, this can be biased with the variations in size, especially with the inclusion of large pit complexes. These observations also hold true for sherd weight to volume (sw/v) ratios, as well as s/v and sw/v ratios for decorated sherds. This supports the notion that structured deposition is not a statistical anomaly, but an irregular occurrence whose presence is identifiable but not quantifiable by statistical means. That is, we cannot infer from the data that a certain percentage of pits on LBK sites will have been subject to structured deposition; it was not a regular occurrence whose remains survive in the archaeological record. Closer investigation is necessary to identify, with a high degree of certainty, which pits were, in fact, structured deposits.

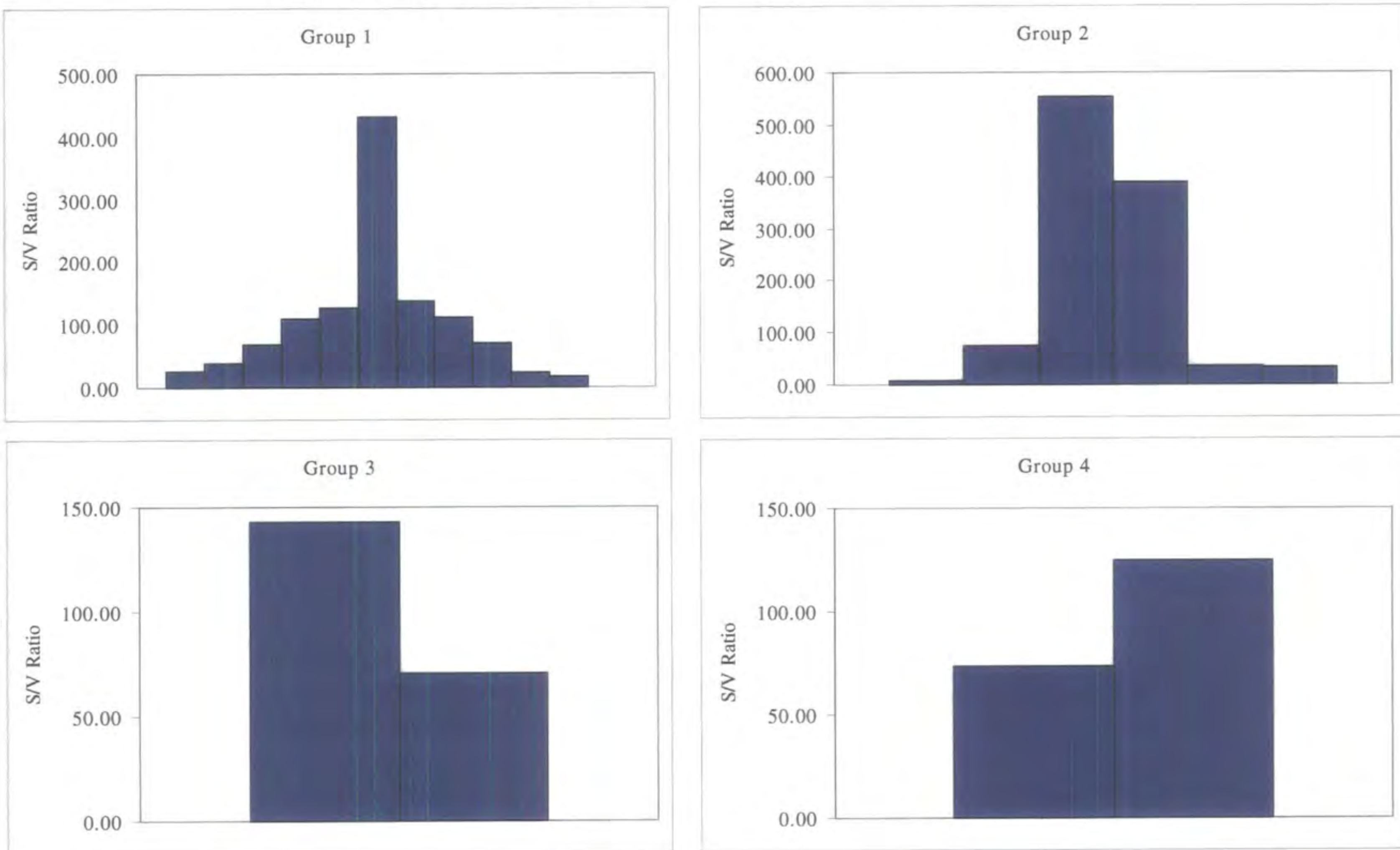
The dispersion of s/v ratios in each stratigraphic grouping shows the extremes from which the statistics are calculated (*Figure 17*). It can be seen that while Group 2 displays the highest s/v ratios, this calculation is biased by two very high values from pits 102 and 108. This is further exhibited by the extremely high standard deviation calculated for this group (30,649.974). Groups 3 and 4, with only two pits per category, cannot reveal any patterns with regard to distribution or dispersion. They do, however, fall within the normal distribution of all pits at Neckenmarkt, when outliers are removed (*Figure 18*).

Figure 18. Dispersion of s/v ratios at Neckenmarkt, with outliers removed.



To investigate the significance of our theorized prerequisites for structured deposition, we must analyze those pits with (a) significant stratification, i.e., those in Group 4, and (b) with significantly high s/v ratios (see Table 8), that is, pits 102 and 108. The fact that the s/v ratios for these two pits fall well outside the distribution of all other pits at Neckenmarkt is a significant observance; further investigation is indeed necessary.

Figure 17. Dispersion of s/v ratios in strata groups 1 to 4 at Neckenmarkt



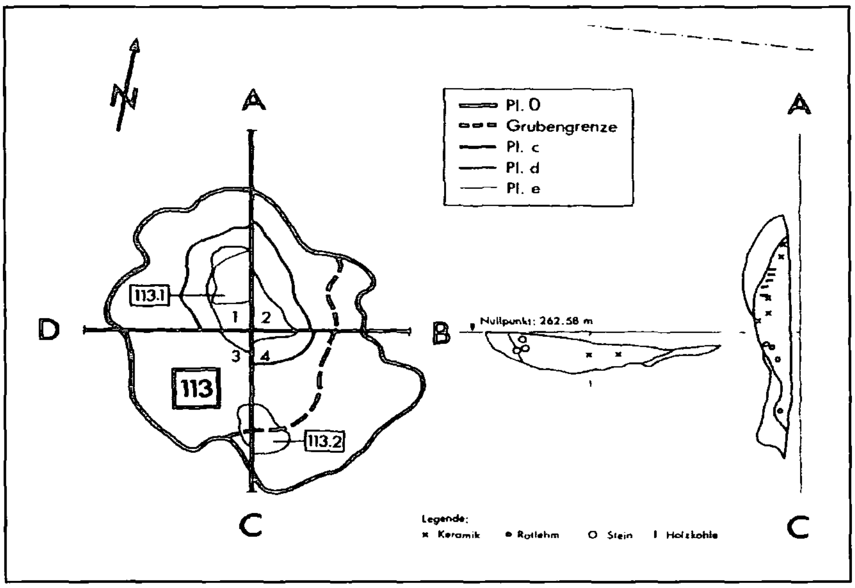
Note: One vertical column represents one pit.

Significantly Stratified Pits

The problem with the term 'significant stratification', however, lies in the question of how many strata would qualify a pit as having this characteristic. Of all pits at Neckenmarkt, there is a maximum of only four strata, in pits 16 and 113. As such, it is only these pits that we consider as having significant stratification. Pit 16 includes what has been interpreted as an oven or a furnace; the complicated stratigraphy that results from this usage, i.e., burning, will explain its quantifiable layers. In fact, we would expect that such a complex feature would have more than four layers. While many cases identified as being of structured deposition exhibit evidence of burning, none exhibit so definitive a structure or function as pit 16. While other examples at Kompolt-Kistér also exhibit remains of ovens, they do not exhibit any resemblance of construction such as that evident in pit 16 at Neckenmarkt and can therefore be considered for other motivations. The theory is that pits of structured deposition were not used for functional purposes, but were created out of ritual. We can conclude that pit 16 does not fall into this category.

A regularly shaped pit at the northeast edge of house 6, pit 113 (*Figure 19*) is claimed to contain the oldest material from the entire site (Lenneis and Lüning 2001:406). The upper fill is greasy black, easily differentiated from a medium to dark brown fill in the lower portions of the pit. There is also a larger hollow in the centre of the deeper portion of the pit (partial pit 113.1), as well as a smaller hollow at its south edge (partial pit 113.2). There were no finds recorded from these areas. As can be seen in vertical profile AC, all observed finds lay in the upper layers of the pit. With limited data, however, we can only conclude that pit 113 is complex and curious. It is quite possible that finds recovered from upper layers could have been displaced from the surface via natural processes. Furthermore, while many of the aforementioned examples of structured deposition note special deposits at the base, pit 113 does not fit the pattern. The possibility of structured deposition is not completely discounted, as there is significant stratification, however, with an average s/v ratio as well as insignificant quantities of other finds (flint, animal bone, fired clay), it does not fit in with our present theories surrounding structured deposition. Detailed recording of finds per stratigraphic layer would help provide a more definite answer.

Figure 19. Surface and vertical profile of pit 113 at Neckenmarkt
(From Lenneis & Lüning 2001:Abb. 11)



Significantly High Sherd Densities

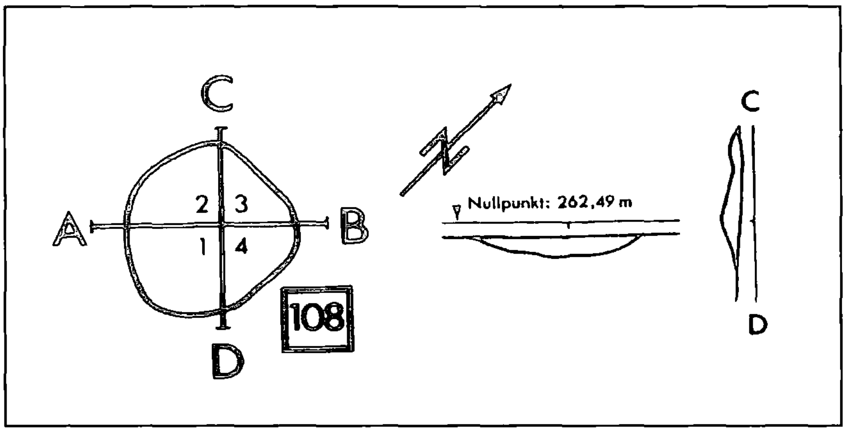
Analysis of sherd densities allows the division of pits into four distinct groups, divided according to where the greatest deviations between values occur. The pits with the highest values are pits 108 and 102. Not only are their sherd densities high in relation to all other pits at Neckenmarkt, but these values are quite distant from those of the next pit (see Table 9).

Table 8. Pits at Neckenmarkt in descending order of sherd to volume ratio.

Group	*Feature*	*# Strata*	*Volume (m^3)*	*Total Sherds*	*S/V Ratio*
1	**108**	**2**	**0.125**	**69**	**552.88**
	102	**2**	**2.418**	**943**	**389.99**
2	101	1	2.788	424	152.06
	14	3	4.199	600	142.89
	112	1	0.169	23	136.30
	113	4	2.055	256	124.55
	167	1	0.045	5	111.11
	17	1	1.621	175	107.97
3	37	2	8.424	624	74.07
	16	4	17.146	1253	73.08
	39	3	2.817	199	70.65
	99	1	1.285	88	68.47
	100	1	0.923	50	54.15
4	119	1	0.285	11	38.65
	13	2	0.826	29	35.10
	6	2	0.942	32	33.98
	45	1	0.157	4	25.52
	208	1	0.261	6	23.02
	43	1	1.035	17	16.42
	107	2	3.975	31	7.80
	231	1	1.238	1	0.81

Pit 108 (*Figure 20*) is a shallow circular pit, southwest from house 5, with a maximum diameter of 130 cm and a depth of 16 cm. Only two strata are identified by excavators, one that is black-brown and another unclear, brighter stratum which was not more closely examined. In this small pit, one piece of flint and two fragments of fired clay were found, along with 69 ceramic sherds, only two of which were decorated. With such data, it is not possible to prove that the contents of pit 108 were deliberately deposited in a structured manner. With its particularly high sherd density of 552.88 per m^3, however, it is probable.

Figure 20. Surface and vertical profile of pit 108 at Neckenmarkt.
(From Lenneis & Lüning 2001:Abb. 109)



Pit 102 was excavated concurrently with pit 107, as they seemed to be connected by a brownish zone (Lenneis and Lüning 2001:400) *(Figures 21 and 22).* Located at the southeast end of house 5, archaeologists have determined that these pits had a different backfilling history. It is posited that pit 102 was filled first, as it would not have otherwise been able to accumulate such a rich amount of finds if pit 107 was already in existence (ibid). Yet pit 102 contains typologically uniform early LBK material; such sherds were also found in pit 107. Late LBK material, however, was found in the latter. This leads to the conclusion that both pits were in existence. Moreover, pit 102 is very rich with finds, in strong contrast to pit 107, which is quite lacking in finds. Figure 23 shows that there are considerably higher quantities of flint and ceramics, especially undecorated sherds. It is therefore quite possible that material was deliberately chosen and deposited to be interred into pit 102.

Figure 21. Surface plan of pits 102 and 107 at Neckenmarkt.
(From Lenneis & Lüning 2001:Abb. 106)

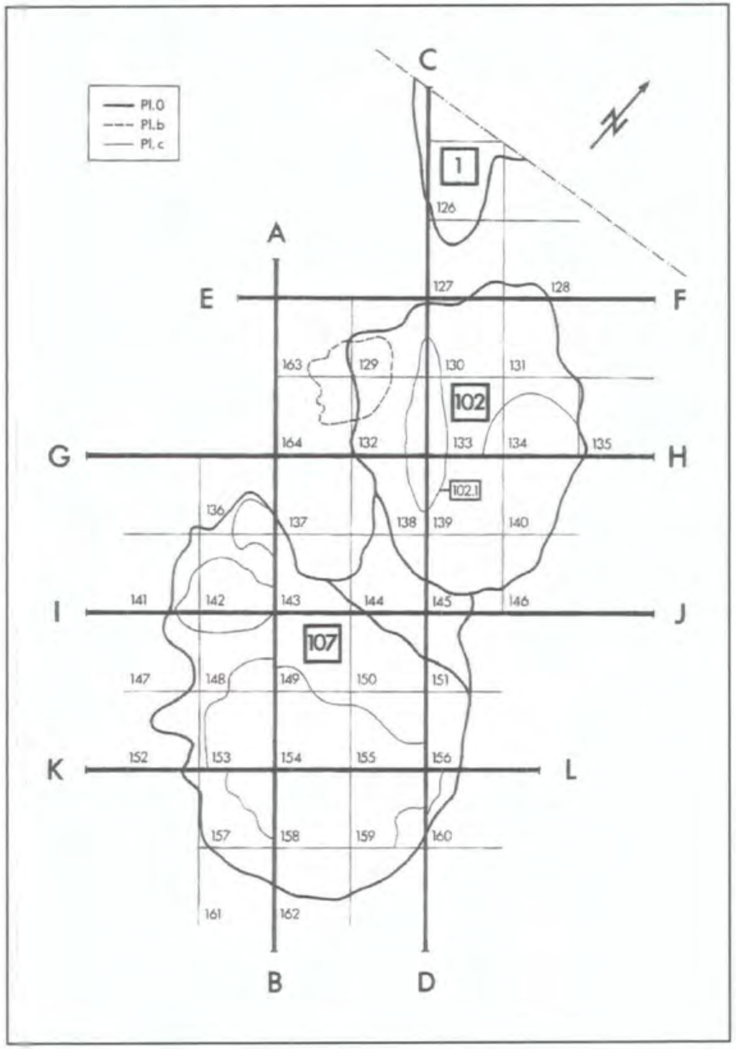


Figure 22. Pit profiles of pits 102 and 107 at Neckenmarkt.
(From Lenneis & Lüning 2001:Abb. 107).

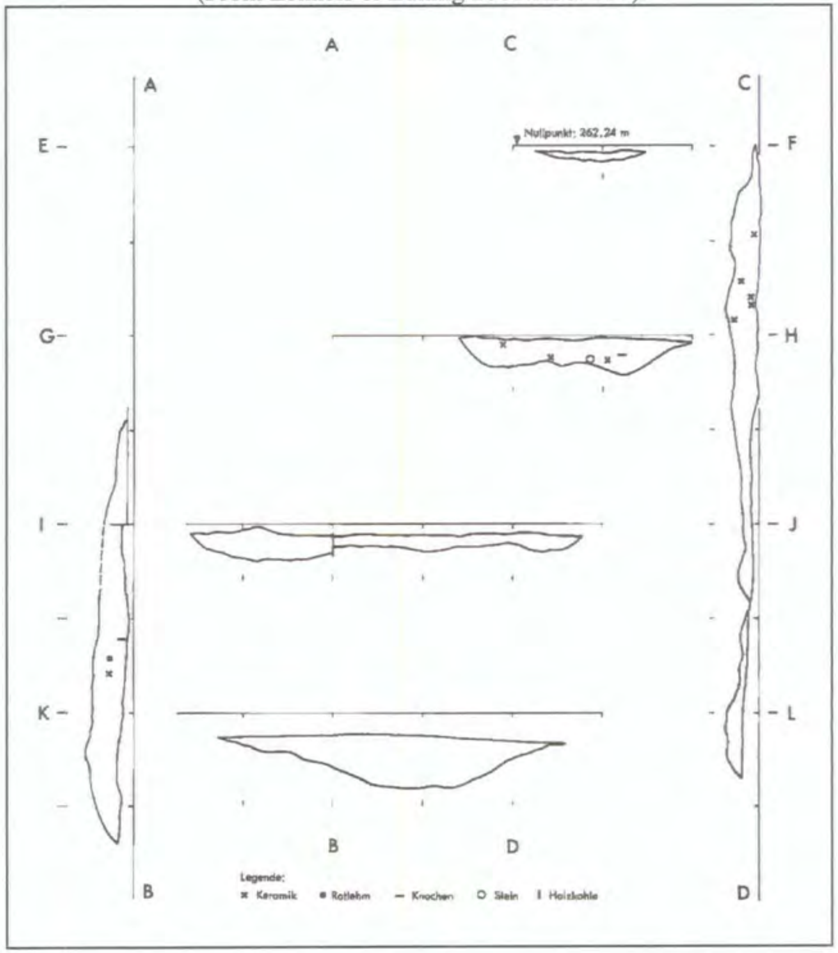
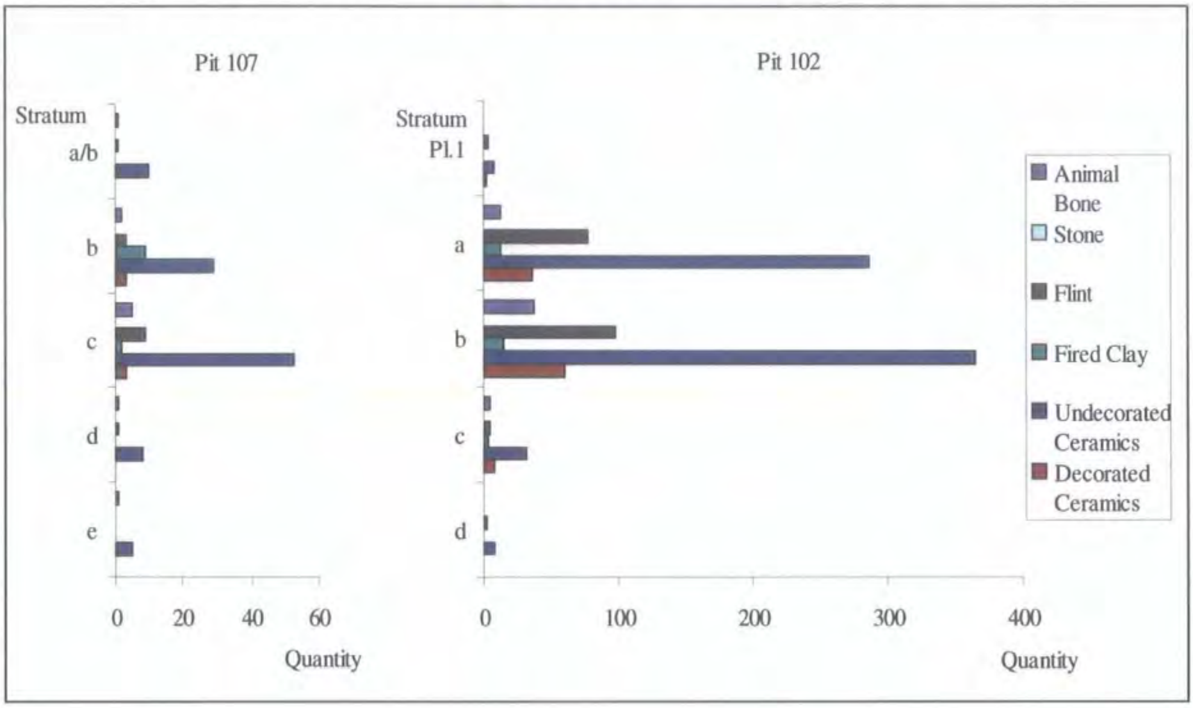


Figure 23. Finds per arbitrary layer in pits 102 and 107 at Neckenmarkt



Other Finds

Similar statistics were also taken with respect to decorated ceramics at Neckenmarkt, with no significant patterns with respect to the number of stratigraphic layers in each pit. However, an analysis of decorated sherd to volume (ds/v) ratios (Table 9) shows that pits 102 and 108 again had the highest values. Pit 167 has fallen into this group, but with only one decorated sherd out of a total of five, its ds/v ratio is insignificant. Similarly, pit 108, with only two decorated sherds (2.90% of its total), is considered insignificant. In continued analyses, pit 102 continues to stand out as an instance of deliberate and structured deposition.

With respect to other finds, an analysis was done of the quantities of fired clay, flint, stone, and animal bone. While using such measures as 'number of pieces' for finds that can be very different on many levels, i.e., size, occurrence, function, use value, etc., may seem erroneous, it was felt that excluding botanical remains and including only said artifact types provided a sufficient test for structured deposition, keeping in mind that this analysis is only a *relative* comparison.

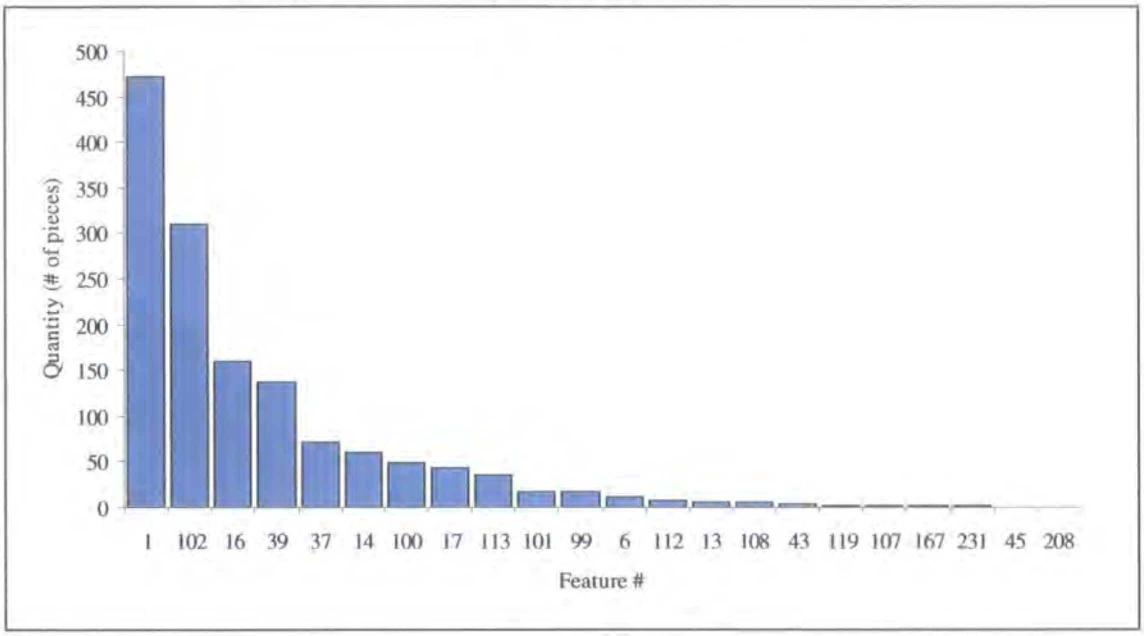
It can be seen in Figure 24 that, in relation to other pits at Neckenmarkt, features 1 and 102 contained proportionately higher quantities of other finds. From pit 1, 268 pieces of fired clay, as well as 104 pieces of flint, 19 stone objects, and 81 fragments of animal bone were recovered. Pit 1, however, is a pit complex fitting with previous theories of LBK pits. That is, it is a long pit on the eastern side of house 1, probably initially created for the purpose of extracting building materials, and then filled with refuse.

This can be contrasted with pit 102, southwest of house 1, containing 42 pieces of fired clay, one stone object, 66 fragments of animal bone, and 202 pieces of flint. These quantities, in comparison to the other pits at Neckenmarkt, are relatively high, especially considering the relatively smaller volume of the pit itself. These peculiarities can be indicative of deposition that is both deliberate and possibly of a ritual nature. It must be recalled that pit 102 was also found to contain a significantly high sherd to volume ratio. Furthermore, its coexistence with a neighbouring pit, whose density of both ceramic finds and 'other' finds which can be considered markers for structured deposition were not significant, shows that these results cannot be coincidental. The fact that pit 102 meets these criteria for structured deposition leads to the theory that pit 102 is itself a structured deposit.

Table 9. Pits at Neckenmarkt in descending order of decorated sherd to volume ratios.

Feature	*# Strata*	*Volume (m^3)*	*# Deco*	*DS/V Ratio*
102	2	2.418	114	47.15
167	1	0.045	1	22.22
108	2	0.125	2	16.03
14	3	4.199	63	15.00
1	1	22.113	310	14.02
101	1	2.788	34	12.19
208	1	0.261	3	11.51
113	4	2.055	23	11.19
99	1	1.285	14	10.89
37	2	8.424	77	9.14
100	1	0.923	8	8.66
17	1	1.621	14	8.64
16	4	17.146	111	6.47
39	3	2.817	15	5.33
119	1	0.285	1	3.51
6	2	0.942	1	1.06
107	2	3.974	3	0.75
43	1	1.035	0	0.00
45	1	0.157	0	0.00
112	1	0.169	0	0.00
231	1	1.237	0	0.00
13	2	0.826	0	0.00

Figure 24. Sum quantities of other finds (fired clay, flint, stone, and animal bone), in descending order, in pits at Neckenmarkt.



Neckenmarkt Summary

Closer analysis was necessary for pits at Neckenmarkt with complex stratigraphy and high sherd densities, keeping in mind that the validity of these factors remained relative in comparison to pits only from this site. It was found that while deliberate and structured deposition is not a statistically quantifiable occurrence, there are instances where pits with complex stratigraphy and/or high sherd densities should be looked at more closely. While some inherent biases were present, such as the dispersion of values in a small sample of 22 pits, further investigation did lead to decisive conclusions. By studying sherd densities of ceramic finds, as well as studying the presence of materials such as stone and animal bone, it was found that contents from pits 113 and 102 were deliberately deposited, and that pit 102 was quite possibly a structured deposit. The latter conclusion was further supported by the comparative presence of categorical finds per arbitrary layer.

Kompolt-Kistér

Pits at Kompolt- Kistér were again divided into four stratigraphic groups according to the number of layers in each pit (see Table 5). Results show a similar lack of pattern as at Neckenmarkt with regard to ceramic sherd densities, as well as similar statistical results. On average, there are more sherds by count and weight in pits with four to five discernible stratigraphic layers (group 3), which is consistent with the theory that pits with stratified fill would contain higher quantities of ceramic sherds. However, mean values show that there are more sherds per unit volume in pits in group 1 (pits with only one or two strata and therefore considered homogeneous), albeit standard deviations display significant variability in sherd density per group.

Table 10. Statistical results of sherd to volume ratios per strata group at Kompolt-Kistér, compared to its average total quantity of ceramic sherds.

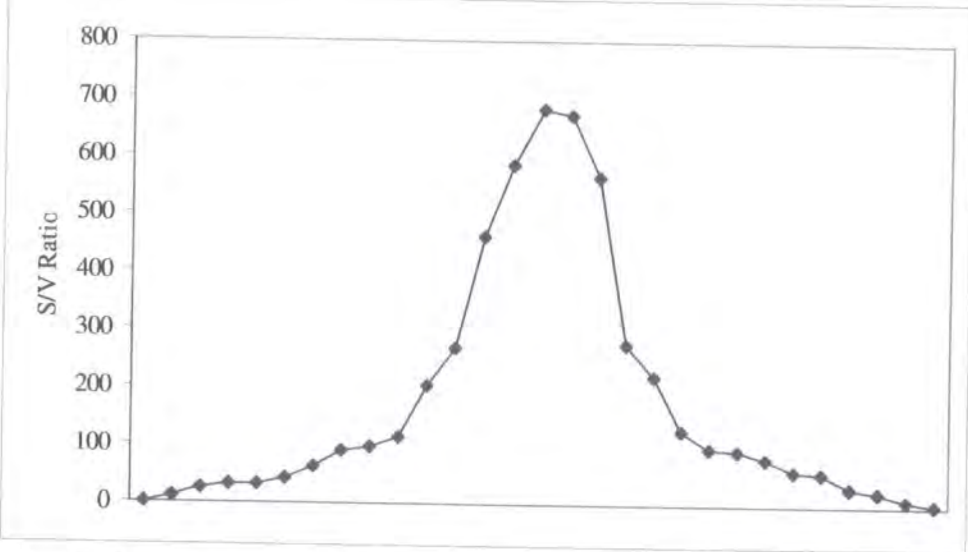
Group	*Mean*	*Median*	*Maximum*	*Minimum*	*Standard Deviation*	*Average quantity*
1	537.50	96.89	3028.57	2.30	875.38	155.33
2	534.86	136.45	1444.44	31.88	701.52	122.83
3	327.76	347.67	585.00	30.70	289.32	330.75
4	168.91	83.46	825.18	1.32	226.64	272.08

Table 11. Statistical results of sherd weight to volume ratios per strata group at Kompolt-Kistér, compared to its average total quantity of ceramic sherds.

Group	*Mean*	*Median*	*Maximum*	*Minimum*	*Standard Deviation*	*Average quantity*
1	9811.00	1123.16	46685.71	13.80	14488.74	3938.08
2	7079.56	1853.32	20339.51	333.33	9353.13	1595.17
3	5675.15	4612.75	13050.56	424.55	5885.22	6841.25
4	3156.47	1656.80	10638.55	101.01	3433.63	4322.42

Dispersion (*Figure 26*) and the bias of extreme values may play a role in construing the significance of these values. In each group, the distribution of s/v ratios is similar, resembling that of a normal distribution with the exception of one or two outliers (*Figure 25*). It is therefore necessary to make closer analysis of pits with high sherd to volume ratios, as well as those exhibiting stratified deposition.

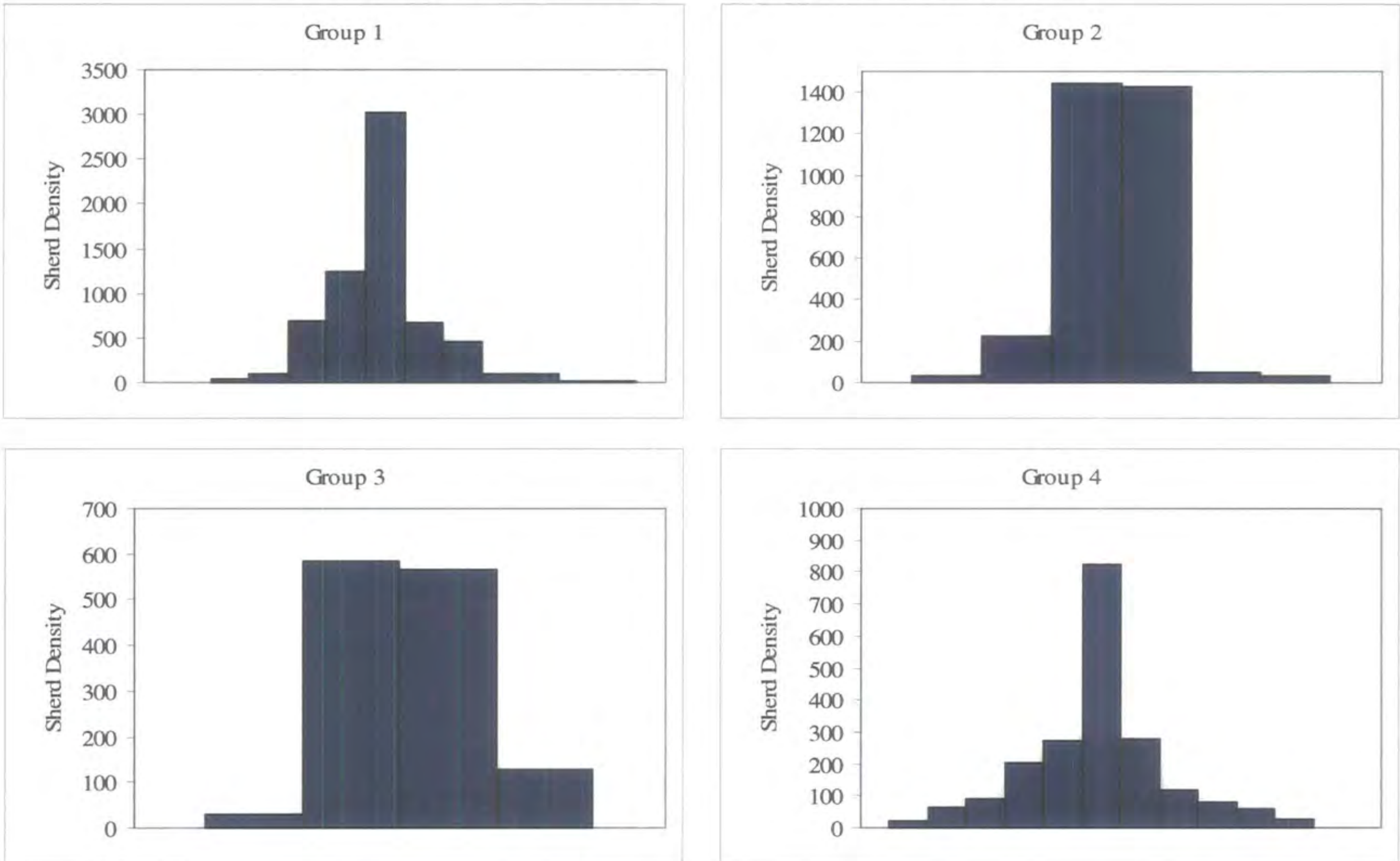
Figure 25. Distribution of s/v ratios of pits at Kompolt-Kistér, excluding outliers.



Note: Each point represents one pit.

Analysis at Kompolt-Kistér was complicated due to two factors. First, finds were recorded in each pit as a whole rather than in their separate layers. It is impossible to know, therefore, whether the distribution of finds were concentrated in any particular levels. While stratigraphy was recorded in great detail via vertical profiles, the lack of precise finds data means that it is not possible to assess any patterns in deposition. Secondly, there were no detectable remains of any houses on the site, so there can be no definitive conclusions regarding function, i.e., construction / longitudinal pits as at Neckenmarkt. However, it is possible to determine from an analysis of sherd to volume ratios, as well through spatial analysis, instances of probable deliberate and structured deposition.

Figure 26. Dispersion of s/v ratios in strata groups 1 to 4 at Kompolt-Kistér.



Note: One vertical column represents one pit.

Table 12. Pits at Kompolt-Kistér in descending order of sherd to volume ratio.

	Feature	*# Strata*	*Volume (m^3)*	*Total Sherds*	*S/V Ratio*
Group 1	**31**	**1**	**0,070**	**212**	**3028,57**
	62	**2**	**0,270**	**390**	**1444,44**
	11	**2**	**0,130**	**185**	**1427,47**
	12	**1**	**0,026**	**32**	**1250,00**
Group 2	140	4	0,834	688	825,18
	26=99	1	2,117	1442	681,15
	44	1	0,064	43	674,11
	184	3	0,200	117	585,00
	125	3	1,800	1020	566,67
	246	1	0,180	83	462,07
Group 3	121	4	0,390	108	276,92
	13	4	2,117	573	270,66
	123	2	0,401	88	219,34
	131	4	2,245	453	201,75
Group 4	94	3	0,816	105	128,68
	134	4	0,338	39	115,38
	288	1	0,020	2	97,98
	114	1	0,240	23	95,79
	122	1	0,129	12	93,26
	132	4	0,554	49	88,38
	249=287	4	9,881	776	78,53
	133	4	0,420	26	61,90
	294	4	8,528	513	60,16
	126	2	1,083	58	53,55
	256	1	0,024	1	41,67
	290	2	0,154	5	32,47
	183	2	0,345	11	31,88
	58=59	3	2,638	81	30,70
	298	4	1,275	31	24,31
	143	4	0,267	6	22,45
	180	1	0,252	3	11,90
	206	1	0,089	1	11,22
	65=283	1	4,348	10	2,30
	296	4	2,268	3	1,32

Analysis of sherd densities again leads to the division of pits into four distinct groups (see Table 12). Pits in groups 1 and 2, while discernible by a definitive gap in s/v ratio, also exhibit similarly high values in an analysis of both decorated sherds (Table 13) and of fine wares (Table 14), showing that such material may have carried higher significance to its users and creators. These density values may be correlated to total sherd density, however, an analysis of fine wares and decorated sherd percentages show that this is not the case (Table 15 and 16). This will be discussed in context for pit in groups 1 and 2.

Group 1 Pits

Pit 31, with a maximum depth of 10 cm, has the highest sherd density of all pits at Kompolt-Kistér. There are a total of 212 sherds, only 12 of which are decorated. Many of the sherds are very small; however, an analysis of sherd weight density also results in pit 31 as being in the forefront. Among the other finds are a number of lithics and pieces of daub, as well as one fired clay conical weight and a fired clay bead. Only one strata was identified in this pit so, according to our theory which uses stratification as a criterion, it cannot be categorized as a pit of structured deposition. However, with its high density values of both sherd count and weight, as well as the presence of 'special' finds, it is likely that the material was deliberately deposited.

Pit 62 (*Figure 27*) is an elongated pit, 300 cm in length and 90 cm in width, with a maximum depth of 20 cm. At the base was an 8 cm thick burnt clay layer, with a thin layer of ash above. Archaeologists note that there were a larger number of ceramics in the lower layers of the pit, as well as large pieces of animal bones. In the south portion, a *Bos Primigenius* mandible was found; in the northeast section, large, red-painted storage jar sherds; and on the north side, a rhyolite grindstone was discovered. Also recovered were numerous shells and small stone fragments. Furthermore, there were 390 sherds, 18 of which were decorated (all coarse wares). The rich and varied find material, as well as the fill contents of the pit, lead to the conclusion that pit 62 is one that was subject both to deliberate and structured deposition.

Figure 27. Pit 62 at Kompolt-Kister.
(From Vaday *et al.* 1999:Fig. 16)

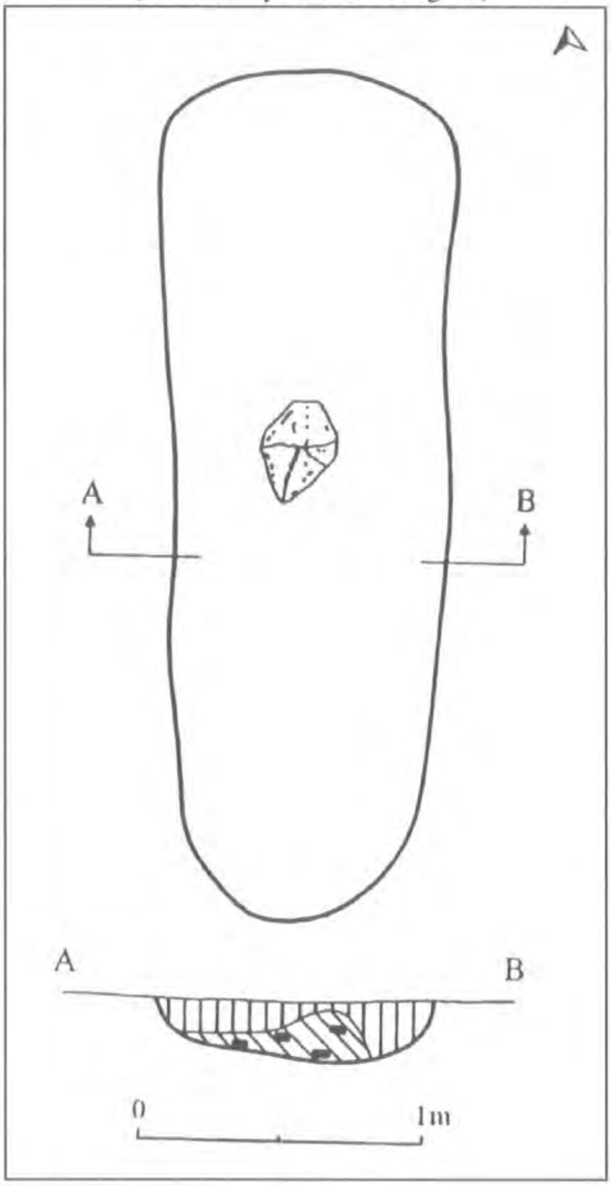


Table 13. Pits at Kompolt-Kistér in descending order of decorated sherd density.

Feature	# Sherds	Sherd Density	Sherd Weight	Sherd Weight Density	Decorated Sherds	Decorated Sherd Density
*12**	32	1250.00	661	25820.31	7	273.44
*31**	212	3028.57	3268	46685.71	12	171.43
*125***	1020	566.67	23491	13050.56	160	88.89
*26=99***	1442	681.15	40207	18992.30	162	76.52
*11**	185	1427.47	2636	20339.51	9	69.44
*62**	390	1444.44	4790	17740.74	18	66.67
*140***	688	825.18	8870	10638.55	36	43.18
13	573	270.66	9020	4260.71	76	35.90
*184***	117	585.00	1550	7750.00	6	30.00
123	88	219.34	1200	2991.03	10	24.93
131	453	201.75	15365	6843.12	43	19.15
*246***	83	462.07	1945	10828.08	3	16.70
*44***	43	674.11	746	11695.08	1	15.68
94	105	128.68	1204	1475.49	10	12.25
132	49	88.38	462	833.33	4	7.22
294	513	60.16	11066	1297.66	48	5.63
121	108	276.92	1842	4723.08	2	5.13
114	23	95.79	145	603.92	1	4.16
143	6	22.45	27	101.01	1	3.74
134	39	115.38	560	1656.80	1	2.96
126	58	53.55	775	715.60	3	2.77
133	26	61.90	955	2273.81	1	2.38
298	31	24.31	290	227.45	2	1.57
249=287	776	78.53	3167	320.50	5	0.51
288	2	97.98	10	489.91	0	0.00
122	12	93.26	155	1204.66	0	0.00
256	1	41.67	25	1041.67	0	0.00
290	5	32.47	55	357.14	0	0.00
183	11	31.88	115	333.33	0	0.00
58=59	81	30.70	1120	424.55	0	0.00
180	3	11.90	5	19.84	0	0.00
206	1	11.22	30	336.70	0	0.00
65=283	10	2.30	60	13.80	0	0.00
296	3	1.32	245	108.02	0	0.00

* Group 1 pit
** Group 2 pit

Table 14. Pits at Kompolt-Kistér in descending order of fine wares density.

Feature	# Sherds	Sherd Density	Sherd Weight	Sherd Weight Density	Fine wares Sherds	Fine wares Density
*31**	212	3028.57	3268	46685.71	42	600.00
*125***	1020	566.67	23491	13050.56	758	421.11
*26=99***	1442	681.15	40207	18992.30	524	247.52
*184***	117	585.00	1550	7750.00	39	195.00
*140***	688	825.18	8870	10638.55	139	166.71
*44***	43	674.11	746	11695.08	8	125.42
*62**	390	1444.44	4790	17740.74	28	103.70
13	573	270.66	9020	4260.71	209	98.72
123	88	219.34	1200	2991.03	38	94.72
*12**	32	1250.00	661	25820.31	1	39.06
121	108	276.92	1842	4723.08	15	38.46
94	105	128.68	1204	1475.49	29	35.54
131	453	201.75	15365	6843.12	76	33.85
134	39	115.38	560	1656.80	11	32.54
133	26	61.90	955	2273.81	10	23.81
132	49	88.38	462	833.33	12	21.65
126	58	53.55	775	715.60	18	16.62
298	31	24.31	290	227.45	13	10.20
114	23	95.79	145	603.92	2	8.33
294	513	60.16	11066	1297.66	47	5.51
249=287	776	78.53	3167	320.50	14	1.42
*11**	185	1427.47	2636	20339.51	0	0.00
*246***	83	462.07	1945	10828.08	0	0.00
143	6	22.45	27	101.01	0	0.00
288	2	97.98	10	489.91	0	0.00
122	12	93.26	155	1204.66	0	0.00
256	1	41.67	25	1041.67	0	0.00
290	5	32.47	55	357.14	0	0.00
183	11	31.88	115	333.33	0	0.00
58=59	81	30.70	1120	424.55	0	0.00
180	3	11.90	5	19.84	0	0.00
206	1	11.22	30	336.70	0	0.00
65=283	10	2.30	60	13.80	0	0.00
296	3	1.32	245	108.02	0	0.00

* Group 1 pit
** Group 2 pit

Table 15. Pits at Kompolt-Kistér in descending order of decorated sherd percentage (number of decorated sherds per 100 sherds in each pit)

Feature #	% decorated sherds
12*	21.88%
143	16.67%
125**	15.69%
13	13.26%
123	11.36%
26=99**	11.23%
94	9.52%
131	9.49%
294	9.36%
132	8.16%
298	6.45%
31*	5.66%
140**	5.23%
126	5.17%
184**	5.13%
11*	4.86%
62*	4.62%
114	4.35%
133	3.85%
246	3.61%
134	2.56%
44	2.33%
121	1.85%
249=287	0.64%
65=283	0.00%
122	0.00%
180	0.00%
206	0.00%
256	0.00%
288	0.00%
183	0.00%
290	0.00%
58=59	0.00%
296	0.00%

* Group 1 pit
** Group 2 pit

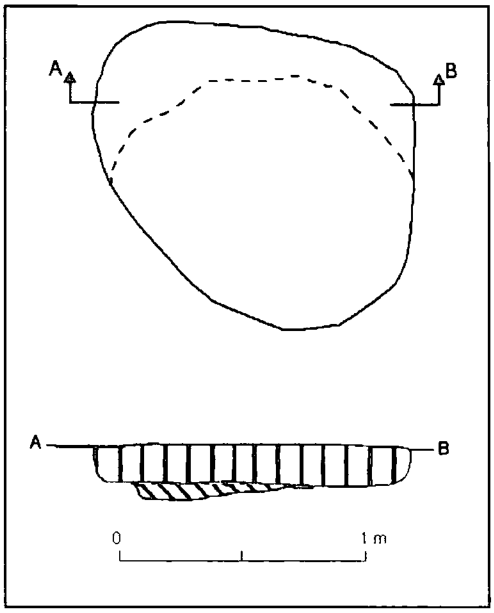
Table 16. Pits at Kompolt-Kistér in descending order of fine wares percentage (number of fine wares sherds per 100 sherds in each pit)

Feature #	% fine wares
125**	74.31%
123	43.18%
298	41.94%
133	38.46%
13	36.47%
26=99**	36.34%
184**	33.33%
126	31.03%
134	28.21%
94	27.62%
132	24.49%
140**	20.20%
31*	19.81%
44**	18.60%
131	16.78%
121	13.89%
294	9.16%
114	8.70%
62*	7.18%
12*	3.13%
249=287	1.80%
65=283	0.00%
122	0.00%
180	0.00%
206	0.00%
246	0.00%
256	0.00%
288	0.00%
11*	0.00%
183	0.00%
290	0.00%
58=59	0.00%
143	0.00%
296	0.00%

* Group 1 pit
** Group 2 pit

In contrast, there were no special finds in pit 11, albeit 185 sherds were found (all coarse, nine decorated). Animal bones were also reported, but none of special mention. The fill consists of mixed grey material, with a stepped portion at the base consisting solely of a clearer grey fill (*Figure 28).* This stepped portion may be related to similar social practices that resulted in the same stepping of the base in pit 51 at Füzesabony-Gubakút, where a clay idol and altar were found. This possibility, along with the significantly high s/v ratio at pit 11, can lead us to believe that the material was deliberately deposited.

Figure 28. Pit 11 at Kompolt-Kister.
(From excavation drawings courtesy of A. Vaday)



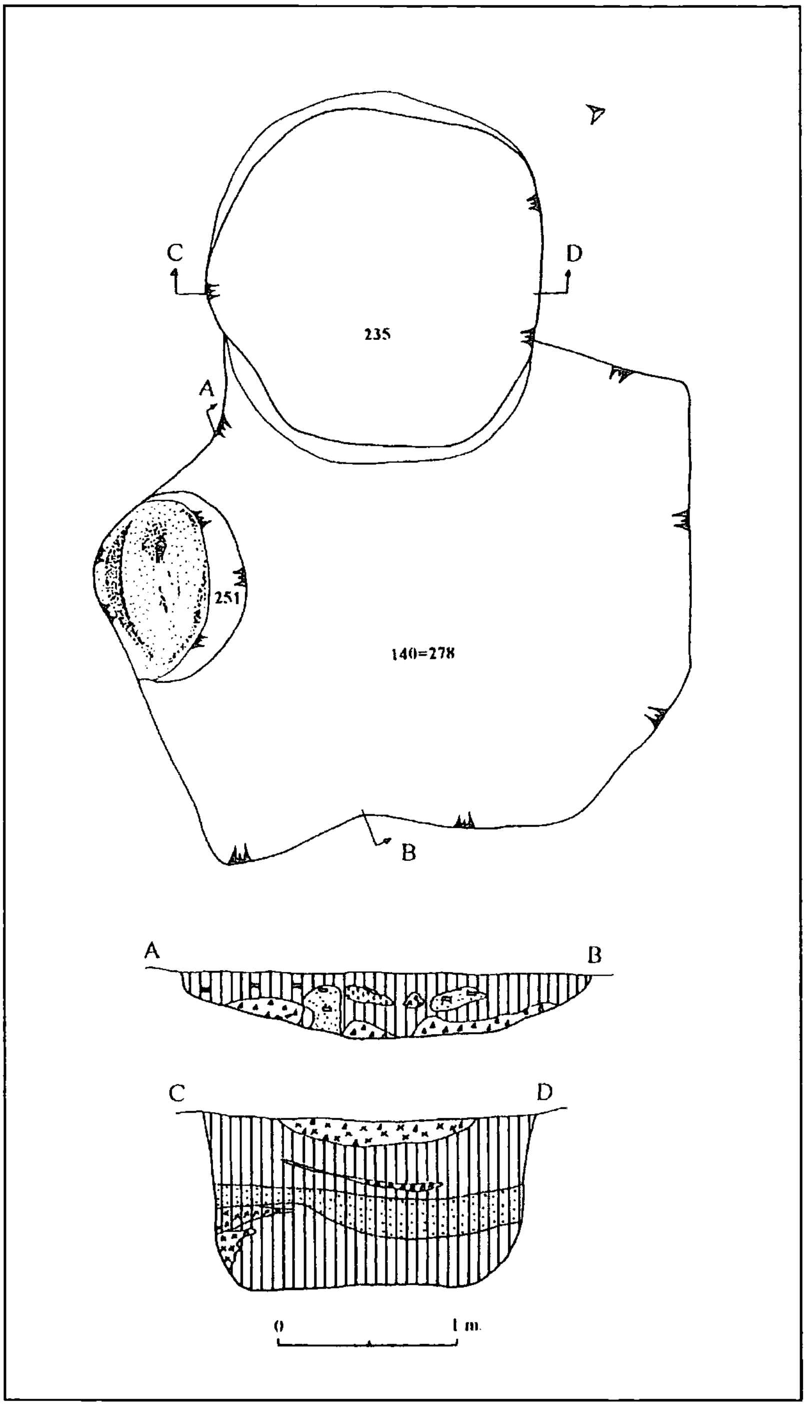
Pit 12 is a small pit that was destroyed or damaged by a later Salmatian pit. It is not possible to know the full extent of contents or structure of this AVK feature. Its secondary disturbance leaves the context of deposition unclear, and a comparison of the remaining archaeological record for this feature in relation to complete pits at Kompolt-Kistér would be imbalanced. Therefore, with only 32 sherds, all of which are domestic, this pit can be removed from the analysis.

Group 2 Pits

Pit 140 (*Figure 29*) has been interpreted as a workshop pit, being large in size and of an irregular square shape. It has been cut by another pit (235) which, while stratified, has few finds. In the southwest corner of the pit lay the remains of a fireplace, larger on the surface (100 x 85 cm) than at its base (90 x 65 cm), and filled with grey ash mixed with charcoal, atop a red burnt surface. Finds include ceramics, animal bones and charcoal, as well as burnt clay, shells, and obsidian tools. The 688 ceramic sherds include both domestic and decorated wares, some of which exhibited traces of red paint. The stratigraphy as presented in vertical profile AB does not appear structured, but the location of this section raises questions. With a sherd density of 825.18 per m^3, the possibility of deliberate deposition is not discounted. Further evidence, such as multiple sections and detailed location of finds would have provided a more definite answer.

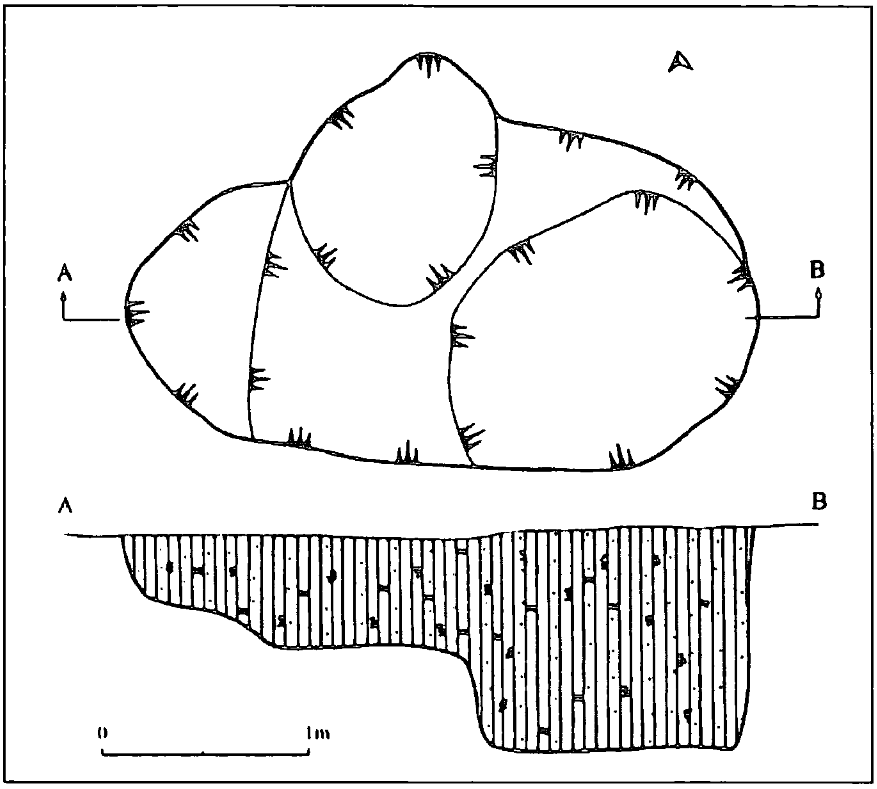
Pit 26 (=99) (*Figure 30*) is an irregular oval shaped pit, stepped from the west towards the deepest portion in the east. The fill is homogenous, but for remains of a possible oven discovered on the north side. The stratigraphy, however, does not show any sort of structure. It should be recalled, however, that pit 51 at Füzesabony-Gubakút was also stepped and had remains of a fireplace; it was within this pit that finds relating to ritual practice such as an idol and altar were found. Pits of this type need further research, as to whether they were simply functional, or if ritual played a role in its use-life. Presently, pit 26 cannot be categorized as being of structured deposition, given its homogeneity. However, the sheer quantity of its material (1,442 sherds), as well as the discovery of two grind stones and imported material (Szilmeg and Bükk material, and one Ludanice sherd[2]), leads to the conclusion that its contents were deliberately placed.

Figure 29. Pit 140 at Kompolt-Kister.
(From Vaday *et al.* 1999: Fig. 28)



[2] The presence of this single Ludanice sherd is unclear, as it is much later in date (Middle Copper Age). However, being a single occurrence, we shall disregard its presence, as it is quite possible that it entered the context by accident, i.e., confusion of finds post-ex, misidentification, etc., or was displaced vertically by biological activity.

Figure 30. Pit 26 at Kompolt-Kister.
(From Vaday *et al.* 1999: Fig. 9)

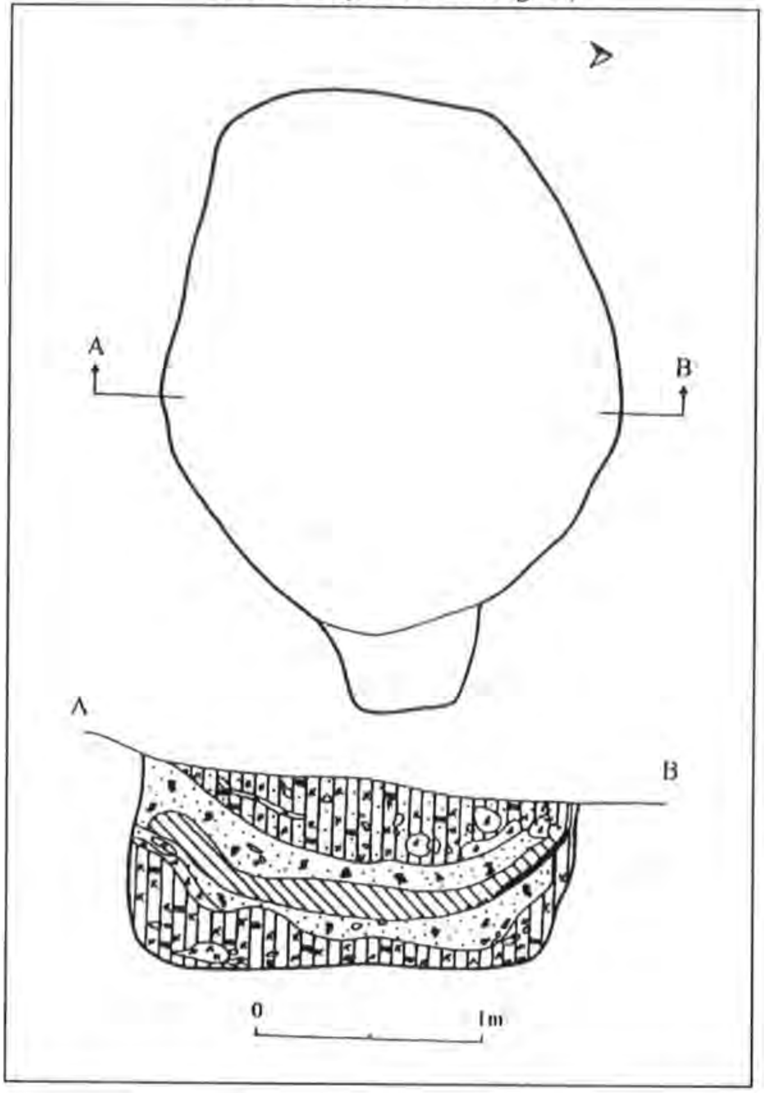


Pit 44 is a circular pit, uneven in the southwestern quarter, with an irregular undercut in the north wall. The fill consists of grey, mixed humus with scattered tufa granules mixed in clay. Finds include 43 pot sherds, which, with the exception of two small thin-walled pieces of fine wares, are all domestic ceramics. Its high sherd density can be contributed to its miniscule volume (0.064 m^3), but not to deliberate or structured deposition.

Pit 184 is a, round-shaped pit, with a diameter of 100 cm and a depth of 40 cm. The fill consisted of light grey material, mixed with granules of chalk. In the middle of the pit lay a grind stone, around which were lenses of grey ash. There were 111 AVK sherds found, as well as animal bone, daub, botanic material, and a polished stone tool. While the presence of such material as stone tools and animal bone often point to structured deposition, the data for this pit is again quite minimal, and no definitive conclusions can be drawn about deliberate or structured deposition. Its relatively rich find material, coupled with the evidence for burning, would point to the possibilities of deliberate placement; however, the results of the analysis are inconclusive.

Pit 125 (*Figure 31*), however, was more detailed in description. It is a regularly shaped oval pit, with an irregular extension on its east side that is only 13cm deep. The pit proper is our sole concern. The uppermost fill is a greyish-black soil, which lies above an ashy layer filled with fired clay. Below is a brownish grey soil, under which the ashy layer and greyish-black strata repeat themselves. At the base on the south side lay a broken pot, with thick remains of paint on the inside. Archaeologists posit that this vessel was used for ochre storage (Vaday *et al.* 1999:69). In the same area was considerably burnt yellow clay, with many animal bones, decorated ceramics, obsidian blades, and two spindle whorls, as well as pierced shells and bone tools. Pot sherds were dominantly found in the grey ash at a level of about 70 cm depth. In the centre of the pit, a fragment of a perforated stone axe was discovered, with an obsidian blade, and fragments of daub and decorated ceramics, all laying in a mound. Traces of red ochre were also found, as well as more than 100 fragments of stone tools. The finds in pit 125 are very rich, containing 1020 pot sherds, predominantly fine wares but ranging from common domestic ware to decorated ceramics, all well-made and seemingly well cared for. This data, combined with the evidence of burning, leads to the conclusion that this pit was subject both to deliberate and structured deposition.

Figure 31. Pit 125 at Kompolt-Kister.
(From Vaday *et al.* 1999: Fig. 25)



Pit 246 is an AVK feature with secondary Sarmatian material. We can speculate, therefore, that much of the material was disturbed by later occupation. Archaeologists further propose that much of the feature had been washed out, leaving only a shallow base layer (Vaday et.al. 1999:112). Ceramics (a total of 83) and animal bones were both recovered, as well as a fragment of an andesite grind stone. Again, while the presence of a grind stone can often be used as a marker for pits with structured deposition, it is impossible to be certain about the full extent of this deposit, and how deliberate it was.

Group 3 Pits

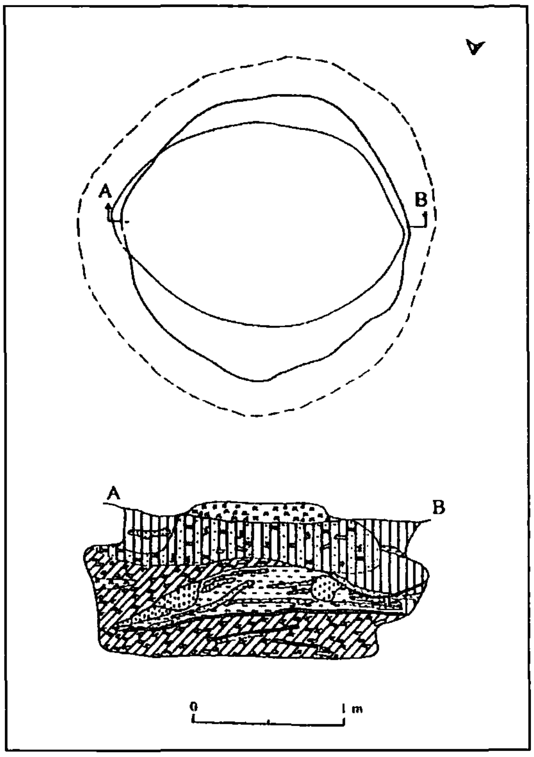
While sherd densities of group 3 pits (121, 13, 123, 131[3]) are considered less significant in relation to all other pits at Kompolt-Kistér, these pits exhibit a complex stratigraphy (with the exception of pit 123) that deems them worthy of discussion. In fact, it is both high sherd density and complex stratigraphy that contribute to predictions of structured deposition; the theory proposed was that these two factors were equal contributors to the rule. Conclusions thus far have been contradictory, with group 1 pits being of homogenous fill and with many other pits with high numbers of strata having low sherd densities. Pits 13 and 121 adhere to both prerequisites and are therefore discussed.

Pit 13 is a round-shaped pit with irregular sides. On the surface lay a one metre thick layer of yellow tufa, below which are layers comprising a complex stratigraphy (*Figure 32*). The majority of the fill is a greyish black clayey soil, alternating with grey ash, considerably mixed with daub. There is also yellow clay and numerous burnt layers with red ash and charcoal. Archaeologists hypothesize that the major burning layer was the surface of a fireplace that was repeatedly renewed (Vaday *et al.* 1999:22). However, burning has often been a typical feature of pits with structured deposition (see Chapter III), especially when combined with the presence of rich and diverse finds. In pit 13, a total of 573 sherds were found, over 36% of which were fine wares; 48 of these thin-walled sherds were decorated with rows of points and dotted lines, as well as 28 sherds of coarse ware. Some red paint and impressed designs were also observed. Many of these ceramics were found within the burning layers, along with many animal bones. Other finds include

[3] Pit 131, however, must be removed from this analysis due to contradictory data upon collection. The publication notes that 30 AVK ceramics sherds were found in this pit; however, a personal visit revealed a count of 453! It is possible that many finds were mixed in the storage process, or that a mislabelling occurred. Nevertheless, the uncertainty of this data necessitates its exclusion. Even if we were to include this pit into the

obsidian and other stone tools; a pair of these stones was discovered at the base. Again, the rich find material, along with the complex stratigraphy and high density of ceramics, leads to the conclusion that the contents of pit 13 were deposited in both a deliberate and structured manner.

Figure 32. Pit 13 at Kompolt-Kister.
(From Vaday et al. 1999: Fig. 5)

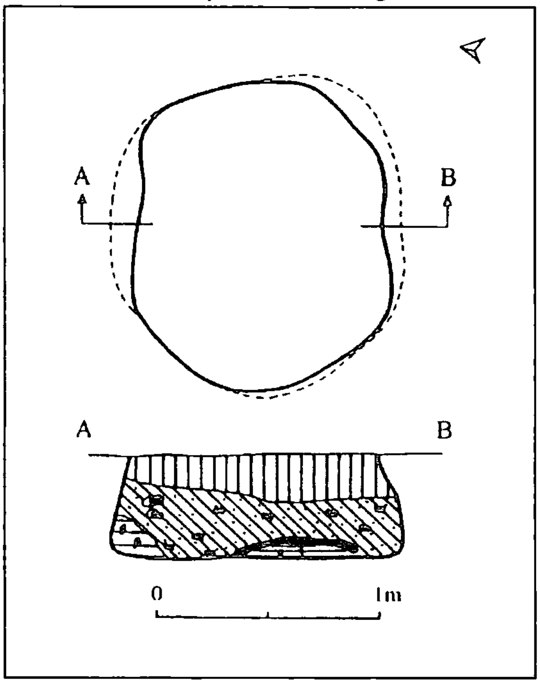


Small and irregular, pit 121 (*Figure 33*) consisted of three types of fill. The uppermost layer was a greyish-black clay, within which were found ceramics and splinters of animal bones. Below was a grey layer, considerably mixed with broken fragments of daub. At the base were two fills, one in the southeast, and one in the middle northern quarter. The former consisted of thick charcoal mixed with clay, and the latter was a considerably burnt grey ash layer. In this fill were ceramic sherds and one bone tool, as well as large storage jar fragments. The ceramics are

database with reliance on the published data, it would not fall into a high sherd density group, and would therefore be discounted.

not as rich in this pit compared to those already discussed. The possibilities of deliberate and structured deposition are not completely discounted; however, the data does not give a clear answer.

Figure 33. Pit 121 at Kompolt-Kister.
(From Vaday et al. 1999: Fig. 24)



Summary of Kompolt-Kistér

The difficulties presented in the beginning of this section have proven to be minor. The lack of more detailed finds data, as well as the absence of any settlement structure, proved insignificant. Close analysis of each pit ranking high in relative sherd to volume ratio and/or exhibiting complex stratigraphy have revealed a number of features rich in finds, containing much evidence of burning as well as special material in the form of decorated sherds and stone tools. Pits 13, 31, 62, 125, 11, 26 and 140 have been cited as having its material deliberately interred, and, with the exception of the latter three, are also considered to be of structured deposition.

Bylany F

Unfortunately, ceramics were not weighed at Bylany; comparisons to statistics based on weight cannot be made with the similar data at Kompolt-Kistér and Neckenmarkt. Data from these sites, however, show that similar patterns were found with regard to mean and median sherd to volume ratios when comparing either sherd counts or weights. Statistics for sherd counts are presented in Table 17, with stratigraphic groups based on divisions identified in Table 5. It can be seen that, on average, there are higher quantities of sherds in stratified pits. At Bylany F, group 4, containing pits with five or more strata, ranks highest in this category. Interestingly, the statistics also show that when taking pit volume into account, mean s/v ratios are also higher in pits with more stratigraphic layers. That is, pits in groups 3 and 4, having a minimum of four strata, contain the highest mean values for density of ceramic deposition.

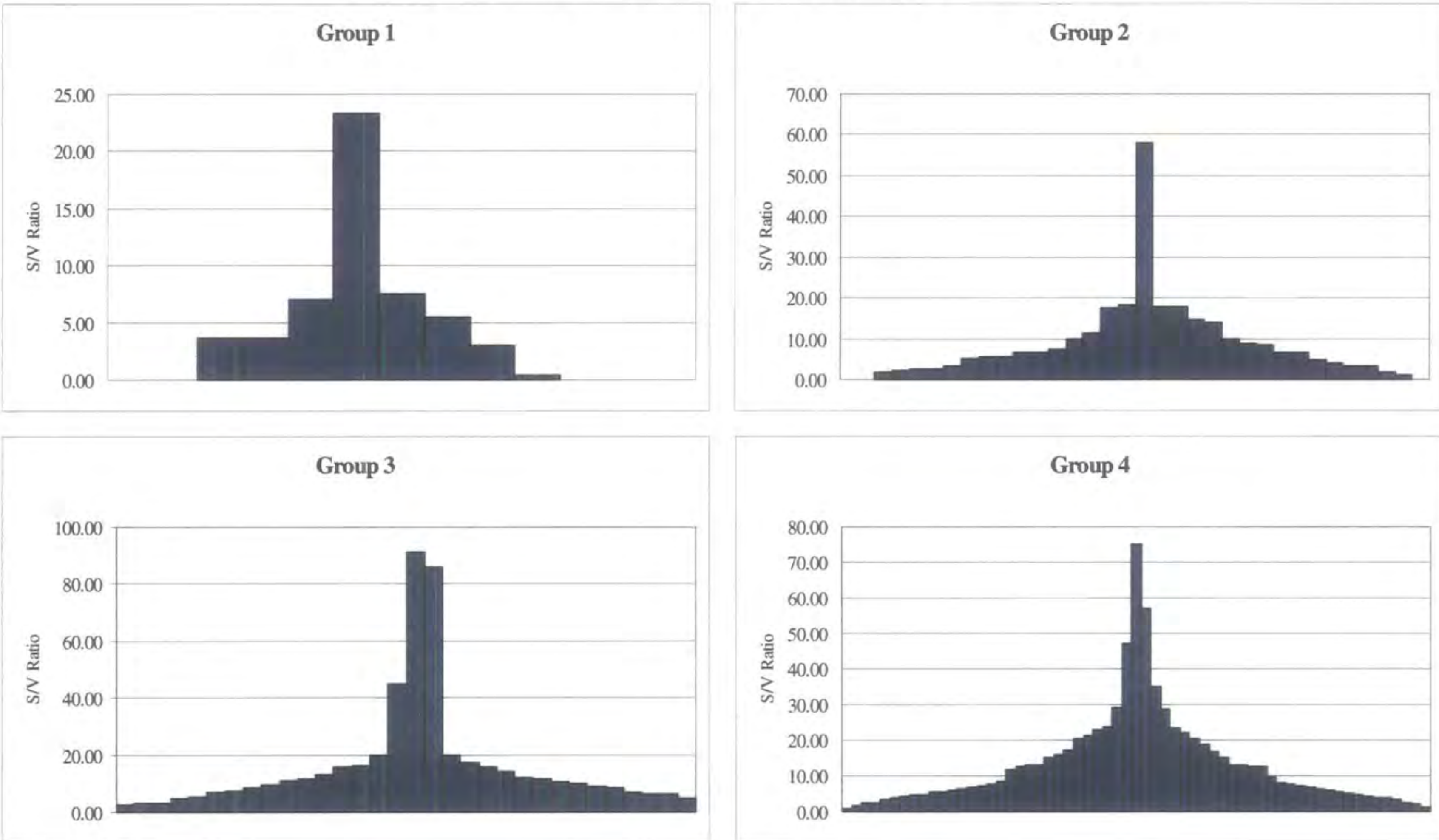
Table 17. Statistical results of sherd to volume ratios per strata group at Bylany F, compared to its average total quantity of ceramic sherds.

Group	*Mean*	*Median*	*Maximum*	*Minimum*	*Standard Deviation*	*Average quantity*
1	4.15	2.94	23.33	0.00	6.40	2.15
2	8.41	5.94	58.08	0.00	10.32	11.35
3	15.11	9.64	90.91	1.41	20.20	16.62
4	12.98	7.62	75.06	0.71	13.53	51.16

Previously mentioned biases relating to dispersion and small sample size were also taken into account. While the sample size for Bylany is higher (n=155), dispersion continues to show variability in the data such that single outliers persist in each strata group (*Figure 34*). It is these values that contribute to high values of standard deviation. While removing these extremes provides more significant values for standard deviation, there is still a lack of any obvious pattern in the distribution of s/v ratios. With some exception, most values fall below 40 but graphically display very peaked characteristics (*Figure 35*). This raises the notion that there were many different social practices contributing to pit-digging at Bylany F, and further supports the theory that structured deposition is *not* a statistical anomaly that can be quantified by any means.

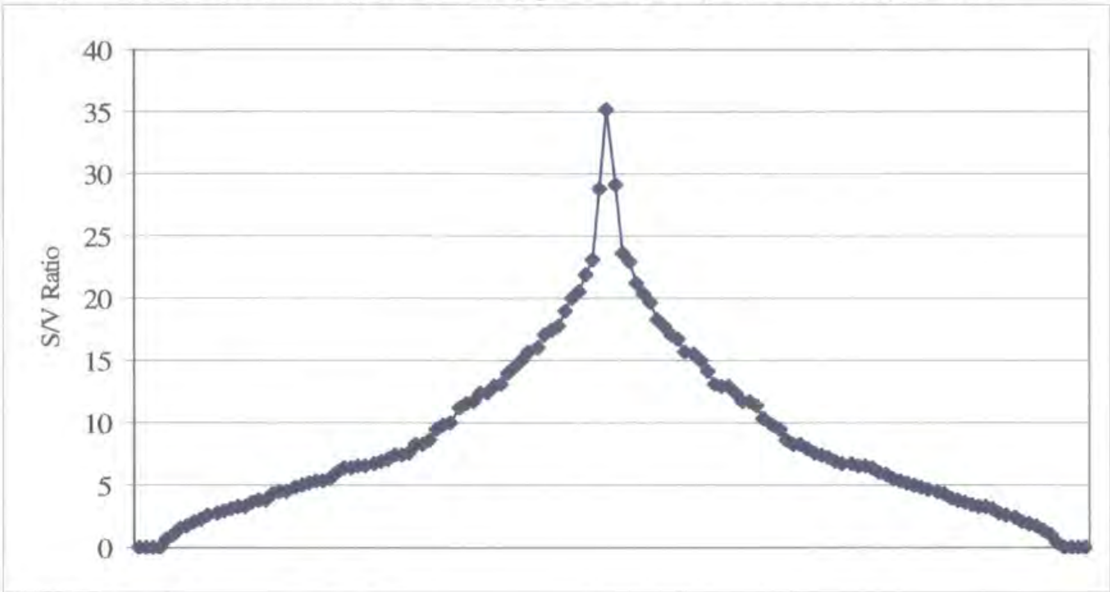
In order to identify instances of structured deposition then, we must again investigate further into those pits with significant stratification and those with significantly high s/v ratios. The data for Bylany poses a number of problems. While there is a complete finds catalogue, all finds are only published per pit and not per excavated layer. Pit complexes were often divided into further sections, but only by horizontal dimension. Again, this makes it impossible to understand the vertical distribution of finds and the possibility of any deliberate concentration of archaeological material. While notable cases are often described in individual descriptions of each feature, such descriptions were not published and were not available for further analysis. Investigation into pits at Bylany F, therefore, meant only an analysis of each pit using central profiles. It must be reiterated how potentially misleading this may be.

Figure 34. Dispersion of s/v ratios in strata groups 1 to 4 at Bylany F



Note: One vertical column represents one pit.

Figure 35. Distribution of s/v ratios of pits at Bylany F, excluding outliers.



Note: Each point represents one pit.

Significantly Stratified Pits

The quantity of pits at Bylany F is limiting to this present discussion. Pit profiles were very detailed, distinguishing between very finite differentiations of strata. As previously outlined, this led to the grouping of pits into four units, not by natural numbers of stratigraphic layers, but by relative groups which allowed the distinction between those with homogenous fill, those with stratified fill, and those that lay in between. At Bylany F, what was considered to have stratified composition were pits in group 4, having five or more strata. With a total of 60 pits fitting this description, it is impossible to analyze them on a case by case basis. If we further take into account pits in group 3, which could also be considered to have complex stratigraphy with four stratigraphic layers, the total number of pits to be discussed would rise to 94. We must, therefore, continue to analyze these pits in relation to each other, taking into account those factors previously identified as being prerequisites to the identification of pits with structured deposition. That is, we must discuss pits with significantly high s/v ratios, highlighting instances were higher numbers of stratigraphic layers are present.

Table 18. Pits at Bylany F in descending order of sherd to volume ratio

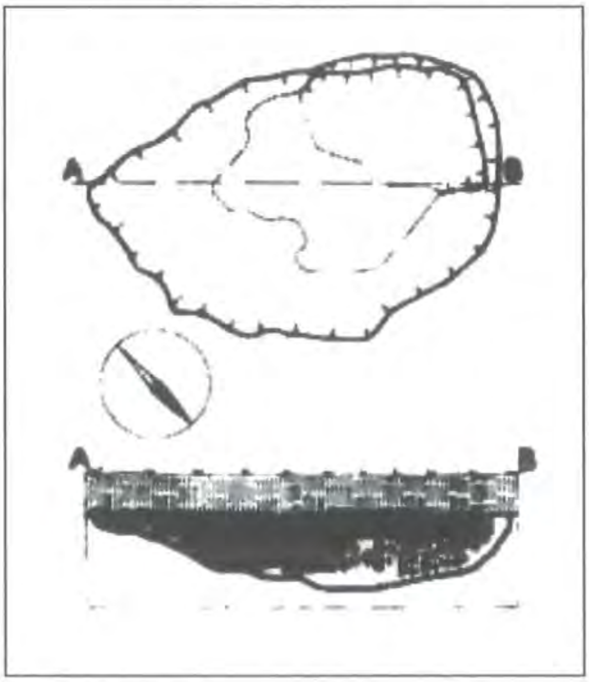
Feature	# Strata	Strata Group	Volume (m3)	# Sherds	S/V ratio
2216	**4**	**3**	**0.66**	**60**	**90.91**
2115	**4**	**3**	**0.74**	**64**	**86.07**
2144	**5**	**4**	**1.01**	**76**	**75.06**
2164	3	2	0.40	23	58.08
2250	6	4	1.60	91	56.93
2121	6	4	2.57	121	47.01
2258	4	3	0.25	11	44.75
2232	6	4	0.77	27	35.14
2236	5	4	0.72	21	29.17
2105	6+	4	4.25	122	28.72
2204	6+	4	7.94	188	23.68
2267	2	1	0.30	7	23.33
2280	5	4	1.68	39	23.17
2124	6	4	1.31	30	22.86
2123	6	4	6.16	135	21.92
2259	5	4	2.49	53	21.28
2174	5	4	0.68	14	20.47
2245	5	4	0.64	13	20.36
2213	4	3	0.80	16	20.05

Significantly High Sherd Densities

Three pits were investigated more closely; the reason being that their sherd density values, while small in relation to pits at other sites, were in a group separate from the others at Bylany F (Table 18 presents the top 20). These pits are 2216, 2115, and 2144, all of which have a complex stratigraphy (see Figures 36 to 38).

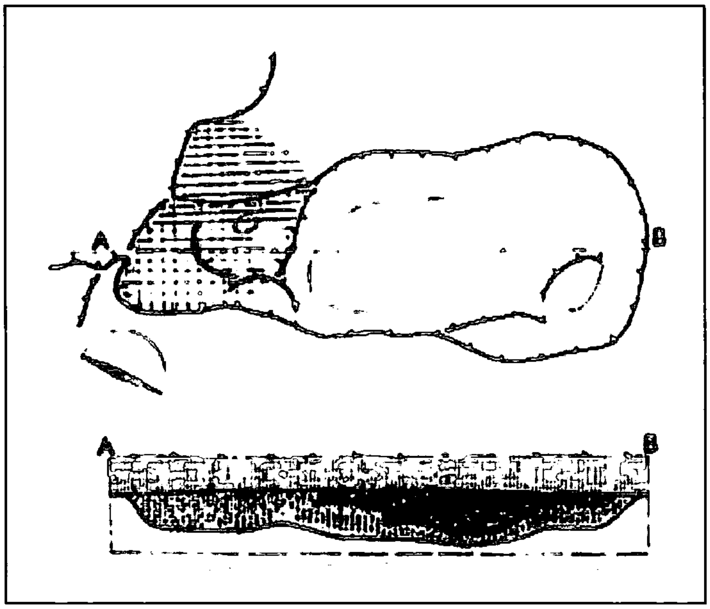
Pit 2216 (*Figure 36*) is a relatively average sized pit, with a maximum length of 220 cm and a maximum width of 150 cm. Its highest depth measures to 40 cm, containing fill that was considered by the archaeologists to be stratified (Pavlů *et al.* 1987a:30, 196). There were but 60 recorded ceramic sherds, 12 (20%) of which were decorated, and 30 (50%) of which were fine. A single find each of chipped stone, polished stone, and a grindstone were also discovered, as well as four stones of undistinguished mention. Burnt clay and charcoal were also present, but it is not clear as to their quantities or concentrations.

Figure 36. Pit 2216 at Bylany F.
(From Pavlů *et al.* 1987b:Fig. 2216)



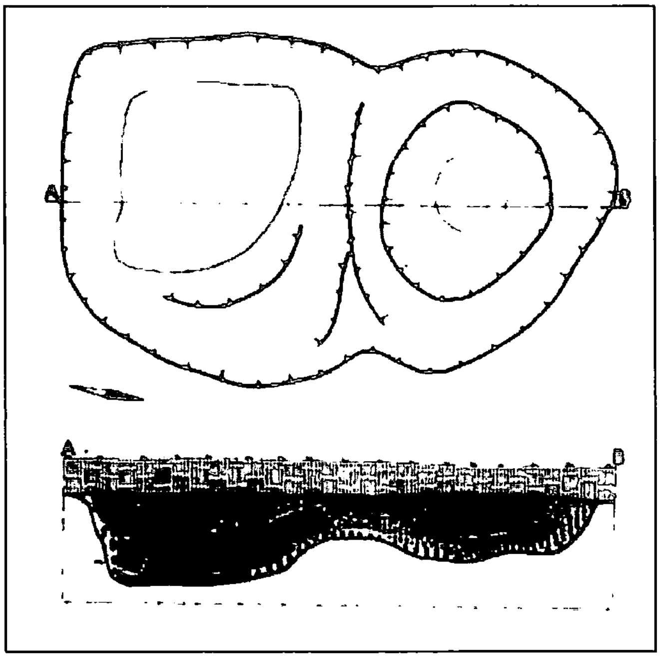
Similarly, burnt clay and charcoal were also present in unknown quantities in pit 2115 (*Figure 37*), as well as animal bone and 15 undistinguished stones. In this pit, however, eight chipped stones were found, along with nine polished stone tools, and seven polishers. Of the 64 sherds of ceramics that were found, only seven (10.94%) were decorated but more than half (53.13%) were fine. The fill in which this material lay was described by archaeologists as 'heterogenous, differing in individual depressions' (Pavlů *et al.* 1987a:26,196), in a pit measuring 340 cm by 150 cm in maximum length and width respectively, with a maximum depth of 36 cm. There is no seemingly obvious pattern or structure to its deposition, but a number of factors may have affected this interpretation, not the least of which is the lack of detailed description. This would have been helpful, as close analysis of the pit profile reveals the possibility that the northern part of the pit closer to point A may have been filled prior to the rest of the pit. It seems that deposition in this pit was uneven both temporally and spatially, and therefore could have been subject to deliberate, if not structured, deposition.

Figure 37. Pit 2115 at Bylany F.
(From Pavlů *et al.* 1987b: Fig. 2115)



Pit 2144 (*Figure 38*) is also a convincing case for deliberate and structured deposition. Identified by archaeologists has having stratified fill (Pavlů *et al.* 1987a:27,196), this pit measures two and a half metres in maximum length and two metres in maximum width. Its maximum depth measures to 50 cm. A total of 76 ceramic sherds were recovered, 35 (46.05%) of which were decorated, and again, more than half of which were fine (53.95%). No charcoal was discovered, but both animal bones and burnt clay were present, along with two polished stones, one polisher, and six stones that were undistinguished.

Figure 38. Pit 2144 at Bylany F.
(From Pavlů *et al.* 1987b: Fig. 2144)



Analyzing these pits together, it can be seen that the quantity of ceramic sherds in each pit is higher than both the site average (28.87) as well as the mean values of each stratigraphic group. Furthermore, the percentage of fine wares is more than 50% in all three pits, compared to the site average of 43.7%, and decorated sherds in pit 2144 comprise about 46% of its total ceramics – more than twice the site average of 21.3%. However, pits 2216 and 2115 both have lower percentages of decorated sherds (20% and 10.9% respectively). Nevertheless, these comparisons support previous conclusions regarding fine wares and decorated ceramics. That is, these finds were held in higher regard than common, undecorated household pottery, possibly carrying with them a sense of history and pride that is connected with its makers. The fact that pit 2144 had an extremely high percentage of decorated sherds in relation to other pits at Bylany F may point to a stronger case for deliberate and structured deposition.

Table 19. Ceramic finds of selected pits with high sherd to volume ratios.

Pit	# Individuals	# Pieces	Decorated	Undecorated	Fine	Coarse
2216	60	362	12	48	30	30
2115	64	255	7	57	34	30
2144	76	206	35	41	41	35

(From Pavlů *et al.* 1987a)

Table 20. Non-ceramic finds of selected pits with high sherd to volume ratios.

Pit	Chipped Stone	Polished Stone	Polishers	Grind-stones	Other Stones	Bones	Burnt Clay	Charcoal
2216	1	1	0	1	4		x	x
2115	8	9	7	0	15	x	x	x
2144	0	2	1	0	6	x	x	

(From Pavlů *et al.* 1987a)

Summary of Bylany

While analysis at Bylany proved difficult on a case by case basis, a lack of detailed description per pit and the absence of layer by layer finds reports did not leave this site inconsequential to the present study. In fact, close intra-site investigation of stratigraphy and relative sherd densities found further instances of deliberate and structured deposition. In those pits identified to have both complex stratigraphy and relatively high sherd to volume ratios, more than half of the ceramic sherds were fine wares, and in a single notable case, the percentage of decorated ceramics were more than twice the site average. While we cannot confirm with absolute certainty that these pits were indeed structured deposits, the possibility is quite high, confirming as well the higher importance of fine wares and decorated ceramics when deliberately depositing material.

Summary

The previous chapter outlined the theory and methodology used in the analysis of pits at three sites: Neckenmarkt in Austria, Kompolt-Kistér in Hungary, and Bylany F in the Czech Republic. Theory stated that it was not the size of the pit but the complexity of stratification that dictated the presence of structured deposition, identifiable only in concurrence with high values of sherd density as well as the presence of other significant finds. During the analysis, it was necessary to keep in mind the presence of outliers, even after pits were grouped according to stratigraphic layer. The resultant lack of pattern in these groups indicated a highly dispersed dataset that was often so small in number such that the calculation of statistical values would provide minimal clues to the identification of deliberate and structured deposition. Therefore, a relational investigation of pits at each site was undertaken, with further analysis into pits with either complex stratigraphy and/or pits with high sherd to volume ratios. The result of these intra-site comparisons, despite certain complications with the data, proved the process worthwhile.

The main conclusion of this study was that while deliberate and structured deposition is not a statistically quantifiable occurrence, there are instances where pits with complex stratigraphy and/or high sherd densities can be identified as being of deliberate and/or structured deposition. By studying sherd densities of ceramic finds, as well as studying the presence of markers such as stone, animal bone, and the presence of burning, a number of pits were identified as being deliberately deposited, with others that were identified as structured deposits. Table 21 highlights these results.

Table 21. Pits with deliberate and structured deposition at sites in used in study.

	Neckenmarkt	Kompolt-Kistér	Bylany F
Pits with deliberate deposition	113, 102	13, 31, 62, 125, 11, 26, 140	2216, 2115, 2144
Pits with structured deposition	102	13, 31, 62, 125	2144
Proportion of pits that were deliberate and/or structured deposits	2/22 or 9.09 %	7/34 or 20.59 %	3/155 or 1.93 %

Difficulties in the quality and availability of data meant that an ideal dataset, more complete and detailed in every respect was not attained. However, in dealing with archaeology, the nature of the record itself is such that the data may never be as complete as we would like it to be. For purposes of this present study, previously identified difficulties in the data have proven to be minor. Close intra-site investigation of stratigraphy and relative sherd densities found instances of deliberate and structured deposition such that it is plausible to use such factors in future identification of these phenomenal occurrences. An inter-site comparison would have been ideal, but variations in the present dataset proved that such an analysis, as in-depth as was done intra-site, was impossible. This issue, along with an investigation of place and possible rebuttals to the theory, are presented in the next chapter.

VI. INTER-SITE RESULTS

The results from the intra-site analyses have provided further proof on the existence of structured deposition. Analyzing relative sherd densities has shown that even the most common material can be highly symbolic. These findings, however, were discovered only through a close relational analysis of pits on specific sites. In order to understand social practice and the reasons behind these findings, it was important to investigate the issue of structured deposition on a wider scale. It can be agreed that pits as structured deposits did exist on specific LBK sites in central Europe, but how do these instances compare to others on a regional scale? An inter-site comparison may provide some clues. Of utmost importance, however, is the fact that there did exist variations in the dataset such that each site did not carry equal weight in an across-site comparison. These discrepancies existed in the two major factors identified as co-requisites to structured deposition: complex stratigraphy and high sherd densities.

Variations in Stratigraphy

Differential excavation and recording methods vary across countries, across sites, and even at different stages of a single archaeologist's career. While the theories of archaeological excavation share many commonalities across these borders, resultant datasets will often reveal a different story. It is recalled that at Bylany, layers were differentiated to diminutive detail, but at Kompolt-Kistér, precision seemed to decrease in comparison, and further so at Neckenmarkt. There were often many layers differentiated at Bylany, with pits displaying highly complex stratigraphy even when interpreted to be of homogenous fill (Pavlú and Zapotocka 1983). It was quite opposite at Neckenmarkt, with the majority of pit profiles revealing only one layer. In order to remove this bias across all three sites, pits at each site were divided not according to the number of natural stratigraphic layers recorded, but by strata groups, thereby accounting for diversity in the records. These were presented in Table 5 and the possible explanations for this diversity are discussed in the next chapter.

Variations in Sherd Density

Similarly, prominent differences were observed in values for sherd density (see Table 22). In comparison to Neckenmarkt where there are no s/v ratios above 600, at Kompolt-Kistér, seven out of 34 pits (20.6%) have s/v ratios over 600, and the range of values for all other pits are much higher than those at Neckenmarkt. The mean s/v ratio at Neckenmarkt is 121.06, while at Kompolt-Kistér, this value is 392.26. At Bylany, the *maximum* value for sherd density is 90.91 (pit 2216). With sherd density values at Bylany well below those at both Neckenmarkt and Kompolt-Kistér, an analysis of all sites together would exclude any pits at Bylany as being possibilities of deliberate and structured deposition. It would be hard to believe, however, that no material at Bylany was deliberately placed, especially considering the size of the settlement.

Pits at Bylany were identified as being deliberate and structured deposits mainly because of its high s/v ratios in comparison to all other pits at that site. If we were to redo the analysis across all three sites, pits at Bylany F would not even have been considered. Pit 2216, with the highest s/v ratio of 90.91 at Bylany, ranks only 29th in comparison to pits at all three sites. Similarly, pits at Neckenmarkt may have been removed from further investigation had s/v ratio been the only factor (see Table 23).

Table 22. Comparative table of statistical results at all three sites used in analysis, individually and combined

	Bylany F	Neckenmarkt	Kompolt-Kistér	All Sites
Mean	11.59	107.52	382.27	87.39
Median	7.02	71.86	96.89	11.60
Maximum	90.91	552.88	3028.57	3028.57
Minimum	0.00	0.81	1.32	0.00
Standard Deviation	14.60	129.06	620.19	293.48
Average # Sherds	28.87	346.73	211.44	96.15
Total # Pits	142	22	33	197

The Analysis

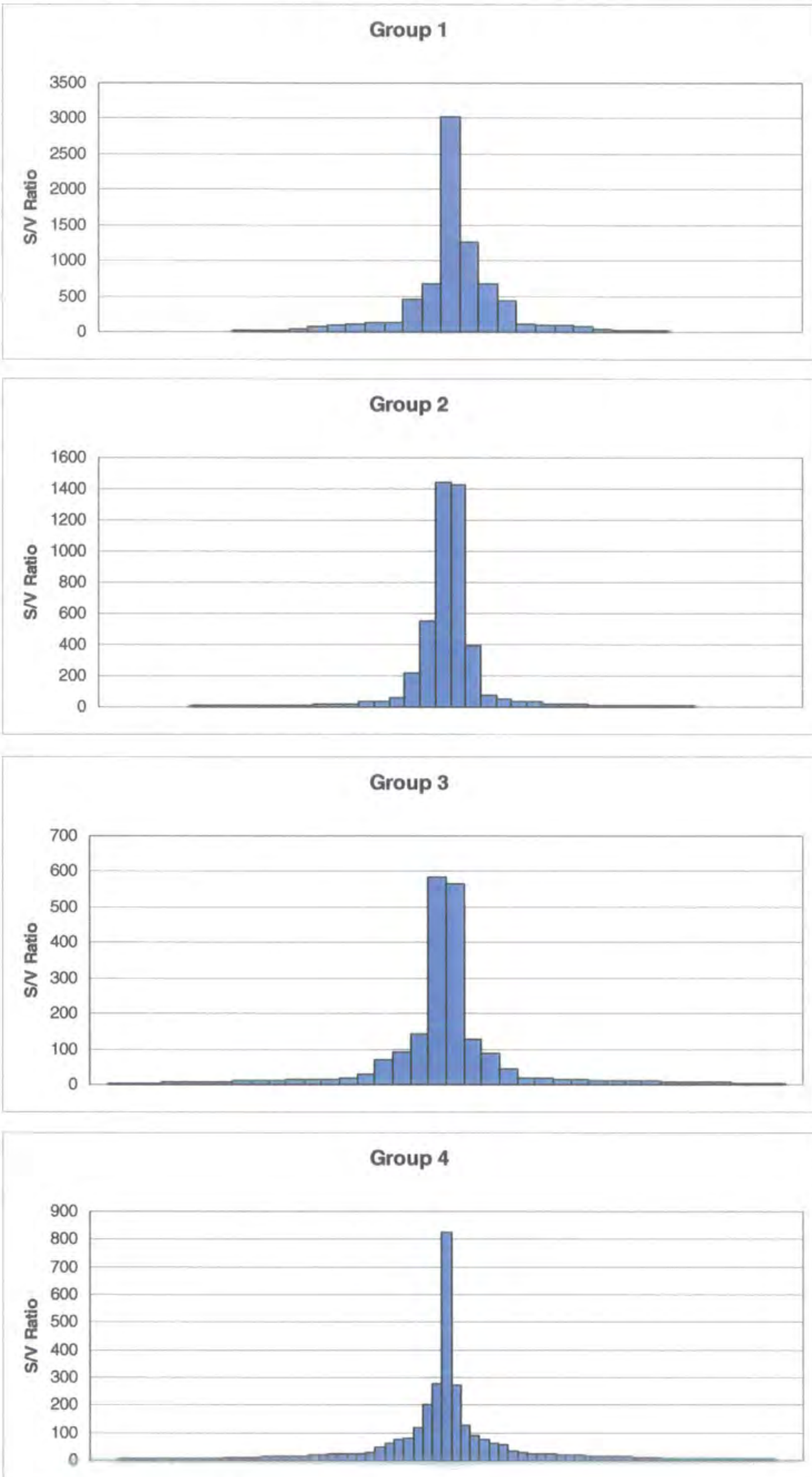
Keeping these variations in mind, the same methodology used in the intra-site analyses was applied on all pits across all three sites, investigating for instances of structured deposition. Numbers from all three sites were incorporated into one complete dataset, revealing the statistics in Table 24. It can be seen that, on average, there were more sherds *and* higher sherd densities in pits with homogenous fill. Higher s/v ratios were found in group 1, across all statistical measures. However, there is no pattern such that higher s/v ratios were found in any particular group. Dispersion, again, shows a very diverse dataset, with outliers in every group contributing to high standard deviations (*Figure 39*). Even if these extremes are removed, statistics still show that pits with homogenous fill are still more likely to have more sherds on average and per unit volume (Table 25).

Table 23. Pits with above average S/V ratios, across all sites used in analysis

Site	Pit #	Strata Group	S/V Ratio	Site	Pit #	Strata Group	S/V Ratio
Kompolt-Kistér	31**	1	3028.57	Kompolt-Kistér	123	2	219.34
Kompolt-Kistér	62**	2	1444.44	Kompolt-Kistér	131	4	201.75
Kompolt-Kistér	11*	2	1427.47	Neckenmarkt	14	3	142.89
Kompolt-Kistér	12	1	1250.00	Neckenmarkt	112	1	136.30
Kompolt-Kistér	140*	4	825.18	Kompolt-Kistér	94	3	128.68
Kompolt-Kistér	26*	1	681.15	Neckenmarkt	1	1	126.08
Kompolt-Kistér	44	1	674.11	Neckenmarkt	113*	4	124.55
Kompolt-Kistér	184	3	585.00	Kompolt-Kistér	134	4	115.38
Kompolt-Kistér	125**	3	566.67	Neckenmarkt	167	1	111.11
Neckenmarkt	108	2	552.88	Neckenmarkt	17	1	107.97
Kompolt-Kistér	246	1	462.07	Kompolt-Kistér	288	1	97.98
Neckenmarkt	100	1	432.10	Kompolt-Kistér	114	1	95.79
Neckenmarkt	102**	2	389.99	Kompolt-Kistér	122	1	93.26
Kompolt-Kistér	121	4	276.92	Bylany F	2216	4	90.91
Kompolt-Kistér	13**	4	270.66	Kompolt-Kistér	132	4	88.38

*pits with deliberate deposition
**pits with structured deposition

Figure 39.
Dispersion of pits per stratigraphic group across all three sites used in analysis.



Note: One vertical column represents one pit.

Table 24. Statistical results of sherd to volume ratios per strata group across all three sites combined, compared to the average total quantity of ceramic sherds.

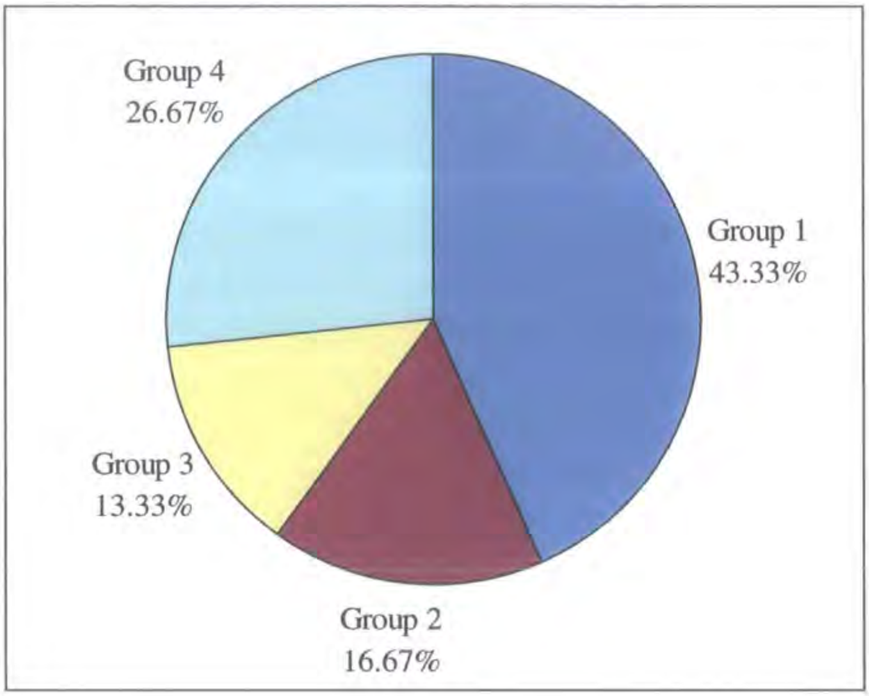
Group	*Mean*	*Median*	*Maximum*	*Minimum*	*Standard Deviation*	*Average quantity*
1	207.04	23.33	3028.57	0.00	541.82	151.46
2	99.76	8.04	1444.44	0.00	305.18	61.98
3	50.95	11.32	585.00	1.41	112.97	67.18
4	40.22	12.33	825.18	0.71	105.79	105.27

Table 25. Statistical results of sherd to volume ratios per strata group across all three sites combined, compared to the average total quantity of ceramic sherds, with seven outliers and eight zero value pits removed from analysis.

Group	*Mean*	*Median*	*Maximum*	*Minimum*	*Standard Deviation*	*Average quantity*
1	149.41	38.65	1250.00	0.41	276.30	173.93
2	41.88	8.28	552.88	1.05	106.39	55.51
3	20.10	20.10	20.10	20.10	20.10	25.68
4	29.61	12.33	276.92	0.71	52.83	97.39

Upon further investigation of pits with significantly high sherd to volume ratios, i.e., those with s/v ratios above the mean value of 87.39 (see Table 23), it was noted that the majority of the pits fell into Group 1. That is, 43.33% of pits with significantly high s/v ratios contained homogenous fill. Only 26.67% were stratified (*Figure 40*). Looking back at the results from the individual site analyses, pits with significantly high s/v ratios at Kompolt-Kistér and Neckenmarkt were found to be in either strata groups 1 or 2. In fact, of the pits that were identified as having been deliberately deposited (denoted by * in Table 23), 50% were of homogenous fill. Of those that were identified as structured deposits (denoted by **), only pit 2144 from Bylany F and pit 13 from Kompolt-Kistér were considered to be stratified. The conclusion to be derived from these anomalies is simply that more research is necessary. Instances of structured deposition do exist, but the correlation of high s/v ratios and complex stratigraphy as contributors to these events is unclear. This will be discussed in the next chapter.

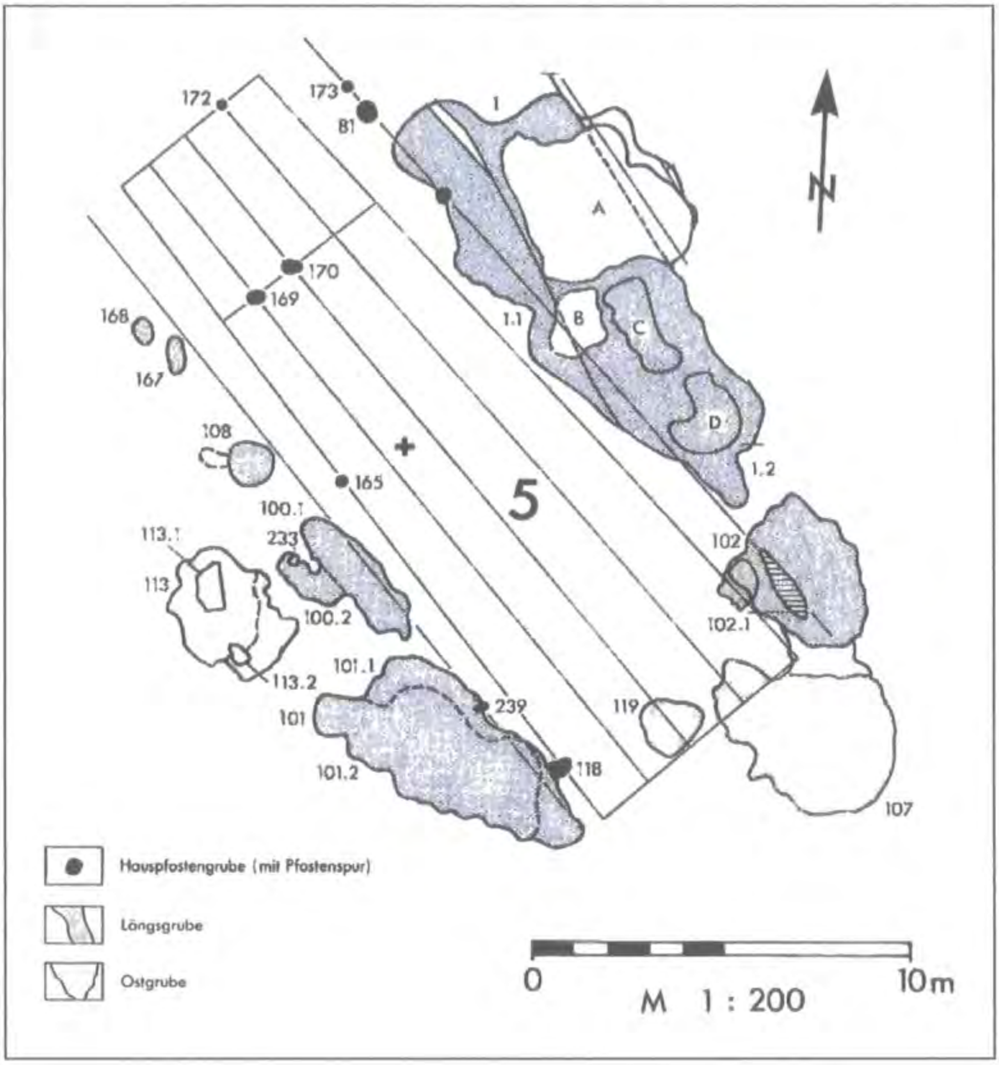
Figure 40. Distribution of strata groups for pits with above average sherd to volume ratios.



Investigating Place

The investigation of place was also necessary to test for any commonalities across all three sites, to see if there was significant place-value connected with instances of structured deposition. At Neckenmarkt, pits with significantly high s/v ratios are in direct vicinity of what is posited to be house 5, albeit a very limited number of postholes were discovered to support this theory. Again, pit 108 is on the long side of house 5 and could have been created for the extraction of clay. Pit 102, however, in its southeast corner, may have filled an alternate function (*Figure 41*).

Figure 41. House 5 at Neckenmarkt and its surrounding pits.
(From Lenneis & Lüning 2001)



At Kompolt-Kistér, analyzing place seemed initially irrelevant, as there was no discernable pattern in the location of pits, nor was there any evidence of housing. Mapping sherd densities, however, reveals a picture resembling the beginnings, or possible founder communities of a future settlement (Chapman, in press). Just as high sherd-density pits at Neckenmarkt were located between the houses, it is possible to see where houses would have been at Kompolt-Kistér, in the same orientation as other LBK houses (*Figure 42 and 43*). This is further supported by the higher density pits being alongside these presupposed locations. Pits with unusually high sherd densities may have been ritual deposits or offerings, with the intention of making the place ready for family habitation. If the assumed locations of these houses are accepted, it can be seen that pits with structured deposition are, as at Neckenmarkt, in the vicinity of the home's southern sector.

Figure 42. The central section of Kompolt-Kistér, displaying locations of pits with varying sherd densities, in relation to possible house locations.

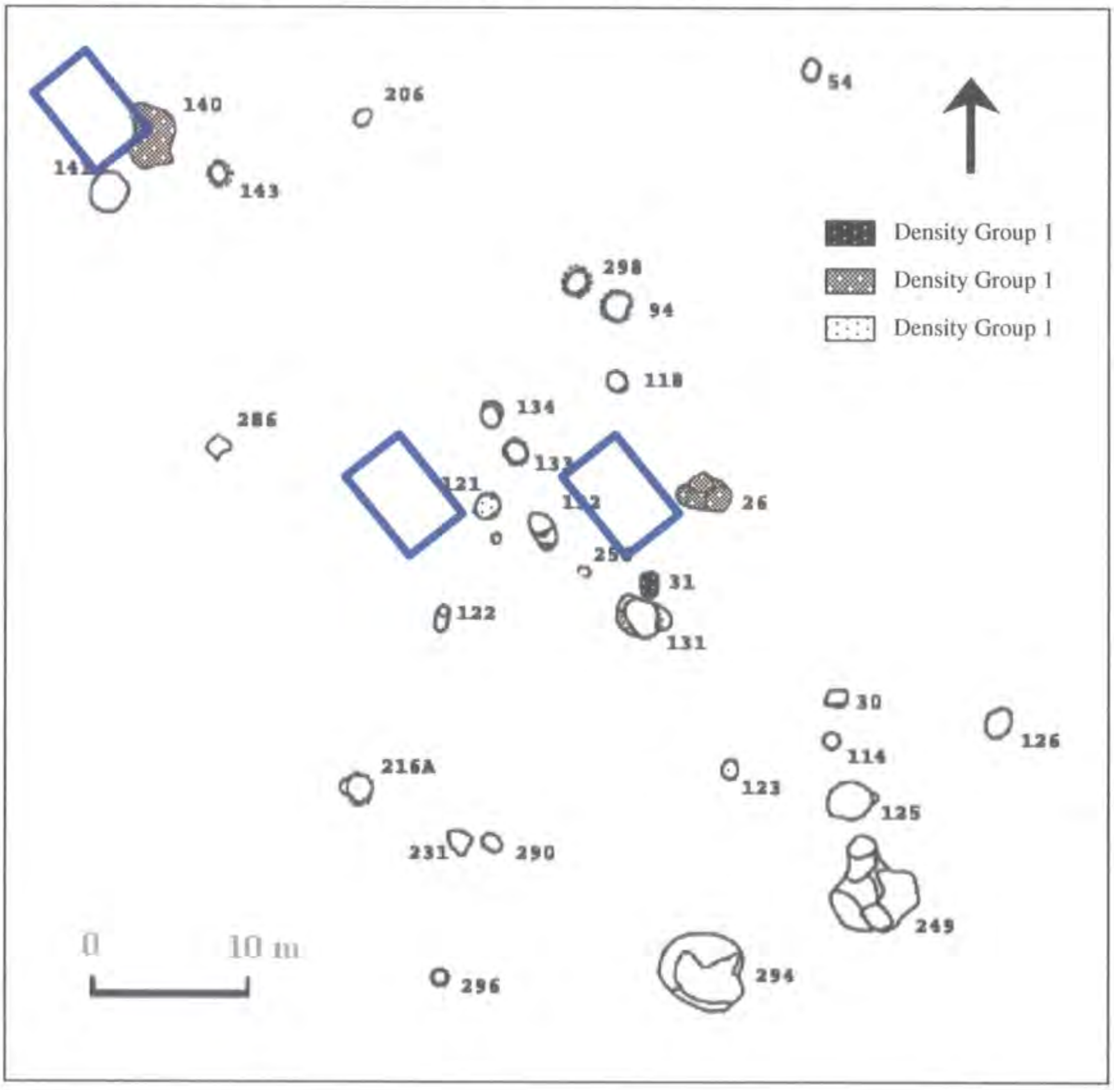
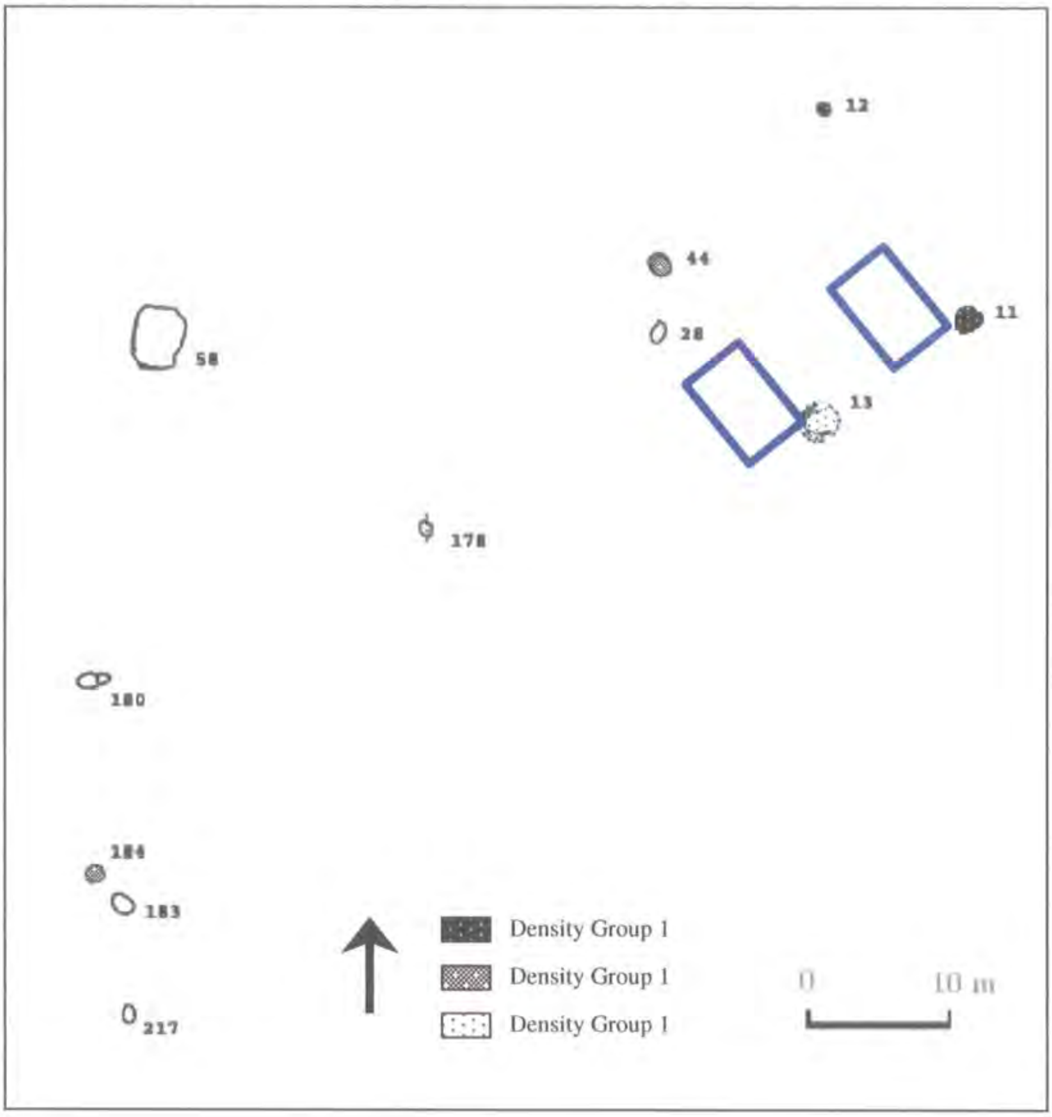
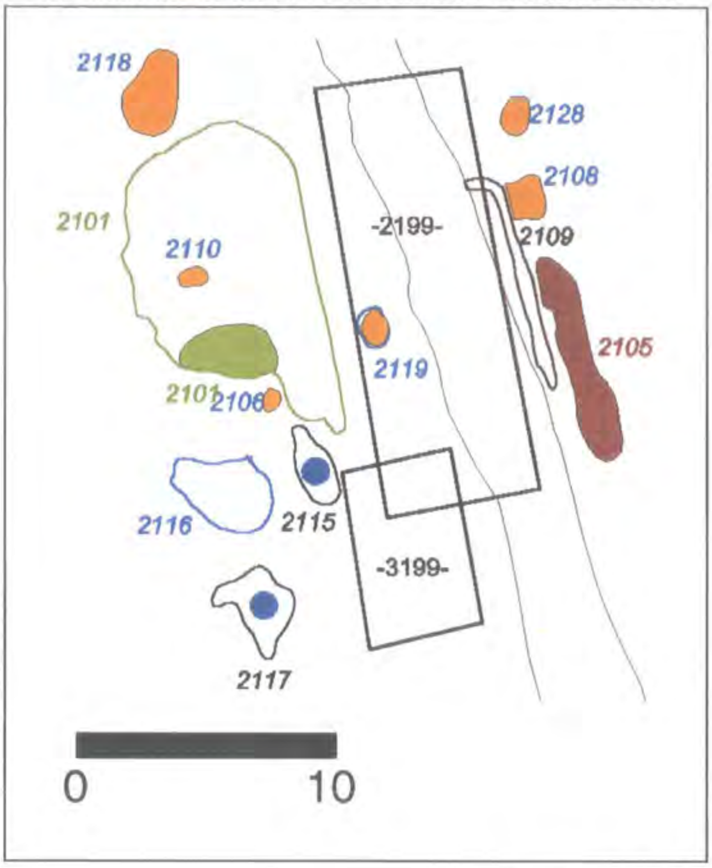


Figure 43. The eastern section of Kompolt-Kistér, displaying locations of pits with varying sherd densities, in relation to possible house locations.



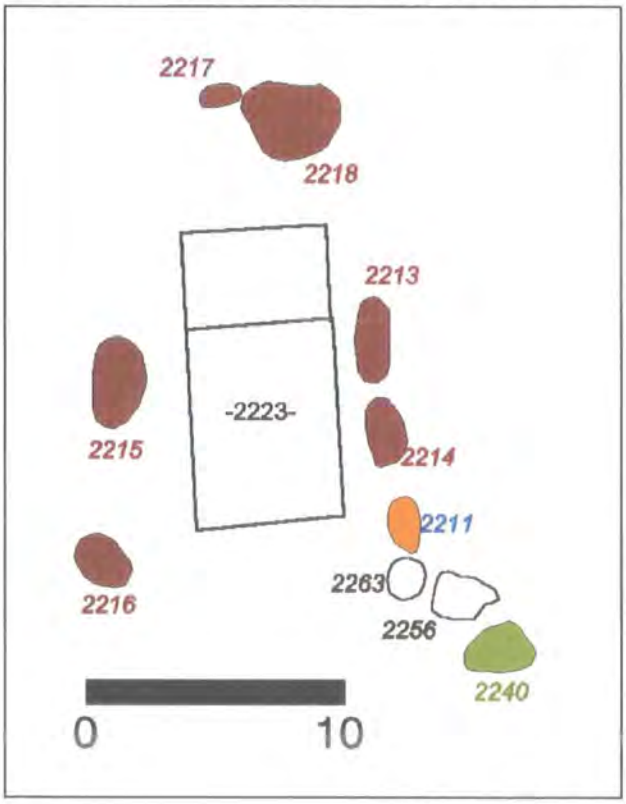
At Bylany F, pits 2115 and 2216, identified to be pits with deliberate deposition, are on the western side of houses 2199 and 2223 respectively. Pit 2144, however, is located near the southeast corner of house 2192, similar to the locations of pits identified at Neckenmarkt and Kompolt-Kistér as being of deliberate *and* structured deposition. Now that pit 2144 fits the pattern as identified for place, we can more conclusively identify it as being a structured deposit.

Figure 44.
The location of pit 2115 in relation to house 2199.



(From Pavlů 2000)

Figure 45.
The location of pit 2216 in relation to house 2223.



(From Pavlů 2000)

Figure 46.
The location of pit 2144 in relation to house 2192.

(From Pavlů 2000)

These commonalities support the identification of of pits as having structured deposition. The fact that these pits were found in similar locations near the house confirms that higher place value was attributed to this sector. We can therefore conclude that these pits were not rubbish pits as originally theorized, but were part of some higher social practice that was distinct and separate from the rituals of daily life. These pits represent more than rational action; these findings support our theory.

Summary

Investigating these pits intra-site only revealed the existence of structured deposition. Making comparisons across all three sites sought to answer how widespread these occurrences were and if there were any regional patterns that could be exhibited. Prior to analysis, patterns of variability were found with regard to sherd density and distinction of archaeological stratigraphy. Sherd to volume ratios were generally higher at Kompolt-Kister than at Neckenmarkt, with Bylany F having a maximum just above the inter-site average. However, pit profiles revealed highly detailed delineation of strata at Bylany F, with decreasing precision at Kompolt-Kister, and finally at Neckenmarkt, where the majority of pits contained only one stratigraphpic layer. Bearing the potential bias that these variations may cause, an inter-site analysis was done, with results that were contradictory to our original theory. High sherd densities and complex stratigraphy were predicted to be markers of pits with structured deposition, but an analysis across all three sites found that there were more average sherds *and* higher sherd densities in pits with homogenous fill, not stratified fill as originally predicted. This result, while seemingly contradictory to our hypotheses surrounding structured deposition, does not discount the theory, especially when taking into account the occurrence of these pits in similar places. It serves to show the variability and rarity of pits with structured deposition, and how closely we must look to discover these instances where discard is not just random, but attributable to higher levels of social practice.

VII. DISCUSSION

Analysis of pits both within and between sites has proven that deliberate and structured deposition did exist in the Neolithic in central Europe. It is clear that deliberate deposition, evident mainly through significantly high sherd densities, did occur, albeit the extent to which these pits can be considered structured deposits is not great. From these conclusions we must embark on the discussion of a number of issues. First is the possibility that variations in the dataset may have played a role in our results. This raises questions both of the site and the pit itself. Next we must recognize alternate explanations to our findings, looking at social aspects by comparing our pits to those in the mortuary domain, as well as functional aspects, in acknowledging that perhaps our identified pits were not dense in ceramics because of deliberate deposition but were simply a result of spatial patterns of discard.

Questioning the Site

Variations in the data were recognized in our inter-site analysis, noting dissimilarities in the density of finds and in the distinctions between stratigraphic layers. This section seeks not to contribute these differences to social practice, but to more practical matters. The premise upon which this is based is threefold. The first is the era in which the finds were collected at Bylany versus Neckenmarkt and Kompolt-Kistér. With the excavations taking place in three different decades, collection of material increased in both quantity and detail. The extremely low density values calculated from Bylany F is possibly due to the fact that excavation took place at a time when such detailed recovery and recording was not the norm.

This methodology surrounding finds and data retrieval holds true even in the present day in some countries where archaeological funding is lacking, and advancements in theory and methodology have not yet been widely accepted. An example of this is Šturovo in Slovakia, where, although it was excavated in the late 1980s, soil stratigraphy was not recorded, and therefore contextual data of finds were not recorded as well. Furthermore, Bylany is in a country where even today the standard for archaeological precision and accuracy is still behind those of other countries. This site was special for its time, but no other site in the Czech Republic has received as much attention or detail. Neckenmarkt and Kompolt-Kistér, on the other hand, are in countries where there is much more available funding for archaeology, equating to more time and a call for a more complete collection of artefacts.

It is also possible that variability in the data is due to natural rather than cultural processes. Perhaps ceramics did not survive as well at Bylany, or higher rainfall combined with the acidity of the loess contributed to an even lower probability of survival for smaller fragments. Alternately, higher rainfall in the Great Hungarian Plain could have washed in more ceramics from the surface into pits at Kompolt-Kistér, contributing to higher quantities of sherds seemingly discarded in its pits. Numerous natural processes could have affected these archaeological remains (see chapter II).

Alternately, it can be proposed that such differentials can be attributed to difference in site type. No evidence for housing was found on the excavation site; Kompolt-Kistér is the sole site in the database that is not a settlement site *per se*. While it is possible that this lack of evidence is due to a failure to identify such evidence[4], alternate theories are available. Archaeologists at Kompolt-Kistér propose that the site was outside of the settlement proper and, furthermore, that this settlement is an extremely large one. If so, these pits could be common to the community as a whole, and therefore used for a much longer period of time than those inclusive to single households. Their usage may have lasted more than one or two generations. Pits with higher sherd densities could have been special places of ritual and offering that, instead of being near the family dwelling, were in a common distant location.

However, with the results from this research, the possibility arises that structured deposition occurred only in pioneer stages of settlements (Chapman, in press), within small communities as opposed to large societies. Structured deposits in the early Neolithic of central Europe were possibly restricted to the times of founding communities, being ritual offerings to ensure a high quality of life in the new settlement, whereby cultural memory was maintained by the 'presencing' both of place and material culture (ibid). The 'pit field' of Kompolt, having no evidence for housing, could have been of this pre-settlement phase; the lack of structural evidence due to periodic visits to the site and deposition of finds by people living elsewhere (ibid). This hypothesis is supported by the commonality of place, where pits identified as being of structured deposition are similarly located just outside the southern corner of a house, as well as the fact that there were higher sherd densities at Kompolt-Kistér, and a greater percentage of pits with structured deposition (20.59%, compared to 9.09% and 1.93% at Neckenmarkt and Bylany F respectively).

[4] Excavators at Kompolt-Kígyósér were unable to examine any row settlements or discover exact positioning of houses. They note that this may have been due to 'a lack of excavational expertise and shortfalls in excavational archaeology' (Domboroczki 2003:9).

Kompolt-Kistér had evidence of only the pioneer stages of settlement; hence the necessity to establish a connection with the land, providing offerings that were deliberately placed deep within the earth. Neckenmarkt, with only one definitive structured deposit, was posited by archaeologists to be a single farmstead. Perhaps the fact that houses were already established and the land had already been in usage for generations equated to the deterioration of evidence for these offerings. At Bylany, where settlement had grown to be a large community, all evidence of their founding gifts had disappeared, mixed in and cut by later construction pits, rubbish pits, and workshop pits.

Pit Function

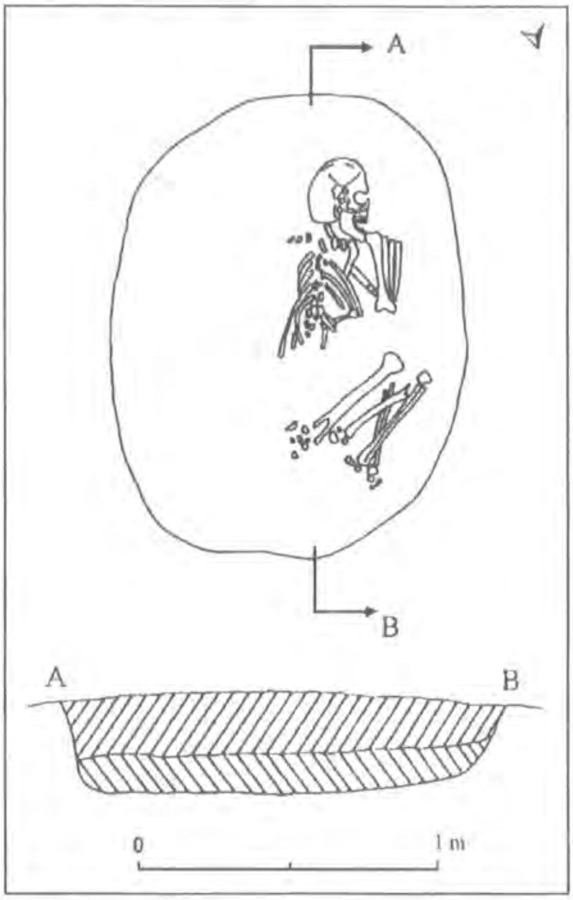
It can also be argued that these structured deposits were stratified and contained dense material simply because they were often used for functional purposes. Pit 16 at Neckenmarkt contained a fireplace/oven and had a number of stratigraphic layers, and therefore was *not* considered a structured deposit. All other pits identified as structured deposits contained evidence of burning; pit 13 at Kompolt-Kistér was even hypothesized to contain a repeatedly renewed surface of a fireplace. Pit 51 at Füzesabony-Gubakút, singled out for the altar and clay idol found within, was also thought to have contained a fireplace. The excavator of this site, however, noted that it was unclear whether this pit was actually used for such a purpose, or whether remains of a fire were simply discarded inside (p.c., L. Domboróczki). It is this exact comment, together with the evidence from this research, which lays the evidence against structured deposits as being strictly functional. Pit 16 at Neckenmarkt contained a definitive make-up – rows of stones comprising an actual functional structure. The pits at Kompolt-Kistér and Bylany did not contain such remains. The evidence for burning did not consist of enough material to conclude that any structure could have contained a fire hot enough for any specific function. These pits were identified by archaeologists simply as pits, while other features at Kompolt-Kistér and Bylany were identified definitively as fireplaces[5]; the reason being that those pits that we have identified as deliberate and structured deposits were not used for this purpose.

Comparisons to the Mortuary Realm

Another point of mention is the initial presumption that structured deposits would be exactly that – structured. As ritual activities involve highly formalised, repetitive behaviour, we would expect any depositional patterns observed in the archaeological record to maintain a high level of structure (Richard and Thomas 1984:191). The pits in this dataset did not contain evidently patterned fill, with repeating layers as identified at Csanytelek-Újhalastó or Endrőd 119 in Hungary (see chapter III). In some instances, a key difference is the interment of human skeletons. With graves, there is no question of backfilling, assuming that human burial was a single ritual event. Yet the graves at Kompolt-Kistér exhibit homogenous fill, with a maximum of two stratigraphic layers (*Figure 48*). Furthermore, these graves contained no finds, except for a couple of Spondylus beads. While such finds are characteristic of graves in the LBK, there are instances of Early Neolithic graves containing a number of fine wares ceramics, refitted to one complete but very small vessel (p.c., L. Domboróczki; see also Chapman 1983).

[5] Fireplaces at Kompolt-Kistér (features 30 and 118), were of similar dimensions and depth (both circular features with a maximum length of 120 cm and a maximum depth of 28cm), contained thick, dense layers of ash and burning, but only 14 and 17 sherds were found respectively. This equates to low density values of 116.67 and 128.79.

Figure 47. Feature 209 from Kompolt-Kistér
(From Vaday *et al.* 1999:Fig.42)



If it is possible to consider graves the epitome of structured deposition, having been filled quickly and in one instance as well as having material that was deliberately deposited, we can compare our pits to those in which human remains were interred. In this scenario, complex stratigraphy need not be a prerequisite to structured deposition. This is contradictory to originally proposed theories surrounding structured deposition. However, the differences between graves, both in regard to its contents and stratigraphy, compared to pits of structured deposition, can be attributed to differing levels of ideo-symbolic significance. Figure 13 outlines the range of social practices contributing to material discard. There did exist activities that were highly symbolic, i.e., ancestor and funerary rituals, whose remains include objects exclusive to such actions, however, there were also events that were lower in scale, containing no human interments but materials that were valuable to its users and creators. This material, being relatively common discoveries on archaeological sites, had not been identified as being overtly special in prehistory. The fact that fine wares and decorated material are discovered at virtually every archaeology site only exemplifies the quantity that was produced, and the extent to which it was used. It was only during certain events, or at times of special offerings, when families would take objectified fragments and material and deliberately deposit them within the earth, securing for themselves the hope of a higher quality of life and forsaking their fears of the unknown. Therefore, it can be hypothesized that structured deposition bears no specific rules, as they too are results of a range of ritual behaviour.

This spectrum of social activity can vary from being highly organized on a communal scale to being less structured on a familial or individual scale, resulting in archaeological features of diverse composition. This variability in social practice means that rules surrounding the social practices that contributed to structured deposition were not singular or specific, but varying and overlapping, with individuals, families, and larger groups contributing to the discard of various materials. With such a range of social activity, the evidence becomes blurred, making it difficult to pinpoint particular activities as effecting archaeological features.

Worthy of note is that there may be occasion where both function and social practice have become blurred by natural process. This research was based on the identification of complex stratigraphy as a co-requisite to structure deposition; however, inter-site comparisons revealed that most cases of high sherd density were those that exhibited homogenous fill. As previously mentioned, experiments have shown the effects of foraging activity and other natural processes on the heterogeneity of fills. At Overton Down, what was apparently banded fill after eight years became blurred after the 32^{nd} year, leading archaeologists to expect the transformation of the heterogeneous fill into a homogenized soil from such activity (Macphail and Cruise 1996:106). This experiment is pertinent to Neolithic studies of deliberate and structured deposition as, depending on rates of site survival, it is quite possible that millennia of weathering and biological activity will have profound effects on what may have been an evidently structured fill.

Patterns of Discard

The possibility thus also exists that our findings are a result of a very different kind of social practice; that is, a functional one. Results from the inter-site comparison have also argued against the original theory that pits with structured deposition are both highly dense with archaeological material and are stratified, i.e., having at least three stratigraphic layers. While there were exceptions to the rule, it must be remembered that certain factors such as natural process can play a destructive role (see chapter 2). Furthermore, this theory stemmed from numerous examples throughout the Balkans and central Europe that displayed obvious structure and deliberate deposition (see chapter III). The purpose of the study was to pursue those cases which were not so obvious, that were often historically regarded as simple rubbish pits but may have been more than strictly functional; hence, the scale of social ritual.

On this matter, the distinction between deliberate and structured deposition must be reiterated. There do exist a number of pits with homogenous fill and high sherd densities which can be considered deliberate but not structured deposits, the notion being that the sherds were intentionally deposited in a certain place and in a certain manner, as opposed to being randomly discarded. While discard is structured in the sense that all human activity is structured, structured deposition as evidently patterned is not regular in every household. Structured deposition relates to pit fills, such that the fill was deliberately organized and purposely arranged. The finds within them are signifiers of structured deposition, but are only part of the deposit. Without any seeming attempt to organize the fill, there would be no structure. Using sherd density values to identify cases of structured deposition, in correlation with the presence of other categories of finds, is necessary because the attempts to create a structured deposit may have been affected by other factors, with the result that the initially intended structure is not what archaeologists find today. Perhaps the deposit was disturbed by natural factors, or perhaps the differences between principles and practice were so great that the intention to discard becomes unclear (p.c., J. Chapman).

Theoretically, it is quite possible that a sorting of rubbish in the process of discard would contribute to varying types of fill. If pits were filled on a regular basis, i.e., daily or weekly, the contents would consist of material resulting from both anthropogenic and natural processes, whereby preservation of material would be variable, and fine archaeological units would be necessary to differentiate between periods of cultural activity and inactivity (Stäuble 1997:24). In this case, pits would not be covered or filled to the surface, and we would expect that the location of these pits would have to be out of harm's way. An open pit would not be safe on a path of regular passage. Therefore, it is also theoretically possible that such pits would share a commonality of place strictly for functional and safety reasons.

It is also quite possible that varying activity and discard patterns would result in differential values of sherd density. In an attempt to characterize the different areas of household space at Miskovice and Bylany, Last (1988) notes the importance of a number of factors in his analysis, including the speed and nature of pit fills, as well as factors relating to the ceramics themselves, i.e., abrasion, size, material, and relationship to their parent vessels (Last 1998:19-20), all of which were unavailable for the sites in this research. The importance of these characteristics is the theoretic ability to distinguish between dumping broken artefacts into pits immediately after breakage, and the scattering of refuse on the surface before maintenance occurs, which would sweep the material into pits after they would have been subject to natural deterioration processes (ibid:19). An extension of research into structured deposition using these characteristics would be highly beneficial in the confirmation of present results.

Despite its thorough analysis, Last's results bear no similarities to our present research. It was found that the densest finds were on the east side of the house towards the rear, opposite from the values from pits on the west side, making no mention of the important southern sector discovered in the present comparison. These findings, however, are highly variable across sites in central Europe (ibid:43-44; see also Boelicke 1988, Drew 1988). In this present research, a distinct pattern was found such that pits filling the prerequisites for deliberate and structured deposition were found in the southern sectors. This was based on the initial identification of structured deposits at Neckenmarkt, namely pit 102, then by the similar identification of pit 2144 at Bylany F. Applying their similarity of place to Kompolt-Kistér allowed for the subsequent identification of houses, which then relayed the consistency of locale. As convincing as this argument may be, the possibility of coincidence still exists, as the basis of our theory rests on two pits, henceforth applied to a further four pits. Further investigation of other sites is necessary to confirm this theory.

Variability can be attributed to the true nature of routinized human practice, which does not conform to particular patterns even when the attempt to conform to particular ways of doing things is practised (ibid:44). Just because human activity is often structured does not mean that the remains of such activities will be similarly patterned, nor will random results imply random processes (Hodder 1977:224). Our results have support this notion, that there is great variation in the use of space and in the remains of past activities. This variability is further affirmed by the statistical results which formed the basis of our analysis, most notably indicated by high values for standard deviation. We have acknowledged that the presence of extreme outliers contribute to these high deviations, however, removing these outliers still revealed high values of standard deviation in each stratigraphic group. Therefore, it must be that social practice differed not only between sites, but within social groups and across social time as well.

This variability can be explained by the range of social activities that contribute to structured deposition (discussed elsewhere), as well as simple differences in discard within families and between generations. It could simply be that larger communities, i.e., Bylany F, discarded material in more areas, and dispersed this material in more pits, leading to lower sherd densities across the site. In contrast, a single extended family at Neckenmarkt would have fewer pits to discard their material, contributing to higher sherd densities and less variability (Table 26). Again, the application of these theories to other sites would provide further insight into social patterns of discard.

Table 26. Comparing variability between sites: deviations from the mean at Neckenmarkt and Bylany F.

	Neckenmarkt		*Bylany F*	
Group	*Mean*	*Standard Deviation*	*Mean*	*Standard Deviation*
1	71.71	52.614	4.15	6.40
2	182.30	230.781	8.41	10.32
3	106.77	51.080	15.11	20.20
4	98.81	36.397	12.98	13.53

Summary

Investigation into pits at all three sites individually and communally has resulted in somewhat contradictory conclusions. Deliberate deposition did exist at Bandkeramik sites in central Europe, but the occurrences of structured deposition are rare, and vary depending on local social practice. It can be said that our results were biased by different collection and recording methods by different archaeologists in different time periods, or that variations in site type or pit function played a role in the amount and complexity of material that was actually discarded. In all reality, however, our results can only be contributed to one factor – variability in social practice. In comparing pits with structured deposition to those with human interment, it was discovered that complex stratigraphy need not be a prerequisite to all cases of structured deposition. However, structured deposition can also occur outside of the mortuary realm, in which case complex stratigraphy can and does exist. While our original theories regarding the identification of structured deposition were based on more obvious cases throughout the Balkans and central Europe, it was recognized that not all instances are so easily observable. Further research is necessary so that social practice, at all ends of the spectrum, is recognized even in the most mundane cases.

VIII. CONCLUSION

This research was based on the intention of relating stratigraphy to the density of its pit contents, in the hopes of identifying the nature of structured deposition. Initial site selection was difficult due to a variety of reasons, mainly owing to varying degrees of accuracy and precision in both excavation and recording in sites across central Europe. Štúrovo in Slovakia could not be included because of its lack of pit profiles and detailed data on stratigraphy and finds contexts. Other sites, such as Füzesabony-Gubakút and Balatonszárszó, both with great potential for making significant contributions to research, were unavailable simply because the data was not yet ready for analysis. A further three sites, namely Pulkau in Austria, and Polgár-10 and Bicske in Hungary, were also excluded from the analysis as the sites were too small and, for the purposes of this investigation, the data incomplete. After a meticulous but difficult process of data collection, three very different sites were used in the analysis. Neckenmarkt, a small farmstead in Austria, was investigated alongside the 'pit-field' of Kompolt-Kistér in Hungary, and the large settlement community of Bylany F in the Czech Republic. Analyzing all three sites as a single component was not possible, due to variations in the dataset and the inherent biases that can occur by comparing three sites of different size. However, comparing the pits within each site separately led to the discovery of a number of commonalities, and subsequent inter-site comparisons found further patterns within the data, all of which combine to form conclusive evidence surrounding pits with structured deposition.

Having compared pits for their stratigraphy and density of ceramic finds, six pits were found to have structured deposition: pit 102 at Neckenmarkt, pit 2144 at

Bylany F, and pits 13, 31, 62, and 125 at Kompolt-Kistér. These findings were not only a result of comparing sherd densities against the number of stratigraphic layers, but a result of closer investigation of pits which displayed only one of these prerequisites for other markers of structured deposition, i.e., evidence of burning, and the presence of stone or animal bones. Pit 102 at Neckenmarkt, although having only two stratigraphic layers, had a highly significant s/v ratio, and was found not only to be rich in finds, but was rich in finds comparative to its co-existent neighbour, pit 107. It also contained high quantities of flint and animal bone, and had significant quantities of fired clay. Similarly, pit 2144 at Bylany contained animal bones, burnt clay, and a number of stones, some of which were polished. More significantly, pit 2144 had a complex stratigraphy with five stratigraphic layers, as well as the third highest s/v ratio at Bylany F, and an extremely high density of decorated sherds.

As for the pits at Kompolt-Kistér, pits 31 and 62 had curiously high values of sherd density but were of homogenous fill, and pits 13 and 125, while complex in stratigraphy, had lower s/v ratios (but significant in an inter-site comparison). Closer analysis revealed the presence of other finds at pit 31 (lithics and daub, as well as one fired clay conical weight and a fired clay bead) which supported its evidence for structured deposition. Pit 62 was even richer in finds, with large pieces of animal bones, including a horse mandible, large, red-painted storage jar sherds, and a rhyolite grindstone, as well as numerous shells, small stone fragments and much evidence of burning. Pit 13 had numerous burnt layers with red ash and charcoal, and contained rich and diverse finds, including decorated pottery, obsidian, and other stone tools. Pit 125 is also very rich in finds, and is our most conclusive case for structured deposition. The pit proper contains repeating layers of ash and greyish-black soil, and at the base lay a broken pot, with thick remains of paint on the inside, as well as considerable amounts of burnt yellow clay. Among the finds were many animal bones, decorated ceramics, obsidian blades, and two spindle whorls, as well as pierced shells and bone tools, and in the centre of the pit, a fragment of a perforated stone axe was discovered, with an obsidian blade, and fragments of daub and decorated ceramics, all laying in a mound. The finds in pit 125 are very rich; combining this data with its complex stratigraphy and high densities of ceramic finds, leads to the conclusion that this pit was subject both to deliberate and structured deposition.

These pits provide evidence of the range of cases in which structured deposition can occur. While no clear and definite pattern could be derived from the evidence, it was possible to confirm characteristics of pits with structured deposition. Collectively, the statistical analyses, the individual pit analyses, and the cross-site comparisons combined to give further insight into this phenomenon; the conclusions derived from this research follow.

Structured deposition is a rare occurrence.

Deliberate and structured deposition occur in a number of pits, and while deliberate deposition can occur with little structuring, the existence of either is not a statistically quantifiable occurrence. Bearing in mind variations in the collection and recording of data upon excavation, only one pit each at Neckenmarkt and Bylany definitively matched our criteria, and at Kompolt-Kistér, four pits were distinct in being structured deposits. In quantitative terms, the percentage of pits that were subject to deliberate and/or structured deposition were quite small. At Bylany, only 1.93% of pits filled our prerequisites, and at Neckenmarkt, 9.09% were deliberate or structured deposits. As for Kompolt-Kistér, the statistic was slightly higher at 20.59%.

The reasons behind structured deposition being such a rare occurrence on LBK sites can be attributed to a number of reasons. First and foremost, variations in the data were already mentioned, and found not to be ideal. The three sites eventually used for comparison were quite variable in size, with Bylany having 155 pits and Kompolt-Kistér and Neckenmarkt having just 34 and 22 pits respectively, and variable in function. Bylany was a large settlement community, Neckenmarkt was posited to be only a single farmstead, and Kompolt-Kistér revealed no evidence of settlement whatsoever. While we were able to confine the dataset within boundaries of environment and cultural practice, these factors may have played a role in the results that were finally achieved. Perhaps the inclusion of more sites would have nullified the contribution that site type would have played, or perhaps a larger data set would have helped to balance the inherent biases. Only further and continued research will tell.

Differential recording methods may have also skewed our results. The precision with which pit profiles were drawn and the precision with which archaeological stratigraphy were delineated certainly weighed heavy in the analysis. Pits at Neckenmarkt consisted of mainly single strata, with the presence of up to four strata being a rarity. At Kompolt-Kistér, many more layers were identified, and at Bylany, the pit profiles were very detailed. As our analysis was largely based on the delineation of archaeological stratigraphy, we cannot ignore the inherent bias of inconsistent archaeological methods. While intra-site analyses somewhat compensated for this factor, it still would have been ideal to have a level of precision that was equal across all sites.

Similarly, the retrieval of archaeological finds was also variable across all three sites. To reiterate, detailed inventories of artefacts were limited. Finds at Bylany were not weighed, and weights of ceramic finds at Kompolt-Kistér were only attained on a personal site visit. Furthermore, sherds at Neckenmarkt were not separated between coarse wares and fine wares, and at Kompolt-Kistér, finds were recorded per feature, and not per context or excavation unit, making contextual analysis impossible. Moreover, there was a noticeable difference between ceramic finds between the sites, such that the numbers at Bylany were significantly lower than the other two sites. This seemed curious, as Bylany is a much larger site, and is posited to be a large settlement community. While this could be due to natural processes, i.e., differential site survival, variations in rainfall and soil acidity, etc., such variations lead to the possibility that there were differential collection and recording methods used at these sites, which were excavated in different time periods and in different countries. Therefore, the possibility also exists that the data is not as comparable as we would like it to be. That is, it was not an ideal dataset and this may have contributed to anomalies in our results.

Alternately, the reason that structured deposition may be such a rare occurrence on LBK sites in central Europe is simply that it was not part of the ideology of the time. The examples that were presented in the introductory chapters of this report include only two that were found on LBK sites. Namely, these are pit 13 at Káloz-Nagyhörcsök, a site of the Zseliz group of the LBK, and a pit near the houses at the Neolithic site of Bicske, both with discoveries of complete animal skulls. The fact that a goat skull and two complete ox skulls were found at these sites, respectively, may be a clue to the origins and nature of structured deposition. Many further examples were found at Starčevo-Körös-Criş sites (Endrőd-Öregszőlők

119, Röszke-Ludvár, Lánycsók-Bácsfapuszty, Divostin, Füzesabony-Gubakút, and Poienești: see chapter III); perhaps the events and social practices surrounding structured deposition were a part of these earlier cultural groups and did not continue into later traditions. Other examples, however, were from culture groups that existed later than the LBK. These include pits from Herpály and Opovo, as well as the Szakálhat site of Csanytelek-Újhalastó and the Lengyel site of Bakonyszücs. If there are pits with structured deposition before *and* after the LBK and AVK, why are there not more instances between these time periods? Is this type of rare occurrence isolated to other cultural groups or have occurrences of structured deposition gone unnoticed? There are many sites not yet uncovered in the Great Hungarian Plain, and information from others are only recently being published (see Domboróczki 2003). Only further excavation and research may be able to answer this question.

Structured deposition is a significant occurrence.

Our findings illustrate the existence of structured deposition as a result of events that were not common. If it was a common occurrence, either the materials used do not survive in the archaeological record, or the limited dataset could not reveal conclusive answers. Nevertheless, the significance of structured deposition rests on three themes: (1) social practice, (2) the objectification of common materials, and (3) the importance of place.

Recalling the different site types represented by our dataset and the varied results from our analyses, it is quite possible to conclude that structured deposition is not the result of a single type of event or social practice. There may have been several types of ritual that contributed to pits having both significantly stratified fill and a significantly high density of ceramic fragments. As discussed in the previous chapter, if we compare pits of structured deposition with those that contain human interment, i.e., graves, there appear to be contradictions to the rule. It is accepted that graves are deliberate deposits, and are a result of a single ritual event whereby the deceased is buried with materials, if any, which would have carried some significance. This is definitive of structured deposition. However, in many instances, graves exhibit only a single stratigraphic layer, or, in the case of pit 209 at Kompolt-Kistér, two definite layers. It must be the case, then, that the material and activities that are composite of deliberate and structured deposition are not of the same ideo-symbolic significance as rituals dealing with the mortuary realm; nor does the opposite hold, that they were simply a result of patterns of discard. In fact, deliberate and structured deposits were a result of varying levels of ideological and symbolic significance (see Figure 13), and it is somewhere between these two extremes that instances of structured deposition occur.

In cases where social practice does not leave obviously symbolic markers, the events surrounding the final deposition of cultural material is unclear. The results of our analysis, however, show that artefacts need not be overtly ritual or special to have been objectified; everyday material was symbolic as well. Deliberate and structured deposits were identified by high values of total sherd density in each pit, none of which contained any material traditionally identified as special or ritual objects, i.e., clay altars or idols. While there were 'other' finds that can mark instances of structured deposition, such as grind stones, flint, and animal bones, the major signifier of deliberate deposition was densities of sherd deposition that were, comparatively, significantly higher than other pits. This leads to the conclusion that common material, with a greater emphasis on decorated and fine ware, were symbolic as well.

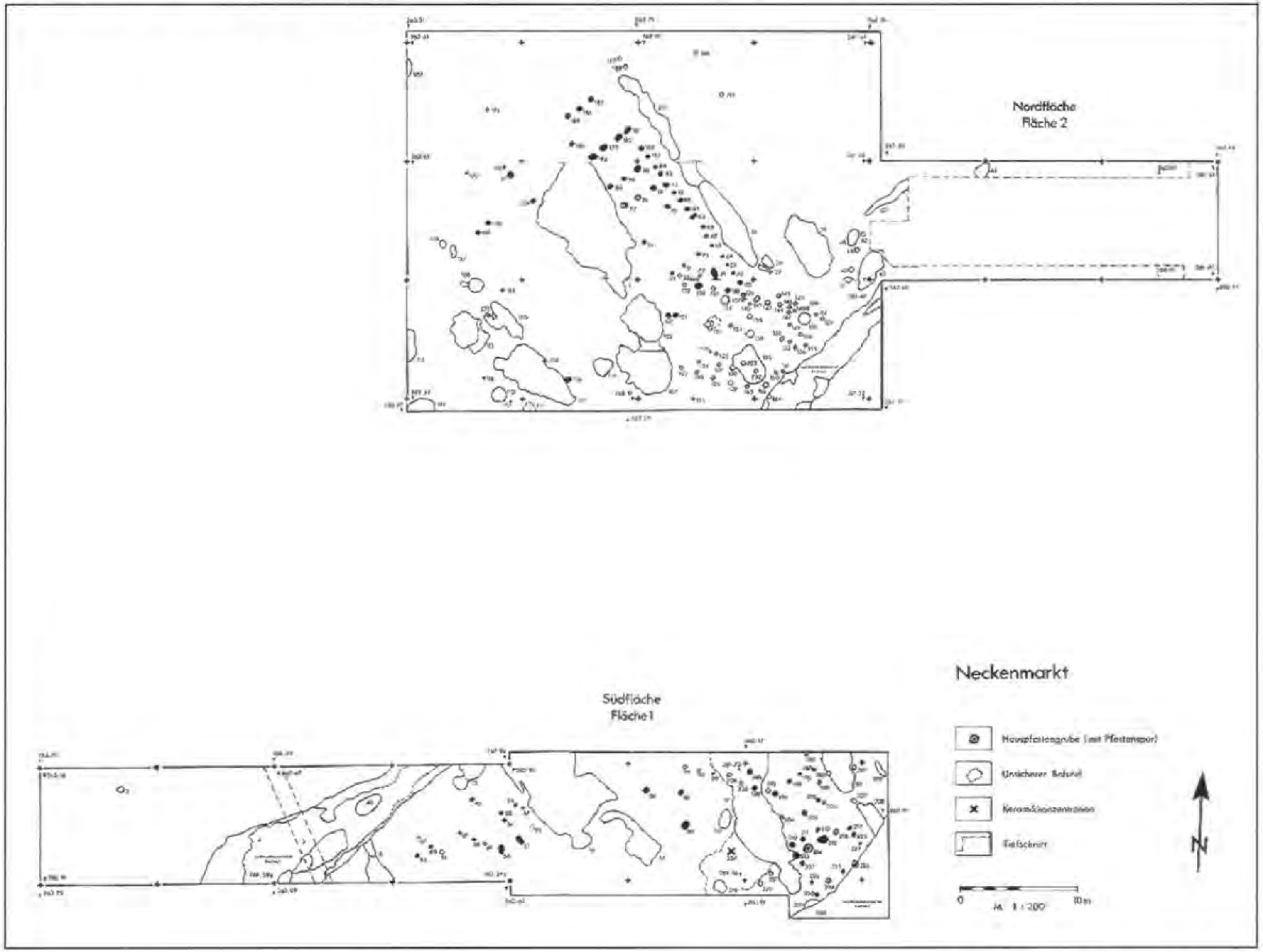
Not only did these activities identify with specific material, but also with a specific place. All pits identified as being deliberate and structured deposits shared another commonality – being in the southern corner of the house. The significance of this sector cannot be a coincidental discovery, but a discovery of a special identity of place. This discovery of place may be linked to the function of 'pit-fields' in the early Neolithic of central Europe. Mapping sherd densities revealed the possibility that houses were to exist at Kompolt-Kistér but had not yet been built. The pits that were discovered at this site could have been in preparation of future settlement. This concept is affirmed by the fact that sherd density decreased with the size of site (defined by the number of features), as increased human activity contributed to the deterioration of the evidence for these foundation rituals. It is quite possible therefore that structured deposition relates to rituals surrounding 'founding communities' – this may be the function of so-called 'pit-fields' such as Kompolt-Kistér.

A final word

This research has added to previous reports on pits of structured deposition (i.e, Hill 1995, Richards and Thomas 1984, Brown 1991) which range from the Neolithic to the Bronze Age, and from southeast to northwest Europe. The existence of pits with structured deposition and deliberately deposited material is a rare phenomenon, but many instances have been found, revealing evidence of a ritual activity made to fulfil some higher purpose. While rubbish pits continue to be common interpretations of most pits on early Neolithic sites in central Europe, the results of this research have shown that closer attention must be given to even the most common discovery. It is hoped that these results will incite archaeologists to look more closely at the everyday material, and to continue to meticulously record the stratigraphy in which it is found so that further evidence of structured deposition is not lost.

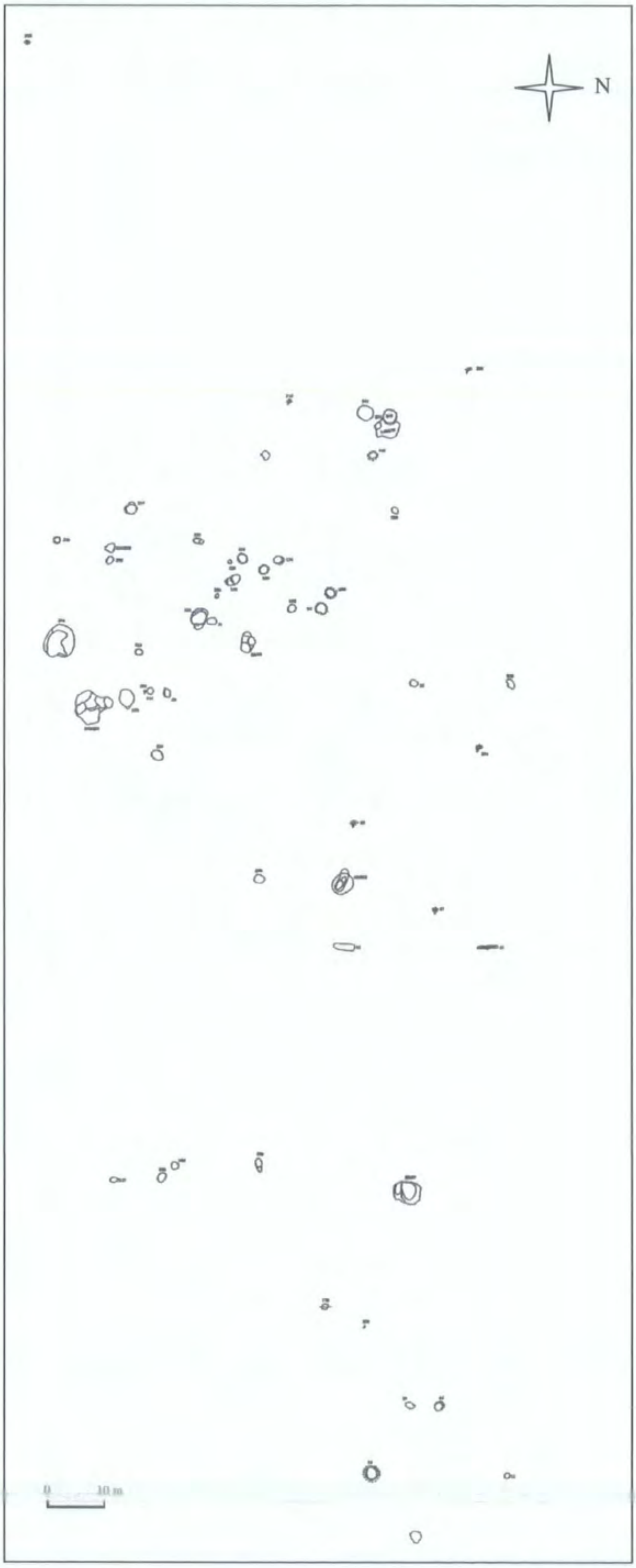
APPENDIX A: SITE MAPS

Figure A1: Site Map of Neckenmarkt



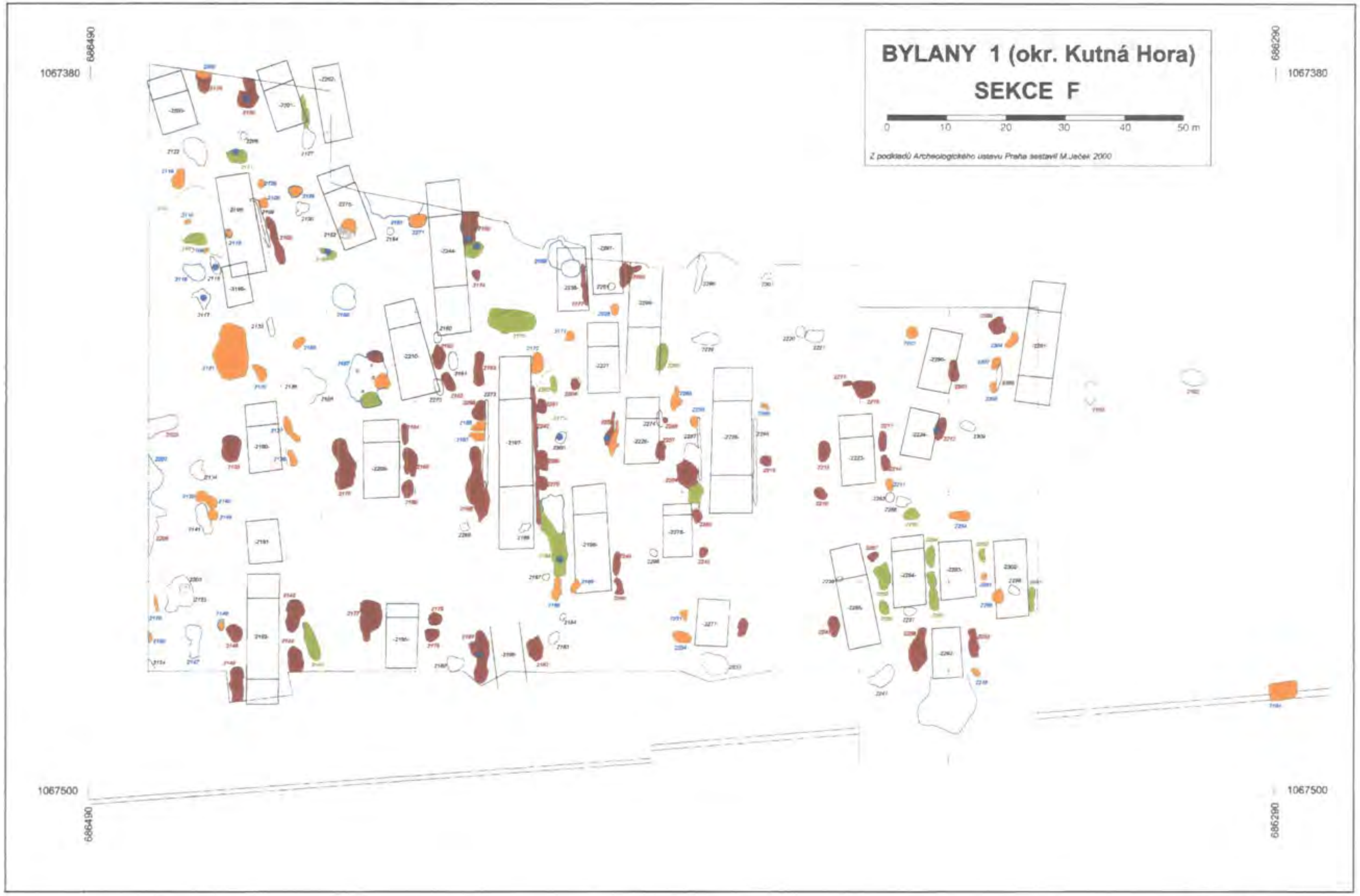
(From Lenneis & Lüning 2001)

Figure A2: Site Map of Kompolt-Kistér



(From Vaday *et al.* 1999)

Figure A3: Site Map of Bylany F



(From Pavlů 2000)

APPENDIX B: THE DATA

Table B1: The Pits At Neckenmarkt

#	*Max L (cm)*	*Max W (cm)*	*Max D (cm)*	*Strata Group*	*(Ir)regular?*	*Volume (m^3)*
1	1400	650	60	1	I	22.113
17	290	230	60	1	I	1.621
43	355	180	40	1	I	1.035
45	150	95	22	1	R	0.1567
99	360	255	28	1	R	1.285
100	400	190	30	1	I	0.923
101	765	300	30	1	I	2.788
112	135	125	20	1	R	0.169
119	165	150	23	1	R	0.285
167	100	50	18	1	R	0.045
208	275	130	18	1	I	0.261
231	825	150	20	1	R	1.237
6	408	190	30	2	I	0.942
13	300	170	40	2	I	0.826
37	1300	400	40	2	I	8.424
102	390	310	40	2	R	2.418
107	470	360	58	2	I	3.974
108	130	120	16	2	R	0.125
14	1080	240	40	3	I	4.199
39	555	290	35	3	R	2.817
16	960	630	70	4	I	17.146
113	350	290	50	4	I	2.055

Table B2: The Finds from Neckenmarkt

Pit #	Total Ceramics		Decorated Ceramics		Undecorated Ceramics		Fired Clay		Flint	Stone	Animal Bone	Botanic
	Quantity	Weight (g)	Quantity	Weight (g)	Quantity	Weight (g)	Quantity	Weight (g)				
1	2788	42442	310	5275	2478	37167	268	2387	104	19	81	0
17	175	4143	14	372	161	3771	14	50	15		15	40
43	17	795	0	0	17	795	3	3				
45	4	5	0	0	4	5						
99	88	732	14	53	74	679	14	101	2			
100	399	7756	44	988	355	6768	36	1381	4		9	
101	195	2159	11	150	184	2009	10	1772	2		5	
112	23	231	0	0	23	231			3		4	
119	11	67	1	2	10	65	1	1			1	
167	5	148	1	10	4	138					1	
208	6	32	3	18	3	14						
231	1	12	0	0	1	12					1	

Pit #	Total Ceramics		Decorated Ceramics		Undecorated Ceramics		Fired Clay		Flint	Stone	Animal Bone	Botanic
	Quantity	Weight (g)	Quantity	Weight (g)	Quantity	Weight (g)	Quantity	Weight (g)				
6	32	490	1	25	31	465	9	62	1		1	2357
13	29	356	0	0	29	356	6	12				
37	624	8268	77	776	547	7492	68	548	2	0	1	
102	943	12545	114	2099	829	10446	42	200	202	1	66	
107	31	222	3	34	28	188	1	20	1			
108	69	901	2	44	67	857	3	2	1		1	
14	600	7717	63	473	537	7244	30	253	14	4	12	382
39	199	1669	15	186	184	1483	126	573	8	1	2	114
16	1253	20179	111	1662	1142	18517	69	226	35	9	46	
113	256	3590	23	416	233	3174	5	30	12	1	17	

Table B3: The Pits at Kompolt-Kistér

#	*Max L (m)*	*Max W (m)*	*Max D (m)*	*Strata Group*	*(Ir)regular?*	*Volume (m^3)*
31	**1.4**	**1**	**0.1**	**1**	**R**	**0.070**
125	**2.25**	**2**	**0.8**	**3**	**R**	**1.800**
26=99	**2.2**	**2.2**	**1.08**	**1**	**I**	**2.117**
184	**1**	**1**	**0.4**	**3**	**R**	**0.200**
140	**3.86**	**1.8**	**0.24**	**4**	**R**	**0.834**
44	**0.15**	**1.5**	**0.7**	**1**	**I**	**0.064**
62	**3**	**0.9**	**0.2**	**2**	**R**	**0.270**
13	2.2	2.2	1.08	4	I	2.117
123	1	1.18	0.68	2	R	0.401
12	0.8	0.8	0.08	1	R	0.026
121	1.2	1.3	0.5	4	R	0.390
94	1.7	1.6	0.6	3	R	0.816
131	2.2	2.1	1.2	4	I	2.245
134	1.3	1.3	0.4	4	R	0.338
133	1.2	1.4	0.5	4	R	0.420
132	2.1	1.2	0.44	4	R	0.554
126	1.9	1.9	0.6	2	R	1.083
298	1.7	1.5	1	4	R	1.275
114	0.98	0.98	0.5	1	R	0.240
294	4.7	4	1.12	4	I	8.528
249=287	5.2	4.6	1.02	4	I	9.881
11	1.2	1.2	0.18	2	R	0.130
246	1.54	1.8	0.16	1	I	0.180

#	*Max L (m)*	*Max W (m)*	*Max D (m)*	*Strata Group*	*(Ir)regular?*	*Volume (m^3)*
288	1.2	0.3	0.14	1	I	0.020
122	1.46	0.64	0.34	1	I	0.129
256	0.6	0.4	0.2	1	R	0.024
290	1.1	0.8	0.35	2	R	0.154
183	1.38	1	0.5	2	R	0.345
58=59	3.7	3.1	0.46	3	R	2.638
143	1.1	1	0.6	4	I	0.267

Table B4: The Finds from Kompolt-Kistér

Pit #	Total Ceramics		Coarse Decorated		Fine Decorated		Coarse Undecorated		Fine Undecorated		Animal Bone (x=present)	Stone
	Quantity	Weight (g)	Quantity	Weight (g)	Quantity	Weight (g)	Quantity	Weight (g)	Quantity	Weight (g)		
11	185	2636	9	246	0	0	176	2390	0	0	x	
12	32	661	6	65	1	1	25	595	0	0		
13	573	9020	28	945	48	345	336	6880	161	850	x	obsidian
26	1442	40207	99	7920	63	542	819	29630	461	2115	x	
31	212	3268	10	115	2	5	160	2860	40	288		
44	43	746	0	0	1	1	35	720	7	25		
58=59	81	1120	0	0	0	0	81	1120	0	0	x	
62	390	4790	18	295	0	0	344	4375	28	120	x	
65=283	10	60	0	0	0	0	10	60	0	0		
94	105	1204	8	305	2	2	68	885	27	12	x	
114	23	145	1	40	0	0	20	95	2	10		stone tools

Pit #	Total Ceramics		Coarse Decorated		Fine Decorated		Coarse Undecorated		Fine Undecorated		Animal Bone (x=present)	Stone
	Quantity	Weight (g)	Quantity	Weight (g)	Quantity	Weight (g)	Quantity	Weight (g)	Quantity	Weight (g)		
121	108	1842	1	5	1	2	92	1780	14	55	x	
122	12	155	0	0	0	0	12	155	0	0		
123	88	1200	3	115	7	55	47	845	31	185	x	stone tools
125	1020	23491	72	5270	88	426	190	12990	670	4805	x	
126	58	775	2	65	1	5	38	605	17	100		
131	453	15365	29	2550	14	620	348	11880	62	315	x	
132	49	462	3	50	1	2	34	360	11	50		
133	26	955	1	150	0	0	15	465	10	340		obsdian blade
134	39	560	0	0	1	10	28	485	10	65		
140	688	8870	25	1240	11	70	524	6540	128	1020	x	
143	6	27	1	2	0	0	5	25	0	0	x	2 obsidian fragments
180	3	5	0	0	0	0	3	5	0	0		

Pit #	Total Ceramics		Coarse Decorated		Fine Decorated		Coarse Undecorated		Fine Undecorated		Animal Bone (x=present)	Stone
	Quantity	Weight (g)	Quantity	Weight (g)	Quantity	Weight (g)	Quantity	Weight (g)	Quantity	Weight (g)		
183	11	115	0	0	0	0	11	115	0	0		
184	117	1550	6	345	0	0	72	1120	39	85		
206	1	30	0	0	0	0	1	30	0	0		
246	83	1945	3	305	0	0	80	1640	0	0	x	grind stone
249	776	3167	0	0	5	32	15	3055	9	80	x	
256	1	25	0	0	0	0	1	25	0	0		
288	2	0	0	0	0	0	2	0	0	0		
290	5	55	0	0	0	0	5	55	0	0		
294	513	11066	23	317	25	239	443	10350	22	160		
296	3	245	0	0	0	0	3	245	0	0		
298	31	290	2	10	0	0	15	260	13	20	x	

Table B5: The Pits at Bylany F

Feature	Max L (cm)	Max W (cm)	Max D (cm)	Strata Group	(Ir)regular	Volume (m3)
2101	1330	780	132	4	I	55.46
2105	885	160	60	4	R	4.25
2106	105	85	15	4	R	0.07
2108	200	140	40	2	R	0.56
2115	340	150	36	3	I	0.74
2116	425	280	67	4	I	3.23
2117	360	190	90	4	I	2.49
2118	325	210	42	2	I	1.16
2119	140	100	19	1	R	0.13
2120	500	310	95	4	I	5.96
2121	330	240	65	4	R	2.57
2122	530	345	73	4	R	6.67
2123	550	320	70	4	R	6.16
2124	280	125	75	4	R	1.31
2125	680	480	65	4	I	8.59
2126	340	200	70	4	I	1.93
2127	940	230	78	4	I	6.83
2128	185	140	15	2	R	0.19
2129	230	220	50	3	I	1.02
2130	250	255	20	2	I	0.52
2132	340	170	85	1	R	2.46
2133	460	290	67	2	I	3.62
2134	310	290	60	3	I	2.18

Feature	Max L (cm)	Max W (cm)	Max D (cm)	Strata Group	(Ir)regular	Volume (m3)
2136	320	320	115	4	I	4.77
2140	230	160	65	2	R	1.20
2141	520	210	55	3	I	2.43
2142	520	350	70	4	I	5.16
2143	680	190	45	3	R	2.91
2144	250	200	50	4	I	1.01
2145	530	230	60	4	I	2.96
2146	320	240	75	3	R	2.88
2147	550	280	55	4	I	3.43
2148	190	160	45	2	I	0.55
2149	180	110	30	2	R	0.30
2150	200	70	68	2	R	0.48
2151	950	360	130	4	I	18.01
2152	260	185	75	3	R	1.80
2153	315	155	60	2	I	1.19
2154	170	140	20	1	R	0.24
2155	440	380	82	4	R	6.86
2156	240	130	53	1	R	0.83
2157	980	710	120	4	I	33.82
2158	590	420	90	4	I	9.03
2159	780	320	84	2	I	8.49
2160	165	130	60	3	R	0.64
2161	310	120	60	3	R	1.12
2162	360	190	20	3	R	0.68
2163	580	200	40	3	R	2.32

Feature	Max L (cm)	Max W (cm)	Max D (cm)	Strata Group	(Ir)regular	Volume (m3)
2164	330	120	20	2	R	0.40
2165	480	200	65	4	I	2.53
2166	220	180	30	4	I	0.48
2167	270	150	58	2	I	0.95
2168	1260	420	112	4	I	24.00
2169	690	380	118	2	I	12.53
2170	830	440	90	2	R	16.43
2171	160	160	30	2	R	0.38
2172	350	180	45	3	R	1.42
2174	190	160	45	4	R	0.68
2175	840	290	70	4	I	6.91
2177	700	400	90	4	I	10.21
2178	250	220	45	2	R	1.24
2179	250	220	40	3	R	1.10
2180	290	270	80	3	I	2.54
2181	900	330	70	4	I	8.42
2182	390	260	75	2	R	3.80
2183	220	155	35	2	I	0.48
2184	140	120	60	2	I	0.41
2185	260	120	26	3	I	0.33
2186	400	170	22	2	I	0.61
2188	200	130	22	1	I	0.23
2189	330	200	140	3	R	4.62
2193	480	260	75	4	I	3.79
2194	1040	410	108	4	I	18.65

Feature	Max L (cm)	Max W (cm)	Max D (cm)	Strata Group	(Ir)regular	Volume (m3)
2204	990	330	60	4	I	7.94
2206	980	360	140	4	I	20.00
2207	735	340	150	4	I	15.18
2208	130	110	30	2	R	0.21
2211	210	140	25	1	R	0.37
2212	380	180	50	4	R	1.71
2213	380	140	30	3	R	0.80
2214	270	160	35	2	R	0.76
2215	370	170	85	2	R	2.67
2216	220	150	40	3	R	0.66
2218	390	330	70	4	I	3.65
2219	220	170	30	3	R	0.56
2220	200	170	65	2	R	1.11
2221	330	200	80	3	I	2.14
2222	190	180	35	3	R	0.60
2228	195	130	32	2	R	0.41
2229	490	200	76	4	I	3.02
2230	190	120	28	2	R	0.32
2231	210	140	36	4	R	0.53
2232	310	180	34	4	I	0.77
2233	560	430	73	3	I	7.12
2236	250	160	36	4	R	0.72
2237	240	170	40	2	R	0.82
2238	740	310	50	4	I	4.65
2239	106	100	32	2	R	0.17

Feature	Max L (cm)	Max W (cm)	Max D (cm)	Strata Group	(Ir)regular	Volume (m3)
2240	320	180	48	3	R	1.38
2241	430	145	32	3	I	0.81
2243	360	190	80	4	I	2.22
2245	190	160	42	4	R	0.64
2246	140	130	28	2	R	0.25
2247	460	300	76	4	I	4.25
2248	330	160	22	4	I	0.47
2249	400	145	36	3	R	1.04
2250	240	180	74	4	R	1.60
2251	135	96	36	3	R	0.23
2252	235	115	36	3	R	0.49
2253	500	175	48	4	I	1.70
2254	385	165	46	3	R	1.46
2255	510	260	70	4	I	3.76
2256	250	170	28	2	R	0.60
2257	360	160	110	4	I	2.57
2258	170	105	34	3	I	0.25
2259	430	220	65	4	I	2.49
2260	470	220	55	3	I	2.30
2261	150	140	34	2	R	0.36
2262	690	170	70	4	I	3.33
2263	175	155	21	1	R	0.28
2264	375	155	108	4	I	2.54
2265	360	140	50	1	I	1.02
2266	265	200	26	1	I	0.56

Feature	Max L (cm)	Max W (cm)	Max D (cm)	Strata Group	(Ir)regular	Volume (m3)
2267	200	125	24	1	R	0.30
2268	350	260	28	1	R	1.27
2271	225	205	98	4	I	1.83
2272	720	90	74	4	I	1.94
2280	340	165	60	4	R	1.68
2281	275	170	54	4	R	1.26
2282	295	140	94	4	R	1.94
2284	205	150	54	3	R	0.83
2285	180	225	92	4	I	1.51
2286	660	150	70	2	R	3.47
2289	150	76	35	2	R	0.20
2296	220	150	50	1	R	0.19
2300	260	160	62	3	R	1.29
2301	225	175	40	1	I	0.64
2303	360	180	68	4	I	1.78
2304	300	140	53	3	I	0.90
2306	210	120	75	4	I	0.77
2307	220	150	68	3	R	1.12
2308	320	300	70	4	R	3.36

Table B6. The Finds from Bylany F

Feature	Total Ceramics	# Decorated	# Undecorated	# Fine Wares	# Coarse Wares	Chipped Stone	Polished Stone	Grindstones	Millstones	Handstones	Other Stones	Bones	Burnt Clay	Charcoal
2101	456	113	343	229	227	10	11	8	7	7	44	x	x	x
2105	122	26	87	59	63	4			2	2	9		x	
2106	1	0	1	1	0		1						x	
2108	3	1	2	1	2									x
2115	64	7	57	34	30	8	9	7			15	x	x	x
2116	61	5	56	26	35	1	3	2	1	1	11		x	
2117	19	4	15	9	10									
2118	4	1	3	0	4									
2119	1	0	1	0	1	1								
2120	78	20	58	38	40	11	7		5	2	8		x	
2121	121	34	87	65	56	8	20	3		2	7	x	x	x
2122	17	2	15	7	10						1			
2123	135	27	108	48	87	2	2	2	2	1	16		x	
2124	30	15	15	20	10	2	2		1		2	x	x	x
2125	63	29	34	41	22	2	2	1	1	1	9		x	x
2126	29	4	25	11	18	1	1			1	1			
2127	46	13	33	24	22	1			3		3	x	x	x
2128	1	0	1	0	1									
2129	10	0	10	1	9				5	1	15			
2130	9	5	4	5	4									
2132	1	0	1	0	1									
2133	12	3	9	5	7	1	2				3	x	x	

Feature	Total Ceramics	# Decorated	# Undecorated	# Fine Wares	# Coarse Wares	Chipped Stone	Polished Stone	Grindstones	Millstones	Handstones	Other Stones	Bones	Burnt Clay	Charcoal
2134	7	1	6	2	5				1		1			
2136	7	1	6	3	4		2				2			x
2140	8	0	8	2	6			1	1					
2141	11	3	8	5	6	1	2			1		x		
2142	36	9	27	11	25						4			
2143	41	13	28	22	19	1	2	1	1	1	11		x	
2144	76	35	41	41	35		2	1			6	x	x	
2145	19	7	12	16	3			2						x
2146	24	10	14	10	14	1	1	1	1	1	5	x		
2147	54	27	27	32	22	3	2	2	1	1	6	x	x	
2148	8	0	8	2	6	1		1						
2149	2	0	2	1	1									
2150	1	0	1	0	1									
2151	105	18	86	39	65	7	8		2	1	19	x	x	x
2152	15	2	13	5	10						2		x	
2153	21	1	20	11	10	5	6				6	x	x	x
2154	0	0	0	0	0									
2155	29	6	23	6	23	2	2		4	2	5		x	x
2156	3	0	3	1	2						1			
2157	149	34	115	56	93	6	3	1	4	3	19	x	x	
2158	34	9	25	13	21				1	1	9			x
2159	17	3	14	6	11		1	1	2		3	x	x	x
2160	11	1	10	7	4						1			x

Feature	Total Ceramics	# Decorated	# Undecorated	# Fine Wares	# Coarse Wares	Chipped Stone	Polished Stone	Grindstones	Millstones	Handstones	Other Stones	Bones	Burnt Clay	Charcoal
2161	22	7	15	11	11	1					2			
2162	8	2	6	4	4									
2163	20	4	16	10	10									
2164	23	6	17	11	12									
2165	16	4	12	2	14						1	x		
2166	6	0	6	0	6									
2167	1	0	1	1	0									
2168	131	34	96	67	63	6	16	3	3	2	27	x	x	x
2169	33	2	31	10	23	3	4	1	8	3	34		x	x
2170	106	20	86	43	63	1	4	1	2		3			
2171	7	1	6	3	4									
2172	2	0	2	0	2				1					
2174	14	5	9	9	5	2		2	1		4	x	x	
2175	30	10	20	10	20						2			
2177	33	7	26	10	23			2		1	6	x	x	
2178	14	2	12	7	7		1		1	1	3			
2179	3	2	1	1	2						1			
2180	19	4	15	8	11					1	5		x	
2181	42	19	23	24	18		5	1	1		20		x	x
2182	28	7	21	21	7		1	1		1	15	x	x	
2183	4	1	3	1	3			1			2		x	
2184	0	0	0	0	0									
2185	2	0	2	1	1									

Feature	Total Ceramics	# Decorated	# Undecorated	# Fine Wares	# Coarse Wares	Chipped Stone	Polished Stone	Grindstones	Millstones	Handstones	Other Stones	Bones	Burnt Clay	Charcoal
2186	1	0	1	0	1									
2188	0	0	0	0	0									
2189	44	10	34	24	20		2	1	1	1	1	x		
2193	36	13	23	21	15	1								
2194	243	59	184	136	107									
2204	188	60	128	118	70	2	2	2	2		12	x	x	x
2206	77	24	53	34	43	3	3		2		13	x	x	
2207	35	6	29	19	16	1	2		3	1	18			x
2208	3	1	2	1	2									
2211	2	0	2	1	1					1				
2212	20	4	16	7	13	2			1	1	1	x		
2213	16	3	13	7	9	1			3		1			
2214	5	1	4	3	2						1			x
2215	23	4	19	7	16					1	3			
2216	60	12	48	30	30	1	1		1		4		x	x
2218	24	6	18	8	16			1			1	x	x	
2219	9	3	6	4	5						1			
2220	6	1	5	2	4	1					1			
2221	14	1	13	4	10	1	1	1	1		1	x		x
2222	2	0	2	0	2									
2228	1	0	1	0	1									
2229	18	5	13	9	9	1	1		1		3			
2230	1	0	1	0	1									

Feature	Total Ceramics	# Decorated	# Undecorated	# Fine Wares	# Coarse Wares	Chipped Stone	Polished Stone	Grindstones	Millstones	Handstones	Other Stones	Bones	Burnt Clay	Charcoal
2231	2	0	2	2	0						1			
2232	27	8	19	22	5		4		1		2			
2233	36	6	30	19	17		2		2		4		x	x
2236	21	10	11	12	9	3	2	1			3	x	x	x
2237	4	2	2	4	0									
2238	37	15	22	20	17		1	3	2	1	16		x	x
2239	3	1	2	0	3									
2240	9	3	6	5	4	2					3		x	
2241	9	2	7	4	5						2			
2243	12	4	8	7	5						2	x	x	x
2245	13	5	8	8	5						2	x		
2246	1	0	1	0	1									
2247	3	1	2	1	2									
2248	8	1	7	4	4	1		1						
2249	12	2	10	3	9		1						x	
2250	91	31	60	63	28	31	7	2			9	x	x	x
2251	3	0	3	1	2									
2252	5	1	4	1	4									
2253	22	11	11	19	3		1	4	1	1	6			x
2254	10	0	10	4	6			1		1	1		x	
2255	18	3	15	6	12		2		1	1	2	x		
2256	0	0	0	0	0									
2257	43	14	29	25	18	4	3	6		1	4	x	x	x

Feature	Total Ceramics	# Decorated	# Undecorated	# Fine Wares	# Coarse Wares	Chipped Stone	Polished Stone	Grindstones	Millstones	Handstones	Other Stones	Bones	Burnt Clay	Charcoal
2258	11	3	8	3	8						3		x	
2259	53	12	41	34	19	1		1		1	4	x	x	x
2260	27	6	21	14	13	1	1	1			3	x	x	x
2261	0	0	0	0	0									
2262	41	15	26	26	15	2	4		1		6	x	x	x
2263	0	0	0	0	0									
2264	5	2	3	2	3									x
2265	3	0	3	3	0		1							x
2266	2	0	2	0	2						1			
2267	7	2	5	2	5									x
2268	9	2	7	3	6									
2271	2	0	2	0	2	15	5			2	6	x	x	x
2272	9	2	7	4	5						1	x	x	x
2280	39	7	32	17	22		4	2			12	x		
2281	4	1	3	2	2						2			
2282	25	5	20	12	13						4		x	x
2284	13	2	11	5	8			2			2			
2285	11	1	10	4	7		1				1			
2286	34	8	26	11	23	1	1					x		
2289	2	0	2	0	2									
2296	0	0	0	0	0									
2300	20	2	18	8	12						2			
2301	0	0	0	0	0									

Feature	Total Ceramics	# Decorated	# Undecorated	# Fine Wares	# Coarse Wares	Chipped Stone	Polished Stone	Grindstones	Millstones	Handstones	Other Stones	Bones	Burnt Clay	Charcoal
2303	22	10	12	12	10	1	2	1			2	x	x	
2304	4	0	4	1	3									
2306	4	1	3	0	4				1					
2307	2	0	2	1	1									
2308	9	1	8	2	7						2			

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