Neolithic meshworks:
A multi-scalar approach to understanding social relations within the LBK

by

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Summary

This thesis explores the different scales of sociality (or social interaction) found within the LBK through the lens of a broadly meshwork-based perspective. It evaluates the hypotheses that people in the LBK lived in and recognised multiple levels of 'community', that these different communities overlapped, resulting in negotiation and possibly conflict; and that membership of these communities was potentially open and fluid, varying according to season, task or personal preference. With the help of meshwork-thinking, I explore the social relationships that helped to define the LBK. In doing so, I demonstrate that this dynamic, multi-dimensional approach can offer a new perspective on understanding the degree of homogeneity and variation within the LBK tradition.

The core of the thesis is divided into three case studies, each concentrating on a specific scale of analysis. The first case study focuses on social interaction at the household scale and considers the emergence of individual households, household complexes and co-operative groups of households within the Merzbach and Schlangengraben valleys. The second case study explores the inter-play between competing family and clan/lineage identities at the scale of the settlement cluster or micro-region. The third case study zooms out to the regional scale of the Lower Rhine basin, tracing more geographically spread patterns in the material culture as well as interaction with non-LBK groups beyond the loess regions. Calling on these cases studies, I also consider how scale was experienced in the LBK.

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1   Introduction

The *Linearbandkeramik* (LBK) represents one of the most intensively studied fields in European prehistory. Early studies emphasised the high degree of uniformity witnessed within LBK material culture and associated these finds with a conservative and largely homogenous cultural group. This assumption of social homogeneity has been steadily replaced by a growing appreciation of the degree of variation within LBK practices at both a local and regional scale. Rather than some sort of cultural totality, the LBK is increasingly seen as a heterogeneous collection of overlapping social groups and identities which operated on multiple scales. Despite this recognition, there remains a tendency within LBK studies to focus on single scales of interaction and treat social groups as clearly defined, subjected to normative rules of membership and appropriate behaviour (although not necessarily deliberately). With few exceptions, little room is left for individual agency and the interplay and negotiation between these different scales. Although the tide is turning, there remains a strong need for more nuanced models of social interaction and its role in the material expression of the LBK. Distilled from a diverse range of relational models, the idea of the 'meshwork' and meshwork-thinking provide a compelling framework on which to consider these issues.

1.1   The L*inearbandkeramik,* or LBK

The *Linearbandkeramik* culture characterises the first established representation of the Neolithic in central Europe. Identified through its distinctive material culture of linear ceramic motifs, groundstone tools and large timber-built longhouses, the tradition

Figure 1-1: Map of the LBK distribution showing the earliest (darker) and later (lighted) phases (Bickle and Whittle 2013b: Fig. 1.1)
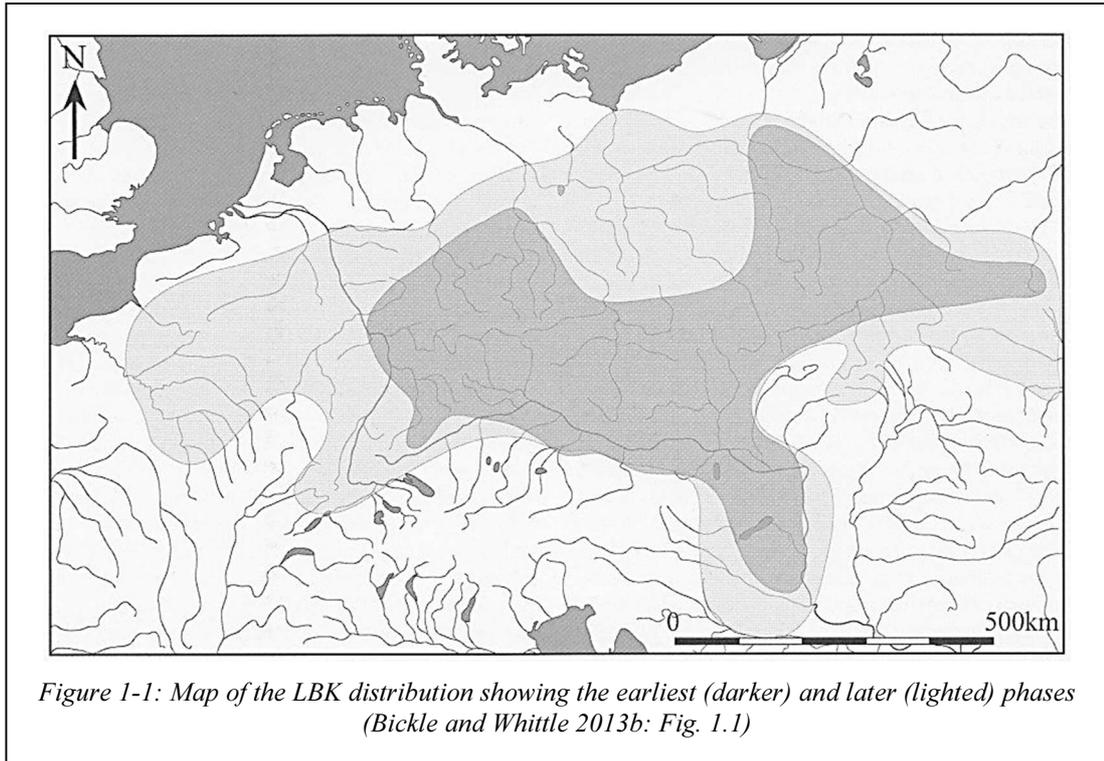
perhaps originated in Transdanubia and surrounding areas and rapidly spread along Europe's river systems through the second half of the sixth millennium cal. BC. By its demise circa 4900 cal. BC, the LBK complex had spread as far north as the border of the North European Plain and into the lower reaches of the Rhine valley (Figure 1-1).

The communities of the LBK were initially seen as the products of migrating farmers—sedentary, culturally conservative, insular and largely homogeneous (Childe 1925; 1929; Piggott 1965; Behrens 1975). Family-based households residing in their characteristic longhouses served as the primary unit of production and consumption (Lüning 1982a; Bogucki 1988). These households were linked together in expansive kinship networks, providing an important source of support and exchange within the relatively modest and dispersed population of the LBK (Bogucki 1988). Socio-political structures beyond the settlement were lacking; local leadership and social authority likely rested in the hands of family heads and possibly a village chief

(Behrens 1975; van de Velde 1979a). The material culture associated with LBK sites—such as its linear pottery, polished stone adzes and longhouses—appeared to be remarkable uniform across a large geographical area (more than 1000 km) and over a relatively long time period (500–600 years). This homogeneity was accepted as the natural product of a conservative tradition defined by a shared, monolithic culture.

Reliant on data from a handful of influential sites in particular pockets of settlements, early LBK syntheses emphasised the unity and uniformity of the LBK people (whilst accepting some regional and temporal variations; Bogucki 1988; Lüning 1988a; Modderman 1988). An explosion of post-industrial development during the late twentieth century led to a broader appreciation of the LBK throughout its (geographical and temporal) distribution. Inspiring a future generation of research, Modderman (1988) raised the rallying cry of "diversity in uniformity" when considering these variations within the LBK. The data collected from excavation and finds analyses highlighted the prevalence of diversity within the material culture (Frirdich 1994; Löhr 1994; Coudart 1998; Kneipp 1998; Gronenborn 1999), subsistence (Arbogast 1993; Döhle 1993; Hachem 2000; Lüning 2000; Bogaard 2004), burial practices (Jeunesse 1995a; 1996; 1997; Veit 1996), settlement (Rück 2007; Petrasch 2003; 2012; Lenneis 2012) and cultural makeup (Gronenborn 1999; 2007; Lukes 2004; Zvelebil and Pettitt 2008; 2013) of the LBK. In light of this research, early assumptions of a monolithic and homogenous LBK society are no longer tenable. Variation can be seen in all aspects of LBK cultural practices and at all scales (individual, intra-settlement, inter-settlement, regional, supra-regional, and temporal).

This appreciation of LBK communities as diverse and segmented brings into sharp focus the unresolved issues of diversity and uniformity within this research area. Despite the growing recognition that several different ways of doing things may have acceptable within LBK groups, the LBK as a whole is still seen as remarkably uniform. Increasingly perceived as a patchwork of inter-linked 'LBKs' (Jeunesse 1995a; 1995b; 2009; Whittle 2003; Pechtl 2009; Whittle and Bickle 2013), the research agenda has moved on from explaining variation (as deviance or local particularities). A greater focus has been placed on explaining the long-term continuities shared across the LBK distribution and what being 'LBK' and other scales of social identity may have meant to the local inhabitants of these communities. Key to uncovering these answers is our understanding of social relations within the LBK.

Early discussions of social organisation within the LBK emphasised a few key scales of social interaction—such as the household, settlement and kin-based exchange network—within a shared cultural context (e.g. Behrens 1975; Bogucki 1988; Lüning 1988a; Modderman 1988). The recent emphasis on variation and diversity within LBK practices has acknowledged newly-recognised scales of sociality within these communities (such as clan-based household groups (Strien 2005) or supra-regional traditions (Jeunesse 1995a; 1995b; 2009)) as well as highlighted potential areas of overlap and conflict between these differently scaled social groupings. Rather than some sort of cultural totality, the LBK likely encompassed a heterogeneous collection of overlapping social groups and identities which operated on multiple scales (Bickle and Hofmann 2009; Whittle and Bickle 2013).

Despite this recognition, our models of LBK social organisation and interaction remain steadfastly behind the times. Whilst past scholarship on this topic has been

strong, it has tended to limit itself to single scales of social interaction, such as the household, descent group or exchange network (Lüning 1982a; Bogucki 1988; Zimmermann 1995; Jeunesse 1997; Mateiciucová 2004; Frirdich 2005; Petrasch 2012). Despite the diversity seen within the data, there remains a tendency to treat these social collective or groups as rigidly defined and undifferentiated. In general, the reader is presented with a model of LBK society based on a nested hierarchy of clearly-defined, bounded social units (linked to spatial units) which are reproduced generation by generation according to accepted cultural norms (Figure 1-2). Although social critiques outside of archaeology remind us that 'societies' are not closely bound, stable or even substantive (Barnard and Spencer 1996; Amit and Rapport 2002; DeLanda 2006), LBK social groups remain stubbornly 'closed' (although there is an increasing recognition of life-time mobility; e.g. Zvelebil and Pettitt 2008; Bentley 2013; Hedges *et al.* 2013). In addition, comparatively few researchers have focused on linking these different scales together or

Figure 1-2: Typical presentation of LBK society as nested hierarchy
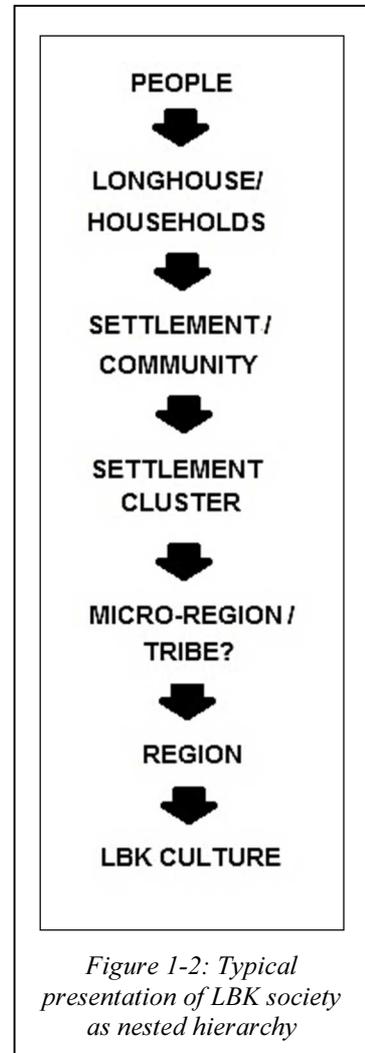
considered how these different scales may have supported or conflicted with one another (although the need for such research is freely conceded by many LBK researchers; Whittle 2009; Whittle and Bickle 2013). Clearly, there remains a pressing need to develop more nuanced models of social interaction within LBK communities which engage with this fluidity, dynamism and diversity over multiple scales.

1.2 Networks and meshworks

Within social sciences, the concept of the social network has proved to be a powerful analytical tool and influential metaphor for understanding the complex and inter-related web of connections that constitute and link human communities (Mitchell 1974: 121; Knox *et al.* 2006). More recently, network theory has taken a more ontological spin, focusing increasingly on how such networks—or, with greater fluidity, 'meshworks'—are constituted through the mutual interaction of social actors of all sorts (human, non-human, object, place, and so on). Whilst sharing a broad appreciation of the interconnectedness of human sociality, these different approaches tend to focus on different aspects of these relations, such as the participation of non-humans, the loci of agency, and lived experience.

Defined with one foot in philosophy, these relational models can be difficult to understand and more difficult to use (although see Fowler 2013 for a recent attempt). Rather than focus on one particular model, this thesis will pull together several (more easily comprehensible) aspects of these relational network-based models. It uses the concept of the 'meshwork' as an ontological metaphor describing the emergence of self and social collectives from practical engagements with 'others' of many types and forms. These meshworks allow plurality without requiring uniformity, strengthened in part by the tensions and contradictory currents that exist between its member constituents. As such, meshwork-thinking may provide an appropriate framework (and broad-based methodology) for exploring the social relations within the diverse context of the LBK.

1.3 Aims of this thesis

The aim of this research is to explore the different scales of sociality (or social interaction) found within the LBK through the lens of a broadly meshwork-based perspective. At its heart, my thesis will evaluate the hypotheses that people in the LBK social world lived in and recognised multiple levels of 'community'; that these different communities (existing on different spatial and temporal scales) overlapped, resulting in negotiation and possibly conflict; and that membership of these communities was potentially open and fluid, varying according to season, task or personal preference. With the help of meshwork-thinking, I seek to explore the potentially open, fluid and dynamic social relationships that defined the LBK social world. In particular, this thesis focuses on the interwoven meshworks of alliances that may have shaped communities and the tensions that may have existed between these meshworks. In doing so, I hope to demonstrate that this dynamic, multi-dimensional approach can offer a new perspective on understanding the degree of homogeneity and variation within the LBK tradition.

The thesis begins by discussing what is meant by the concept of 'meshwork-thinking' and how this approach serves as a framework (or methodology) for analysis (Chapter 2). As background, Chapter 3 provides a brief historiography of past scholarship on social relations in the LBK, and Chapter 4 offers a regional overview of the research area, the Lower Rhine basin. The core of the thesis is divided into three case studies, each concentrating on a specific scale of analysis[1]. The first case study (Chapter 5) focuses on social interaction at the household scale and considers the emergence of

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[1] These scales of analysis are not intended to imply absolute divisions or breaks within LBK society nor necessarily represent social interaction in their own right. They are intended to provide a heuristic framework in which to explore a broad range of social groupings, identities and loci of social interaction within the LBK.

individual households, household complexes and co-operative groups of households within the Merzbach and Schlangengraben valleys. The second case study (Chapter 6) explores the interplay between competing family and clan/lineage identities at the scale of the settlement cluster or micro-region. The third case study (Chapter 7) zooms out to the regional scale of the Lower Rhine basin, tracing more geographically spread patterns in the material culture as well as interaction with non-LBK groups beyond the loess regions. Chapter 8 calls on these cases studies to consider how scale was experienced in the LBK. The final Chapter 9 assesses the implications of this research and offers suggestions for future investigation.

2   From network to meshwork

The concept of the social network has proved to be a powerful analytical tool and influential metaphor for understanding the interconnected nature of human social relations since the early twentieth century (Knox *et al.* 2006; Mitchell 1974: 121)[2]. Like other terms such as 'agency', the everyday usage of the term 'network' brings with it a variety of different understandings and assumptions. However, at its heart, the network centres on the interconnections and interdependencies that lie between persons, places and things. By and large, contemporary archaeologists limit themselves to a single dominant model of the network—the inter-locking nodes and connecting ties derived from the formal quantitative models of social network analysis (Knappett 2013). This model has proved to be useful when exploring regional interaction (e.g. Broodbank 2000; Coward 2009; Mizoguchi 2009; Claßen 2009a; 2009b) but are less proficient when dealing with the temporal and multi-scalar 'realities' of social interaction.

In this chapter, I review how network theory (and practice) has been incorporated within archaeology to date, as well as consider the slow but steady inclusion of more ontological models that explore the interconnectedness of human sociality. Tailored towards specific issues and concerns, each of these models offer insights into how the social landscape emerges through mutual interaction and engagement. Rather than focus on one specific method, I propose a more generalised approach which takes advantage of this diversity. Co-opting the term 'meshwork', I outline a broad-brush methodology for exploring the emergence of self and social collectives through

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[2] It is impossible to comprehensively review the large and diverse body of work that has arisen from network studies in the twentieth century. This work will focus on the approaches that are most relevant to this archaeological context.

practical engagements with 'others' of many types and forms and highlight how this will help us to conceptualise and engage with the multiple dimensions of social relations within the Neolithic world.

2.1   Network as system: world-system & peer polity models

The concept of 'the network' is not new to archaeology. First introduced in the late 1970s, systems models, such as world-system theory and peer polity interaction, have attempted to explain long-term social change through the changing social relationships, or networks, shared between regional elites.

World-system theory was initially developed by Immanuel Wallerstein as a critique or protest against traditional social scientific approaches that limit themselves to geo-political units, specific specialisms or to a single historical or generalising perspective (Wallerstein 1974; 1987; 2004). The main aim of Wallerstein's initial work was to demonstrate the emergence of a dominant and uniquely stable world-economy based on capitalism in Europe as early as the sixteenth century. In doing so, he introduces the concept of the world-system (later, historic system) as the primary unit of analysis. These world-systems are largely self-contained social systems of economic activity that extend beyond political or socio-cultural borders and possess their own boundaries, structures, rules of legitimisation and member groups. According to Wallerstein, these systems are held together by the tensions existing between different member (social) groups, who each attempt to mould the system to suit their purposes. They are only minimally effected by external forces (Wallerstein 1974: 15, 347). Prior to the modern era, these world-economies were highly unstable and tended to convert

to world-empires (through militaristic conquests) or to disintegrate into smaller-scaled mini-systems (Wallerstein 1974: 348–50)[3].

Central to world-systems theory is the development of hierarchical zones of activity, moving from dominating core states through the buffer zone of the semi-periphery to the underdeveloped (and exploited) areas of the periphery. This system is dynamic, with the status of individual locations within this hierarchy shifting as a result of competitive forces and technological innovation (Wallerstein 1974: 349–51). This combination of economic theory and power relations means that many would classify world-systems theory as a Neo-Marxist paradigm.

From its inception, world-systems theory has been heavily criticised on various grounds. For example, common complaints include its assertion that the modern world-economy started as early as the sixteenth century, its unbalanced Eurocentrism, and its denial of stable world-economies prior to the modern world (Ekholm and Friedman 1980; Rowlands *et al.* 1987; Schneider 1977; Wolf 1982). However, its concept of the core and periphery and the implied asymmetric relations between these areas has been influential. In his summary of world-systems' impact on archaeology, Rowlands states that it avoids the need to define bounded geo-political units, noting that it only requires "recognising different scales and hierarchies of relations operating at different levels of geo-political resolution" (Rowlands 1987: 4). At the same time, he argues that archaeology requires a broader definition of core and periphery in order to apply Wallerstein's initial concept to the class-less societies of prehistory. Rather

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[3] Wallerstein categorises these world-systems into three general types: (i) mini systems which are spatial and temporally limited and based primarily on reciprocal exchange; (ii) world-empires which are inter-regional economic units that share a single political system; and (iii) world-economies which are also inter-regional economic units but that operate under multiple cultural and political systems.

than focusing on geo-political units and class as bases of power, Rowlands stresses the role of networks of social elites and points to the unequal costs paid by these elites in participating in these networks as the source of core-periphery relations.

Although sharing a focus on inter-regional contact, peer polity interaction models expand beyond the mere economic relations of world-systems theory. At their heart, peer polity interaction models attempt to explain social change (especially the emergence of social complexity) by exploring the interaction between neighbouring "polities" (autonomous socio-political units)—as opposed to internal and external sources of change. Whilst peer polity interaction also focuses on larger-scaled interaction spheres, it rejects the dominant relations implied by Neo-Marxist world-systems theory. Instead, the peer polity approach—as defined by Renfrew (1986)— offers a number of different modes of interactions varying from warfare to competitive emulation to symbolic entrainment to explain the nature of this interaction.

Within archaeology, these key concepts of inter-regional contacts and their influence on long-term change have been applied (broadly) to a variety of contexts (e.g. the Lapita complex in Oceania (Kirsch 1987), the Hopewellian complex in Midwestern North America (Braun 1986) and European prehistory (Kristiansen 1987; 1998; Shennan 1986)). Whilst considering the formal role of social interaction in long-term change, they focus almost exclusively on the interaction of a limited set of people (local elites) and on the emergence of asymmetrical power relations in prehistory. However, the adoption of formal network methodologies developed within sociological studies (social network analysis) has offered archaeology a more formal and possible expansive means to explore regional and inter-regional interaction in the past.

2.2   Network as method: the bounded world of social network analysis

Social network analysis (SNA) serves as an umbrella term for a collection of quantitative methods that seek to describe, topologically and behaviourally, the interpersonal networks that dominate human social interaction. It first appeared as a collective whole in the late 1960s with Mitchell's synthesis of earlier studies of friendship circles, group dynamics and graph theory (Mitchell 1969; Scott 1999). At its core, SNA conceives of the social network as a bounded collective of persons. These persons are 'connected' to each other in some fashion (as friends, business colleagues, community residents, and so on); the specific nature of the connection varies depending on the character of the analysis (Mitchell 1974: 292–5).

Figure 2-1: Examples of basic sociographs (after Scott 1999: Fig. 3.5(v))
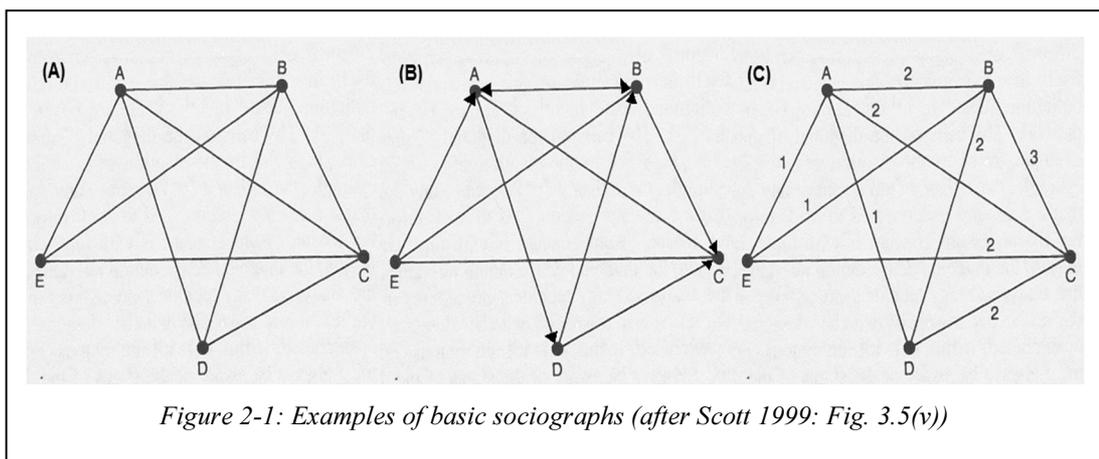
Traditionally, SNA displays these networks graphically as points (or nodes, representing the individuals within the network) and lines (or links, symbolising the social interaction(s) that occur between these individuals) (Figure 2-1). These 'sociographs' can be enhanced by representing the directionality of the relationship through the use of arrows (B) or by recording the intensity of the relationship through a context specific value scale (C).

Given the complex nature of real-life social networks, these 'sociographs' can be complicated to analyse and interpret. Recent developments in multidimensional scaling techniques have attempted to overcome some of these complications through the use of computer simulation and multivariate analysis (Scott 1999: chapter 8). Underlying these graphical representations are a series of mathematical matrices that record the absence or presence of a link between each and every node in the graph. Using a set of mathematical formulae referred to as 'graph theory', the sociometric features of the graph (standing as proxy for the social network) can be quantified—the key attributes being:

• Density—measuring the overall connectedness of the graph; for example, what proportion of the universe of possible links are represented in the data. High density networks display greater levels of mutual cross-linkages, whereas low density networks are more dispersed.

• Centrality—measuring the relative prominence of a particular node within a graph (local centrality) or the 'distance' of the graph as a whole (global centrality). The distance (or number of linkages) needed to span the network is minimised within a social network with a high degree of (global) centrality.

• Centralisation—measuring to what extent the whole graph has a centralised structure (individual node or cluster of nodes), as opposed to multiple centralising regions. A social network displaying high centralisation is organised around particular focal points.

Treated as closed systems, SNA uses graph theory and other mathematical approaches to measure these sociometric features of interpersonal networks, quantifying their

overall connectedness and dispersal from the perspective of an individual (*ego-centric*) and for the network as a whole (*global* or *whole*). In addition, these graphs may be divided further into discrete sub-groups—variously described and defined as components, cliques and circles—which make up the overall topography of the network. Thus defined, researchers go on to use these graphs to explore the flow of information or resources within the network, often associating this with political control or influence (Scott 1999; Easley and Kleinberg 2010).

Granovetter's study of job seeking in 1970s Boston provides a classic example of social network analysis in action (Granovetter 1973). Based on survey work, this research tracked the flow of information about new jobs though an interpersonal network of male employees. Granovetter's analysis demonstrated that the 'distance' of these networks were relatively small, with the relevant information only passing through two or three individuals before reaching the job applicant. More importantly, Granovetter showed that the source of job information came not from those contacts closest to the applicant, but through more indirect links within the larger network. He distinguishes the multiple (*multiplex*) links that connect dense interpersonal networks with the less durable *uniplex* links shared between more socially distant individuals (known respectively as *strong* and *weak* links). Because of the high proportion of overlap between members of a dense network, information is shared, in relatively quick terms, with the whole group. As a result, new information is most likely to come from outside the close network through the indirect *weak* links. Popularly referred to as "the strength of weak links", this key insight highlighted the need to understand the extended network, appreciating the varying degrees of connection that can link people.

Whilst the early focus of social network analysis was the influence of individual persons within an ego-centric interpersonal network (in either central or intermediary positions), later studies broadened this focus to include more structural analyses of role types within whole networks (Knox *et al.* 2006; Mitchell 1974). As such, it moved from using 'the network' as a means of mapping social connections to a tool for identifying structural relationships. Knox *et al.* (2006) link this shift to changes in social network analysis' overall objective. They argue that the earlier, individual-focused studies were aimed at challenging the methodological individualism of contemporary economics. On the other hand, later developments in these more role-based techniques are linked to a deliberate shift away from the individual to more structural arguments of social constraints. It is this shift towards structuralism, according to Knox *et al.*, that result in the abandonment and later suspicion of social network analysis in the field of anthropology.

It is important to note at this stage that SNA's reliance on closed networks comes from pragmatic issues linked to data collection and the limitations of its quantitative methods. Social network analysts appreciate that the connections linking people together extend endlessly in time and space. In order to apply the quantitative methods of graph theory, researchers are forced to define somewhat arbitrary network boundaries based on pragmatic or administrative criteria (Knox *et al.* 2006: 120–1; Scott 1999: 53–4).

Shifting the analytical focus from individuals to sites, social network analysis techniques are increasingly being used within archaeology to explore social interaction at the macro scale (Brughmans 2013; Knappett 2013; Collar *et al.* 2015). Here, the nodes of the network represent archaeological sites and the links refer to social

connections visible in the archaeological record such as the distribution of raw materials, shared stylistic traits in material culture or, occasionally, through written records. For example, Mizoguchi (2009) argues that inter-regional hierarchies arose in the Kofun period in Japan (circa 1st to 3rd centuries AD), in part, because of the typological features of this area's social network (in contrast to differences in the individual attributes of groups within the network) (Figure 2-2). He points

Figure 2-2: Structural network analysis. Comparison of network typography of earlier Yayoi V period (A) and later Initial Kofun period (B) settlements in Japan (Mizoguchi 2009: Fig. 4 & 5)
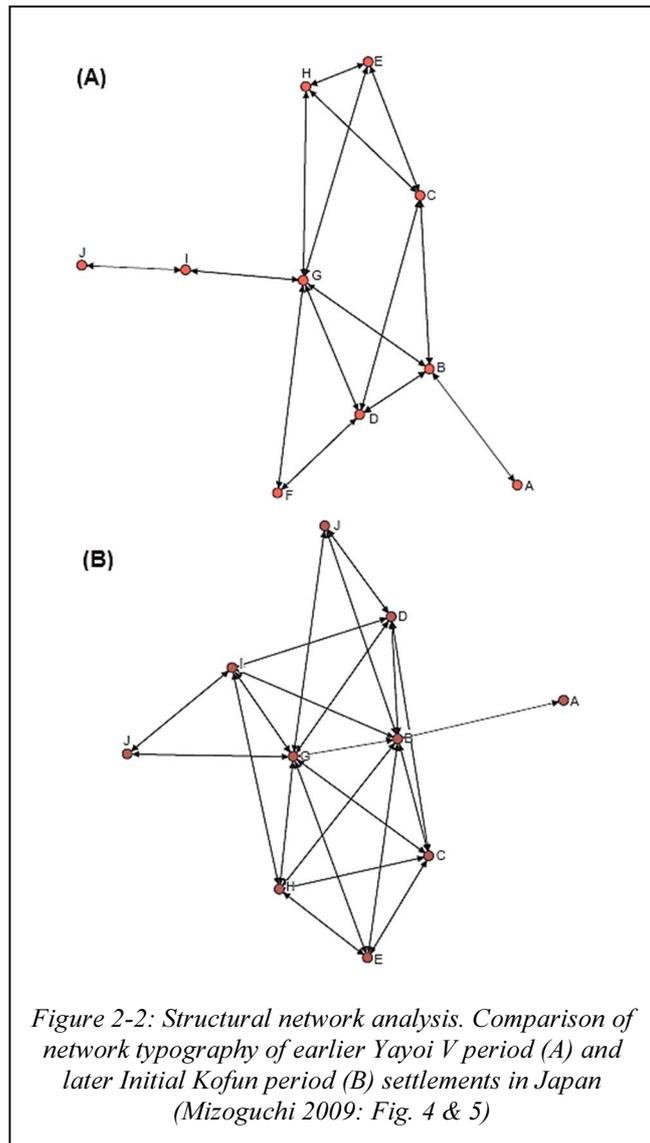
to the emergence of 'paramount mediators' as key movers in this process which helped to define who had the "power to" act or even conceive of such acts. Mizoguchi notes, "it can be concluded that the cause of emergent inter-regional hierarchy can be explained, to a considerable degree, by the different locations in which the nodes were situated in the network and the different topological characteristics that the nodes possessed" in addition to "the character and content of regional polities" (Mizoguchi 2009: 24).

As noted above, archaeological studies have also called upon the long-distance networks of exchange as an impetus for emergent social stratification, hierarchisation

and even the rise of agriculture (e.g. Jennbert 1985; Kristiansen and Larsson 2005). The network becomes not just a description of close, interpersonal relations but also an interlinked chain of indirect contacts. Calling upon the central assumptions of social network analysis, these models imply that control over exotic objects and materials created a privileged social status within a group, leading over time to differential access to economic and ideological resources. On the large scale, world-systems theory and peer polity interaction models share a similar approach, investigating the macro networks of exchange on an inter-regional scale in order to understand the economic, political and social relations and processes that characterise core and peripheral regions. Though few in number, examples such as these suggest that social network analysis could serve as a useful tool to appreciate shifts in social relations (and therefore personhood) at various social scales.

Whilst the techniques of social network analysis have proved useful to large-scale studies of regional interaction, they are less well suited to dealing with the multiple scales of social relations of the collective. To begin with, SNA techniques are limited to homogeneous populations of similar scaled entities whose boundaries are clearly defined. They are not intended for or able to deal with the open and fluid social groupings that comprise society as a whole. More importantly, social network analysis cannot provide an explanation to the patterns seen within these networks; the techniques merely quantify the descriptive characteristics of the network. Researchers are left with the challenge of providing these explanations post-hoc, often falling back on common-sense rationalisations. As a result of these limitations, alternative conceptions of the social network are worth considering.

2.3 Network as metaphor: identity, social landscape and the network

Whilst social network analysis in the mid-20th century included a great deal of cross-fertilization between the social sciences, the use of the network as an analytical tool ceased in anthropology in the 1970s as a part of a growing movement away from structuralist approaches (Knox *et al.* 2006). However, given the ubiquity of network-like structures within human groups (such as kinship groups and marriage alliances), the network remains an important metaphor for understanding social life within anthropology. Whereas social network analysis has tended to focus on the bounded interpersonal networks of individuals, anthropology and the wider social sciences have shifted their attention to a metaphorical use of the term as 'connection', 'relation' or 'association'. Most recently, several researchers have explored the role of social interaction and personal networks in the development of identity and the construction of the social world (or landscape). Some of these approaches are discussed below.

2.3.1 Relational personhood

The concept of the 'dividual' emerges within anthropology in the latter half of the twentieth century as a challenge to universal western models of the individual as a bounded and autonomous entity who is driven by rational thought. The ethnographic work of researchers such as Marriot (1976), Strathern (1988) and Bird-David (1999) point to alternative forms of personhood which extend beyond the skin boundary of the individual. Here, the person is formed and defined through its social relationships.

For example, Busby (1997) explores the nature of personhood in South India through the construction of gender, procreation and kinship. According to these groups, gender is evidenced both through bodily differences and the person's capacity to act in gendered way (e.g. the production of semen or mother's milk). These substances

themselves are deemed, by extension, to be gendered. Whilst children are seen as the product of both parents, they are linked to them differently through these gendered substances—with the father through his semen and with the mother through her milk. This substantial link established through the flow of substances extends to the wider kin group. Consistent with a Dravidian form of kinship, parallel cousins on the paternal side (father's brother's children) are deemed to be siblings as they share the same 'male' substances. Likewise, parallel cousins on the maternal side (mother's sister's children) are siblings as they share the same 'female' substance. Through this case study, Busby is demonstrating how the South India person is seen as fluid or 'permeable' (i.e. not bounded) and is formed through the flow of substances between persons.

Strathern (1988) presents another model of personhood—that of the partible or distributed person—in her exploration of gender and exchange in Melanesian groups. She shows how identity and personhood are not necessarily givens bestowed at birth. In contrast to bounded and autonomous individuals in the Western sense, the dividual subject of Melanesia is internally-divided, containing both male and female parts. Strathern refers to this androgynous state as *cross-sex*. The gender of a person is not self-evident but must be made manifest or revealed through his or her interaction with other persons or objects. As a result, persons and objects shift between 'male' and 'female' depending on their context. This gendered, or *same sex*, state is fleeting, with the person or object returning to their *cross-sex* status once that interaction is at an end. Thus, Strathern argues that Melanesian gender is performative and is defined through the establishment of social relationships. Here, the social relations are seen as prior to the person. The body has no inherent properties and is thus reliant of the wider web of person and objects that surround it for its definition of 'self' (Busby 1997:

273); in other words, the body is "a microcosm of *relations*" (Strathern 1988: 131). The dividual of Melanesia is distributed within the objects and persons which are said to objectify these relations and, as such, are said to be 'partible'.

These ethnographic examples of relational personhood stress the significant role played by social relations in defining the nature and limits of the person within specific cultures. As such, it is not unreasonable to argue that this concept can be taken as an example of the 'social network' on the smaller scale of identity and subjectivity. This connection is even more apparent when looking at how the concept of relational personhood has been incorporated into contemporary archaeology.

Like anthropology, archaeology's interest in personhood emerges as a critique of western views of the individual and the field's often implicit acceptance of these assumptions. For example, Brück (2001) demonstrates that moving towards a more relational and de-centred sense of personhood alters our understanding of how British Neolithic monuments helped to construct multiple but not necessarily contradictory forms of authority. At the same time, the nature of personhood itself has become a topic within its own right. Authors such as Chapman (2000), Fowler (2001; 2004) and Jones (2005) have developed arguments defining the nature of Neolithic personhood through studies of relationality within the material world and through the concept of social practice as citation or reiteration. Despite their different approaches, we see what could possibly be described as an emerging consensus about the nature of personhood in the Neolithic—that of the partible dividual self. However, it is argued that the way in which this relationality was expressed was contextual, varying in time and space.

However, the application of the concept is not without criticism. Jones (2005: 196) himself argues that anthropology's concepts of relationality were constructed deliberately, and possibly artificially, to emphasis specific issues. For example, he suggests that Strathern neglected discussions of persons and objects as worldly constituents in themselves as a means of foregrounding the relationships between them. Her "'dividuals' are…constructs, artefacts of a way of seeing the world which promotes an analysis of the connections or systems of relations between people and things" (Jones 2005: 196). As such, we should be careful that we do not reify the dividual within our interpretations (a sentiment shared by Sahlins (2013: 27–8)). Furthermore, LiPuma (1998) reminds us that individual and dividual aspects of personhood are not mutually exclusively and are likely combined within the overall expression of the person. As a result, we must take care to consider both elements within our analyses. Whilst subject to these qualifications, the relational, performative networks of personhood have undoubtedly proved a useful model when exploring the construction of self as a social being through interaction with others.

2.3.2 The social landscape as meshwork

In contrast, Tim Ingold addresses this issue of subjectivity directly in terms of the network. Within his influential book *The Perception of the Environment*, Ingold stresses the importance of the bodily experience of being-in-the-world in the constitution of the self (Ingold 2000). Merging the philosophical arguments of Heidegger with ethnographic data from traditional hunter-gatherer groups, he argues that the subject is not born preformed as a bounded entity. Instead, subjectivity is created through everyday interaction with other persons, animals, objects and places as each make their way through the world.

Ingold defines human sociality as emerging from "the resonance of movement and feeling stemming from people's mutually attentive engagement" with themselves and the wider world (Ingold 2000: 196). Incorporating Deleuze and Guattari's (1988) *rhizome* metaphor, he refers to this

Figure 2-3: The interwoven lives of Ingold's meshworks *(Ingold 2007: Fig. 3.1)*
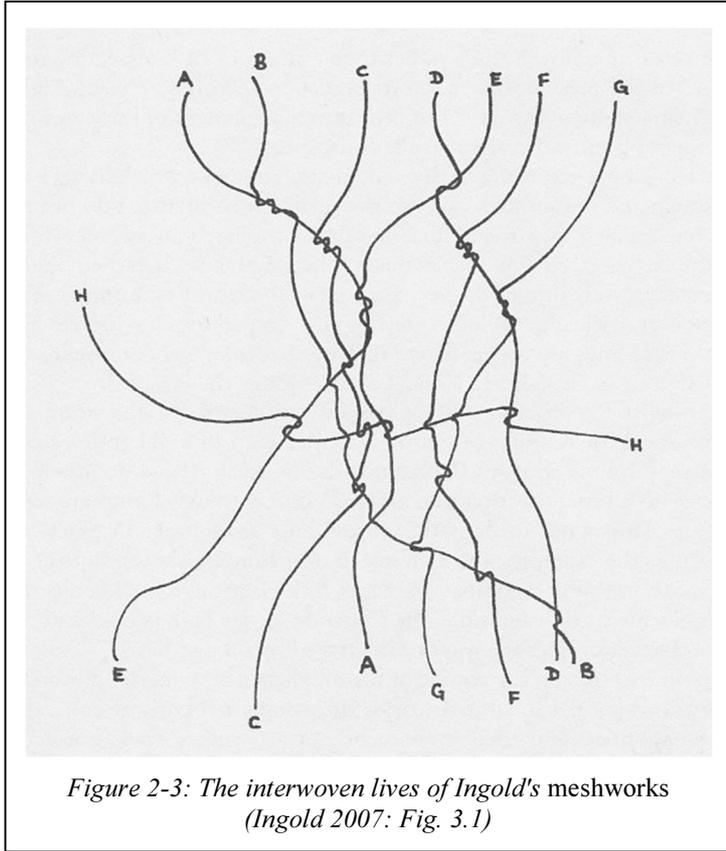
inter-weaving of lived lives as a 'meshwork', noting how individual entities interact and pull apart only to meet up again in the future (Figure 2-3). Here, the lines of the meshwork represent "the trails *along* which life is lived" rather than the 'connectors' that traditional social networks depict (Ingold 2007: 81, original emphasis). This interactivity with others (both animate and inanimate) takes place within the taskscape—that is, the amalgamation of individual tasks carried out within the course of daily life and through which the wider landscape derives meaning (Ingold 2000: 194–7). By focusing on the lived life, Ingold's meshworks emphasise the constitutive nature of social relationships over both time and space.

Within one of his essays, Ingold demonstrates the impact of this perspective on the issue of descent within indigenous groups (Ingold 2000: chapter 8). To begin with, Ingold argues that our modern view of descent is based on the assumption that something innate or essential is passed between generations; thus, providing an

underlying logic for western views of kinship, descent, generation and social memory. Kinship refers to those persons that share this same essence, descent tracks the passage of this essence over different generations, generations are marked points in time which lie outside of everyday practice and social memory is passed as a whole within the socialisation of the individual. This perspective is best represented by the metaphor of the tree, with the innate substance passing through the generations like sap through the tree truck, limbs and leaves. As an alternative, Ingold proposes a *relational* model built on the metaphor of the rhizome. Here, there is no strict linearity within the social structure of the group. Like the roots of a plant, the individual social lives of persons continue to grow in time and space, interweaving themselves with the social lives of others. Persons may come together in the course of life, only to separate and possibly rejoin in the future. Focusing on the worldviews of traditional hunter-gather populations, Ingold demonstrates how concepts such as 'ancestor' and 'generation' lack the temporal split of the *generational* model. Rather than ancestors and/or previous generations trailing behind in a chronological break with the present, his ethnographic case studies suggest that these other groups remain interactive within present (and future) populations through mythical narratives, ritualistic ceremony and everyday practice (Ingold 2000: 134–50).

Complementing Ingold's other concepts of the *taskscape* and the *dwelling* perspective, this rhizome model focuses on the appearance of the social landscape from the embodied actions of causal agents, be they persons, animals or objects. Avoiding any discussion of social structures or institutional constraints, Ingold argues that both the physical and social environment are constituted through the tempos and temporalities of this embodied living. Whilst this approach may be adequate for communities that generally lack formal social institutions, Ingold's approach has limited application to

stratified groups. There is little discussion of conflict or power relations within his argument, suggesting that each individual subject is free of social constraints. This assumption may be appropriate in the relatively fluid hunter-gatherer groups, but is less likely in the social confines of the farming village.

2.3.3   Embodied personal networks

Inspired by recent sociobiological arguments about the universalism of interpersonal networks, Gamble takes a similar tack to Ingold. Recent cross-cultural studies and advancements in the cognitive sciences suggest that our interpersonal networks are heavily influenced by sociobiological factors (the so-called *social brain hypothesis*). These studies have noted that the size of social groups in primates appears to increase with brain size, specifically with the brain's neocortex (which is responsible for information-processing and reasoning). This correlation holds true for human social groups as our interpersonal networks appear to be limited in size to around 150 persons (Dunbar 1998). Calling upon this research, Dunbar (2008) argues that human social groups are both limited in size and highly structured. He also sees interpersonal relationships as a series of expanding "circles of acquaintanceship" with intimacy (i.e. emotional closeness) and frequency of face-to-face contact decreasing with each progressively larger scale. These differing scales of acquaintanceship—support clique, sympathy group, close network and personal social network—are represented broadly in both traditional and post-industrial societies, although there is considerable individual variation as a result of gender, personality and cognitive ability. Dunbar also suggests the existence of more socially distant groupings beyond the scale of the

Table 2-1: Gamble's multiple scales of interpersonal network (after Gamble 2007: 216)

Ego based network	Principal resource	Size	Sample descriptors of modal size
Intimate	Emotional affect	3–7	Support clique Significant others Nuclear family
Effective	Material exchange	10–23	Sympathy group Colleagues and friends Minimum band Local group, Clan
Extended	Symbolic 'positive style'	100–400	Friends of friends Dialect tribe, Connubium Maximum band
Global	Symbolic 'negative style'	2,500	Non-significant 'Others' Linguistic family

interpersonal network (the super-network and language community) but argues that these larger-scale entities can only exist through the creation of language-based structural categories and roles.

Tackling the issue of human social evolution and the emergence of identity from these relations, Gamble (1998; 2007) takes a distinctively network-driven approach. He defines a four-tiered framework of qualitatively and quantitatively different ego-based networks (Table 2-1). These networks are viewed as modular with the intensity and frequency of personal contact decreasing at each level. Gamble argues that these personal networks are created and recreated through social technologies that make use of emotional, material and symbolic resources. The use of emotional resources is limited to the small intimate network of just a handful of others. This is the result of the intensive and time-consuming nature of these relationships. However, as a counterpoint, these relationships tend to be the most stable and durable. The use of material resources is characteristic of the practical exchange that dominates the

everyday life of the individual with his effective network. On the other hand, the establishment and maintenance of the larger-scale extended network requires the use of symbolic resources that have the effect of extending the social presence of the individual in time and space.

Looking at the evolutionary evidence, Gamble argues that the development of these symbolic resources and the associated ability to 'stretch' one's presence emerged gradually in the Palaeolithic period. At this point, early human groups developed the cognitive ability to invest material artefacts with the social memory of their presence, thereby allowing these artefacts to personify the individual in different times and places (Gamble 1998: 443). He suggests that early humans began to use the body-centred metaphors of containers and instruments as material proxies to define themselves through their relationships to other persons, objects and places (*accumulation*) and to extend themselves beyond the local (*enchainment*) (Gamble 2007). The importance of this development is made apparent when we compare human sociality with that of other primates. Although socially complex, our primate cousins are reliant on physical presencing and contact (e.g. grooming activities) to develop and maintain their social relationship; as a result, their sociality is spatially and temporally restricted (Dunbar 1998; Gamble 1998). In contrast, humans have freed themselves from this constraint—what Gamble refers to as "the release from proximity"—and can 'stretch' their social relationships over large distances. The creation of these symbolic resources provides individuals with the ability to maintain their extended networks through boundary defining activities whilst leading to the emergence of a social category of 'otherness', which defines the semi-anonymous, and potentially boundless, global network.

In outlining this framework, Gamble is attempting to address the micro and macro scales of social life in the Palaeolithic through the bottom-up approach of body-centric networks. He uses the term 'local hominid network' to describe the spatial network of intersecting paths that the individual travels in order to establish and maintain his multiple personal networks. At a larger scale, Gamble characterises the social landscape as the summation of these individual intersecting networks and therefore represents the scale at which the negotiation between micro and macro is achieved. These networks include the heterogeneous elements of other persons, objects and places and, therefore, closely resemble the meshworks of Ingold's lived lives. Like Ingold, Gamble is dealing with mobile hunter-gatherer groups and, therefore, does not extend his argument to more settled populations.

2.3.4 Social assemblages as networks

Focusing on the broader issue of social ontology, DeLanda (2006) introduces assemblage theory as an alternative to the concept of seamless totalities in social theory. He argues that social reality is comprised of "a variety of intermediately scaled entities", or social "assemblages". These assemblages emerge from the interaction of smaller scale components, who may in turn be assemblages themselves (DeLanda 2006: 32–4). In other words, assemblage theory sees social entities as a collection of interacting parts and, as such, represents a sort of network. Whilst this model of increasingly larger (or smaller) scaled assemblages may resemble the nested hierarchy of the Russian doll, DeLanda is keen to stress that social reality is far more complex; individual social entities (seen either as interpersonal networks or institutional structures) can be a component of multiple assemblages, resulting in significant overlap (DeLanda 2006: 33). Thus, human society is seen as a series of overlapping social parts and wholes, with all social entities—from the individual to the nation

state—being perceived as examples of the social assemblage on different spatial and temporal scales (DeLanda 2006: 6–7, 40–4).

Table 2-2: Role and function of component parts in DeLanda's assemblage theory (derived from DeLanda 2006: Chapter 3)

		Personhood	Social encounters / Conversations	Interpersonal networks
Role	Material	Bodily mechanisms behind the production of sense impressions The energy and attention needed to establish these associative links	The co-presencing of human bodies The attention or effort needed to maintain conversation	Physical bodies The attention or effort needed to maintain relationships
	Expressive	The linguistic and non-linguistic expressions (or ideas) that make sense of these impressions	Verbal communication (i.e. the flow of words) Nonverbal communication (e.g. facial gesture, bodily posture) Choice of subject matter	Non-linguistic displays of solidarity and trust (e.g. routine acts, the willingness to sacrifice) Badges of identity (e.g. objects, dialects)
	Language	Establishment of propositional attitudes towards truth/falsity that defines 'belief'	The communication of signification (meaning) and significance	Shared stories and categories that distinguish the identities of conflicting groups
Function	Territorialisation	Habitual repetition	Behaviours which define boundaries in space and time (e.g. physical proximity, conventional ways of initiating and terminating engagement)	Conflict between different communities (e.g. the establishment of "us" and "them" categories) Community controls
	De-territorialisation	Any process that returns the subject to a state prior to the establishment of associative links (e.g. delirium, sensory deprivation, intoxication) The acquisition of new skills or capabilities that allow the subject to break with habitual routine	Any disruption to the defined boundaries (e.g. physical relocation, social faux pas, strong disagreement)	Social mobility The introduction of novel resources

Exploring the nature of this interaction, DeLanda defines two key dimensions though which the assemblage's parts act (Table 2-2). Firstly, he defines the variable roles in which an assemblage's components may play, distinguishing between *material* components and *expressive* components. Because each component can exercise different (multiple) capacities in its interaction with other components, DeLanda notes how a single component can play a mixture of both *material* and *expressive* roles within the same social assemblage. Whilst keen to stress the inclusion of language (and genetics) within these broad categories, DeLanda treats these as specialist expressive media. Secondly, DeLanda defines the variable processes in which these components become involved. Territorialisation processes stabilise (or *territorialise*) the whole by increasing group homogeneity or accentuating group boundaries; thus, rigidifying group identity. Alternatively, the assemblage can be destabilised (or *deterritorialised*) by components that blur group distinctions or increase heterogeneity within the group. Again, the multiple capacities of a component mean that it can help to both stabilise and fragment within the same assemblage (DeLanda 2006: 12–3).

It is from this continuous interplay between territorialisation and deterritorialisation processes that the social assemblage emerges. As DeLanda notes, it is "through the more or less permanent articulations produced by this [territorialisation] process that a whole emerges from its parts and maintains its identity" (DeLanda 2006: 14). Ontologically, DeLanda views these assemblages as *individual singularities* rather than specific examples of a reified category of "something" (i.e. such as a structure is the result of specific historical processes rather than merely being an example of the category of 'house') (DeLanda 2006: 28). These processes of emergence are recurrent and repeatable, leading to the appearance of a set or population of similarly scaled assemblages. As these new assemblages interact within this population of similarly

scaled social entities, new larger-scale assemblages emerge in turn leading to the escalating scale of social networks and organisations (DeLanda 2006: 16–7).

Once emerged, the assemblage develops properties and capacities (i.e. the ability to act) of its own. As a result, these social assemblages are seen as individual or singular entities in their own right, possessing properties, capabilities, and (causal) agency. Whilst the actions of the network or organisation are actively carried out by individual persons, agency does not lie with these individuals. DeLanda compares this situation to the relationship between the hand and the whole person. The hand may be physically picking up an object, but agency still lies with the person. Looking at social entities larger than the individual, DeLanda suggests that action is frequently determined by the roles being played by individuals rather than being individualized. For example, business managers are likely to make similar decisions regardless of their own personal preferences and thoughts. DeLanda refers to this generic or substitutable replacement as *redundancy causality* (DeLanda 2006: 36–8).

By exercising their own capacities, these social assemblages both constrain and empower their underlying parts; in other words, the capacities of the whole create opportunities and risks for its components (DeLanda 2006: 33–4). DeLanda talks about components acquiring "new layers" of identity as a result of their inclusion/interaction with the social whole. He illustrates this by noting how an individual's persona or identity is enhanced when that individual takes on specific roles within a larger-scale entity, such as an interpersonal network or institutional organization (DeLanda 2006: 33). As such, assemblage theory shares the reflexivity present in many discussions of the micro and macro social universe (e.g. Giddens' structuration theory (Giddens 1984)). However, DeLanda differs by emphasising the

relativity of scale in assemblage theory (DeLanda 2006: 32). Rather than seeing the micro and macro as two fixed points (i.e. the individual and society), assemblage theory argues that the relative scale (either micro or macro) of a given social entity is context specific. For example, DeLanda notes how one such entity, the overall status or role of a particular individual, can play both a micro role (when compared to status of the individual's lineage within marriage exchange) and a macro role (when compared to the individual's relation to certain kin group members) (DeLanda 2006: 127). Here, we see assemblage theory remodelling the micro/macro debate into a consideration of the relationship between parts and wholes in general.

In laying out this ontological model of the different scales of human sociality, DeLanda highlights several qualifications. First of all, DeLanda stresses the precariousness of these assemblages, arguing that they are continuously re-emerging from the interaction of their parts. As an individual singularity, the social assemblage is born and, ultimately, dies. As such, the analyst must be equally attuned to processes of maintenance as well as any initial processes of formation. In addition, DeLanda reminds us that these processes of emergence occur within a context of previously existing assemblages of various scales. Rather than starting from scratch, new social assemblages are frequently formed from the members of other pre-existing assemblages. Furthermore, the component parts of the assemblage need not necessarily pre-exist the assemblage as new components may be formed through the exercising of the assemblage's capacities and interactions with other assemblages. Finally, DeLanda highlights that these social assemblages are composed of heterogeneous components that need not share the same scale. By nature, the territorialisation processes underlying the emergence of social assemblages are dynamic and multi-scalar (DeLanda 2006: 38–40).

Whilst assemblage theory has had little impact on archaeology to date, Normark (2009) makes use of this approach when exploring the episodic occupation history of the Maya settlement of Nohocacab in southern Mexico. Centring his analysis on the social entity of domestic structure N1E1-1, Normark explores the different components from which the house emerges as well as how this particular structure was involved in the emergence of larger-scaled assemblages such as its household, its community and the larger intra-regional community. For example, Normark illustrates how the development of internal and external house decorations (as expressive components) may have led to the destabilisation of earlier community consensus. Through assemblage theory, Normark traces how this one particular house interacted with other social entities to help structure (in its own little way) the multiple scales of sociality in the Maya culture, either as an extended household, as a participant in lineage co-ownership or as a social integrator within a mixed community. Normark's analysis of the structure N1E1-1 demonstrates how exploring processes of territorialisation (and deterritorialisation) can help us to better understand the emergence of social entities from particular historical trajectories.

DeLanda's objective in presenting his approach to social assemblages is to provide other social scientists with an ontological framework for exploring social phenomena which considers both material and immaterial entities. His is a philosophical mission and, as a result, his case studies are deliberately brief and limited to the modern, western context to which he is most accustomed; for example, demonstrating the emergence of national markets from country markets (firmly rooted in their physical local), regional markets and provincial markets (DeLanda 2006: 17–8). However, Normark's case study suggests that this approach may help us to see social units in the archaeological record as individual singularities. As such, the value of assemblage

theory may lie in its focus on the interactive processes that shape a dynamic social world rather than in attempting to build a stable model of social organisation comprised of social building blocks.

2.3.5 Actor-network theory

Emerging from the tradition of science and technology studies, Bruno Latour's presentation of actor-network theory (ANT) also considers the nature and constitution of social subjects through the twin concepts of agency and networks. In his book *We Have Never Been Modern*, Latour (1993) challenges the object-subject dichotomy that he sees as central to modern western thought. This dualism, Latour argues, is built on a bed of philological paradoxes that can only be held in place through the endless creation of hybrid entities (mixing both nature and culture elements) whilst still maintaining a strict ontological separation between Nature and Culture. Through these twin processes of 'translation' (the creation of hybrids) and 'purification' (the continuation of opposing categories of non-human/nature and human/culture), western societies attempt to distinguish and distance themselves from traditional groups, both in the past and in the present. Latour points out the logical and practical fallacies of this philosophy and, instead, offers an alternative view of objectivity and subjectivity that presents all material entities (both human and non-human) as 'collectives' created from the meeting of agencies from other times and places.

According to Latour, ANT views the world as a two-dimensional field of widely distributed agencies (Latour 2005). Rather than being a location framed and limited by structural constraints, face-to-face interaction is envisioned as a meeting point of countless different agencies. These agencies originate in different locations, in different times or temporalities and have varying degrees of influence to the action;

however, they cumulatively frame the action. As an example, Latour demonstrates the many 'agencies' involved in constructing (or assembling) a university lecture. Whilst the lecturer herself may dominate the action, other less-obvious agencies, such as the architect who designed the lecture hall or the manufacturing of the desks, also play a role (Latour 2005: 48–9). Each location of action is conceived as a star burst of incoming and outgoing agencies. In other words, each actor is seen as embedded in a network (or cloud) of connected agencies. Although these agencies do not determine the specific actions of the actor, they do force the actor into action and, therefore, into existence (Latour 2005: 217).

Resisting the temptation to treat social relations/structures as a substance or kind of thing that can drive human behaviour, Latour redefines 'the social' as an adjective to describe the movement of mediators that transport these different agencies to the action loci (Latour 2005: 7). He is keen to stress that ANT is not a theoretical framework for understanding human society; there is no such thing as 'society'. Instead, ANT is a methodical approach that encourages sociologists to track the countless mediating agencies that circulate through time and space. In his book *Reassembling the Social*, Latour (2005: 153–4) firmly rejects structuralism's search for 'hidden structures' within social groups and sociology's general use of 'objective' *a priori* categories. As part of the larger objectives of STS, Latour asserts that the actions and words of the actors themselves should dictate the terms of analysis. Through close observation and interaction, the actors should define the social groups and agencies which frame their actions. Latour suggests that the 'collectives' of human sociality, including the human subjectivity, can be 're-assembled' through a close inspection of these agencies. These collectives are fragile and fleeting and can only be made durable through intermediaries. His discussion of the actual 'connectors' that

link the different local sites of actions and through which these different agencies are transported is less developed. Although he suggests that material culture/technologies and more traditional objects of sociological study such as social forms, standards and metrologies play a role as intermediaries, the actual process of this is veiled behind the rather obscure label of 'translation' (Latour 1993: 85–6; 2005: 108).

Unfortunately, Latour does not provide a clear example of what this process might look like in practice. On the face of it, there appears to be a disjunction between (i) his methodical call to 'follow the actors' to identify the many agencies at play and (ii) the assembling of active social collectives. Although many researchers have attempted so-called 'actor-network' studies, Latour rejects most of these as inadequate (Latour 1999). Betraying its roots in science and technology studies, Latour is more interested in disproving the false dichotomy between science and nature and the substantive nature of 'the social' than in proposing a robust—and practical—approach to social ontology. It is for this reason that ANT remains an attractive critique of traditional sociological approaches rather than a valid alternative approach.

Having said that, actor-network theory does offer two key insights that have influenced a wider audience. To begin with, ANT has highlighted the importance of non-human entities and objects, either by the agencies of others through time and space or as transformative agencies in their own right. In doing so, it parallels researchers in archaeology who have emphasised the role of material culture as an active agent rather than as the simple context of human action (e.g. Barrett 2001; Tilley 2004; Fowler 2013; Harris 2014). In addition, ANT suggests a mechanism by which the impact of distant agencies can be felt locally through material and human intermediaries, even if this mechanism is not clearly elucidated.

ANT also offers an alternative perspective on the issue of scale. In this view, there is no 'global', merely action loci that have greater concentrations of connections to other action loci. As Latour notes, "we never leave the local level" as social interaction happens within particular and ever-shifting locations of action (Latour 1993: 121). At the same time, there is no such thing as a 'local interaction' as action is always dislocated through time and space by the countless incoming connections. Whilst scale exists as a contextual concept for the actors themselves, Latour argues that the polarities of 'macro' and 'micro' scales are intellectual fictions (Latour 2005: 184–6). He notes that "no place dominates enough to be global and no place is self-contained enough to be local"; as a result, any search of a mediating force between the two is meaningless (Latour 2005: 204). As such, Latour is distancing actor-network theory from reflexive, dialectic models of structure and agency.

2.4   Meshwork-thinking: modelling the boundless social world

The above discussion has highlighted some of the many diverse ways in which the network concept has been called upon to help understand human sociality and subjectivity. Whilst traditional social network analysis has influenced archaeology's appreciation of exchange networks and the impact of social contact on large geographical and temporal scales, other approaches within the social sciences (and humanities) provide alternative perspectives. Ethnographic research by authors such as Busby and Strathern has highlighted the significance of social relations in establishing identity and, in some cases, defining personal attributes such as gender. These case studies demonstrate how social relations can be objectified within material culture and, thus, provide a new appreciation of the role of objects in establishing and maintaining social relationships and personhood. Again looking at sociality on the local scale, both Ingold and Gamble argue that the social landscape emerges from the

everyday interactions between people, places and things as they carry on their lives. This concentration on embodied living (through the taskscape and the maintenance of interpersonal networks, respectively) brings to focus the intimate scales of social relations. Whilst also focusing on social interaction, DeLanda dramatically extends the scope of the tradition social 'network', arguing that all social entities (from person to state) emerge from the interaction of smaller-scale component parts. The tension between territorialising and de-territorialising processes expressed in his assemblage theory provides a possible means of exploring the links between different scales of human sociality. Finally, Latour re-phrases the question in a completely different and innovative way. Arguing that everything is local, he recasts actors as the centre of networks of mediated agencies linking points of social interaction across time and space. Whilst difficult to operationalise within archaeological studies, Latour's actor-network theory reinforces Ingold's assertion that our social networks contain both the animate and inanimate.

Despite their diversity, the ontological approaches discussed above share a subset of founding principles. Firstly, they each argue that social entities (as networks or assemblages) are not essentialist things. They are performative, emerging from the interactions of their constituent parts. Without this interaction, the social assemblage would cease to be. As such, social collectives (including personhood) can be described as dynamic and unstable (in and of themselves)—what Ingold describes as in a constant state of 'becoming'. Furthermore, once emerged, these entities develop their own capacities to act and inter-act, thus engaging with others to form new networks and assemblages at ever greater scales.

These characteristics, or broad assumptions, form the framework of the 'meshwork' approach taken by this research. It integrates the ontological concept of continuous growth and 'becoming' with more traditional network concepts. It argues that all social entities are composite, emerging from the mutual interaction of their constitute parts. Such meshworks are dynamic, unbounded and in possession of emergent properties and capacities. As such, they reflect the fluid constitution of social interaction within the real world. As contingent entities, these social meshworks emerge as singularities, not as repeated copies. Descriptive and historical, the meshwork encompasses the interaction and subsequent conjoined growth and developed that is shared by participants. Through this, meshworks allow plurality without requiring uniformity, strengthened in part by the tensions and contradictory currents that exist between its member constituents.

Therefore, the meshwork concept represents an extension of more traditional network models. Whereas the network collapses time and presents a palimpsest of historic interactions, the meshwork embraces this movement through time by incorporating the ontological concept of 'becoming'. Networks may be dynamic, but meshworks are growing, moving forward and evolving with each engagement. In addition, as embedded meshworks themselves, the actors (or actants) who participate within these higher order assemblages change, develop and grow as a result of these constitutive connections. As such, these meshworks are boundless and scalar, extending in both time and space.

Meshwork-thinking offers little in terms of prescribed methodology. Unlike quantitative network models, the meshwork is purely descriptive, encouraging the researcher to trace the myriad of connections linking the various actors involved in

social interaction. The goal in this endeavour is not to establish (linear) causation but to describe the complex and general sense of embeddedness inherent in the constitution of the 'social' landscape—what Hodder might describe as 'entanglement' (Hodder 2012). As such, it offers an alternative to more traditional descriptions of social relations that continue to emphasise rigid social structures and/or default to universal normative rules and practices. Also, by defining the emergence—and maintenance—of larger-scaled social collectives through the mutual engagement of others, it provides a means to explore the inter-play between different scales of interaction.

As the previous chapter argued, there is a growing call to move beyond the bounded cultural and social totalities of previous years and adopt a more open and fluid understanding of prehistoric society. This thesis tackles this challenge head on. In the following chapters, I explore the nature of social relations in the LBK through the guise of 'the meshwork'[4]. I hope that such an approach allows us to tackle the need to better understand the social environment which allowed for both uniformity and diversity of practice and the need to move away from rigid social institutions by recasting LBK 'society' as the composition of overlapping, self-organising and heterogeneous meshworks.

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[4] By their nature, these meshworks are comprehensive, incorporating a myriad of agents, both human and non-human, in the constitution and reification of social life. Obviously, it is beyond of scope of this thesis to include a detailed discussion of all possible factors. As a result, the research relies on previous analyses where possible and focuses its attention on particular aspects of social interaction within the research area.

3   Social relations in the LBK

Whilst recognised as early as the 19th century, understanding of the LBK was limited in scope or detail for the first half of the twentieth century. As the archaeological record consisted of little more than sporadic rescue excavations and chance finds, there was relatively little evidence to draw upon. The first large-scale excavations at Köln-Lindenthal (Rhineland) in the 1930s uncovered dense settlements with circumscribing ditches and a means to study social relations more closely (Buttler and Haberey 1936). Buttler (1936) concluded that the family served as the primary social unit of LBK society but within the larger amalgamation of the village. The absence of 'chiefly homes' indicated a lack of pronounced social leadership. In contrast to the closely-knitted tell settlements in south-east Europe, LBK communities were seen as peaceful peasant farmers with few social distinctions, who lived in flexible units in order to maintain their self-sufficiency (Childe 1925; 1929; Clark and Piggott 1965; Piggott 1965).

The number of excavated LBK sites has bourgeoned since then, and the LBK now is one of best studied Neolithic cultural groups in Central Europe. Intensive research since the mid-twentieth century has pursued a number of themes—including chronologies, sedentism, settlement archaeology, the Neolithic transition and climate change—as well as fleshing out the regional and temporal developments of the LBK as a whole. Within each of these topics, attention has been paid to the more 'social' aspects of the LBK, e.g. social organisation, social structures, social interaction, but generally as a by-product of other analyses. The following chapter pulls together these different strands of evidence and presents a brief summary of how our view of LBK society has evolved over the past eighty years.

3.1 Social differentiation: the most equals of equals

Early assumptions about LBK society emphasised the peasant-like nature of these communities (e.g. Buttler and Haberey 1936; Childe 1925; Clark and Piggott 1965; Piggott 1965). They were simple close-knit farming communities of equals or, in the terms of Fried (1967), an egalitarian society. Within such communities, no social group had greater or lesser access to wealth, power or prestige. Whilst inequalities could and did emerge, they did not fossilise into permanent social institutions or structures. There was no political specialisation, and leadership roles were available to all members of the community (although positions could be restricted to certain ages or sexes). However, subsequent burial and settlement studies have produced growing evidence of social inequalities, both temporary and structural, within the LBK.

3.1.1 Longhouses

The broad similarities shared by LBK longhouses, both locally and further afield, have tended to reinforce the idea of an egalitarian society. Within this shared architectural lexicon, there are clear differences in the size and floor plans of different houses (Coudart 1998; Modderman 1988: 89), leading to the suggestion of social differentiation within the community. For example, early excavations at Bylany (Czech Republic) and Olszanica (Poland) uncovered examples of extremely long longhouses (more than 40 m) associated with greater quantities of finds (especially wood-
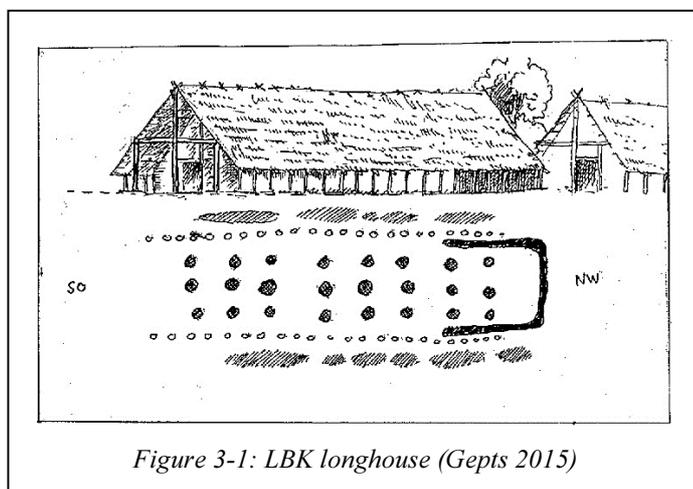
Figure 3-1: LBK longhouse (Gepts 2015)

Figure 3-2: Modderman's house typology (after Modderman 1970: Fig. 12)
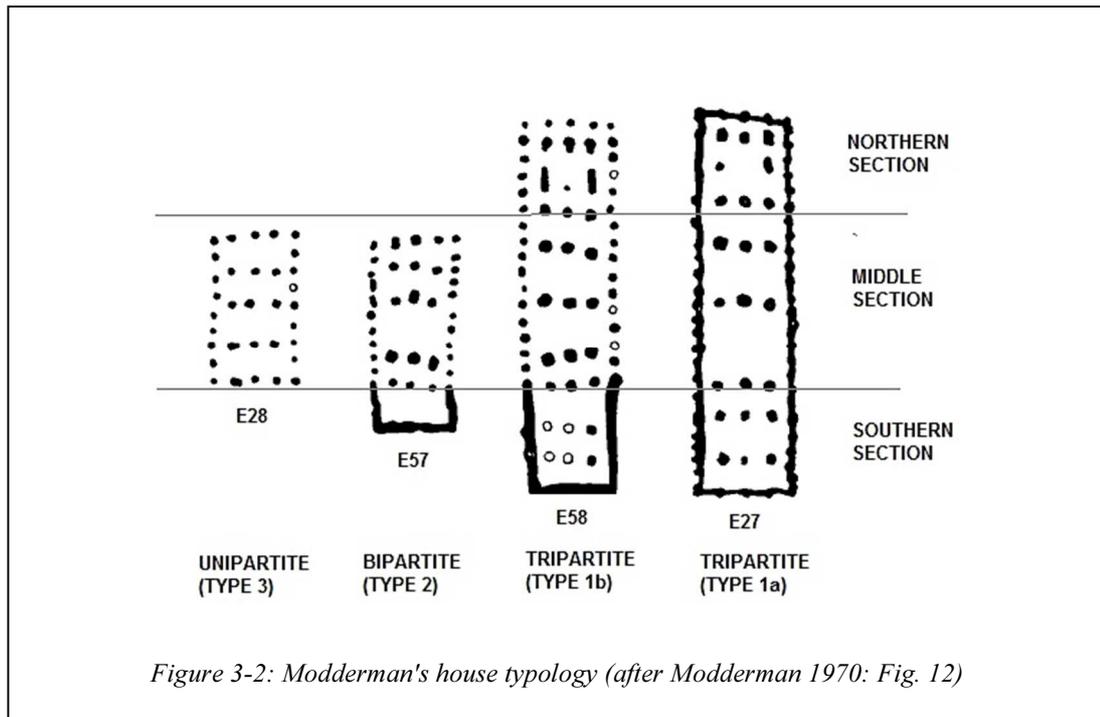
working tools). According to Milisauskas (1972: 72–3; 1986: 215), these may have

served as the residence of a prominent member of the community (such as a local 'Big

Man').[5] Beyond length, Modderman's longhouse typology distinguished different

types of house, ranging from the larger tripartite forms (Type 1) to the more modest

unipartite structures (Type 3) (Figure 3-2; Modderman 1970). Modderman (1970: 207;

1988: 96) suggested that the larger tripartite longhouses belonged to more prominent

families within the community (such as the family of the local 'chieftain'). His work

with the settlement at Elsloo demonstrated that these tripartite longhouses dominated

the early phases of settlement, whilst the proportion of smaller bipartite and unipartite

houses increased over time. He saw these changes as reflecting growing inequalities

within the later LBK.

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[5] More recently, Pechtl (2009) has suggested that the construction of these extremely long 'monumental' longhouses represented a form of prestige competition between different households. This level of competition between households (or possibly lineages) characterises more egalitarian societies with weaker stratification (Pechtl 2009: 195).

Building on Modderman's work, van de Velde (1990) offered a cogent rationale for these differences. Assuming that each of the three components of the longhouse represents an economic speciality, the lack of one or more of these specialisms within the smaller longhouses suggested that the inhabitants of these houses did not have equal access to the resources or contacts needed to develop these economic functions (1990: 27-8). Rather than equivalent social units, van de Velde argued that individual longhouses within Elsloo and Geleen-*Janskamperveld* were grouped together into supra-household groups (or 'wards'), with "relations of domination when not of exploitation" developing between members of the larger tripartite structures and the other lesser households in the ward (van de Velde 1990: 28; 2007a). As these wards were stable throughout the settlements' occupations (Flomborn to late LBK), these social inequalities between longhouses were an established feature of social life in the north-western LBK.

Beyond clear differences in size and structure, it has been difficult to demonstrate any clear social inequality between the different types of longhouse. In general, there was no significant difference between the artefacts found in association with the different types, although some Type 1 longhouses had been shown to have greater numbers of highly-valued adzes and higher proportions of chaff (de Grooth 1987; Lüning 1982a; Milisauskas 1986; van de Velde 1990). In addition, there was no consistency of house type on particular house plots (*Hofplatz*; see 3.2.1) over multiple generations, suggesting that any inequalities that may have emerged were short-lived (Whittle 1996: 166). Consequently, a more prosaic hypothesis seems more probable; the larger longhouses may simply represent the domestic home of larger family units (Lüning 1988a; Schiesberg 2010) or the size of labour force one could draw upon, which could be related to social network and length of residency (Whittle 1996: 165–6).

3.1.2 Burials

Early burial studies were broadly consistent with this image of a weakly differentiated, egalitarian society (Dohrn-Ihmig 1983; Pavúk 1972; van de Velde 1979a). The presence of gender-specific objects within graves (for example, male graves were frequently marked by the inclusion of stone adzes or arrowheads) attested to a pronounced division of labour between the sexes. In addition, Pavúk's analysis of the cemetery at Nitra uncovered a strong correlation between prized objects such as adzes and *Spondylus* ornaments and the graves of older males (Pavúk 1972; see also Dohrn-Ihmig 1983: 102; van de Velde 1979a: 93–5; 1992: 182). This suggested a ranked society, where older males possessed higher social status or even dominated the community. At the same time, some individual graves were marked by collections of specific artefacts (such as arrowheads, flint tools or pottery) suggesting the presence of economic/social specialisms or even solidarity groups (Gronenborn 2003a: 40–1; van de Velde 1979a: 110–1; 1979b: 45; Whittle and Bickle 2013: 391). Given the rarity of such graves, these specialisms probably reflected the skills and talents of particular individuals rather than inherited economic activities or formal social institutions (Dohrn-Ihmig 1983: 102; van de Velde 1979a: 115, 70; 1979b: 45).

In contrast, the presence of a handful of 'male' and 'female' graves at Elsloo with more diverse inventories led van de Velde (1979a: 95) to suggest the possible existence of 'chiefly' lineages or a local 'Big Man' within the community. Unfortunately, the reliability of this interpretation was handicapped by the lack of any skeletal remains within the graves. The later publication of the Bavaria cemetery at Aiterhofen provided much clearer evidence of such elite 'lineages' within the LBK (Nieszery 1995). The majority of graves at Aiterhofen appear to follow the same pattern witnessed at Nitra—the graves of adult males were more likely to contain

'richer' inventories. However, Nieszery's analysis also uncovered a small group of extremely 'rich' graves which included males, females and children (Figure 3-3). These 'rich' graves were more consistent with ascribed status based on family association or, possibly, their relationship to a chiefly lineage within the community.

Figure 3-3: Burial 60 at Aiterhofen (mature adult female) (Hofmann et al. 2013: Fig. 6.5)
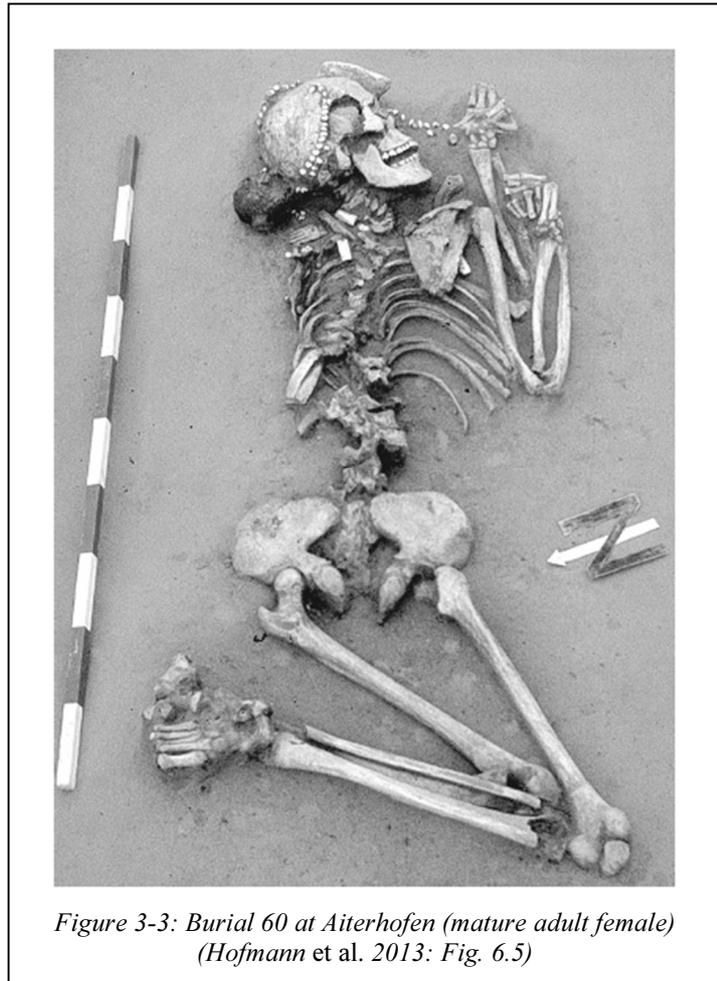
Linking these results with growing evidence of internal hierarchies within house groups and between settlements (discussed in more detail below; van de Velde 1990; Zimmermann 1995), Jeunesse (1997: 121) argued that the degree of social differentiation within LBK society varied in time and space. He suggested two variations within LBK burial practices (Jeunesse 1997: 117–8). In Model A, the burials are less differentiated, with the 'richest' graves being correlated with older males (similar to that seen at Nitra). Differences in wealth were more strongly marked in Model B, with 'richer' graves being more evenly distributed between men, women and children (similar to the 'lineages' suggested at Aiterhofen). Whilst burials from the early LBK tended to reflect the more egalitarian communities associated with

Model A, later cemeteries often incorporated both modes of burial. Thus, settlement and burial data suggested a more strongly differentiated society within the later LBK.

It is important to note that these studies are not without their critics. For example, Hofmann (2006: 176) questioned the appreciation of 'wealth' based on modern perceptions of value (i.e. rarity, labour-invested, distance travelled, etc.) and whether grave goods should be seen as personal possessions or an expression of the deceased's wider social network (see also Whittle 1996: 196). In addition, only a small proportion (c. 20%) of the local inhabitants would have been buried within these formal cemeteries based on population estimates. They may have reflected, in themselves, a privileged class within LBK society (Lüning and Stehli 1989; *contra* van de Velde 1992: 174; 1997: 86). Other burial practices (e.g. burials within settlement pits, burials within settlement ditches, cremations) were less well furnished with grave goods (Veit 1992: 123). Considering these non-cemetery burials, Veit (1992; 1996) argued that they may represent individuals with relatively low social status, but saw this more as an expression of circumstances rather than solely and necessarily marking different social group.

Recent burials studies have incorporated stable isotope data to document the variable histories of individual lifeways within the LBK (Price *et al*. 2001; 2006; Bentley *et al.* 2002; 2003b; 2008; Price and Bentley 2005; Knipper 2011; Zvelebil and Pettitt 2008; 2013; Bickle *et al.* 2011; Bickle and Whittle 2013a). A recurrent feature of these studies is the presence of a significant proportion of buried individuals with non-local strontium signatures, presumably marking individuals who were born outside of the settlement or who spent a great deal of their lives outside the settlement. In many cases, these non-local signatures were associated with different burial and economic

practices, suggesting that non-local individuals may have been recognised as socially different to those individuals who had local signatures throughout their lives. If so, these data would suggest social inequalities within LBK communities beyond simple differentiation.

3.1.3 Leadership & social authority

Whilst there may be increasing evidence of social inequalities within the LBK, our understanding of social authority and leadership remains rather vague. Behrens' early presentation of LBK society suggested that communities were guided by a council of elders made up of heads of households and led by a village chief with specific rights and privileges (Behrens 1975: 155). Linking such social roles to settlement data, van de Velde (1986: 135) argued that these family heads resided in the larger tripartite longhouses at Elsloo, whilst the family of the village's chief resided in the settlement's sole walled Type 1a house (see below for further discussion of kinship; van de Velde 1990: 37–8). In contrast, Milisauskas (1986) suggested that the extremely large longhouses found at Olszanica and Bylany represented the house of a local 'Big Man'.

Given the lack of centralised institutions or re-distribution networks, social control was likely "based on power relations inherent in the kinship system"[6]—that is to say, authority rested in local family heads or lineages (Behrens 1975: 155; van de Velde 1986; Frirdich 1994; Sommer 2001: 206). Frirdich (1994: 354–8) has presented a detailed narrative suggesting how this social authority may have been tied to the control of long-distance contacts and exchange. She argues that family heads were responsible for maintaining the group's social networks and, through that, controlled

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[6] Alternative power bases—defined through patrilineal and matrilineal lines—may have also operated alongside one another, possibly restricted to specific contexts (exchange, ceremonial rituals, and so on) (van de Velde 1986).

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access to certain desired raw materials and potential marriage partners. Challenging this authority by breaking with established traditions meant risking access to these important resources (see also Sommer 2001: 257). These age authority structures were later challenged by the emergence of new settlements, with their own set of elders, and the development of local economic specialisms during the middle LBK. With these changes, social authority and access to position in the late LBK became more influenced by place of origin and access to local contact networks, whilst traditional age authority structures may have gradually lost their economic and social significance.

Overall, the evidence suggests that social status remained largely linked to age and gender, with nascent ranking based on descent or place of origin emerging slowly over time. The relative lack of social 'ranks', however, does not mean that LBK groups were undifferentiated. To explore this segmentation, we now turn our attention to other social groupings within the LBK, starting first with the household.

3.2   Longhouses & their inhabitants

As archaeological data, the posthole floor plans of the longhouse remain some of the most striking and ubiquitous features of LBK settlements. Given that, it is hardly surprising that the longhouse—as a physical structure, as an expression of cultural identity and as the nexus of the LBK household—has been an on-going focus of LBK studies. The following section explores this latter point in detail and outlines how our understanding of LBK social relations has been enhanced by the study of the longhouse and its associated household.

3.2.1 The independent household

As the most basic unit within LBK society, it was assumed that the household (centred on the longhouse) served as the primary social and economic unit within the LBK (Figure 3-4; Behrens 1975; Bogucki 1988: 10; Lüning 1982b). Given the lack of social organisation beyond the settlement, these households were seen as largely independent, capable of producing their own food, tools and pottery from local resources or from materials procured through down-the-line exchange.

The best representation of this independent household within LBK research can be seen in the so-called *Hofplatz* model (Farruggia *et al.* 1973; Kuper *et al.* 1977; Lüning 1982a).[7] The *Hofplatz* was interpreted as the economic zone of the domestic longhouse and included the house, associated pits, facilities such as ovens and possibly small garden plots (Kuper *et al.* 1977; Lüning 1982a: 25; Stehli 1982: 274). Each settlement consisted of multiple family farmsteads, or *Hofplätze* (plural), which were separated by locally determined minimum distances. As a general rule, only one longhouse was

Figure 3-4: Reconstruction of a LBK house (after Czekaj-Zastawny 2008: 3)

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[7] The *Hofplatz* model has emerged from the collective works of several key researchers involved with the SAP project, including published site monographs (Boelicke *et al.* 1988a; Farruggia *et al.* 1973; Kuper *et al.* 1977), preliminary reports (Lüning 1982b), and contributions to the 1981 conference 'Siedlungen der Kultur mit Linearkeramik in Europa' (Boelicke 1982; Lüning 1982a; Stehli 1982), amongst others. Zimmermann (2012) has recently argued that this model only represents a series of methodologies developed in order to reconstruct occupation phases (see Appendix A for further discussion). In doing so, he limits himself to a single chapter in the final Langweiler 8 monograph (Boelicke *et al.* 1988b) as the definitive and sole definition of the *Hofplatz* model. Like Lenneis (2012), I would argue that this definition is too limiting; the *Hofplatz* was intended, from its inception, as a model of LBK living. A close inspection of the above listed sources demonstrates that many perceived aspects and assumptions about LBK settlement and social life were embedded in these methodologies as well as standing apart of them.

occupied on the *Hofplatz* at a time (although exceptions to this 'rule' were accepted). Periodically, this longhouse would be replaced by another building built near to its predecessor, presumably to make use of existing facilities (Boelicke *et al.* 1988b: 900). This repeated abandonment and construction of LBK longhouses proved an invaluable tool for narrating settlement development through 'house generations' and, through these, explore the nature of contemporary and diachronic settlement (for further details, see Appendix A). Thus, each area of settlement was seen as distinct and possessing its own individual history (Stehli 1982: 276). Assuming that the longhouse contained a single family, the continuity of the *Hofplatz* represented a family tradition, whereby the right to reside and use particular areas was passed down as an impartible heritage alongside other household emblems, such as pottery design or family heirlooms (Lüning 1982a: 32; 1982b: 18; Frirdich 1994; Strien 2010a; *contra* Lenneis 2012: 47).

Having said that, it is important to not overstate this independence. Whilst the LBK longhouse may have benefited from a high degree of economic and political autonomy, its members were almost certainly linked to other households and settlements through kinship ties, marriage alliances, exchange networks and more general interpersonal relationships. LBK longhouses are generally clustered together to form settlements of variable size. Whilst some extreme examples can be found in the later LBK (for example, more than 300 house plans have been uncovered at the *älteste* LBK settlement of Eythra near Leipzig; Hohle 2012), most settlements rarely exceeded more than a dozen contemporary houses, and many were composed by only a handful of such structures.[8] Many features of these settlements suggest a developed

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[8] This conclusion is based on the assumption that individual longhouses were abandoned after 25 to 30 years of use based on the overall length of occupation at sites and the presumed number of settlement

sense of 'community', such as the shared orientation of the longhouses, communal ovens and, in the later LBK, the construction of enclosing ditches and palisades. Assistance was almost certainly needed in the construction of new longhouses (the 'typical' tripartite longhouse required up to 2,200 man hours: Startin 1978). Given this, settlements (or, more appropriately, sites) are referred to frequently as villages, hamlets or farmsteads (depending on the number of coeval houses) (e.g. Lüning 1982a). However, it is important to not overstate this sense of community as the degree of social integration within these communities may have varied (Pechtl 2009).

Whilst the longhouse itself as a structure has been well studied (Coudart 1998; Modderman 1970; Startin 1978; Stäuble 1997; von Brandt 1988; Waterbolk and Modderman 1958/59), the nature and number of its inhabitants remains unclear. Buttler initially suggested that the LBK household consisted of an extended family of 8 to 10 people (Buttler and Haberey 1936: 162), and we see similar assumptions continuing to this day (5–7 persons: Lüning 1982b; 6–10 persons: Modderman 1970: 205; 6 persons: Zimmermann *et al.* 2009: 13).[9] Recent attempts have been made to confirm these assumptions through demographic modelling but their discussion remains largely theoretical (Schiesberg 2010; Strien 2010a). This is not the only household model presented for the LBK. Earlier authors, especially those drawing on ethnographic examples, suggested that clan groups composed of multiple nuclear families resided within the longhouses (Childe 1929: 107; Otto 1960; Piggott 1965),

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phases (e.g. Modderman 1970: 200; Stehli 1989a: 56–7, 61). However, ethno-archaeological experiments suggest that the longhouse timbers could survive up to 125 years before succumbing to the elements (Schmidt *et al.* 2005). Whilst some researchers point to this as evidence that LBK longhouses had longer use lives (up to 100 years: Rück 2009), most continue to use the shorter period and propose socio-cultural factors (such as the death of the head of household) as reasons for abandonment.

[9] This need not mean that the composition of inhabitants was constant over time. Household membership was likely relatively fluid, varying with seasonal tasks, the lifecycle of the resident families and lifetime mobility (Whittle 2003: 72; Strien 2010a).

and Rück recently restated this view (Rück 2009: 179–80). Although an attractive possibility, this alternative assumption is based on the overall size of the longhouse. The accepted longhouse typology developed by Modderman (1970) proposes a modular form for the larger tripartite longhouse, in which only the smaller central section served as a living area. Given this scenario, the overall size of the longhouse as living space is more modest and more in keeping with the single family dwellings found in Neolithic communities in south-east Europe (Tringham 1972: 119). Regardless of which assumption is accepted (extended nuclear versus multi-family residences), the relative uniformity of longhouse size and shape suggests that the general nature of the LBK household did not change significantly over time (Bogucki 2000: 216; Lüning 1982a).

3.2.2 House groups and rows

More recent settlement studies have identified groups of longhouse which are linked spatially and/or materially, challenging this well-established model of the independent household. Kinship ties, such as clan or lineage affiliation (see 3.4.2 below) may have played a larger role in the structuring of local settlements. Researchers working in the Dutch Limburg identified hierarchical supra-household groups (or 'wards'), which they felt represented the most basic *independent* economic unit within LBK settlements (Modderman 1988: 101; van de Velde 1990). Similar groups of households were also found at Vaihingen in the Neckar valley (Upper Rhine), although inequalities between member households were downplayed in this case (Bogaard 2011; Bogaard *et al.* 2011: 413). Detailed analysis of the pottery and lithic assemblages at Vaihingen identified unique stylistic traditions within the settlement, which were each associated with different groups of houses (Strien 2005). Given their close proximity, Strien (2005: 195) proposed that the individual households found

within these groups were closely related to one another and likely represented a local 'clan' or 'lineage'. Furthermore, archaeo-botanical data indicated economic inequalities between the groups in regards to proximity and, therefore, quality of cultivation plots (Bogaard 2011; Bogaard *et al.* 2011). How the existence of these larger-scaled affiliations affected the autonomy and inter-generational reproduction of individual households and farmsteads remains unclear at this stage, and households may have retained an element of independence within these supra-household groups.

3.2.3   Settlement rows

The most influential challenge to the *Hofplatz*'s independent households by far comes from the introduction of Rück's *Zeilensiedlung* (in English: row settlement) model. Rück's review of the architecture and structure of LBK settlements led him to question certain key assumptions about LBK settlement, including, most notably, the structuring of settlements into spatially independent farmsteads (or *Hofplätze*) (Rück 2007; 2009). He reasoned that the *Hofplatz* model's basic understanding of "short-lived houses located far from their contemporary neighbours in autonomous wards" was incompatible with growing evidence that longhouses could have been used for up to 100 years (Rück 2009: 159–63; Schmidt *et al.* 2005) and, therefore, a new model of settlement was needed (Rück 2009: 163). Instead of loosely arranged family farmsteads, Rück argued that LBK settlements were organised into rows of contemporary parallel houses with aligned ends (Figure 3-5; Rück 2009: Fig. 7, Fig. 8, 159–64). The relationship between house rows (be it chronological, topographical or socio-cultural) remains unclear (Rück 2012: 30).

Figure 3-5: Comparison of Hofplatz (left) and Zeilensiedlung (right) models at Weisweiler 110 (Aldenhoven Plateau) (Rück 2007: Fig. 157–8)
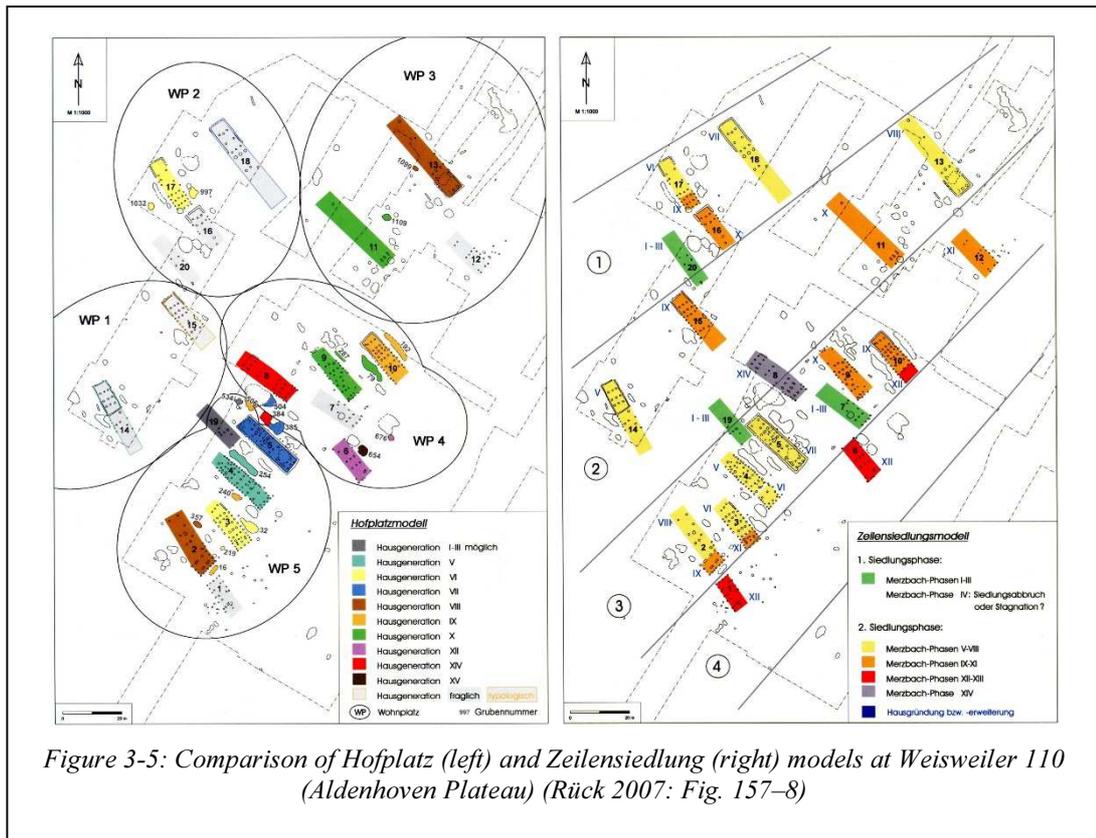
In contrast to the *Hofplatz* model, Rück's *Zeilensiedlung* implies that the household held a lower degree of independence than previously believed. Evidence of such integration was not limited to the architectural use of space. Comparative studies of lithic and ceramic finds have demonstrated close social links between groups of households within settlements and between settlements (Strien 2000; 2005; Claßen 2009a; 2009b). Economic practices such as raw material procurement, crop selection and hunting may also have varied between groups of households, leading to what appears as different neighbourhoods within certain settlements (Hachem 2000; 2011; Nockemann 2008; Bogaard *et al.* 2011).

The introduction of Rück's *Zeilensiedlung* model instigated a robust debate about the archaeological basis of the *Hofplatz* model and a more open consideration of alternative structures (see especially Wolfram and Stäuble 2012). For example, both

Petrasch (2012: 54–5) and Rück (2012: 21–7) argue that the 'Hof', or sequence of independent farmyards, represents an idealised model based on a small number of examples and, therefore, is not well established in the archaeological data. Whilst Rück appears to dismiss the existence of the *Hofplatz* altogether (in favour of his *Zeilensiedlung* model), others treat both models (*Hofplatz* and *Zeilensiedlung*) as one of several localised traditions within the LBK (Lenneis 2012; Link 2012; Petrasch 2012: 55–6). Despite these challenges, the *Hofplatz* model continues to influence LBK studies; for example, many of today's researchers rely on the model's chronological methodologies when reconstructing settlement histories (Petrasch 2012: 65). What has changed, however, is our view of the nature of the household. Whilst the household (as represented by the *Hofplatz*) may remain an important social and economic unit within LBK society, it is no longer seen as a completely independent social building block.

3.3 Settlement integration

Like the household, LBK settlements were once viewed as economically and politically independent (e.g. Behrens 1975: 153; Milisauskas and Kruk 1984: 22). Since the basic needs of the settlement could be satisfied by household production and down-the-line exchange through expansive kin networks (Bogucki 1988), there was no economic need for socio-political integration beyond the settlement community. Increasingly detailed studies, however, have suggested greater degrees of integration between neighbouring settlements and have documented the development of social, economic and hierarchical dependencies within some areas.

3.3.1   Connected communities

The large-scale excavation programmes of the mid-twentieth century provided the first opportunity to explore the relationships between different settlements. Kruk's study of the LBK in southern Poland described an integrated settlement system that included both larger, more permanent settlements with smaller, short-term sites and offshoot settlements which were "intimately connected" (Kruk 1980: 52). Bakels' palaeo-environmental study of the Graetheide region (Dutch Limburg) provided a similar picture. Although partly self-sufficient, the Graetheide settlements functioned within larger co-operative economic units (linked to the settlement cluster) which structured other activities, such as raw material procurement (Bakels 1978: 140–1). These units emerged from the day-to-day interdependencies that were shared between neighbouring settlements and their inhabitants and may have extended beyond economic practices (e.g. shared use of the cemetery at Elsloo) (Bakels 1982: 41). Thus, settlement communities were embedded in extensive support and communication networks likely expressed in kinship terms (Bogucki 1988: 120–2; Krahn-Schigiol 2005; Claßen 2009a; see more about kinship below).

These studies demonstrate that settlements could be integrated into larger socio-economic networks thorough kinship ties, co-operative labour, economic dependencies and, in places, craft specialisation (see more below, 3.3.2). As a result, there has been a tendency to treat the LBK social landscape as uniform and relatively undifferentiated—that is, an endless web of interlinked settlements. However, settlement gaps and abrupt discontinuities in the distribution of particular raw materials and/or decorative pottery motifs suggest that social contact and exchange may have been less intense between some neighbouring groups. For example, *Zimmermann et al.* (2009: 20) highlights the lack of known settlements along the Rur

river between the Aldenhoven and Hambacher settlement clusters in the Lower Rhine basin, despite its suitability for settlement, and interpret this as the maintenance of a buffer zone between distinct social groups (Figure 3-6). Regional patterns in pottery and/or material preferences have been seen also as broadly marking the territories of different (local and regional) groups within the LBK (Zimmermann 1995: 114; Kneipp 1998: 192). Whether these 'boundaries' delineate areas where social contact was inhibited or represent the conscious expression of different identities remains unclear. Attempting to explain this phenomenon, Zimmermann (1995: 114) and Kneipp (1998: 192) suggest that the discontinuities represent the extent of communication and exchange networks associated with distinct tribes or social groups. Though only a handful of such examples have been considered to date, such divisions—suggesting a

Figure 3-6: Buffer zones between settlement clusters
in the Lower Rhine basin (Zimmermann et al. *2009: Fig. 2)*
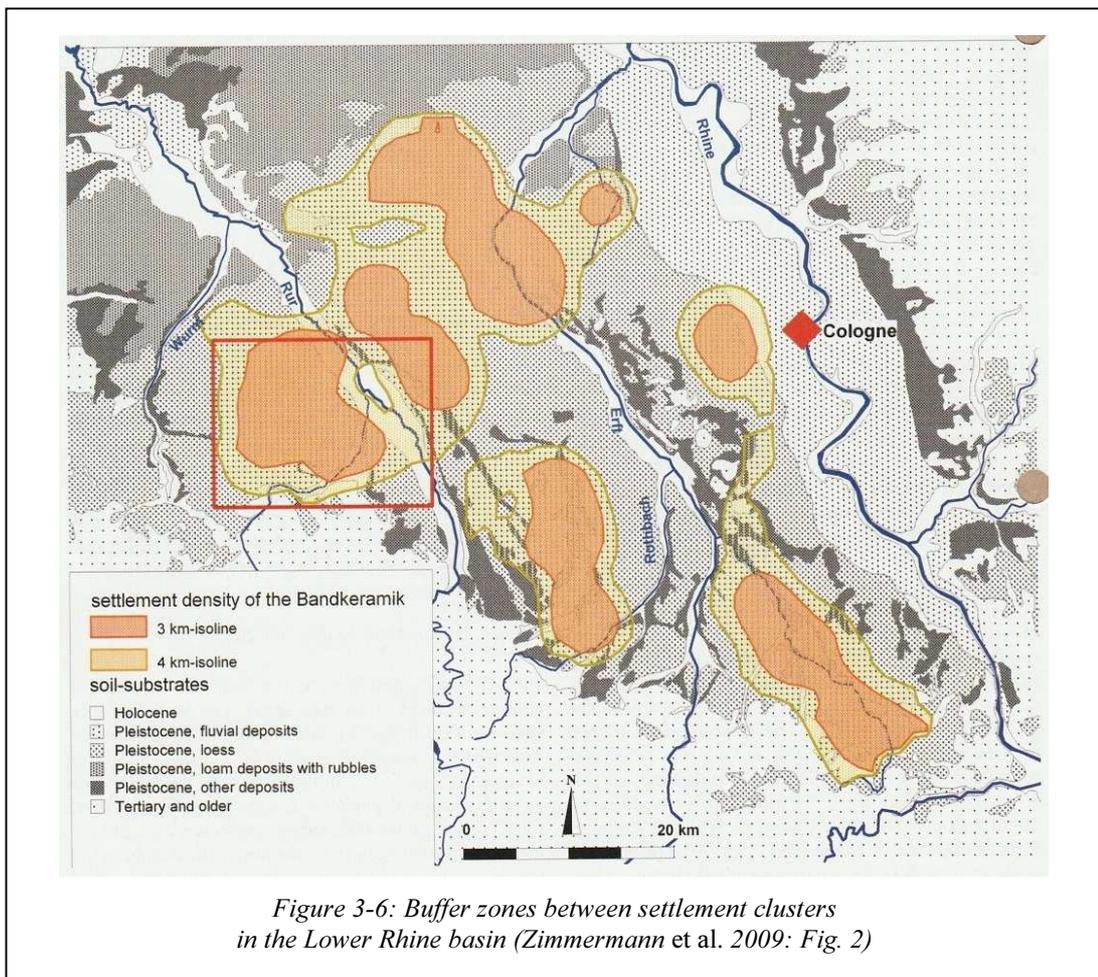
sense of territoriality or tribal land—may be more common, even typical, in the LBK (Zimmermann 1995: 114), raising the probability and even likelihood of impersonal conflict and warfare within the LBK (see 3.3.3 below).

3.3.2   Settlement hierarchies & economic integration

Investigating the regional circulation of flint materials in the north-west LBK, Zimmermann suggested that certain settlements played a more central role in the procurement of certain raw materials and, by extension, dominated their local surroundings (Zimmermann 1982; 1995). An earlier regional study of the stone tool assemblages in eastern Central Europe by Lech (1989; 2003) found that some settlements located near to good-quality flint outcrops (e.g. Olszanica, Vedrovice) served as 'producer' sites, supplying cores, blanks and finished tools to more distant 'user' settlements. Zimmermann found a similar pattern within the more localised area of the Aldenhoven Plateau, with the pioneer settlements of Langweiler 8 and Weisweiler 17 serving as 'producer' sites to their neighbours (Figure 3-7). This functional specialism was not as marked as that seen by Lech as it was grounded in social, rather than economic, factors; the 'consumer' sites continued to procure these materials directly but this access was suppressed by their relationship to the larger settlements (Zimmermann 1982: 321). These larger settlements also had greater proportions of other 'exotic' materials such as amphibolite, red ochre and La Hoguette/Limburg pottery (see 3.5.2 below), suggesting that their inhabitants either controlled or were responsible for maintaining long-distance exchange networks (Zimmermann 2002: 24) . As such, he argued that these larger settlements served as 'central places' within the local social landscape (Zimmermann 1995: 92–6).

Figure 3-7: Main distribution routes for Rijckholt flint
on Aldenhoven Plateau (Zimmermann 2002: Fig. 14)
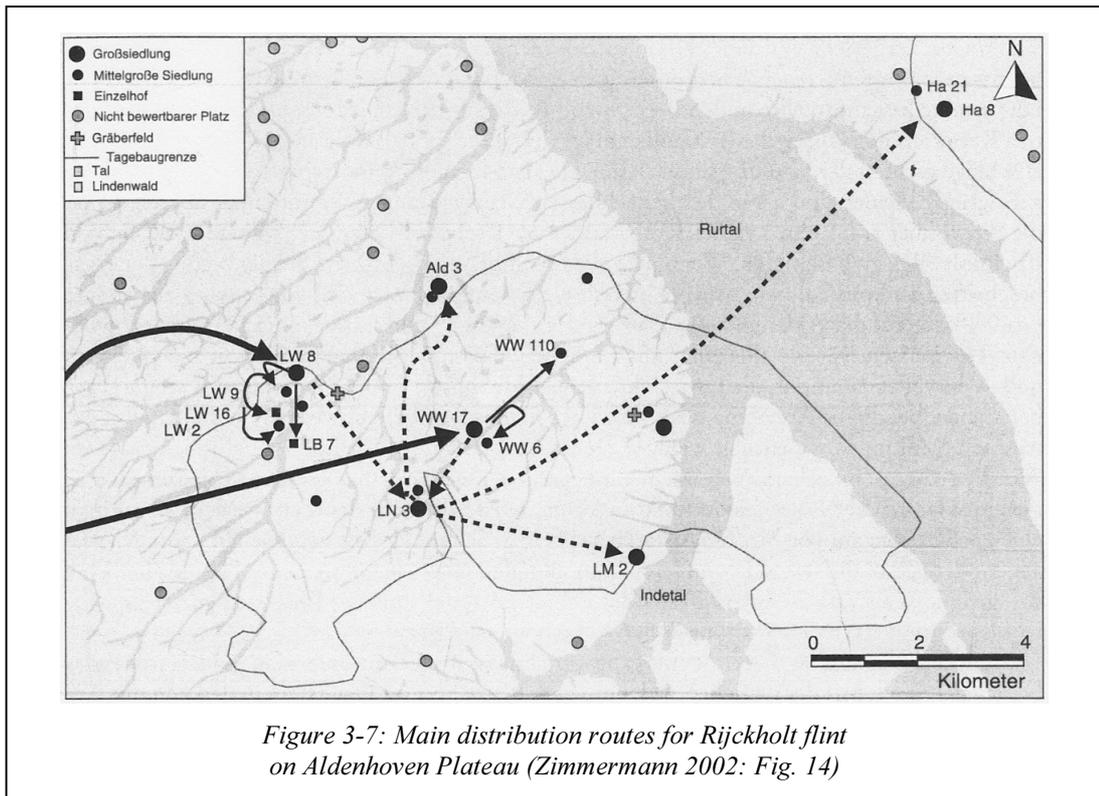
As a result of this exchange system, Zimmermann (2002) proposes a three-tiered asymmetrical settlement structure, comprising a main settlement (often settled earlier and holding a prominent role in procurement strategies), secondary settlements (hamlets of 2–3 contemporary households) and individual households. This is an implicitly hierarchical model that assumes a causal relationship between settlement history and local authority (see also Frirdich 1994 discussed above, 3.1.3). At the beginning of occupation, the more dispersed and independent settlements were responsible for procuring their needed materials directly. When the population (and number of settlements) expanded over time, the newly founded settlements had to accept these economic structures, leading to the evolution of different rights and obligations within the wider community (Zimmermann 1995: 131). Thus, the pioneering households of an area continue to control certain aspects of daily-life (e.g.

raw material exchange networks) throughout much of the history of that settlement group (Zimmermann 2002: 31).

Based on the clustered settlements of the Aldenhoven Plateau, the wider application of Zimmermann's 'Central Place' model to other areas of the LBK remains contentious. The model is broadly consistent with the pattern of settlement in the Filder (Neckar valley; Strien 2000: 33–4) and the Wetterau (Hesse; Schade 2004). However, Petrasch (2003) challenges the applicability of this model on three grounds. Returning to the Merzbach valley, he highlights the unequal distribution of certain activities within the settlements clustered there (associated with possible economic specialisms; see discussion below) and argues that Langweiler 8 lacks the full spectrum of economic and social functions that generally define 'central places' (Petrasch 2003: 508). Secondly, he argues that it is inappropriate to transfer a model based on modern (western) settlement patterns to a prehistoric context (Petrasch 2003: 509). Finally, he suggests that settlement patterns within the earliest (*älteste*) LBK are incompatible with the grouped pattern of 'central places' (Petrasch 2003: 510). As an alternative, Petrasch (2003: 511–2) prioritises kinship ties and suggests that LBK households and settlements were integrated economically and socially through segmentary lineages (which are discussed in more detail below, 3.4.2).

In contrast, detailed material studies within the late LBK Hesbaye and Petite Klein clusters of north eastern Belgium suggest that local settlements may have developed economic specialisms as a means to establish and maintain (micro-) regional alliances beyond such kinship structures (Keeley 2002: 389; Golitko 134–5). Local production centres for blade and flint tools, phtanite stone adzes and finewear decorative pottery have been inferred from differences within the local assemblages (Keeley and Cahen

1989; Allard 2005a; 2005b; Golitko 2015). Allard (2005b: 218) goes so far as to argue that a "genuine blade production economy" developed in the sites neighbouring the flint sources at Hesbaye (e.g. Darion, Verlaine 'le Petit Paradis'). The quantity and quality of the lithic assemblage at Verlaine 'le Petit Paradis' suggest that surpluses were produced by skilled knappers for (long-distance) exchange with areas further west (Hainaut) and south (the Moselle valley). Similar traits are found at up to six 'workshop' sites amongst the 20 LBK sites found in a 3 km radius. This suggests that flint production was not limited to one 'central place', but organised at the micro-regional level.

The evidence for similar specialisations within other areas of the LBK remains vague. For example, local peculiarities within the settlements of the Merzbach cluster (Aldenhoven Plateau) suggest subtle differences in the economic activities taking place in them (Langweiler: greater focus on pottery production; Langweiler 9: increased adze usage; Langweiler 2: prevalence of V-trenched *Schlitzgraben* and presence of unusual fence compounds/pens; Laurenzberg 7: high qualities of pits and lithic artefacts; Lüning 1982a: 23; Stehli 1994: 91; Boelicke *et al.* 1994: 45–59; Krahn-Schigiol 2005; Krahn 2006). However, these examples lack the clarity and intensity witnessed in the Hesbaye cluster. Economic specialisation on this scale may have been limited to certain places and possibly certain times. For example, noting the role economic specialisation plays in establishing military alliances within the ethno-historical record (Keeley 2002), Golitko (2015: 138) treats the increasing economic integration witnessed in the Belgium Hesbaye with a developing atmosphere of tension and potential conflict during the latest LBK, a popular trope within recent LBK studies.

3.3.3 Interpersonal conflict

Up until the early 1980s, the lack of tangible combatants, armature or fortifications fostered an assumption that LBK communities were largely peaceful (Childe 1929: 109; Behrens 1975: 160; Keeley and Cahen 1989: 158). Any conflicts were short-lived or avoided through settlement fissioning. The discovery of the mass grave at Talheim in 1983/84 led to an on-going debate about the frequency and nature of violence within the LBK. The resulting discussions have focused on two main areas: short-term conflict with local Mesolithic groups in newly occupied areas of settlement and increasing inter-communal competition within the later periods of the LBK (Keeley and Cahen 1989; Gronenborn 1999: 186–8; Golitko and Keeley 2007). Whilst the presence of 'fortified'[10] settlements across the LBK distribution may suggest that such

Figure 3-8: Mass grave at Talheim (Price et al. 2006: Fig. 3)

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[10] Keeley and Cahen (1989) interpreted the V-shaped ditches enclosing the Hesbaye settlements of Darion and others as defensive features due to their depth, presence of complex 'baffle gates' and, in

conflict was a common feature of LBK life (Golitko and Keeley 2007; Kerig 2003; *contra* Whittle 1996: 174), more direct evidence of inter-personal violence has been found within several noteworthy skeletal assemblages. The remarkable late LBK sites of Talheim, Asparn/Schletz and, most recently, Schöneck-Kilianstädten provide vivid details of a violent attack against what appears to be entire communities (Figure 3-8; Teschler-Nicola 2012; Wahl and Trautmann 2012; Meyer *et al.* 2015). In addition, the possibility of ritualised sacrifice of war captives has been suggested by the finds at Herxheim (Boulestin *et al.* 2009). Pulling these data together, there is a developing narrative within LBK studies that suggests that increasing competition from population growth and climate change led to a time of crisis and intensifying inter-communal violence/war in the later periods of the LBK (Boulestin *et al.* 2009: 979; Gronenborn 1999: 168). However, as Orschiedt and Haidle (2012: 133) point out, these may be unique sites that were the exception rather than the rule. Beyond these examples, the burial record suggests that interpersonal violence was a recurring feature within the LBK (comparable to other Neolithic groups), but that females and juveniles were its most likely victims (Fibiger 2010; 2012; Hedges *et al.* 2013: 371). Upon reflection, it remains more reasonable to see the LBK as punctuated with episodes of sometimes spectacular violence but this conflict was not necessarily endemic or institutionalised.

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some places, association with burnt longhouses (see discussion in 6.3.2.2.1). This interpretation remain open to debate (e.g. Kerig 2003; Whittle 1996: 174).

3.4 Kinship

Another important theme in the study of social relations within the LBK is kinship—in particular, its structures and influence on social organisation, mobility and power relations.

3.4.1 Residency & descent

There is a long tradition of attempting to characterise LBK kinship systems in terms of residency and descent. Early discussions of LBK society emphasised matrilineal aspects. For example, the pan-European narratives of the mid twentieth century (e.g. Clark and Piggott 1965; Piggott 1965) drew on ethnographic parallels with the longhouse societies in North American (such as the Iroquois, Nootka and Kwakiutl) where extended matrilineal clans resided within large timber halls. Behrens (1975) came to similar conclusions, arguing that matrilineality represented the natural state for simple agrarian societies. Such conclusions influenced early interpretations of the archaeological settlement data (e.g. Soudský 1962; Milisauskas 1986: 218).

This early assumption of matrilineality was first challenged by the higher social status of older men witnessed at the Nitra cemetery (see 3.1.2; Pavúk 1972); however, van de Velde was the first to tackle this topic head on (van de Velde 1979a; 1979b). His study of the settlement and cemetery at Elsloo in the Netherlands suggested that both matrilineal and patrilineal elements could be extrapolated from the distribution of two distinct pottery motifs (recti- and curvi-linear bands). These two systems—matrilineal descent and patrilocal residency—operated alongside one another, creating alternative power bases (van de Velde 1986) and different classes of kin and eligible marriage partners (van de Velde 1979b). Similarly, Bogucki argued that LBK kinship was probably bilateral (where kinship is traced through both parents) as bilateral systems

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allow greater flexible and a wider pool of potential kin. Bogucki argued that unilineal kinship systems would have been too limiting to provide the necessary support network for the widely-distributed and sparsely-populated settlements of the LBK (Bogucki 1988: 183, 217).

The last 10–15 years has seen an influx of studies that tackle the issue of residency and descent rules through an analysis of the archaeological data. Distribution patterns within the material culture (e.g. pottery decoration, lithic technology) have led some to suggest that patrilocality was practised within the LBK (Krahn 2003; Strien 2000). Though suggestive, these material studies rely on assumptions about the division of labour within LBK society and the symbolic meaning of pottery motifs. Alternatively, studies based on the physical remains of the LBK people themselves have provided more robust evidence of LBK residency rules. Numerous isotope studies (e.g. Price *et al.* 2001; 2006; Bentley *et al.* 2002; 2003b; 2008; Price and Bentley 2005; Bentley 2007; 2013; Knipper 2011; Hedges *et al.* 2013) reported that females were more likely to display non-local strontium signatures throughout the LBK, suggesting a greater mobility for these individuals, possibly due to patrilocality (although alternative interpretations relating to diet are possible; Bickle and Hofmann 2007). Similarly, the epigenetic and odonatological features of the individuals found in the mass grave at Talheim (later LBK) suggest that females were less "related" to one another (i.e. shared fewer epigenetic traits) compared to the male population (Eisenhauer 2003). Isotopic analysis of these individuals also suggest that females from the local farming community were taken as captives (to become wives?) by the village's attackers. Both of these factors are consistent with a patrilocal residence system. In contrast, the underlying system for descent remains far more difficult to establish (*sensu* Deetz 1968). Eisenhauer rejects matrilineal forms of patrilocality (virilocal and avucuolocal

residency), at least during the later LBK, claiming that such matrilineal kinship ties would have prevented the community massacre at Talheim (Eisenhauer 2003; supported by Bentley 2007).

These data suggest that certain 'idealised' rules, e.g. patrilocality, may have been followed within the LBK. However, in attempting to define kinship as matri–/patri–lineal (or –local), it is important to note that kinship status is not necessarily biologically determined. Anthropological research has highlighted that kinship relations are often made through the sharing of food, domesticity, substances and other such activities and, therefore, are mutable (Carsten 2004; Sahlins 2011a; 2013; Schneider 1968). Within these conventions, regional or inter-regional variations may have also been possible (Whittle and Bickle 2013: 391).

3.4.2   Segmentary society

Beyond residency and descent, studies from the last decade have increasingly viewed the LBK as a type of 'tribal' segmentary society (Evans-Pritchard 1951; van de Velde 1990; Frirdich 1994; 2003; Kerig 2003; Petrasch 2003; 2012; Strien 2005; Bogaard *et al.* 2011). Indirect evidence of these local lineage segments in the LBK can be found in the settlement data. Distinct spatial and material patterns at Elsloo and Vaihingen have highlighted groups of 'related' households within the settlements. Researchers have assumed that these reflect kin relations of some sort given the long-term stability of the groups, and, in some cases, the identity of the kin group is marked by the usage of particular pottery motifs or ornamentation (Strien 2005; van de Velde 1979a; 1990). Frirdich (2003; 2005) has also argued that the rapid expansion during the *älteste* phase was the result of different lineages competing with one another for social prestige by establishing (and supporting) new settlements. Whilst serving as co-operative groups

(Petrasch 2012), tensions undoubtedly emerged within these local groups as a result of competition for lineage ranking, positions and resources (Frirdich 2005: 105; van de Velde 1990: 38). In addition, challenging the social authority of the dominant lineage may have reduced a household's own social prestige and risk access to exchange networks (Frirdich 2005: 105).

However, not all lineages were created equal. The recent archaeo-botanical study at Vaihingen suggested that particular local clans may have had access to the more productive field plots over multiple generations, leading to possible inequalities and eventual abandonment by other groups (Bogaard *et al.* 2011). In addition, the presence of 'richer' burials suggested that certain lineages within the communities may have held a higher social status and, through that, influenced the actions of others (3.1.2). This social position may have been based on their role in established exchange networks, their control of acceptable marriage partners, their proximity to a real or mythical ancestor or even to their early arrival at newly founded settlements (van de Velde 1990; Frirdich 1994: 354; Zimmermann 1995: 131).

Lineage relations were not necessarily equally important throughout the LBK period. Frirdich (1994; 2003; 2005) argues that lineage groups were at their most powerful in the *älteste* period when they served as a safety net for the small, dispersed communities and competed against one another by founding new settlements. The prevention of further expansion within later periods of the LBK led to the weakening of these lineages. As a result, lineage heads lost much of their economic and political power and may have only played a role in ritual contexts in the later LBK. Kerig (2003), on the other hand, argues that 'tribal' social structures only emerged in the later LBK. He argues that fissioning and dispersed settlement, more akin to 'band' structures, were

the preferred strategy for developing new resources and avoiding conflict in the *älteste* and *ältere* LBK. In contrast, later periods were marked by an increased significance for social connections and with that the formation of larger social spheres.

3.4.3 House societies

Rather than traditional kinship models, Borić (2008) argues that the concept of the *house society* (*sensu* Lévi-Strauss 1982; 1987) may provide a more suitable model for understanding kin relations within the LBK. Responding to ethnographers' difficulties in attributing traditional kinship/lineage systems to the diverse indigenous groups living in British Columbia, Lévi-Strauss (1982; 1987) highlighted the importance of corporate 'houses' in structuring property rights and social privileges over multiple generations. He defined the social 'house' as "a corporate body holding an estate made up of both material and immaterial wealth, which perpetuates itself through the transmission of its name, its goods, and its titles down a real or imaginary line, considered legitimate as long as this continuity can express itself in the language of kinship or of affinity and, most often, of both" (Levi-Strauss 1982: 174). Integrating a heterogeneous membership, these 'houses' served as a means of transforming conflicting tensions arising from other structuring principles (such as descent, filiation, residence, exogamy and heredity) into a unified external 'whole', thus negotiating differences and asymmetries within the local community (Lévi-Strauss 1982: 134).

The long-term continuity and inheritable estate implied by the *Hofplatz* model offers the possibly that LBK communities were organised into such corporate 'houses'. According to this hypothesis, daily practices, ritual gatherings and exchange alliances anchored to LBK households helped to create a sense of consanguinity, attracting and integrated a heterogeneous population (Whittle 2003; Borić 2008). The resulting

social 'houses' represented the basic unit of inheritance and social reproduction, rather than tradition lineage and other corporate groups. It is important to note that these proposed 'houses' are not synonymous with resident households. Whilst the household is transitory, shifting and changing with its membership, the social 'house' endured over multiple generations, providing a similar long-term structure of social interaction as maintained by traditional kinship structures (Helms 2007: 502).

Initially proposed as an alternative model of kinship, the original idea of Lévi-Strauss' *société à maison* has been extended in later anthropological and archaeological discussions as a means of exploring the integrative and structural role of houses and households (Waterson 1990; Carsten and Hugh-Jones 1995; Joyce and Gillespie 2000; Beck 2007; Borić 2008; Thomas 2013). As such, there has been a significant overlap between house-centric studies and arguments for *house societies*, and there is a real risk of over-extending this model of social organisation to any and all house-based communities (Gillespie 2007: 27). Furthermore, the great variability seen within known *house societies* challenges its use as a categorical 'type' (Gillespie 2007: 31; Thomas 2013: 292). Rather than accepting Lévi-Strauss' *house societies* as some sort of structural 'type', the concept may be more useful as a heuristic tool to reconsider how relationships based on descent, residence, affinity and others may have interacted in the formation of short- and long-term social structures (Gillespie 2000; 2007; Beck 2007).

3.5   Culture, tradition and identity

The discussion so far has focused on the social structures and organisation of the LBK—but how should we interpret this label 'LBK'? The LBK is often treated as a totality of some sort, albeit with significant local, regional and temporal variations.

The final section of this chapter outlines below how the concept of LBK as a cultural group has developed over the past century.

3.5.1 The LBK 'culture'

The LBK was initially defined as an 'archaeological culture' by Childe in the 1920s (Childe 1925, 1929). For him, its assemblage of regularly associated traits represented the material expression of a single 'people'. The wide distribution of these characteristic traits across Central Europe reflected the movement or migration of those 'people' (Childe 1929: v-vi). This understanding of the LBK as colonising farmers from SE Europe dominated much of the twentieth century (e.g. Sangmeister 1951; Quitta 1960; Ammerman and Cavalli-Sforza 1984). The relatively few number of Late Mesolithic sites (compared to the Early Mesolithic and Neolithic) suggested that much of Central Europe was sparsely populated prior to the arrival of the LBK (Jochim 2000).[11] It was assumed, therefore, that LBK settlers were colonising virgin territories, with little contact or interaction with other non-Neolithic groups. Close social contact (and dependencies) between dispersed LBK settlements and an inherent social conservatism ensured the unchanging reproduction of these cultural traits over multiple generations.

3.5.2 Foragers and farmers

A renewed increase in Mesolithic studies (e.g. Tillman 1993; Gronenborn 1998; 1999; Jochim 1998; Kind 1998; 2010) challenged these assumptions by identifying considerable evidence of contact between early farmers and local foragers in Central

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[11] This decline in known archaeological sites may represent a research bias rather than a reflection of prehistoric population levels (Bogucki 1988: 37; Modderman 1988: 128; Gronenborn 1999; Jochim 2000). Regardless of this issue, local foraging communities were more likely to exploit the upland regions of Central Europe due to their higher biomass. As a result, the transitional zones favoured by LBK settlers were more than likely unoccupied by existing groups.

Europe. In the west, studies of lithic assemblages of the *älteste* LBK demonstrated numerous similarities between the Late Mesolithic flint industry and that of the LBK (although recent studies suggest these similarities may have been exaggerated; Gronenborn 1997; 2007; Robinson *et al.* 2008; 2010). Meanwhile, the presence of raw materials in *älteste* settlements from outside the contemporary LBK distribution (such as Maas Valley flint and Carpathian obsidian) suggested that these early settlements tapped into existing Mesolithic exchange networks for these materials, illustrating ongoing contact between the different groups (Gronenborn 1999; 2007; Mateiciucová 2004; 2010).

By far the most intriguing evidence is the appearance of 'foreign' La Hoguette, Limburg and associated *Begleitkeramik* pottery in LBK settlements along the western fringe of the LBK (Figure 3-9).[12] These ceramic vessels differ from traditional LBK pottery in their manufacture, form, and decoration. La Hoguette pottery is generally found in association with earliest (*älteste*) LBK sites in the Upper Rhine and Neckar valleys and with early Flomborn and late LBK (*Rubané moyen*) settlements in eastern France and north
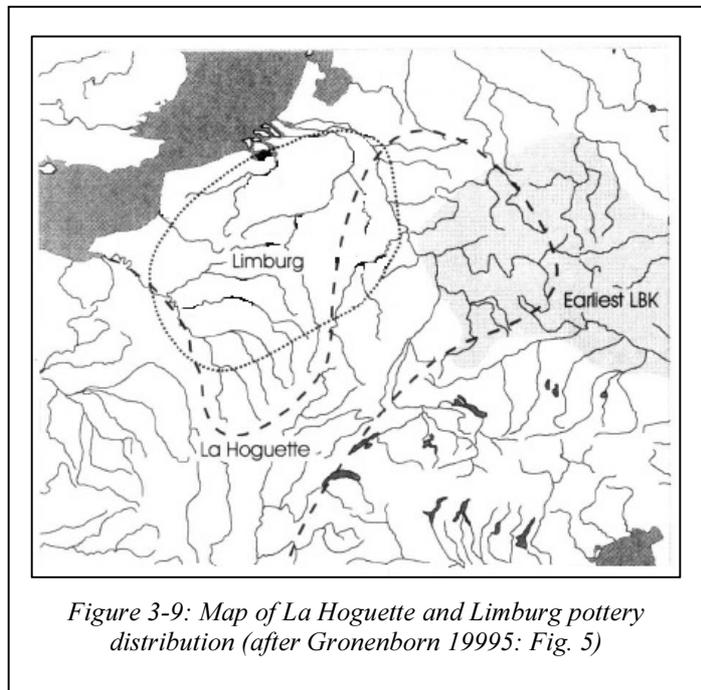
Figure 3-9: Map of La Hoguette and Limburg pottery distribution (after Gronenborn 19995: Fig. 5)

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[12] In addition to the defined La Hoguette, Limburg and *Begleitkeramik* ceramic styles, other examples of atypical and ambiguous pottery are known in the Rhine-Meuse area, which may represent the less skilled adoption of pottery production in some local foraging communities (Lüning *et al.* 1989; Crombé 2009; van de Velde 2010).

along the Rhine corridor (Lüning *et al.* 1989: 381–2; Gronenborn 1999: 138; Crombé 2009). On the other hand, Limburg pottery has a more north-westerly distribution and may be a slightly later phenomenon. It is found almost exclusively in earlier–later LBK settlements in the loess areas between the Loire and Rhine valleys (including the Paris basin and Belgium/Dutch loess belt) (Gronenborn 1999; Crombé 2009) and is rarely found east of the Rhine, suggesting an effective boundary of sorts (Lüning *et al.* 1989). *Begleitkeramik* ceramics are largely limited to the area of La Hoguette/Limburg overlap and may represent a hybridisation of these two forms (Crombé 2009).

The social implications of these non-LBK pottery traditions remains heavily debated. Early suggestions that these long-term traditions represent LBK-inspired innovations (either by local indigenous groups or as special purpose forms within the LBK) have since been rejected due to the lack of stylistic and technical similarities between La Hoguette, Limburg and LBK pottery (Modderman 1970; Constantin 1985: 127–8; Crombé 2009). More recently, these pottery forms have been associated with hunter-gatherer groups, who learned these skills through contact with other (non-LBK) Neolithic groups, such as Cardial/Epicardial groups in the western Mediterranean area (due to stylistic similarities; Jeunesse 1987; Lüning *et al.* 1989; van Berg 1990; Gronenborn 1999; 2007)[13].

Unlike Limburg pottery, La Hoguette pottery has been found outside LBK sites (at Sweikhuizen and La Hoguette), strengthening suggestions that it represents a local,

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[13] Constantin (1985) and van Berg (1990) assert that the arguments for these southern connections rely too heavily on stylistic similarities and ignore significant differences in technical aspects. As an alternative, they suggest that knowledge of pottery may have been acquired through contacts along the North Sea/Baltic area, despite the lack of such pottery until the appearance of the LBK.

pottery-producing indigenous group (Gronenborn 1999; 2007). Although contentious, these sites have been dated to as early as 5600 cal. BC; therefore, La Hoguette groups may pre-date the arrival of the LBK (Gronenborn 1999: 140). Trace evidence of domesticated animals and plants at Stuttgart Bad-Cannstatt may indicate that La Hoguette groups may have been small-scale agriculturists and/or pastoralists. Stylistic similarities with Cardial pottery from southern France suggests that La Hoguette groups may have adopted some aspects of a Neolithic way of life following interaction with Cardinal groups (Lüning *et al.* 1989: 360). Given the proximity of La Hoguette groups with the temporary frontier formed by the halt of LBK expansion in the earliest LBK, Gronenborn (1999; 2007) proposed that this expansion was halted in southern Germany because of contact with this group. Further colonisation could only continue once relations between the two groups were normalised after several generations of contact and interaction.

Recent investigations of the *chaîne opératoire* associated with Limburg pottery in the Aisne valley and Belgium may challenge such simplistic categorisations. Gomart (2014) found that 'Limburg'-style decorations were imitated on 'LBK'-formed pots. In contrast to these imitations, 'pure' Limburg pottery was concentrated in marked areas of settlement (for example, in particular neighbourhoods or in association with communal buildings or pioneer households). Based on these results, Gomart (2014: 320) argues that Limburg pottery had a "marked cultural role" within LBK groups, with 'pure' vessels being produced by a distinct sub-group within the LBK. There are also rare examples of La Hoguette decorations on 'LBK'-formed pots but not the reverse (Sommer 2001: 252), and at least some La Hoguette and Limburg vessels deposited within LBK settlements were made from local clays (Maletschek 2010; Golitko 2015: 131).

Based on such evidence, it has been suggested that LBK communities may have been multi-traditional communities that served as foci for the surrounding areas and incorporated both LBK and hunter-gatherer/pastoralist groups (Gronenborn 2007; Whittle 1996: 152). The introduction of stable isotope analysis encouraged the further development of these ideas of inclusion. Studies in south-west Germany repeatedly demonstrated that a significant proportion of burials display non-local strontium signatures (Price *et al.* 2001; 2006; Bentley *et al.* 2002; 2003b; 2008; Price and Bentley 2005; Bentley 2007; 2013; Knipper 2011; Whittle and Bickle 2013). In addition, many of these non-local burials were associated with different burial and economic practices, suggesting that these individuals may have been recognised as socially different to those with local signatures. As a point of contrast, recent ancient DNA (aDNA) research has minimised the role of Mesolithic genetic populations within LBK burial communities (Figure 3-10; Bramanti *et al.* 2009; Haak *et al.* 2005; 2010). Whilst the underlying reason for this variation remains unclear, it has been suggested that these non-locals may represent local hunter-gatherers who ultimately settled within LBK communities, or later generations of such migrants
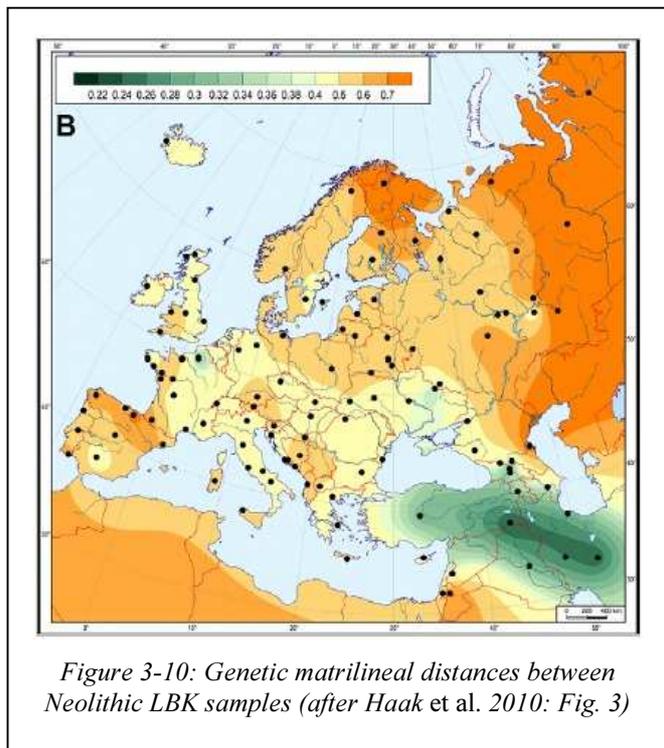
Figure 3-10: Genetic matrilineal distances between Neolithic LBK samples (after Haak et al. *2010: Fig. 3)*

who continue to practice more "Mesolithic" subsistence practices (e.g. hunting or mobile pastoralism) (e.g. Bentley *et al.* 2002; 2003b; 2008). These studies suggest that

interaction with local indigenous communities was not limited to the period of initial settlement or even the earliest/earlier periods of the LBK; instead, it may have been a characteristic feature of the LBK social world.

This may not have been universal. The distribution of Mesolithic lithic scatters in Belgium suggests that local groups sought to avoid LBK settlements by relocating (Vanmontfort 2008). The construction of 'defensive' settlement enclosures and evidence of burning along the upper boundary of the LBK in Belgium suggest that there may have been hostile contact with the indigenous groups to the north (Golitko and Keeley 2007; Keeley and Cahen 1989; Golitko 2015). When considering the nature of social relations between individuals, groups and settlements of these distinct cultural traditions (LBK, hunter-gather, Limburg, La Hoguette), it is important to remind ourselves that these relations need not be the same in all places and all times (Amkreutz *et al.* 2009). The impact of small groups of incoming farmers may not have disturbed local relations initially, as kin-based groups are flexible enough to deal with incomers. However, as these LBK settlements grew in size and impact, the relations between groups may have changed (Wansleeben and Verhart 1990; Golitko 2015: 135).

3.5.3 Multiple identities

An alternative viewpoint, influenced by the post-processual criticisms emerging within British archaeology, turned to practice-based models to better understand uniformity and diversity within LBK material culture and, by extension, the nature of LBK-ness. Sommer (2001) used the concepts of doxa and orthodoxy to explain the degree of variation found within different forms of material culture. The early uniformity of pottery and house construction suggested that these crafts were subject

to a form of orthodoxy where social controls (bound up with inherent power structures such as kinship) dictated appropriate forms and penalised those deviating from these. These objects served as 'signal-traits' communicating 'LBK-ness' and, thus, were fundamental to maintaining cultural unity. Later regionalisation suggested that the role of pottery in the creation of identity changed over time from signalling large-scale group membership to expressing individual agency or more localised group identity. In contrast, LBK lithic industries were less meaningful (neutral) and represented the unconscious practices of doxa (although the exchange of particular raw materials may have become more ideologically significant during later periods as a mechanism for cultural cohesion).

Focusing on the formative and earliest LBK in Moravia, Lukes (2004) explored the broad identity of the LBK through the deliberate manipulation of symbolic material culture by indigenous and immigrating groups during the Mesolithic-Neolithic transition. Rather than a framework of groups and roles, Lukes (2004: 19) argued that LBK society should be seen as "a system of contexts" in which relationships came into play and were negotiated, subverted and transformed. She suggested that much of the variability witnessed within the LBK represents the localised involvement of Mesolithic populations as they consciously and unconsciously adopted Neolithic symbols and practices alongside more traditional forms. Given its foundation in overlapping and contested identities, it seems odd that her study presented 'Neolithic' and 'Mesolithic' identities as clearly defined and undifferentiated. Despite this shortcoming, Lukes demonstrates the value in considering the context in which these different scales of identity come into play.

In contrast, Whittle (1996; 2003: 16) attempted to explain LBK practices in terms of a shared value system based on "participation, sharing, non-accumulation, commonality and pursuit of prowess". He described this value system as a 'moral community'; that is, an open and unbounded social grouping or network that defined what was appropriate or even conceivable (although these ideals may have been contested or interpreted differently by members of the community). Given its size, the LBK archaeological culture likely consisted of multiple, overlapping moral communities, which can be characterised through a close inspection of social practices and routines across multiple scales. Within this discussion, Whittle emphasised the 'messiness' of past lived lives, seeing them as a "mesh of routines, individualism, shared values, life courses, rememberings and intentionalities", whilst the moral community reflected a "nexus constituted in varied dimensions" (Whittle 2003: 133, 143). As a result, no one model can hope to capture these multiple identities.

Taken together, these studies show a growing interest in exploring how social identity was formed, negotiated and formalised within LBK communities. Whilst focusing on the expression of LBK-ness, these studies accept the multiple/scalar nature of identity itself, a theme expanded in a number of recent case studies. Bickle's detailed study of the longhouse as both context and product of daily life presented these routines as creative performances which made use of contested fields and flexible cultural practices (Bickle 2008). These events emerge from particular historical circumstances that resist totalising narratives or hierarchical structural models. Hofmann (2006) also interpreted cultural practices as performance, demonstrating how burial and settlement practices created overlapping identities and groups on different scales through a continuous process of 'becoming'. For example, she considered how LBK communities were formed through daily practices or activities such as the use of

communal ovens, shared depositional practices and the maintenance of open areas for communal rituals (Hofmann 2006: chapter 4; 2010). If these communal activities were not strong enough, the community would fall apart, as witnessed at short-lived settlements such as Salmannsberg in Lower Bavaria. Similarly, combined analyses at Vaihingen demonstrated how different scales of social identity were reinforced through shared subsistence practices (Bogaard *et al.* 2011). The production and consumption of the dominant cereal crops by all sub-sections of the settlement reinforced community identity, whilst tenured land and the mutual exclusion of opium poppies and feathergrass in different parts of the settlement highlighted the differences between intra-settlement groups. Pulling this work together, Whittle and Bickle (2013) define the LBK as a process and its material culture as an outcome of situated practices based in a shared value system.

These studies suggest alternative means of exploring social life within the LBK which emphasise lived lives, the emergence of different social groups of varying size from routine practices and the interaction of different dimensions within this cultural framework. In doing so, they engage with an often ignored aspect of social life—the emotions, values and passions that coloured everyday life within the LBK community. Although such approaches can be criticised as overly speculative or reliant on a universal understanding of human existence, they rightly bring attention back to conscious and unconscious agency within LBK studies.

3.6   The LBK as meshwork

Thus, we see that there is a long tradition of rigorous research exploring the nature, intensity and variation in the social organisation, structures and relationships which operated within LBK communities throughout central Europe. Rather than the

culturally-conservative farmers initially assumed, this research continues to highlight the hidden complexities operating within these groups. This presents a far more complicated and complex model of LBK social life than originally conceived. As summarised by Whittle (2009: 248), "a complex picture is perhaps emerging of communities both rooted in place and very local activity, and bound into much wider networks within which both people and their animals were regularly on the move".

Whilst these themes of 'connectedness' run throughout contemporary research on the LBK, these studies tend to focus on single scales of interaction—such as the role of the longhouse in community organisation or wide-ranging procurement networks—and offer them as explanatory factors in the emergence, homogeneity and rapid expansion of the LBK. Whilst local kin group may have replaced the independent longhouse for some researchers, the underlining approach continues to emphasise the importance of a single scales of sociality.

As noted by other researchers, there remains a need to engage with these different scales together, as would have happened in the everyday lives of local inhabitants (Whittle 2003; 2009; Bickle and Hofmann 2009; Whittle and Bickle 2013). The concept of the network has been proposed as one such method. Like the wider field of archaeology, various conceptions of 'the network' have been incorporated into studies of the LBK. Whilst the extent and intensity of long distance exchange networks has been explored through the detailed analyses of raw materials (Lech 1989; Müller *et al.* 1996; Zimmermann 1995; Gronenborn 1997; Mateiciucová 2004, 2010), Claßen's recent contribution makes use of formal social network techniques to investigate changing intra-regional social relations (Claßen 2006; 2009a; 2009b; discussed in more detail in 7.2.1). Ingold's taskscape concept has also been used as a means of

exploring the nature of human sociality in and around the longhouse (Bickle 2008; 2009). Studies such as these demonstrate the successful application of network-based approaches to understanding social relations within the LBK. In fact, Bickle and Hofmann (2009: 3) go so far as to state "the challenge is to re-think the LBK as a fusion of intersecting networks, each open-ended and allowing for a degree of flexibility, but also integrating diverse actors into a shared frame of reference".

The research presented within the following chapters revisits several themes within contemporary LBK research through the broad lens of the meshwork. In doing so, I hope to challenge many of the influential models and narratives described above. However, the goal is not to offer yet another dominant model of LBK practice but demonstrate how a more fluid and performative appreciation of social relations within the LBK can help us to better understand the uniformity and diversity we see throughout the LBK. In order to achieve this, I focus on the well published and influential sites located in the Lower Rhine basin; a regional overview of this area is provided in the following chapter.

4   The LBK in the Lower Rhine basin

The majority of sites discussed in the following case studies are drawn from the Lower Rhine basin. The following chapter provides a brief overview of this region. As such, it is intended to give the basic background in which to place later discussions.

4.1   The Lower Rhine basin

The Lower Rhine basin is defined broadly as the area encompassing the lower courses of the Rhine, Meuse and Scheldt rivers amongst others (Figure 4-1). The Eifel mountain range lying south of the loess belt and the Rhine river to the east mark the southern and eastern boundaries of this broadly-defined geographical area.
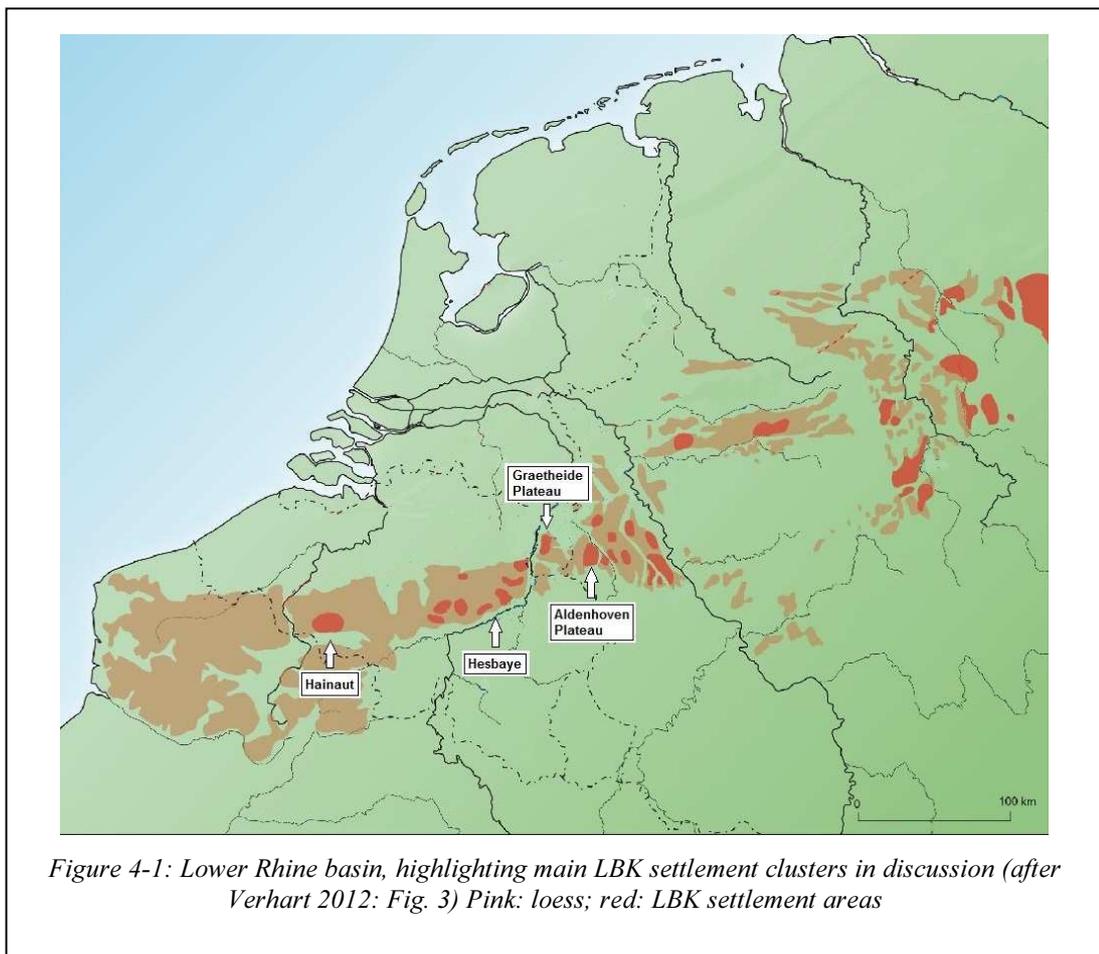
Figure 4-1: Lower Rhine basin, highlighting main LBK settlement clusters in discussion (after Verhart 2012: Fig. 3) Pink: loess; red: LBK settlement areas

During the Early Neolithic, LBK settlement was limited largely to the loess zone running along the southern border of the Lower Rhine basin. The topography of these loess-covered uplands consists of undulating plains interlaced with dry valleys and erosion channels. Broken patches of wind-blown loess deposits (up to 15 m thick) overlay a diverse range of Pleistocene and pre-Pleistocene strata (Bakels 1978; Lüning 1982a: 6; Golitko 2015: 52–4). This loess has been subjected to severe weathering and decalcification, resulting in the present surface soil of degraded brown earth (Lüning 1982a: 6, 8; van de Velde 2007b: 16). At the time of LBK settlement (the Atlantic period), the relatively mild climate would have been slightly warmer and possibly wetter than previous periods (Modderman 1988: 80). Despite this, most of these valleys would have been dry during the Early Neolithic (given the good drainage found in loess soils) (van Gijn and Louwe Kooijmans 2005: 205–6).

It is believed that the upland areas in the Lower Rhine basin were covered by dense forest, pocketed with small, natural occurring clearances (Kreuz 2008). Whilst lime forests were found at higher elevations, mixed deciduous forests dominated by oak carpeted the valleys (Bakels 1982; van Gijn and Louwe Kooijmans 2005: 205–6). Evidence of forest clearance and cereal cultivation during the LBK can be found in pollen diagrams from the region, although this deforestation was not extensive nor was it permanent (Bakels 1982; 1992; Kalis and Meuers-Balke 2003; 2005). Although relatively easy to traverse (Modderman 1988: 85), these dense forests would have been a poor environment for large game and therefore unattractive to hunter-gatherer groups (Bakels and Zeiler 2005).

4.2   The LBK in the Lower Rhine basin

Pockets of LBK settlement are found scattered within a narrow belt of loess extending through north-west Germany, the southern Netherlands and north-east Belgium. As with other regions, the local inhabitants favoured loess-covered plateaus near to water courses, although atypical locations—such as lower terraces, river banks and plateau areas away from water—were also exploited by the LBK, especially during later periods (Amkreutz 2010). The site of Erkelenz-*Kückhoven*, with its unusual wells, represents a rare example of a long-lived LBK settlement established away from a source of running water. Beyond this preferred water/loess environment, settlement was not distributed evenly, and LBK sites are often found clustered together in what have been referred to as 'settlement clusters' or 'settlement cells' (Kruk 1980; discussed in Chapter 6). Several of these dense patches of LBK occupation have been subject to extensive study (such as the Graetheide, Aldenhoven and Hesbaye plateaus; see Figure 4-1 and discussion below, 4.3) and, consequently, represent the main data-set of this thesis. Beyond these well-known examples, small-scale excavations and surface surveys have identified the presence of other LBK settlement clusters along the Meuse (Heeswater cluster), Upper Gete (Petite Gette cluster) and Ellebach rivers (Hambacher Forst) as well as on the Titzer Plateau between the Rur and Erft (Hasselweiler and Königshoven clusters).

The presence of ephemeral LBK sites in the Meuse valley suggests that these early farmers exploited the margins of the neighbouring coversands region (up to 25 km), presumably for hunting and herding (Verhart 2000; Louwe Kooijmans 2007). Beyond settlement clearances, very little fodder would have been available in the dense forests of the loess zone, and these early groups would have needed to pasture their cattle in the valleys and woods outside this area (Bakels and Zeiler 2005). Further north (some
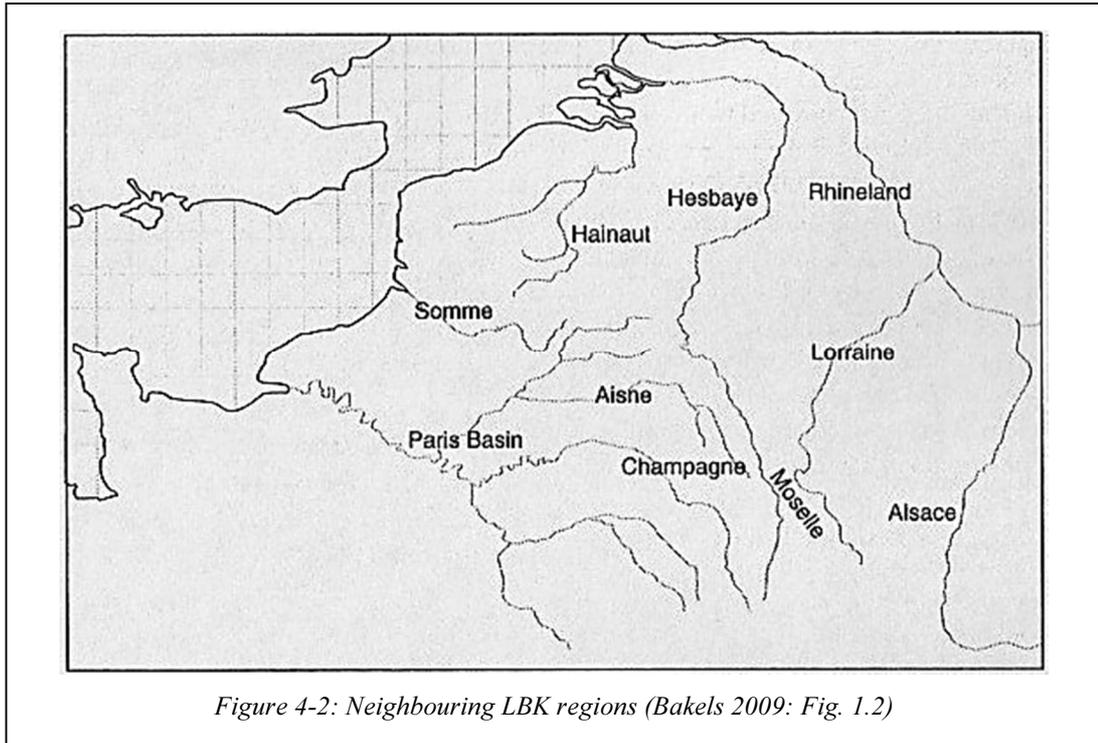
Figure 4-2: Neighbouring LBK regions (Bakels 2009: Fig. 1.2)

50–75 km beyond the loess), hunter-gatherer groups continued to exploit the diverse riverine environments along the Rhine-Meuse rivers; there is little evidence of LBK activity in these northern regions (Louwe Kooijmans 1993; 2003; 2007).

To the south, the nearest LBK neighbours to the Lower Rhine basin can be found along the Rhineland corridor; in the Mosselle, Aisne and Lorraine valleys; and in the Paris basin. Scattered settlements have also been found east of the Rhine in Westphalia (Figure 4-2).

4.3   Chronology

Absolute dates remain scarce within this part of the LBK due to the decalcifying effects of the loess soils. Very little organic material (including skeletal remains) survives for radiocarbon dating, and, where samples are available, precise dating is hampered by 'wiggles' in the calibration curve associated with this occupation (5210–5060 BC; van de Velde 2007c: 293). Past attempts to date the beginning and end of

LBK occupation in the region has tended to depend on less reliable radiocarbon dates from charcoal samples (e.g. Modderman 1970: 200; Dohrn-Ihmig 1974; Breunig 1985; Stehli 1989b). Based on these data (in combination with his Merzbach house generation sequence, see below), Stehli (1989b: 61) estimated that LBK settlement in the Merzbach valley (and, consequently, in the region as a whole) began around 5330 (± 50) cal. BC and continued until the end of the 50th century BC (4980 ± 50 cal. BC; see also Lüning 2005: 70). Focusing on short-life samples (such as charred grains or hazelnut shells), Lanting and van de Plicht (2002) argued for a later date of first settlement in the region (circa 5230 cal. BC) but with a similar end date (5000 cal. BC).

Due to the scarcity of robust radiocarbon dates, researchers working in the Lower Rhine basin have tended to rely on relative seriation. Based on his excavation work on the Graetheide Plateau, Modderman (1970) developed a chronological scheme based on indicative traits within pottery decoration, morphology and longhouse post

Figure 4-3: Development of decorative pottery sequence following Modderman's chronological framework (after Lüning 1988a: Fig. 33)

configuration (Figure 4-3). The LBK was divided into three broad chronological periods. The earliest (or *älteste*) phase was associated with the rapid expansion of the LBK along the Danube corridor into the Upper Rhineland and Neckar valleys. This
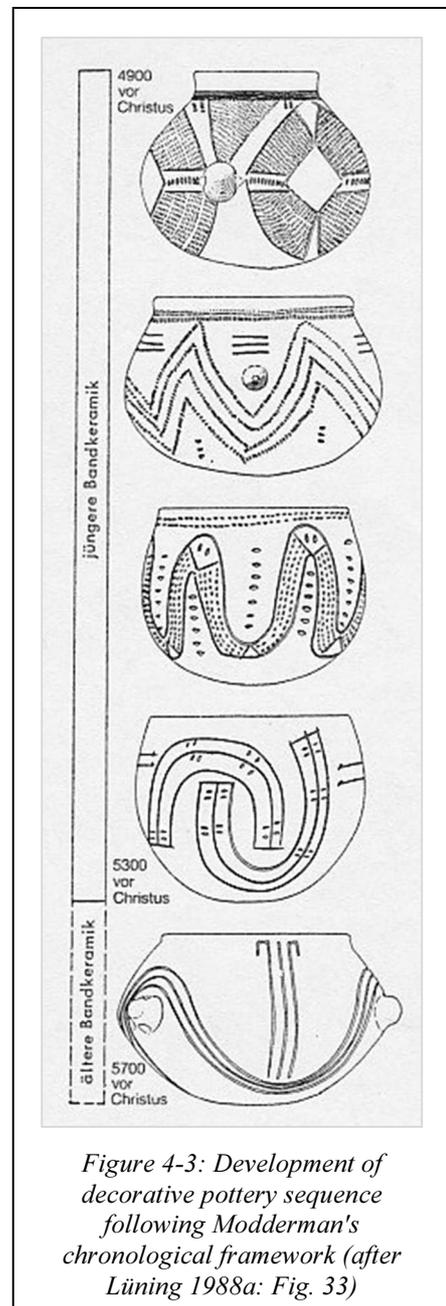
phase is not present in the Lower Rhine basin.[14] The LBK arrived here during the earlier (also, older or *ältere*) phase, which was known locally as the Flomborn period. Modderman subdivided this phase into three stages (Ib, Ic and Id) based on changes in the internal post configuration in longhouses and the appearance of rim decorations and new decorative motifs on pottery. The later (also, younger or *jünger*) LBK was characterised by the increasing elaboration of decoration found within the pottery's linear bands. Again, Modderman partitioned the later LBK into four subdivisions: IIa, IIb, IIc and IId. The final phase, IId, is often referred to as the 'latest' or 'final' LBK. Although developed with data from the Graetheide sites, subsequent comparisons indicate that Modderman's chronology is equally valid in the neighbouring Rhineland (or Rhenish) and Belgian settlements (Stehli 1994; Jadin 2003).

Figure 4-4: Comparison of Stehli's and Modderman's chronologies to other regional chronologies (Stehli 1994: Fig. 36)

As part of large-scale excavations in the middle Merzbach during the 1970s, Stehli developed a series of assumptions and methodologies (based in part on the *Hofplatz*

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[14] Although the earliest LBK is not represented within the Lower Rhine Basin, Modderman accounted for it (Phase Ia) within his chronological framework.

model, see 3.2.1) which allowed him to advance detailed local chronologies at the fine temporal scale of 25–30 years (Stehli 1982; 1994; Boelicke *et al.* 1988b). These so-called 'house generations', based on the repeated abandonment and construction of LBK longhouses, proved an invaluable tool for narrating settlement development and exploring the nature of contemporary and diachronic settlement. With the help of correspondence analysis and some inductive reasoning, features such as house plans,

pits and ditch systems could be attributed to specific House Generations (HG, ranging from I to XV) within Stehli's initial 15-phase temporal framework (Figure 4-4)[15]. This approach to dating has been widely used within the lower Rhineland (see Appendix A for further discussion) [16].

The discovery of two timber-lined wells at Erkelenz-
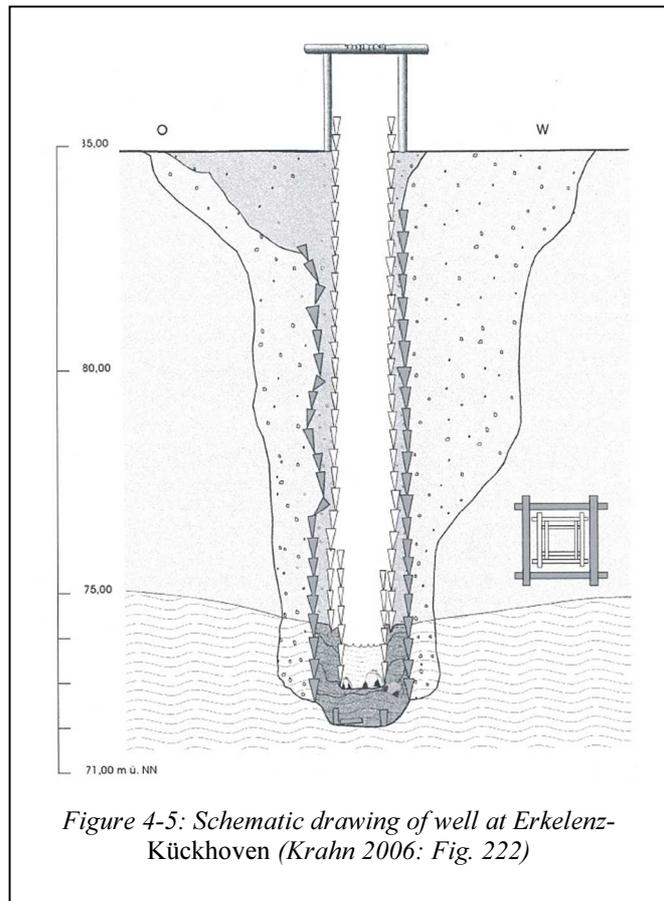
Figure 4-5: Schematic drawing of well at Erkelenz-Kückhoven (Krahn 2006: Fig. 222)

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[15] Stehli's early analysis was unable to differentiate pottery styles—and thus, dates—for the early Flomborn period (Stehli 1994). Following examples from other regions of the LBK (Kneipp 1998; Strien 2000), Münch (2009) was able to further segment pottery motifs from the Flomborn period and thus provide a more robust chronology for this early period. When compared with Stehli's initial model, Münch's chronology is significantly different at the level of the individual longhouse, with only a handful of houses being allocated to the same house generation in both models. Overall, however, these differences do not significantly alter the general pattern of settlement.

[16] Van de Velde (2007c) has developed an alternative multivariate approach using Principle Component Analysis. Similar to Stehli's approach, associations between various traits are condensed into new mathematical 'components'; however, van de Velde's method allows the analyst to select the principle component which most closely mimics the large-scale chronological shifts identified in Modderman's early sequence as the relative chronological index. This distinction, however, appears to have limited significance as both approaches provide similar results (de Grooth and van de Velde 2005: 223).

Kückhoven (Figure 4-5) have provided a rare opportunity to collect two dendrochronological dates for the region: 5090 BC and 5057 ± 5 BC (Weiner 1998). Artefacts in the debris layers associated with the construction of these wells indicate that they are contemporary with House Generation X and XI, thus anchoring Stehli's chronological framework. Assuming that Stehli's house generations are an equal length (23.3 years), the absolute and relative dates for these features differ by only 40 years, providing some confidence in Stehli's chronology (Krahn 2006: 254).

Until recently, there have been no attempts to apply Bayesian modelling to the chronological data from the Lower Rhine basin. Within his synthesis of the Hesbayen LBK, Golitko (2015: 62–3) subjected the radiocarbon dates available for the Hesbaye cluster to Bayesian methods. His analysis suggested that this micro-region was settled around 5170/60 BC and abandoned some 200 years later, circa 5006/07 BC, casting doubts on the accuracy of these relative chronological schemes. Based on pottery decoration, the Hesbaye was settled during the later LBK (Modderman's IIb–IId stages; Golitko 2015: 57). However, Lüning (2005: 70) argues that the earlier Flomborn period extended from 5300 to 5125 cal. BC, overlapping with Golitko's proposed 'later LBK' occupation of the Hesbaye micro-region. Clearly, more collaborative work is needed between the different sub-regions in the Lower Rhine basin to clarify these dating issues and develop more robust chronological frameworks for comparative discussion.

4.4   History of research

As noted above, the Lower Rhine basin encompasses parts of north-west Germany, the southern Netherlands and north-east Belgium. Whilst there has been a call for closer collaboration (for example, the region was the focal point for the First

Euroregional Archaeological Conference held in Sittard in 2014), LBK research within the region remains relatively segmented into distinct research traditions based on broadly national (or language) lines. The following section provides a brief synopsis of LBK research within each of these areas, highlighting the main LBK settlement areas so far uncovered within their borders.

4.4.1   The Dutch Limburg: the Graetheide Plateau and Heeswater clusters

The undulating hills of the Graetheide Plateau represent the traditional water-loess environment favoured by the LBK. Whilst surface scatters are found along the major tributaries of the Meuse (such as the Geleenbeek and Keutelbeek), research has tended to focus on the settlements found on the middle terraces of the Meuse.

The first large-scale investigations into the LBK of this region were conducted by Waterbolk and Modderman in the 1950s and 1960s. Inspired by Buttler's work at Köln-Lindenthal, these researchers excavated the LBK sites of Sittard and Geleen-*De Kluis* on the Graetheide Plateau, focusing specifically on the issue of settlement continuity and the need for clearly established chronologies (Modderman 1958/59; Waterbolk 1958/59). Modderman later returned to this area (funded by the National Service for Archaeological Heritage (ROB) and Leiden University) and conducted extensive excavations at the Graetheide settlements of Stein and Elsloo (with its adjacent LBK cemetery; Modderman 1970). Subsequent analyses of these sites focused on the nature of settlement in this region (Modderman 1970; Bakels 1978; 1982), social organisation (van de Velde 1979a; 1979b; 1990; 1992; 1993; 1997) and regional seriations in pottery and longhouse form (discussed in more detail below, 4.3; Modderman 1970). During the early 1990s, new housing developments near the town of Geleen led to large-scale excavations (by the Institute of Prehistory of Leiden

Figure 4-6: Distribution of LBK sites in Dutch Limburg (after Amkreutz et al. *2012: Fig. 1).*
Northern cluster: Graetheide Plateau; Southern cluster: Heeswater
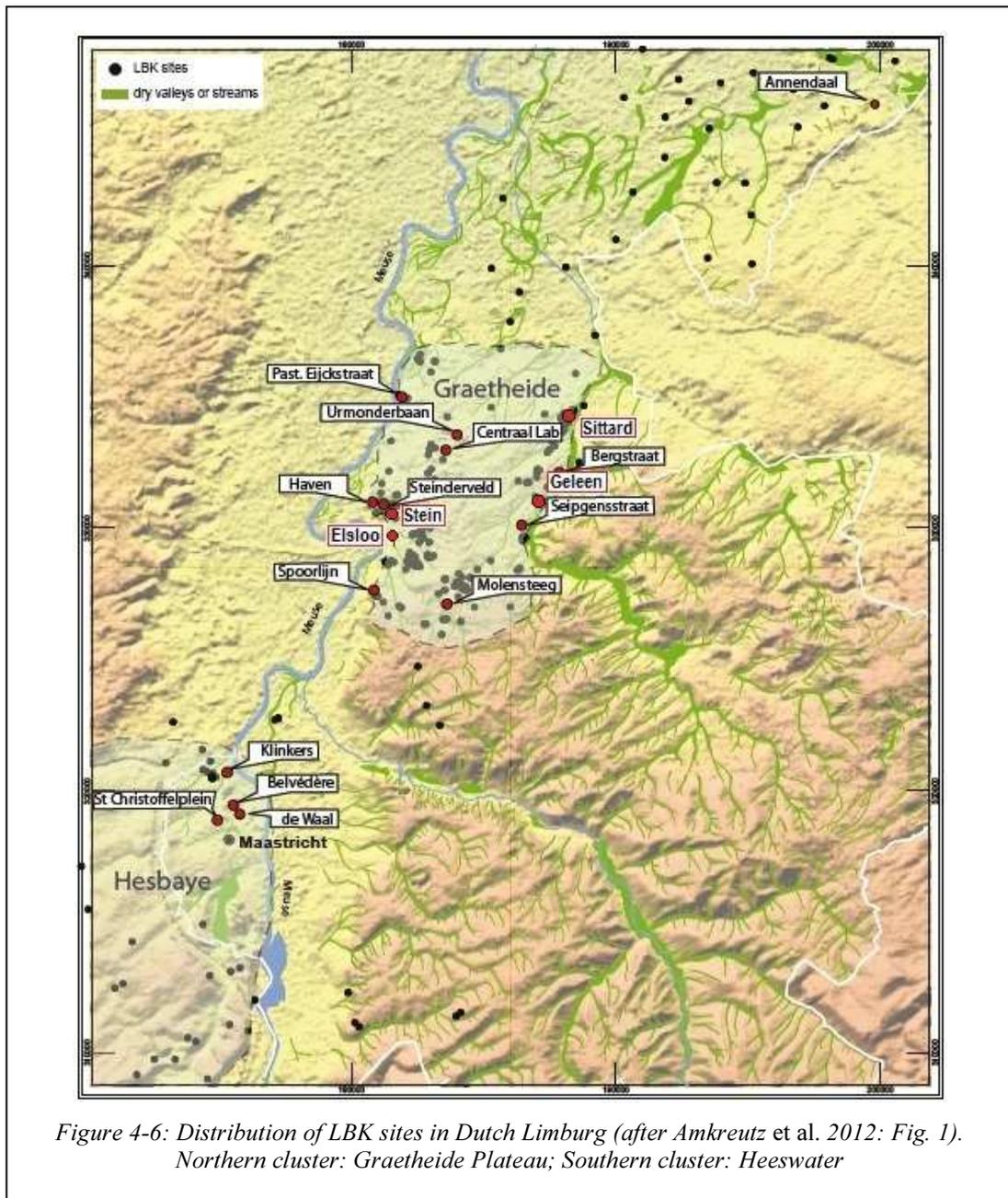
University) at Geleen-*Janskamperveld*. Like the sites mentioned above, these excavations (and their resulting post excavation analyses) have been fully published (van de Velde 2007b).

Based on their assemblages, the settlements of Elsloo, Sittard and Geleen-*de Kluis* were occupied throughout the local LBK sequences (early/Flomborn to late LBK; in contrast to earlier arguments for periodic abandonment and resettlement, e.g. Buttler

and Haberey 1936: 164; Sangmeister 1951: 103; Soudský 1966), with Geleen-*de Kluis* possibly representing the earliest occupation in the region. Use of the cemetery at Elsloo, in contrast, was limited to the late LBK. Geleen-*Janskamperveld* was synchronous with these other sites during its early phases, but appears to have been abandoned during the middle Flomborn (after HG IV according to Stehli's 15-phase Merzbach sequence, 4.3). Van de Velde (2007a: 241) suggests that the local population may have temporarily relocated to the less extensively studied LBK site of Geleen-*Haesselderveld* found lower on the valley slopes, before briefly reoccupying Geleen-*Janskamperveld* during the late LBK.

These well-known sites do not encompass the entirety of LBK settlement in the loess zone near the Netherlands/Belgium border (Figure 4-6). Surface finds and smaller rescue excavations have identified pockets of settlements throughout much of the Graetheide Plateau. In addition, a second settlement cluster, Heeswater, can be found near Maastricht, some 20 km south of the Graetheide sites (van Wijk and Meurkens 2008), and the first confirmed example of a LBK enclosure within the Netherlands has been found at the Graetheide site of Beek (van de Velde *et al.* 2009). However, the majority of these lesser known sites were only subjected to small-scale investigations and were not well published. The recent Odyssee project[17] attempted to address this imbalance. Representing a joint venture by the commercial firm Archol, the National Museum of Antiquities (RMO) and the Faculty of Archaeology of Leiden University (UL), fourteen unpublished LBK sites along both sides of the Meuse, which were excavated in the past, were subject to specialist analysis and incorporated into the wider LBK literature (van Wijk and Meurkens 2008; Amkreutz *et al*. 2012). The

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[17] 'The LBK revisited: 'forgotten' research into the Bandkeramik occupation of the Low Countries'

results of this project highlighted the diverse nature of LBK occupation within the Limburg region and, thus, the importance of incorporating older excavations and lesser sites within such studies.

Beyond the publication of specific sites, Dutch researchers have a strong tradition in researching LBK settlement patterns (Modderman 1970; van de Velde 1979a; 1990; Bakels 1978; 1982; Amkreutz 2010; Amkreutz *et al.* 2012), subsistence practices (Bakels 1978; 1992; 2003; Bakels and Zeiler 2005), lithic industries (de Grooth 1987; 2003; 2007), and the gradual adoption of Neolithic traits amongst hunter-gatherer groups residing in the river districts and coversands north of the loess zone (Louwe Kooijmans 1993; 1998; 2007; Verhart 2000; 2008; Amkreutz *et al*. 2010).

4.4.2   The Rhineland: the Aldenhoven Plateau and surrounding clusters

Several distinct settlement clusters have been discovered and investigated within the Rhineland (or Rhenish) region of the Lower Rhine basin (Figure 4-7). Because of on-going mining activities, the south-eastern corner of the Aldenhoven Plateau remains one of the most intensely studied areas of LBK settlement within central Europe. The rolling hills of this plateau are separated by small stream valleys and dry water courses, and loess layers can be up to 6 m deep (Lüning 1982a: 6). Its river valleys are characteristically asymmetrical. One bank, generally the western or southern slope (depending on the orientation of the river), is relatively flat with a thick layer of loess. In contrast, the northern or eastern bank is much steeper and typically free of loess soils. LBK settlements have been located in both locations (Lüning 1982a: 10, 13). However, this topography has changed significantly since the Neolithic period. The plateau's system of rivers and valleys was subjected to erosional forces which

Figure 4-7: Settlement clusters within Lower Rhineland area (Krahn 2006: Fig 1)
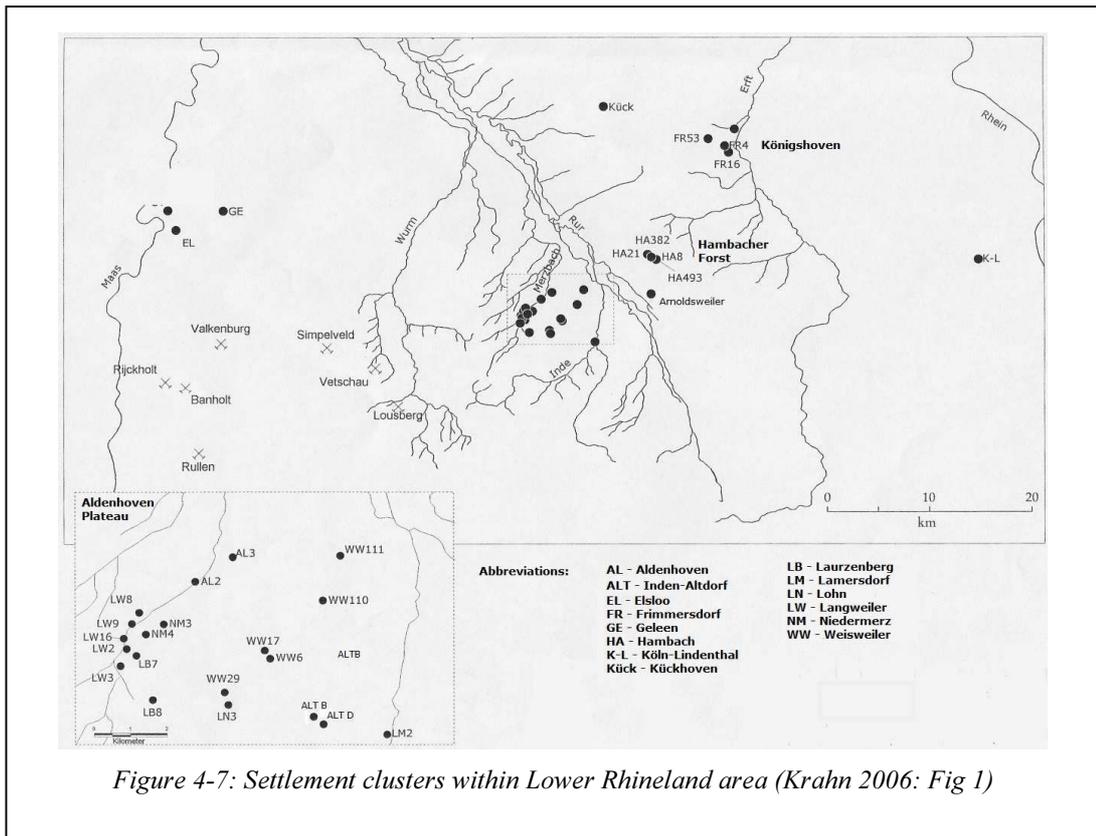
intensified following the deforestation of the landscape during the post-Roman period. As a result, the former Neolithic surface of the plateau has been heavily eroded, with the resulting colluvium collecting in water channels and other depressions. These processes have effectively levelled off (to some extent) the originally more pronounced morphology that existed during the period of LBK settlement (Lüning 1982a: 8–9).

Whilst ad hoc investigations and survey work have demonstrated that LBK settlement can be found scattered along the dry channels and tributaries of the Aldenhoven Plateau (Schwellnus 1983), the region around the Merzbach, Schlangengraben and Inde river valleys in its south-eastern corner has been a focus of detailed LBK research for more than forty years (Lüning 1982a; Krahn 2006; Clare *et al.* 2014). Based on the sites of this region, much has been written about LBK settlement structure (Boelicke

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et al. 1988b; Zimmermann 1995; 2002; Zimmermann *et al.* 2004; 2009), chronological development (Münch 2005; 2009; Stehli 1994), social organisation (Dohrn-Ihmig 1983; van de Velde 1992; Frirdich 1994; 2003; 2005; Krahn 2003; Claßen 2006; 2009a; 2009b), and, most recently, population density (Zimmermann *et al.* 2009).

Two particular settlement clusters within the Aldenhoven Plateau have been particularly well-studied. The first, found along the middle Merzbach valley, was uncovered during the "Settlement Archaeology of the Aldenhoven Plateau in the Rhineland" (SAP) project (1971–81) (Lüning 1982a). The main objective of this project was the complete excavation of areas along the Merzbach River which were scheduled for destruction from opencast mining. In total, six settlements, one cemetery and three enclosures were uncovered along a 1.3 km stretch of river (Figure 4-8). The valley's largest settlement, Langweiler 8, was found on the plateau and upper slopes of the western bank. Three smaller areas of settlement (Langweiler 9, Langweiler 16, and Langweiler 2) were
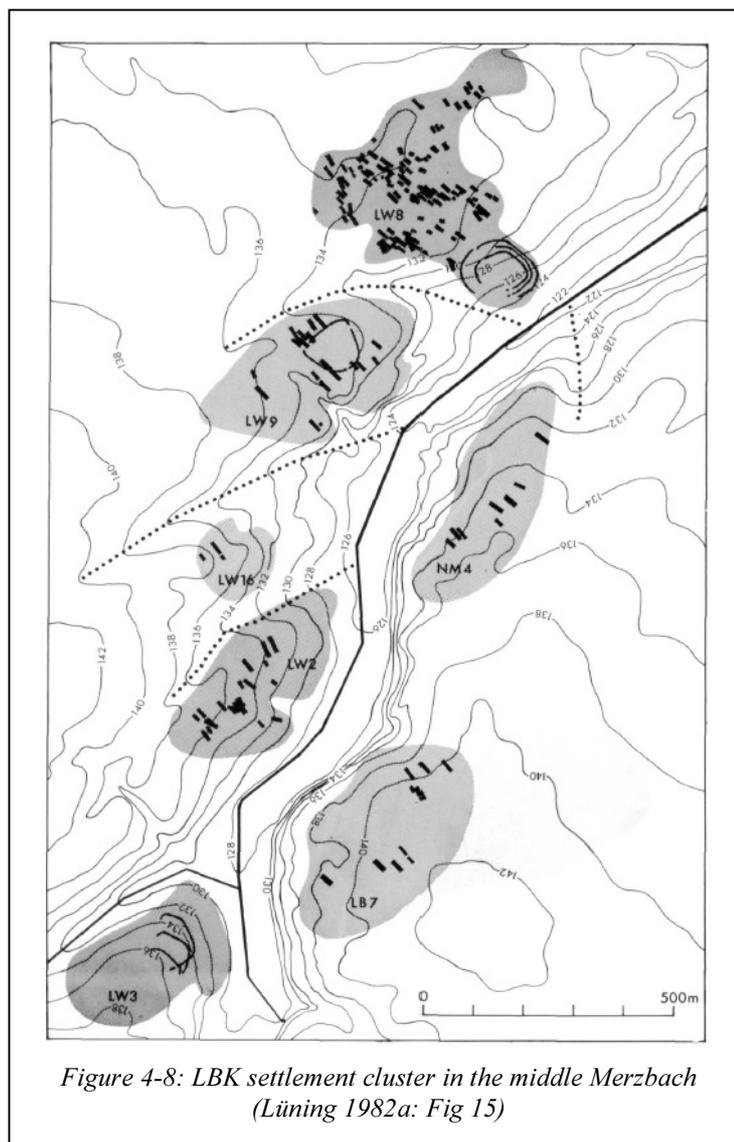
Figure 4-8: LBK settlement cluster in the middle Merzbach (Lüning 1982a: Fig 15)

located at short distances (up to 300m) on spurs of land formed by side channels. On the steeper eastern bank, two further settlement sites (Laurenzberg 7, Niedermerz 4) and a small cemetery (Niedermerz 3) were found. Later enclosures were uncovered on the lower slopes beneath the main settlement of Langweiler 8, within the former settlement area of Langweiler 9 and on an unoccupied spur south of Langweiler 2 (Langweiler 3). All of these sites are within 500 m of the river and have been thoroughly published (Boelicke *et al.* 1988a; Farruggia *et al.* 1973; Kuper *et al.* 1977; Lüning and Stehli 1994).

The Schlangengraben valley, the second well-studied settlement cluster, lies some 3 km south-east of the Merzbach (Figure 4-9). Unlike the middle Merzbach, the LBK
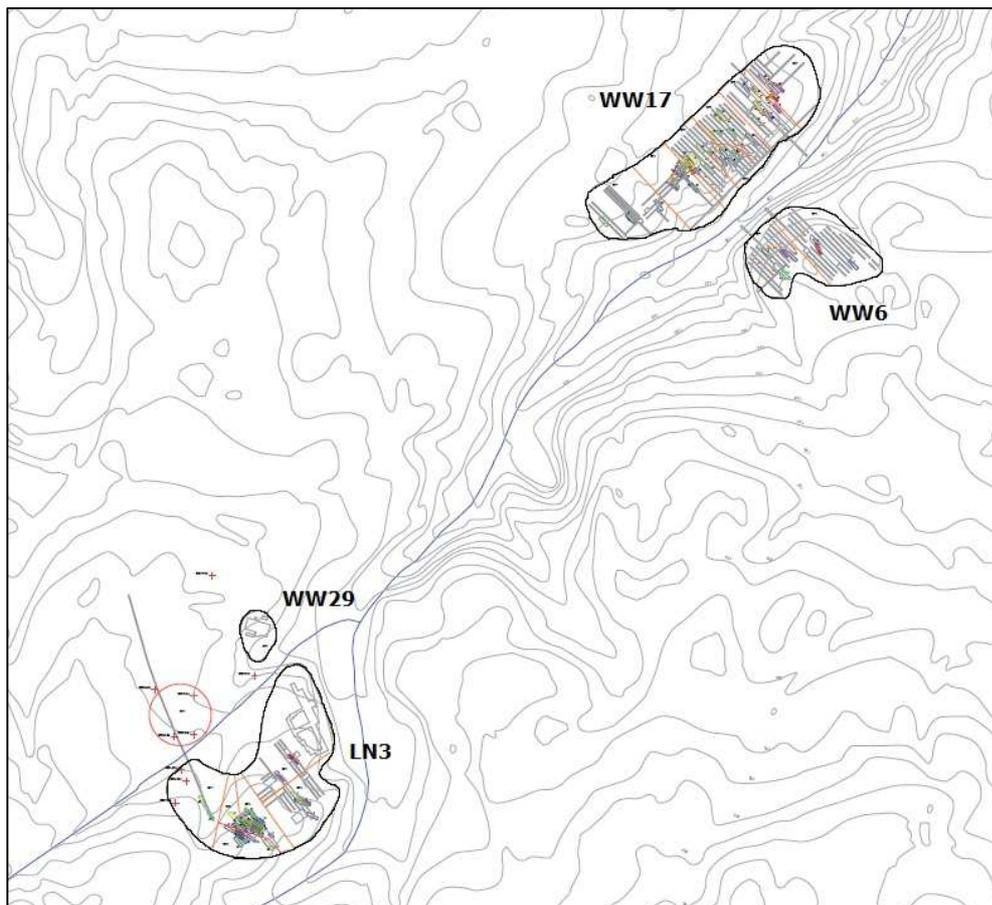
Figure 4-9: LBK settlement cluster in the middle Schlangengraben valley (after Krahn 2006: Insert 9)

settlements of the Schlangengraben were not the subject of a large-scale research programme. The presence of Neolithic activity in the area was established early on through chance discoveries during routine construction in the valley. Whilst large parts of this area were only studied through time- and resource-pressed rescue excavations, the data-set as a whole provides an overview of settlement in the region. Several small-scale excavations over the period of 1970 to 1984 identified the remains of three, possibly four, settlements within a 1.5 km stretch of the river. The two larger settlements (Weisweiler 17, Lohn 3) contained more than forty longhouse plans, whilst a smaller settlement (Weisweiler 6) can be found on the eastern bank across from Weisweiler 17. A fourth possible settlement was also found (through pits) across a water channel from Lohn 3 (Weisweiler 29), but no clear house plans were identified. Like the Merzbach, there was evidence of enclosures associated with the settlement at Weisweiler 17 and Lohn 3. Although these sites were less extensively excavated (due to lack of time), they too have been published (Krahn 2006) and offer an interesting comparison to the Merzbach settlement cell.

Outside of these clusters, other LBK settlement areas have been found along both the Merzbach, Schlangengraben and Inde rivers (e.g. Aldenhoven 3, Weisweiler 111, Lamersdorf 2) and in more atypical upland locations (e.g. Laurenzberg 8, Weisweiler 110). More recently, a third settlement cluster along the lower Inde river (approximately 3 km south east of the Schlangengraben) was subject to limited excavations by the University of Köln (2001–3) prior to open cast mining (Clare *et al.* 2014). The remains of two later LBK settlements (Altdorf B & Altdorf D) and a cemetery (Altdorf A) were uncovered. Both settlements in the Inde valley were relatively modest in size and were likely enclosed by a single ditch system at some point in their occupation.

In addition, several Rhenish areas beyond the Aldenhoven Plateau have been investigated in the past. Large-scaled excavations conducted at Erkelenz-*Kückhoven* during the 1990s uncovered a large LBK settlement (comparable to Langweiler 8 and Weisweiler 17) beyond of the typical loess/water environments chosen by these communities (Koschik 2004). Two deep timber-lined wells were uncovered at *Kückhoven*, which provided rare examples of dendrochronological dates for the LBK (5090 BC and 5057 ± 5 BC; Weiner 1998: 106). Several smaller LBK settlements clustered along the Ellebach near Hambach (i.e. the Hambacher Forst; Hambach 8 & Hambach 21) and on the Rur-Erft Plateau (Hasselweiler 8 and Hasselweiler 21) have been analysed and the results published (Cladders 1997; Hohmeyer 1997; Schwitalla 1997). Also, in a recent volume, Claßen (2006) re-assessed the trace evidence for LBK settlement near Königshoven and offered a synthesis of LBK occupation within this area. Most recently, the results of excavations at the LBK settlement and cemetery at Arnoldsweiler along the upper Ellebach have been published (Cziesla and Ibeling 2014).

Using Stehli's house generation model, we have a firmer sense of local chronologies within the settlement clusters of the Aldenhoven Plateau (Krahn 2006; Münch 2009; Stehli 1994). Settlement appears to have begun at Langweiler 8 in the middle Merzbach in HG I, followed shortly by the establishment of both Weisweiler 17 and Lohn 3 in the upper Schlangengraben valley in HG II[18]. These pioneer settlements began with only a handful of longhouses but steadily increased in size throughout the Flomborn period, reaching their peak during the middle–late LBK. This growth was

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[18] The limited nature of excavation at Weisweiler 17 resulted in a far smaller proportion of house plans being allocated to particular house generations (i.e. being dated) through their pottery assemblages (only 5 out of 44 confirmed longhouses). As a result, the resulting model of settlement development in the upper Schlangengraben remains somewhat speculative compared to those in the Merzbach valley (Krahn 2006: 214).

mirrored with the establishment of smaller, secondary settlements along (and across) the rivers at Langweiler 16, Laurenzberg 7, Langweiler 9, Langweiler 2 and Weisweiler 6. Unlike the larger pioneer settlements, growth was fairly limited at these settlements, and occupation may not have been unbroken. The late LBK on the Aldenhoven Plateau was marked by a steady decline in the number of longhouses in both the Merzbach and Schlangengraben valleys, although this period also saw the relatively late establishment of secondary settlements at Niedermerz 4 and Weisweiler 29 and the establishment of the Inde valley cluster. Several large-scale enclosures were constructed near to existing settlements (Langweiler 8, Lohn 3, Weisweiler 17), on the site of former settlements (Langweiler 9), and on areas not previously occupied (Langweiler 3) during the final phases of occupation (HG XIII–XV). LBK settlements were abandoned across the Aldenhoven Plateau by the end of HG XV. However, it is important to note that the chronologies established using Stehli's approach are based on a number of significant inferences which are discussed in more detail in Appendix A. Given these issues, it is best to think of the detailed chronologies developed using these techniques as 'best guesses' rather than hardened and well-established chronologies—or as Modderman puts it, "there are thus gradations in the correctness of the dating of a house-plan in a certain phase" (Modderman 1988: 98).

4.4.3 North-Eastern Belgium: the Hesbaye and Petit Gette clusters

The loess belt of north-eastern Belgium represents the third area of dense LBK settlement—and research—within the Lower Rhine basin. The Hesbaye plateau extends between the Upper Geer/Geer rivers to the north and the Meuse river to the south and represents the typical loess-covered hills favoured by the LBK (Golitko 2015: 52). Established during the later LBK, settlement was focused along the Upper Geer/Faux Geer and Yerne streams on the plateau north of the Meuse (Figure 4-10).

Lying within 3 km of each other, the Hesbaye settlements of Darion-*Colia*, Oleye-*al Zèpe* and Waremme-*Longchamps* represent the best studied sites in the region (Keeley and Cahen 1989). Excavated in the 1980s, these settlements date to the late LBK and, therefore, only overlap with the final phases of settlement within the Graetheide and Aldenhoven plateaus. The presence of deep V-shaped ditches around the sites, along
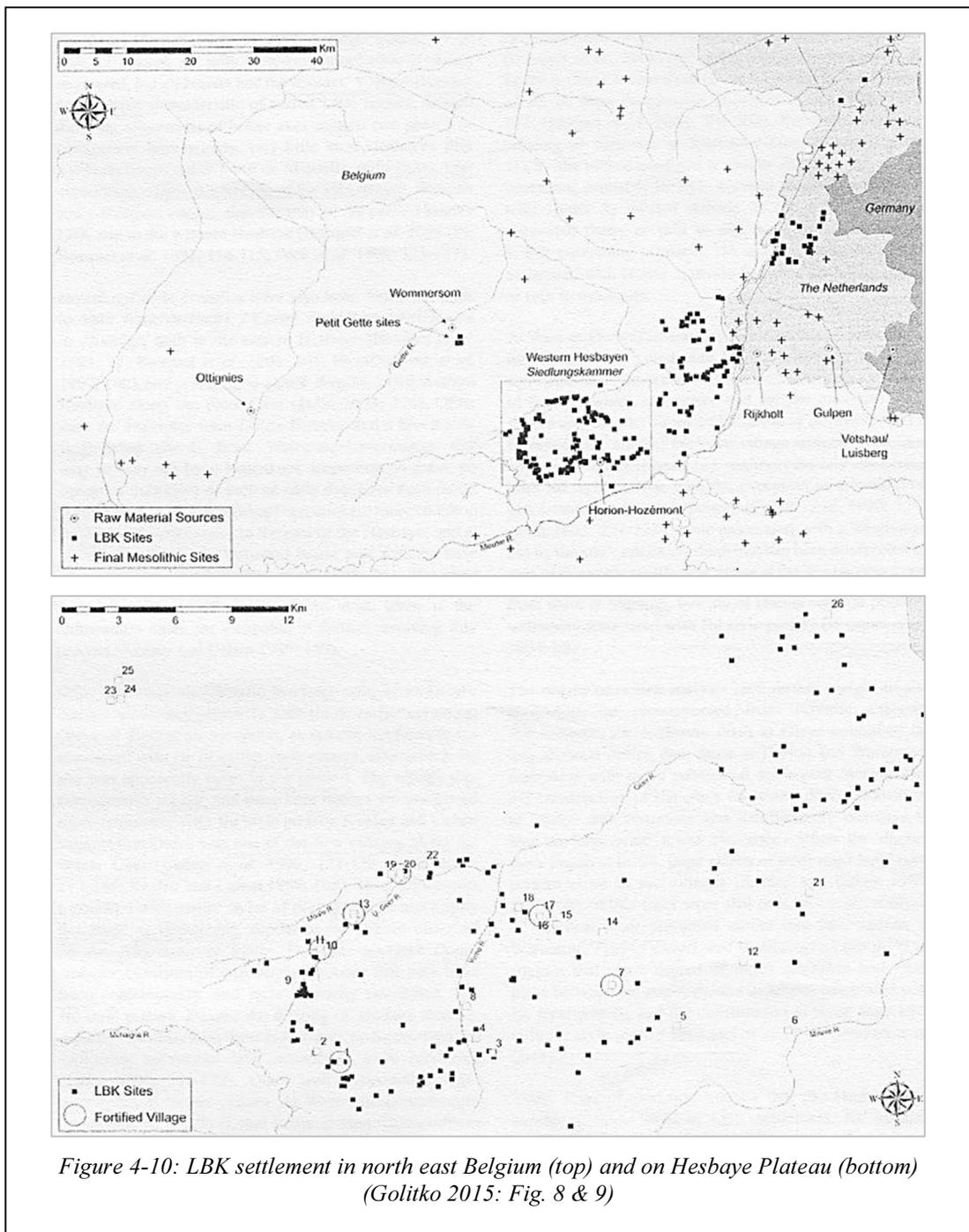
Figure 4-10: LBK settlement in north east Belgium (top) and on Hesbaye Plateau (bottom)
(Golitko 2015: Fig. 8 & 9)

with associated palisades and complicated gate structures (baffle gates), have led some to suggest that these villages were fortified, although the evidence for large-scale and sustained conflict in the area remains slim (Keeley and Cahen 1989; Golitko and Keeley 2007). Golitko (2015) recently published a book synthesising the data from the Hesbaye region, linking this evidence of aggression with the intensification of economic specialisms within the micro-region.

A small enclave of three sites (Wange-*Neerhespenveld*, Overhespen-*Sint-Annaveld*, and Wange-*Damekot*) has also been found along the river Gette, approximately 15–20 km north-west of the main Hesbaye cluster (Lodewijckx 1984; 2009; Lodewijckx and Bakels 2000). This area marks the end of the loess zone; the Hageland coversands start a few kilometres north of these sites. These sites contain many of the key characteristics of LBK communities such as rectangular longhouses, incised decoration on pear-shaped vessels, traditional tools on flint blades, adzes made from ground stone, and agri-pastoral husbandry based on emmer, einkorn wheat, cattle, sheep/goat and pig. However, their inhabitants also exploited local outcrops of Wommerson quartzite, a material favoured by the Late Mesolithic population (Gendel 1984; 1987). The tools produced from this materials varied in form and technique from that typically seen in the LBK toolkit. As such, Lodewijckx (1984; 2009) argues that these Petit Gette settlements may have been more culturally integrated with neighbouring indigenous groups. Unfortunately, it has not been possible to securely date the evidence found on these sites. Six radiocarbon dates based on charcoal and a single nut shell from the bottom of 'LBK' pits span a range from 5650–5050 cal. BC to 5220–4950 cal. BC, opening up the possibility that the Wommerson artefacts could represent an earlier occupation of the area by Late Mesolithic groups (Lodewijckx 2009: Table 1).

The Hesbaye and Petit Gette clusters do not represent the most westerly extent of LBK settlement within northern Belgium. A small concentration of later LBK settlements have been found more than 100 km to the west near Hainaut in the Scheldt basin (Upper Dendre cluster; Constantin *et al.* 1980; Constantin 1985; Crombé and Vanmontfort 2007; Louwe Kooijmans 2007). There is little evidence of LBK settlement in the loess areas between these two areas of settlement (Jadin 2003), although stray finds of LBK polished stone adzes and arrowheads can be found scattered across this barren zone (Jadin and Hauzeur 2003). The reason for this gap in LBK settlement remains unclear, although Vanmontfort (2008: 157) suggests that the intermediary territory may have been exploited by hunter-gatherer groups and was, therefore, unavailable for LBK exploitation.

4.5   Endings and beginnings

As noted, various estimates have been given regarding the length of LBK settlement within the Lower Rhine basin (e.g. Stehli 1989a: 60–1; Lanting and van de Plicht 2002; Lüning 2005: 67–1). Whilst different assumptions of average house generation length has resulted in variations within these date ranges, LBK settlement in the Lower Rhine basin likely began in the earlier (or *ältere*) LBK circa 5300 cal. BC. Settlement likely occurred synchronically in the Graetheide and Aldenhoven plateaus, possibly as a single colonisation movement from the middle Rhineland (Louwe Kooijmans 2007: 295; van de Velde 2007c: 215). Whilst individual settlements were established later or abandoned earlier, occupation of these two regions appears to be continuous throughout the LBK period. In contrast, the Hesbaye and Petit Gette sites represent a later expansion into the Belgian loess belt.

The end of the LBK in the Lower Rhine Basin appears to come fairly suddenly at the end of the 50th century cal. BC (possibly slightly earlier in Belgium). Whilst areas east of the Meuse river are abandoned altogether (Stehli 1994; Koschik 2004; Krahn 2006; Louwe Kooijmans 2007), farming groups associated with the Groupe de Blicquy[19] later occupied a handful of sites in the Hesbaye and Hainaut (Upper Dendre) regions.

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[19] Better known in the Paris basin, the Groupe de Blicquy can be distinguished from the LBK by its pottery decoration and technology, lithic technology, agricultural practices and cultural influences (Crombé and Vanmontfort 2007: 265).

5 Social relations at the household scale

The following case study focuses on social interaction within the settlements or villages of the LBK (the household scale). Based on past research on social relations, this scale is dominated by the social groups anchored to the substantial timber longhouses which define LBK settlement areas. As discussed in 3.2 above, our understanding of the household group, its status as an autonomous economic and political structure and its contribution to other collectives has radically changed over the past decades. In addition to the semi-independent farmsteads (or *Hofplätze*) proposed by Lüning (1982a), we now speak of wards or groups of related houses working together as cooperative groups (van de Velde 1990; Strien 2005; Petrasch 2012; Czerniak 2013). Sites such as Cuiry-lès-Chaudardes (Hachem 2000), Vaihingen (Strien 2005; Bogaard *et al.* 2011), and Erkelenz-*Kückhoven* (Nockemann 2008) demonstrate that these settlements may not have been as homogeneous as previously thought; individual neighbourhoods may have maintained different economic strategies and wider social networks. Rather than the repetitive construction of largely interchangeable households, the 'typical' LBK village appears to have been diverse, segmented but inter-connected.

Meshwork-thinking encourages us to see all of these influential social scales (household, house group, kin group, and others) as fluid assemblages of heterogeneous parts that emerge from the mutual interaction of those parts and, equally important, dissolve when this interaction ceases. The following chapter seeks to re-define households and household groups as dynamic meshworks linked in tension. Focusing on the Merzbach and Schlangengraben valleys on the Aldenhoven Plateau (4.4.2), it re-considers the degree of uniformity and diversity found within the layout of

individual farmsteads and attempts to identify and characterise co-operative house groups with the larger settlements. It argues that the nature of these meshworks can be uncovered in the diversity expressed here.

Much of this analysis will rely on the local chronologies established by Stehli (1994), Krahn (2006) and Münch (2009), which are based on the application of the *Hofplatz* model of house generations. By its very nature, this case study is challenging the assumptions that underlie these chronologies (obligatory abandonment and replacement of longhouses with each generation; only one house occupied at a time; household autonomy), calling into question the very data (house sequences) it uses. In the absence of alternative methods of dating, this circularity cannot be avoided altogether. This case study will limit its acceptance to houses that are dated (indirectly) through the pottery seriation of elongated clay borrow pits and other nearby (associated) pits (see Appendix A for further details).

5.1 The family farmstead or *Hofplatz*: a template for the LBK household

Within LBK studies, the LBK 'household' is almost exclusively associated with the longhouse. As discussed previously (3.2.1), the prominence and repeated structure of the longhouse encouraged early researchers to view the household—or, more properly, the inhabitants of the longhouse—as the primary unit of production and consumption within LBK society (Lüning 1982a; Bogucki 1988). Although counter-arguments have been made (Soudský 1962; Rück 2007; 2009; Czerniak 2013), this household is generally assumed to be a multi-generational nuclear family responsible for the day-to-day production of household needs and daily food. Initially, these households were viewed to be politically and economically independent from one another, although the existence of shared projects (such as the construction of longhouses, settlement ditches

and communal burial sites) indicated a degree of cooperation between them (Lüning 1982a; Bogucki 1988). In addition, the finds collected around these longhouses appeared to represent everyday domestic activities that did not differ qualitatively between individual houses (Boelicke 1982; 1988; van de Velde 1990).

A close inspection shows that this view of the LBK household is closely linked to the *Hofplatz* model. The notion of independent family farmsteads, or *Hofplätze*, developed as part of the Merzbach excavations in the 1970s (Lüning 1982a). According to this model, LBK settlements were composed of sequences of independent houses anchored to particular areas of land. These clusters of houses are treated as the domestic activity zone of a family-based household over multiple generations (Boelicke *et al.* 1988b). All longhouses are deemed to lie within the confines of a *Hofplatz*, resulting in the division of settlement areas into a patchwork mosaic of non-overlapping family farmsteads. Lacking any clear evidence of durable ranking amongst households, these family farmsteads were seen as largely homogenous. Variations in the form, density and duration of these plots represent the historical circumstances of individual families (Boelicke *et al.* 1988b: 925).

Thus, the framing principles of the *Hofplatz* model made basic assumptions about the nature of social relations within LBK settlements. The sequences of houses were seen as comparable units. The domestic activities of the family were largely limited to the farmstead area immediately surrounding the longhouse, whilst more distant pits reflected the communal sharing of activities between farmsteads. Whilst the presence of communal features suggests that these individual units cooperated at times, the requirement of minimal distances implied distinction and competition between groups. The variable length, size and density of features on these farmsteads suggest that each

sequence was subjected to its own historical circumstances as well as the wider social and economic differences indicated by a comparison of material culture (Boelicke *et al.* 1988b). The repeated construction of longhouses in particular areas also suggested that a sense of tenureship, rights of access or "estate" may have emerged (Lüning 1982a).

This model represented the dominant view of local LBK settlement for nearly thirty years. However, this view of settlement—and social organisation—has come under increasing scrutiny, especially over the past 10 years (Rück 2007; 2009; Petrasch 2012), leading to a greater interest in intra-settlement diversity, supra-household groups and, to a lesser extent, links between these groups and other settlements. New models of settlement based on house groups or rows suggest a greater degree of integration between individual households and encourage us to consider the existence, form and role of households within local communities (Rück 2007; 2009; Petrasch 2012; Czerniak 2013). For example, comparisons of faunal assemblages and house size/form demonstrate that the late LBK settlement of Cuiry-lès-Chaudardes in the Aisne valley was spatially segmented into neighbourhoods with different economic specialisms: hunting, cattle herding and sheep herding (Hachem 2000). The presence of economically different neighbourhoods was also suggested by variations in the types of materials and tools produced at Erkelenz-*Kückhoven* in the Lower Rhineland (Nockemann 2008). More recently, researchers working at Vaihingen in the Neckar valley (Upper Rhine) have illustrated the far-reaching social implications of such supra-households groups. Detailed analysis of the pottery and lithic assemblages at Vaihingen identified unique stylistic traditions within the settlement, which were each associated with different groups of houses (Strien 2005). Given their close proximity, Strien (2005: 195) proposed that the individual households found within these groups

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were closely related to one another and likely represented local 'clans' or 'lineages'. Furthermore, archaeo-botanical data indicated economic inequalities between the groups in regards to proximity and, therefore, quality of cultivation plots (Bogaard *et al.* 2011). These examples demonstrate that early assumptions about the homogeneity of households within LBK settlements may not be a true reflection of LBK society. However, the fierce debates over the validity of different models of settlement at recent LBK conferences (Wolfram and Stäuble 2012) highlight the continued perceived importance of defining culturally-determined modes of settlement within this field.

The recognition of household groups linked to diverse ways of living marks an interesting innovation within LBK studies. However, the relationships between these groups and the households and individuals living and interacting within them remain vague. The household groups witnessed within Vaihingen, Cuiry-lès-Chaudardes and other sites may represent collectives of related households, responding to the underlying social currents of the larger community. Presented as such, these larger scaled social groupings leave little room for the inter-generational family farmsteads of the *Hofplatz* model. Reconfigured as dynamic meshworks, we can begin to unpick how these different scales of social identity may have interacted—and conflicted— with one another.

5.2   The family farmstead: spatial relations and different ways of relating

The *Hofplatz*, or family farmstead, was interpreted as the economic activity zone of the domestic longhouse and included the house, associated pits, facilities such as ovens and possibly small garden plots (Kuper *et al.* 1977; Lüning 1982a: 25; Stehli 1982: 274). Each settlement consisted of multiple farmsteads, which were separated by

locally determined minimum distances. Periodically, the longhouse located on the farmstead would be replaced by another building built near to its predecessor, presumably to make use of existing facilities (Boelicke *et al.* 1988b: 900). According to Boelicke *et al.* (1988b: 924), the boundaries of these domestic zones were not fixed; the separation of clusters seen in the smaller settlements reflected the need for distance between contemporary houses rather than the expression of rigidly maintained boundaries.[20]

The settlements of the Merzbach and Schlangengraben valleys were divided into discrete family farmsteads, or *Hofplätze*, in order to develop local chronologies and illustrate the settlement history of these areas (Boelicke *et al.* 1988b; Stehli 1994; Krahn 2006). In some cases, such as the examples used to define this model (A.1), distinct longhouse clusters were recognised in the presence of house-free zones or gaps. In other cases, researchers interpreted more loosely configured groups of longhouses as a collective farmstead in order to satisfy their need for closed sequences of multi-phase house construction. Thus, the determination of farmstead boundaries was dependent, in part, on the iterative process of developing local chronological sequences based on house generations and the *Hofplatz* model.

Surprisingly, little interest was paid to the spatial organisation of subsequent generations of longhouses within each farmstead. Previous work on house typology and depositional practices demonstrates the routinised use of space within and around the longhouse and suggests an implicit link between spatial relations and deeper cosmological or mythological meanings (Boelicke 1982; Lüning 1982a; Modderman

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[20] Boelicke *et al.*'s family farmsteads do not encroach on one another (Boelicke *et al.* 1988b). This may be attributed to their need to define spatially-restricted house sequences rather than a conscious desire to impose fixed and/or respected boundaries on the inhabitants of Langweiler 8.

1988; Last 1998). Thus, such spatial relations likely played an important role in daily life. The following section explores the spatial associations shared between clustered longhouses and suggests that these patterns capture different ways of 'relating' within the 'family' farmstead.

5.2.1 Importance of spatial relations

The routinised use of space in and around LBK longhouses indicates that spatial relations may have held a deeper meaning beyond unconscious shared practices. Like other LBK settlements, the longhouses in the Merzbach and Schlangengraben valleys shared a general NW–SE orientation, regardless of the local topography and terrain. This shared orientation remains a typical, if unexplained, characteristic of LBK settlement. Whilst functional (e.g. prevailing winds, rainwater run-off) and ideological (e.g. orientation towards a mythical homeland) arguments have been presented as explanation, the specific reason(s) for this phenomenon remains subject to debate (Bradley 2001: 176; Mattheusser 1991: 35–7; Rück 2007: 133–5; 2009). These patterns do not appear to be influenced greatly by local conditions or focal points. For example, the general form of longhouse does not vary on the right and left banks of the river. Presuming that the main entrance to the structure lay in the south-eastern gable end (von Brandt 1988: 274; Coudart 1998), houses on the left bank would have opened up towards the river, whilst those on the left bank would have been oriented away from the river and towards the uplands.

In addition, several studies have highlighted repeated patterns in structured activities around the longhouse itself. Artefact distribution at Langweiler 2, Langweiler 9 and Langweiler 8 suggested that the area around the house was divided into different "activity zones" where specific activities are more likely to occur (Figure 5-1;

Boelicke 1982; 1988). Flint tools and artefacts were clustered in pits around the northern half of the house, whilst pottery was more frequent in the southern half of the house. Other spatial tendencies were found in other find classes—such as plant remains (Castelletti 1988; Knörzer 1988)—providing further evidence of generalised shared patterns of behaviour. Last's (1998) analysis of depositional practices in the

Figure 5-1: Different activity zones identified around the longhouse (or within the Hofplatz) in the Merzbach valley (Lüning 1988a: Fig. 20)
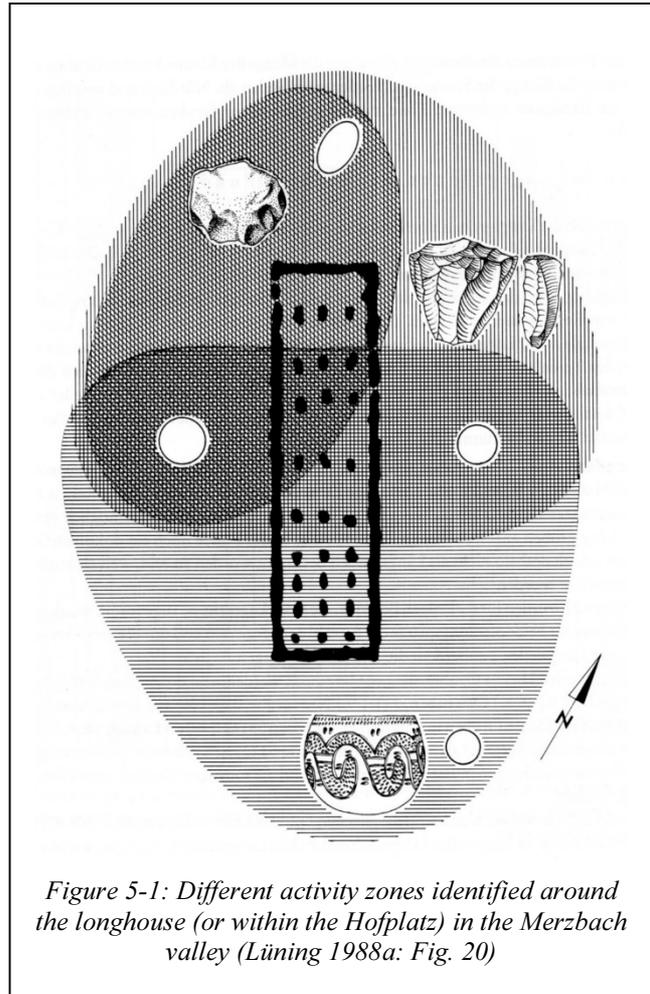
eastern sites of Miskovice and Bylany suggested that the debris found in pits on the eastern side of houses was associated with external activities occurring towards the rear of the house whilst debris from inside the house was swept into pits located on the western side, near the front of the house. In both cases, these patterns reflected tendencies rather than hard and fast rules. However, they do suggest that the *habitus* of LBK social practices defined certain areas for certain activities.

Investigating the *älteste* settlement of Schwanfeld, Lüning (2005) proposed that the tightly bunched rows of houses may represent the development of family farmsteads over time (in contrast to Rück's contemporary settlement rows—see below for further discussion). As each subsequent generation of house was built, the row of longhouses was extended. The form of these settlement rows varied and included both earlier

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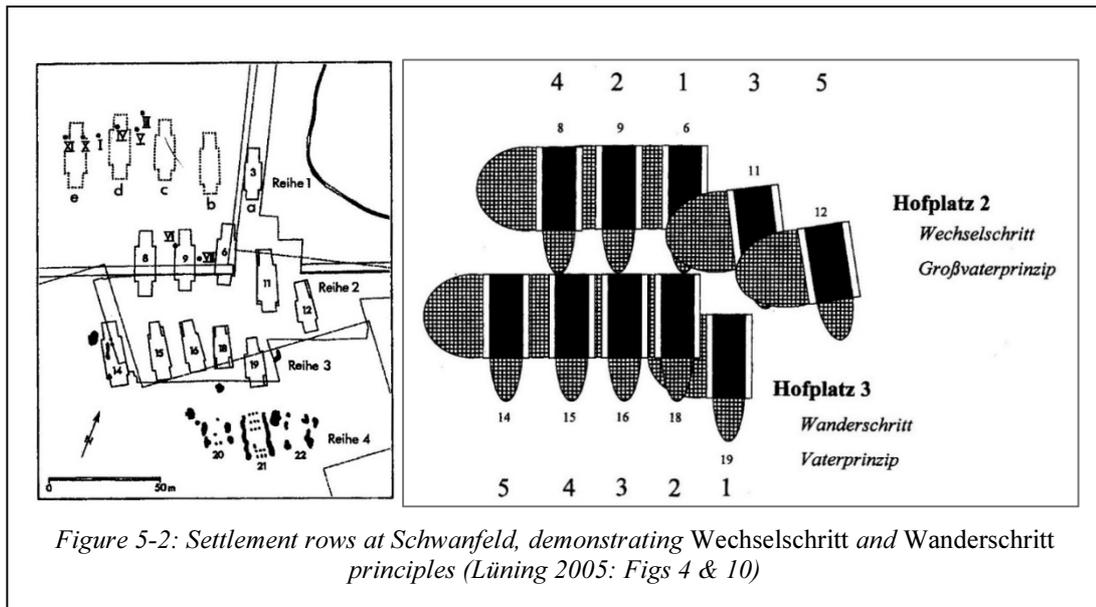
Figure 5-2: Settlement rows at Schwanfeld, demonstrating Wechselschritt *and* Wanderschritt *principles (Lüning 2005: Figs 4 & 10)*

parallel rows (gable ends aligned, from the *älteste* LBK) and later longitudinal rows (placed end to end, from the *ältere* LBK). In addition, new houses could be built immediately next to their predecessor (*Wanderschritt* or 'father' principle) or next to their predecessor-but-one (*Wechselschritt* or 'grandfather' principle) (Figure 5-2). According to Lüning (2005: 67), these variations reflected distinct social traditions practised by different kin groups (be that family, lineage or clan) and referenced areas around the longhouse which possessed different symbolic meanings or genealogical structures within the group. These practices may have served as a means of reifying and communicating family connections to the wider social world (Lüning 2005: 60). Thus, the unity and cohesion of the household could be explored through the visual and experiential cues manifested in the farmstead or *Hofplatz* as a whole. However, we can also think of house construction as a communal project, involving persons beyond the wider household. Petrasch (2012) sees such activities as an opportunity to bring together kin members from other settlements as well as the cooperative labour of neighbours within one's settlement. The decision about where to build a new house also may have reflected the influence of these heterogeneous work groups.

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Collectively, these examples highlight the importance of spatial relations in the built environment of the LBK, especially in regards to the location of succeeding generations of longhouses. It is not unreasonable to assume that similar considerations may have played a role in the layout and organisation of households on the Aldenhoven Plateau.

Table 5-1: Spatial layout of family farmsteads. Secondary sites in Merzbach and Schlangengraben valleys. Houses: number of longhouses located in farmstead; In brackets: number ceramically dated; Distance: distance (in metres) between the centre point of longhouses within the farmstead; Overlap: number of times house plans within the farmstead overlap

Site	Farmstead	Houses	Configuration	Distance (max)	Overlap
LW2	Farmstead 1	2 (2)	Parallel	14	0
LW2	Farmstead 2	6 (6)	Loose	110	1
LW2	Farmstead 3	6 (2)	Parallel	35	2
LW2	Farmstead 4	5 (5)	Semi-circular	40	1
LW9	Farmstead 1	2 (2)	Loose	50	0
LW9	Farmstead 2	5 (4)	Loose	160	0
LW9	Farmstead 3	6 (6)	Parallel	65	0
LW9	Farmstead 4	3 (3)	Parallel	55	0
LW16	Farmstead 1	3 (3)	Parallel	45	0
LB7	Farmstead 1	1 (1)	n/a	n/a	n/a
LB7	Farmstead 2a	4 (3)	Semi-circular	75	0
LB7	Farmstead 2b	4 (4)	Semi-circular	85	0
NM4	Farmstead 1	4 (4)	Parallel / Loose	100	0
NM4	Farmstead 2	4 (1)	Parallel / Loose	150	0
LB8	Farmstead 1/2	4 (2)	Indeterminate	60	0
WW6	Farmstead 1	4 (-)	Indeterminate	45	0
WW6	Farmstead 2	3 (-)	Indeterminate	65	1

5.2.2 Spatial relationships within clustered longhouses

Given their lower settlement density and expansive excavation, it is easier to identify the tightly-clustered longhouses which have been defined as family farmsteads in the smaller, secondary sites in the Merzbach and Schlangengraben valleys. As conceived by the *Hofplatz* model, these farmsteads emerged from similar social processes based on the generational abandonment and replacement of the family longhouse. The general lack of overlap on different house plans suggests that the remains of abandoned houses were visible to and respected by later generations. Overall, three general patterns can be discerned from the collective layout of houses on these family farmsteads: tightly-clustered rows of parallel houses, semi-circular house 'compounds' and looser agglomerations of longhouses (Table 5-1).

5.2.2.1 Tightly-clustered parallel rows

Of the 13 multi-house farmsteads with clear spatial patterns, over half (seven) are composed of tightly-clustered house rows. The number of houses in these rows ranges from two (Langweiler 2) to six (Langweiler 2 and Langweiler 9).

Representing one of the largest examples, Farmstead 3 at Langweiler 9 typifies the idealised model of the household over time (Figure 5-3). This discrete cluster of six longhouses can be found along the edge of a dry channel running to the north-west of Langweiler 9. The houses lie side by side, forming a dense row of structures that do not overlap. Pottery dating indicates that this area was settled during the Flomborn period, and occupation may have continued until the late LBK (Phase IV–XII) (Stehli 1994; Münch 2009). The distribution of pits around these houses does not highlight a focus for shared activities or the location of any specialist work areas. In addition,

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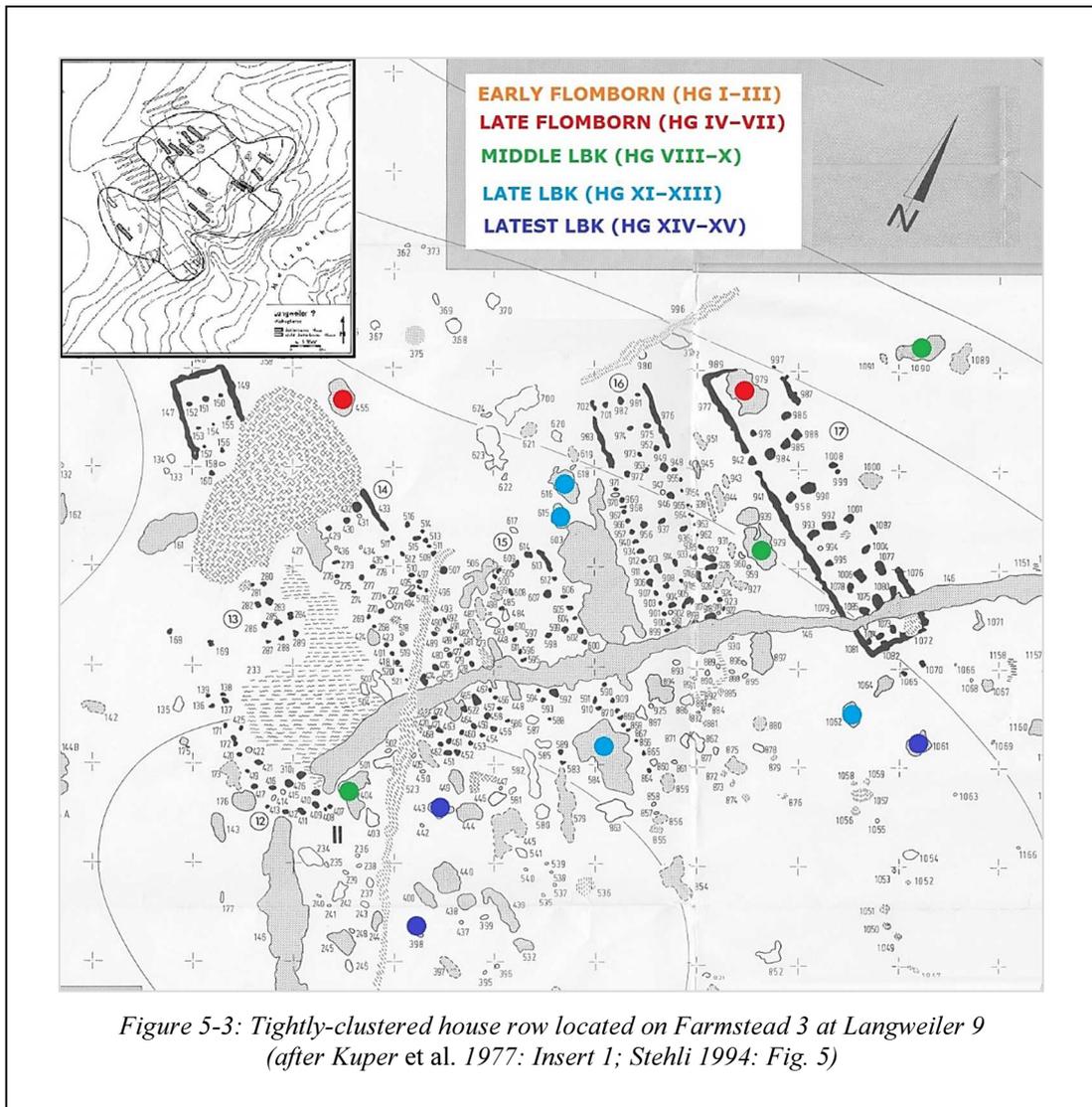
*Figure 5-3: Tightly-clustered house row located on Farmstead 3 at Langweiler 9
(after Kuper et al. 1977: Insert 1; Stehli 1994: Fig. 5)*

there are no clearly defined shifts of inhabited space or construction trends[21]. Based

on these data, it is not possible to discern the repeated use of certain spaces or areas

when constructing subsequent generations of longhouse as seen by Lüning (2005) at

Schwanfeld.

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[21] Stehli (1994) proposed a sequence of houses (13-16-hiatus-12-17-15-14) that included a temporary hiatus during the Flomborn-middle LBK transition (Phase VII–VIII). Given the continuation of the general layout of the area, it was speculated that this area was resettled by descendants of its original inhabitants following this hiatus (Boelicke *et al.* 1994: 116). Whilst Münch (2009) later suggested a slightly earlier date for the founding house (House 13, Phase IV), her reassessment of the Flomborn pottery did not significantly alter Stehli's proposed chronology. However, this house sequence was based on best-guess allocations of pits in the surrounding area to nearby house plans and not based on finds in the adjacent elongated clay borrow pits. As such, I would argue that these allocations are too speculative on which to base a specific sequence of houses.

The spatial configuration of longhouses within these farmsteads was not taken into consideration when Stehli (1994) and Krahn (2006) defined their family farmsteads at these sites. As a result, some rows of tightly-clustered longhouses were allocated to different farmsteads, or *Hofplätze*, in order to define extended house sequences. For example, a clustered group of longhouses along the western slope of Langweiler 9's headland (Figure 5-4) was divided into two family farmsteads (Farmsteads 2 and 4), despite their close proximity. Although badly eroded, the presence of four structures can be identified through traces of their wall trenches and some postholes. Based on their 'associated' pits, Stehli (1994) allocated all four houses to the middle/late LBK

Table 5-2: Stehli's house allocations for Farmsteads 4 and 2, Langweiler 9 (Stehli 1994)

Phase	Farmstead 4	Farmstead 2
X	House 10 (Pit 1374)	House 7 (Pit 545)
XI	House 9 (Pit 1137)	House 6 (Pits 550, 561)
XII	House 11 (Pit 1383)	House 8 (Pits 1312, 1317)
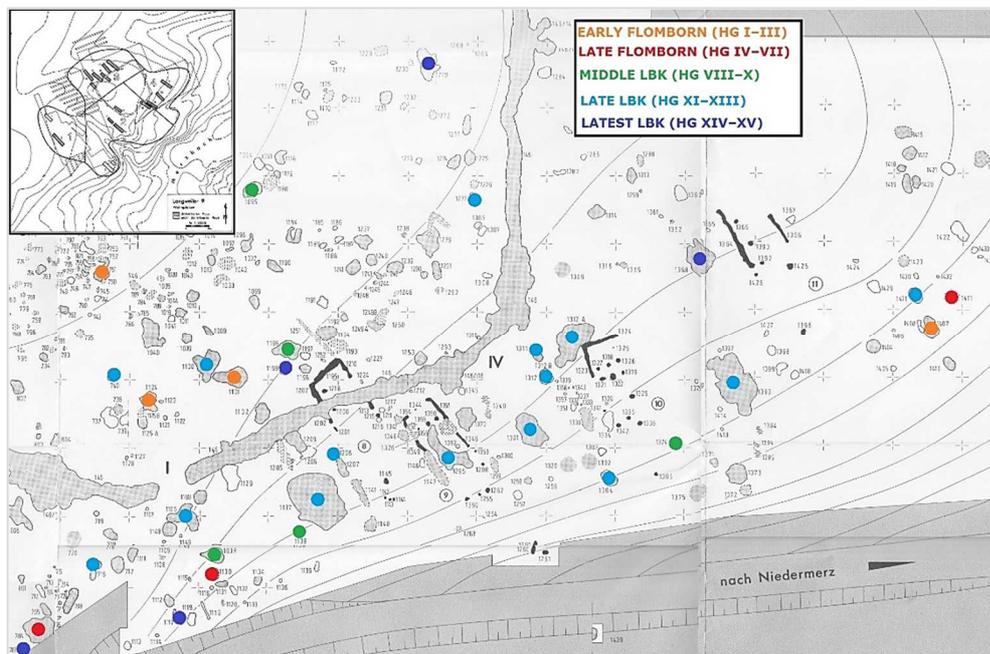
Figure 5-4: Tightly-clustered house row divided between Farmsteads 2 & 4 at Langweiler 9 (after Kuper et al. *1977: Insert 1, Stehli 1994: Fig. 5)*

transition (Phases X–XII), with Houses 8 and 11 both occupying Phase XII. Since the principles of the *Hofplatz* model preclude multiple structures occupying a single farmstead, Stehli argued that House 8 should be grouped with the other houses in Farmstead 2 (distance: 60–120 m to the south-west), rather than the neighbouring Houses 9–11. Several pits dated to Phases IX–X demonstrate that habitual activity may have been weighted towards the western part of the area, when Houses 9 and 10 were deemed to be in use. In the following (house) generation, this western section of the farmstead was encroached by the neighbouring household (Farmstead 2), with the construction of House 8 and its western pits whilst the former inhabitants shifted further north-west (with House 11). No explanation is given for the sudden geographical relocation of Farmstead 2 away from its former house plots and associated facilities and into an area heavily used so recently in the past by the residents of Farmstead 4. Given the lack of clear dating evidence, I would argue that it is more prudent to be guided by spatial patterns within the placement of longhouses in identifying durable family farmsteads rather than shoe-horning the data to satisfy an *a priori* assumption for 'closed' house sequences (see similar discussion in Frirdich (1994: 261)).

Similar allocations were also made at Niedermerz 4 on the opposite bank of the Merzbach (Figure 5-5). A bird's-eye view of Niedermerz 4 suggests two separate rows of longhouses (in addition to the more isolated House 8 to the north-east). Stehli (1994) chose to group these structures into two farmsteads, assigning House 4 with the south-eastern cluster and House 8 with the central cluster (Table 5-3). His main rationale for this assignment was the construction of continuous sequences of houses as per the *Hofplatz* model (Stehli 1994: 100–1). Pottery seriation suggested that House 1 should

Table 5-3: Stehli's house allocations for Niedermerz 4 (Stehli 1994)

Phase	Farmstead 1	Farmstead 2
XI	House 1 (Pit 12)	House 5 (undated)
XII	House 4 (Pits 569, 609)	House 8 (undated)
XIII	House 2 (Pits 93, 94, 100, 127)	House 6 (Pits 697, 708)
XIV	House 3 (Pits 124, 125, 134)	House 7 (undated)
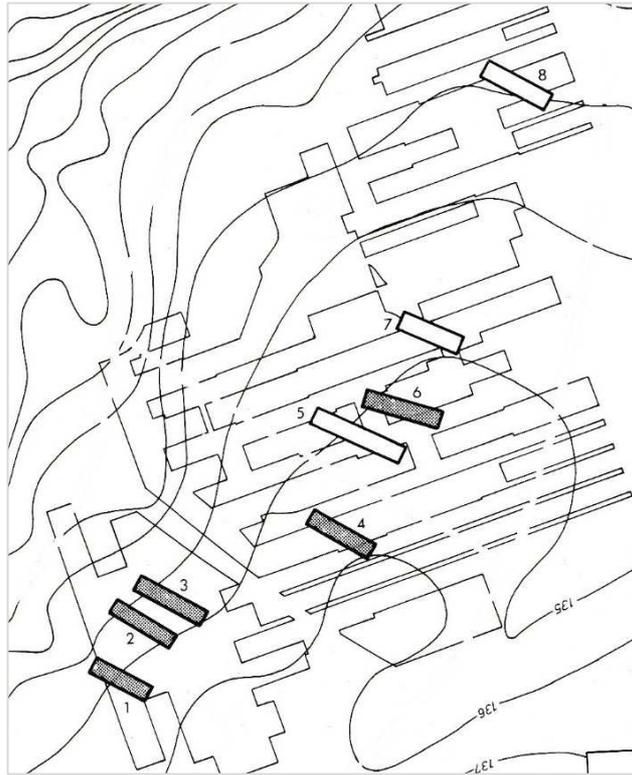
Figure 5-5: Tightly-clustered house row divided between Farmsteads 1 & 2 at Niedermerz 4 (after Stehli 1994: Fig. 7).

be dated to Phase XI whilst Houses 2 and 3 could be dated to Phases XIII and XIV, respectively. Dated to Phase XII, House 4 conveniently filled the gap in this sequence. The largely undated structures in Stehli's Farmstead 2 were allocated so as to match the sequence pattern found in Farmstead 1.

Whilst conforming to the methodological assumptions of the *Hofplatz* model, these allocations may be at odds with the original understanding of the *Hofplatz* as the product of habitual practice in the area around the longhouse. Taking into consideration the significance of the use of space within LBK settlement and depositions practices, Stehli's (1994) allocations may sacrifice too much of the underlying interpretation of *Hofplatz* as durable and tenanted family farmsteads in the drive to produce closed house sequences of generationally replaced longhouses. Given the scarcity of dateable features and the inherent uncertainties within the house

generation chronologies (see Appendix A), there is sufficient scope within the data to maintain these tightly-clustered house rows as family farmsteads.

Possible restrictions from encroaching neighbours may have impacted the geographical scope of these developing house rows, forcing later structures to overlap with older, abandoned structures. For example, there are two instances of overlapping house plans on Farmstead 3 in Langweiler 2 (Figure 5-6). There were few dateable pits uncovered within this area which could be used to date the six houses found within this row. However, the orientation of neighbouring pits suggests that Houses 13 and 9 were constructed in the areas formerly occupied by Houses 14 and 10 respectively. Although roughly the same size as Langweiler 9 (up to three contemporary households occupying a 40,000 m^2 area (Farruggia *et al.* 1973: 22; Kuper *et al.* 1977: 14, 18)), settlement at Langweiler 2 was more evenly distributed, and the inhabitants of
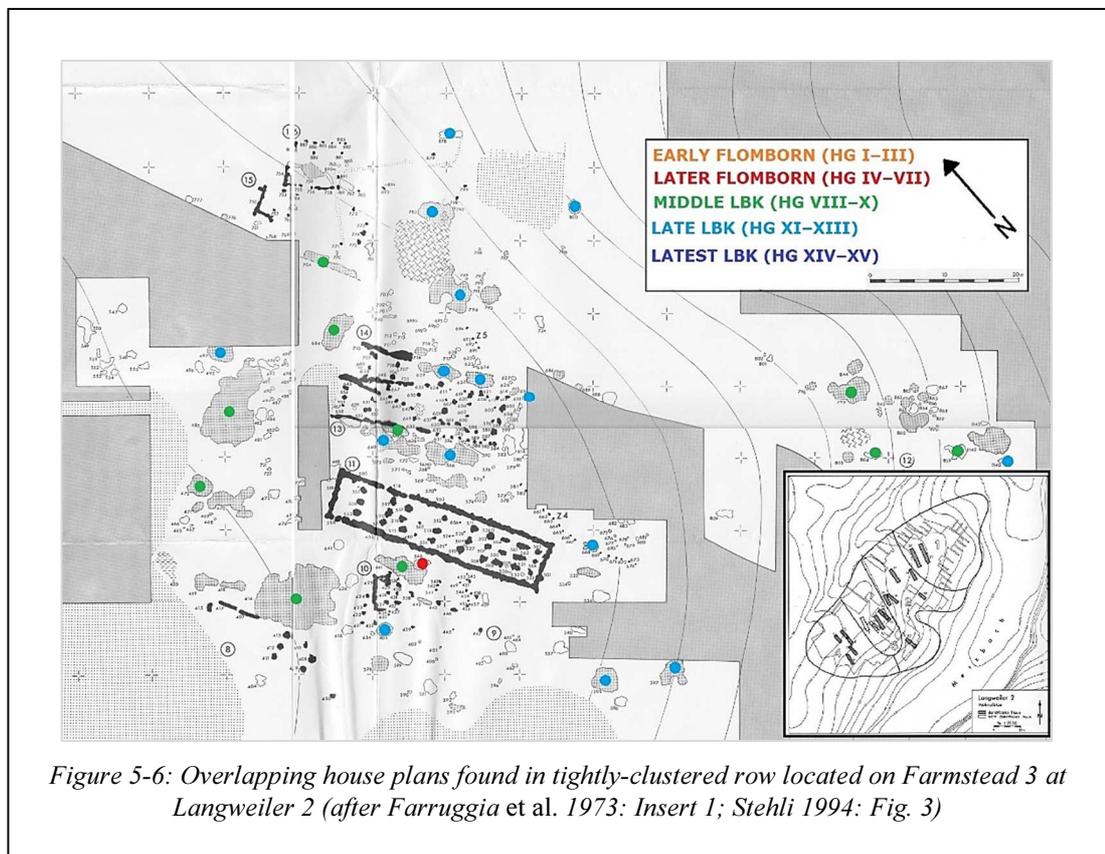
Figure 5-6: Overlapping house plans found in tightly-clustered row located on Farmstead 3 at Langweiler 2 (after Farruggia et al. *1973: Insert 1; Stehli 1994: Fig. 3)*

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Figure 5-7: Site map, Weisweiler 6 (after Krahn 2006: Insert 9). Small numbered squares: post structure, possible house.
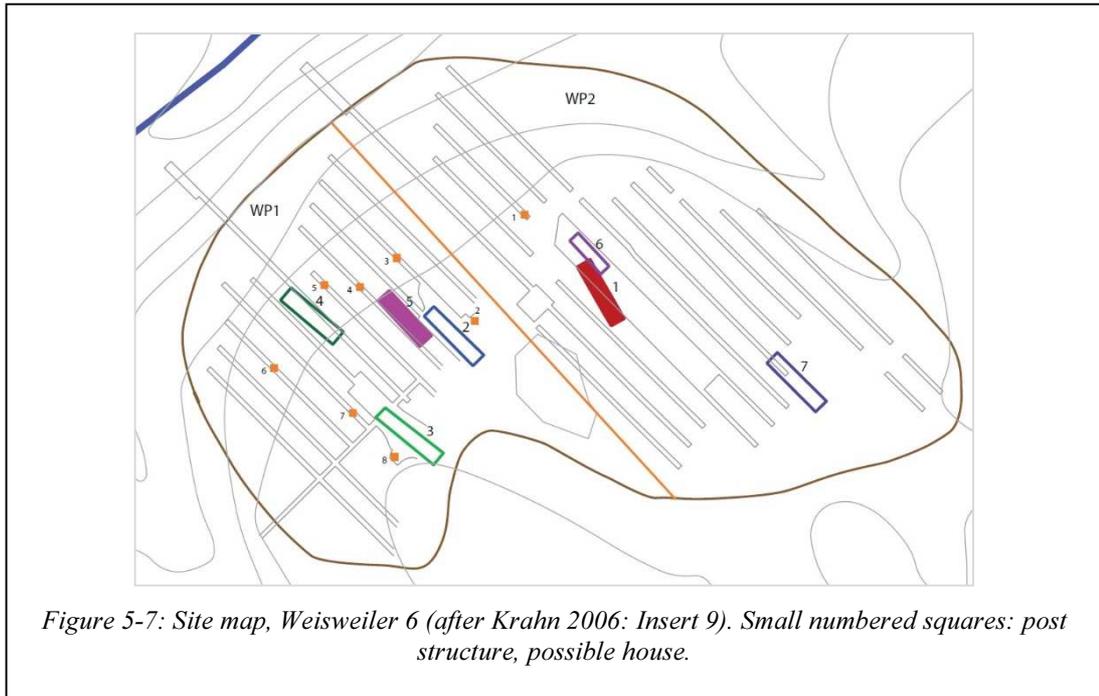
Farmstead 3 may have been limited in where to build new longhouses by the construction of Houses 15 and 16 (Farmstead 2) to the immediate north-west. Whatever their circumstances, the building choices followed by the residents of these clustered houses may have been unusual in the area; there are no overlapping houses in any of the other six examples of tightly-clustered parallel house rows in the research area.

In general, the limited excavations undertaken at smaller LBK sites in the region prevent us from exploring the spatial relations found within discrete clusters of longhouses beyond the Merzbach cluster. For example, seven house plans were uncovered in the systematic trenching at Weisweiler 6 in the Schlangengraben valley (Figure 5-7). A number of post configurations were also found (orange squares) that could represent the remains of former houses, but this is by no means certain. Could the Houses 2, 5 and 4 form part of a staggered row of houses? Or do the post structures indicate a higher degree of overlapping house plans and denser settlement at this site?

Where more extensive excavations permit, we see a replication of the spatial patterns discussed above. For instance, parallel rows of longhouses are clearly indicated at Weisweiler 110, located 3 km north of the Schlangengraben cluster, which inspired Rück's model of LBK settlement based on loose rows of houses (Figure 5-8). The settlement rows proposed by Rück are variable in length and spatial integrity. For instance, House 16 stands immediately in front of House 17, and Row 2 is far more spread out compared to the dense cluster found in Row 3. Instead, the settlement layout may be more consistent if seen as a collection of tight(er) clusters of houses. A main cluster of ten longhouses occupied throughout the settlement's history dominates the site, whilst the other clusters of two to three houses may represent family farmsteads inhabited for a short durations.
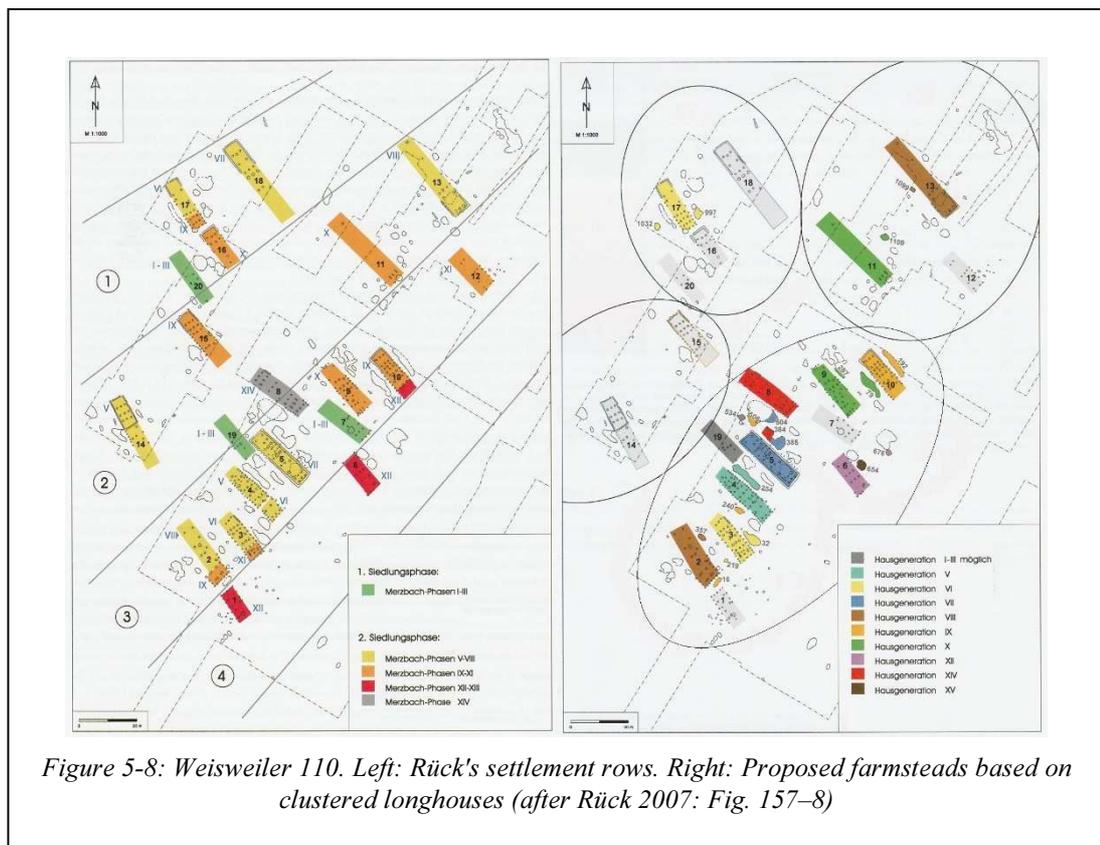
Figure 5-8: Weisweiler 110. Left: Rück's settlement rows. Right: Proposed farmsteads based on clustered longhouses (after Rück 2007: Fig. 157–8)

5.2.2.2   Semi-circular clusters

The rows of tightly clustered houses seen at Langweiler 9 and other sites are absent from the right-bank site of Laurenzberg 7 (Figure 5-9). The neighbouring houses at this site are stepped, one in front of the other, or possibly grouped around a central house-free area. Compared to other sites in the Merzbach, the nine longhouses found at Laurenzberg 7 could be well dated through nearby pits (Stehli 1994). Within the central cluster, House 2 (HG II) was earlier than the poorly preserved remains of House 1 (HG IV). The pits around House 3 suggested it was occupied later during the Flomborn/middle transition (HG VIII). It was not possible to attribute a date to House
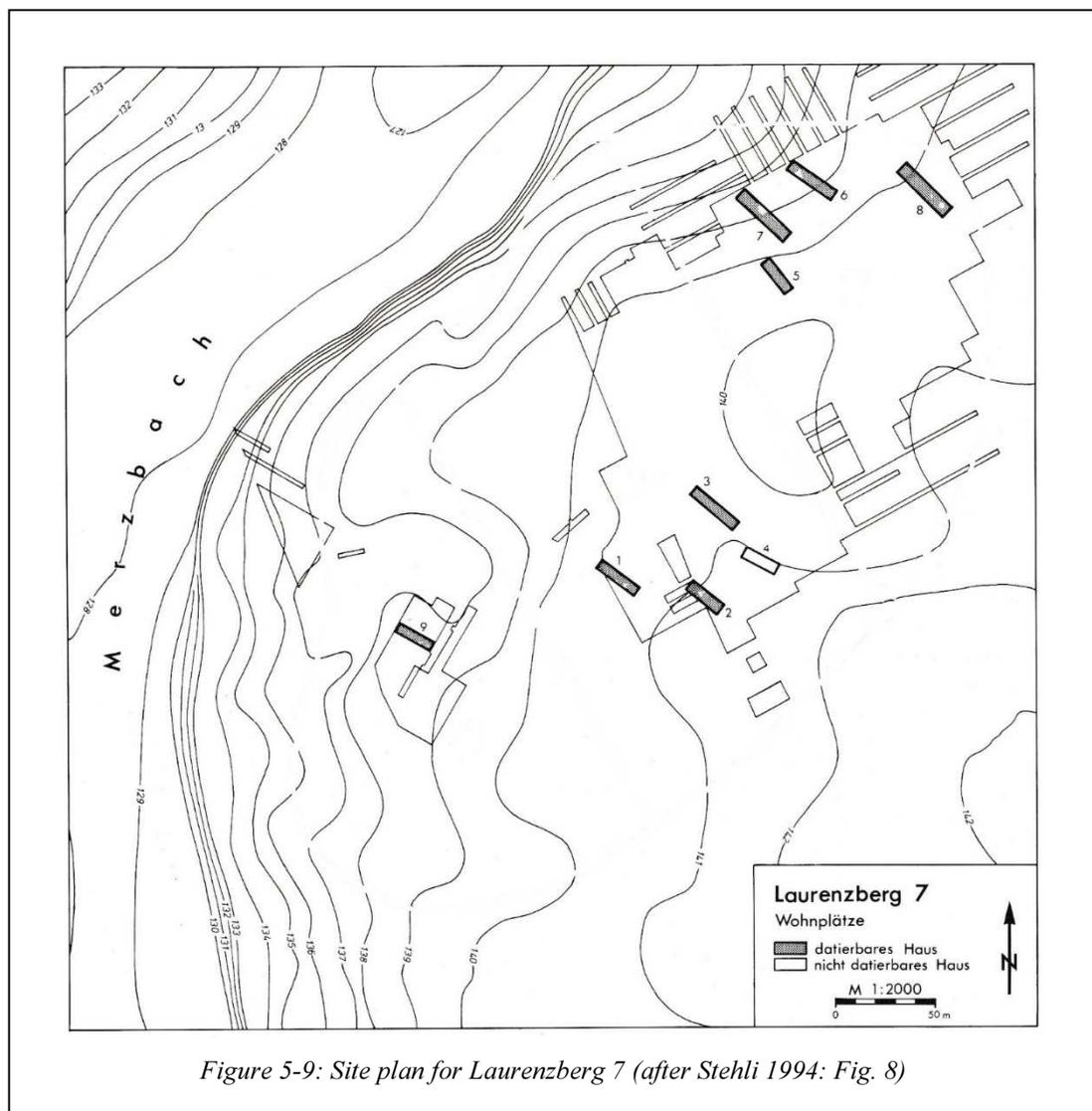
Figure 5-9: Site plan for Laurenzberg 7 (after Stehli 1994: Fig. 8)

4. The chronology of the northern cluster is slightly more secure—House 5 (HG X), House 6 (HG XI), House 7 (XII), and House 8 (XIII). Like the rows discussed above, we see an element of 'infilling' in later phases of house construction in this cluster.

In many ways, Laurenzberg 7 is atypical for the Merzbach. Composed of two distinct and diachronic clusters of houses, it is traditionally interpreted as a single farmstead settlement which shifted its foci approximately 200 m north-east during the younger LBK (Stehli 1994: 102). A reasonably dense field of pits (spanning the entire period of occupation) is situated in the area between these two clusters, suggesting that this shift of house location had little bearing on where daily activities took place. Compared to the other Merzbach sites, Laurenzberg 7 presented a higher number of 'free' pits[22] spread over a wider area, less pottery (decorated and undecorated) and a greater proportion of flint artefacts and tools. Taken together, some form of economic specialism was likely centred at Laurenzberg 7 (Boelicke *et al.* 1994: 45–59). As such, the households found at Laurenzberg 7 may have been connected by this specialism, rather than the ordered reproduction of a single household. It could be significant to note that that other example of a 'semi-circular' cluster, Farmstead 4 at Langweiler 2, was also associated with an unknown specialism in the form of unusual long, V-shaped trenches (German: *Schlitzgraben*) and a large pen or corral in the southern section of the settlement (Farruggia *et al.* 1973: 50; Lüning 1982a: 23; Stehli 1994: 91).

5.2.2.3   Loose configurations

Excavator site plans demonstrate that not all longhouses were clustered together in discrete groups. In some cases, buildings appear to be isolated on the fringes of the

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[22] According to Boelicke (1982), any pit beyond the deemed 25m radius of the longhouse activity zone were of a more communal nature and therefore categories as 'free' pits.

settlement (Houses 1–4, Langweiler 9; House 12, Langweiler 2; House 8, Niedermerz 4). In other areas of the settlement, the remains of longhouses appear to be more uniformly distributed (Figure 5-10; Farmstead 2, Langweiler 2; Farmstead 2, Langweiler 9), lacking the close spatial relationships of dense rows and clusters. Stehli (1982; 1994) appears to ignore these differences and ensures that all houses are allocated to a *Hofplatz*, regardless of resulting variations in density or the lack of clear spatial relations. These differences are attributed to historical contingencies of individual family groups over time, but without further discussion (Boelicke *et al.* 1988b: 925). As with the rows of houses described above, the need to construct continuous household sequences (for dating purposes) resulted in the more amorphous and arbitrary definition of the household over time.

If we accept Stehli's presentation of the *Hofplätze* at these sites, we are left with a number of questions. For example, if the concentration of houses within a restricted area was the result of continued use of family resources (such as ovens or garden
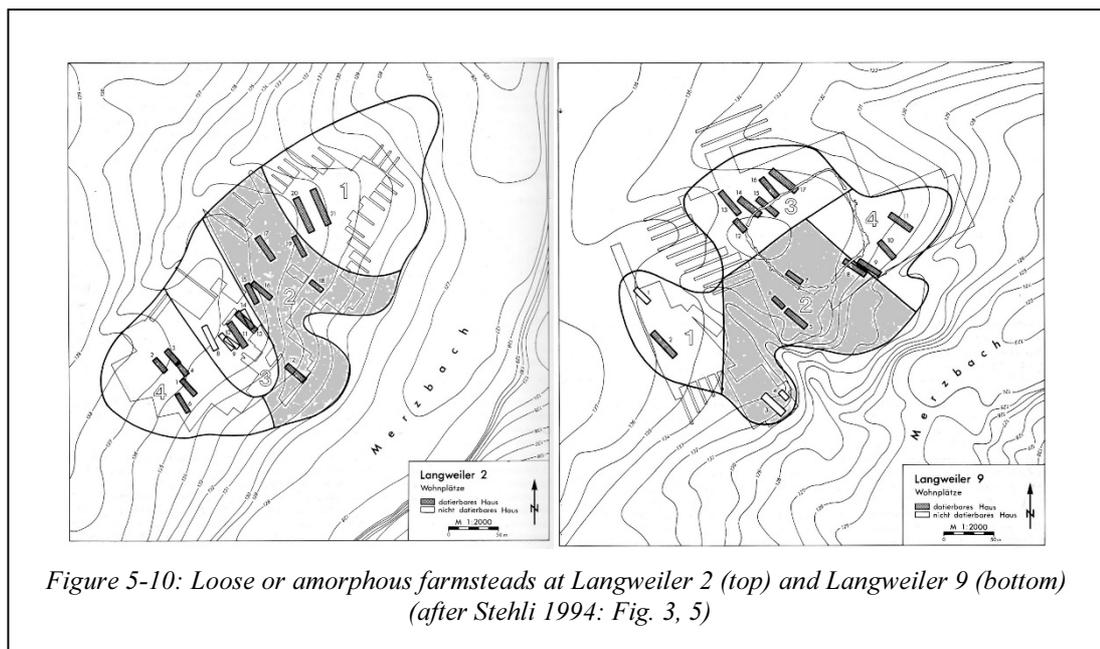
Figure 5-10: Loose or amorphous farmsteads at Langweiler 2 (top) and Langweiler 9 (bottom)
(after Stehli 1994: Fig. 3, 5)

plots), should we see the families inhabiting these 'loose' farmsteads as lacking these facilities or, perhaps, having to relocate these facilities over time as a result from pressure from neighbouring households? Did the siting of new longhouses away from their predecessors represent an attempt to distance the household from the former generation(s)? Did such shifts affect the accepted boundaries of the farmstead? As always, preservation remains a problem. For example, the presence of four neighbouring pits along the top of Langweiler 2's erosion channel may indicate that more houses could have stood to the south-west of House 18, altering our perception of where these family farmsteads could have stood (Stehli 1994: 90).

All in all, the repeated pattern of rows and semi-circles in other parts of these settlements suggests that the spatial relationship between past, present and future longhouses was meaningful for the LBK people. However, not all longhouses are part of such rows. Smaller groupings of one and two houses may represent the 'unsuccessful' household—one without the economic surplus, social standing or demographic capacity to reproduce the household over subsequent generations. Maybe these families moved on to pastures newer, a theme picked up later on in subsequent chapters (6.1.3). Alternatively, the lack of facilities associated solely with the households—for example, where these resources were shared between different households or where access was restricted to certain families—may have precluded the need to rebuild in a restricted area. Such households may have been freed to situate themselves as suited them best, generation by generation.

5.2.3   Different ways of relating

The *Hofplatz* model emerged from a desire to see LBK settlement anchored to family household plots as continuous and stable. Its application in the construction of local

chronologies imposed this desired continuity on the clustered house plans uncovered in the Merzbach and Schlangengraben sites. As we have seen, exalting this need for localised settlement continuity overrode the physical proximity of neighbouring houses in some cases and produced farmsteads loosely scattered over wide areas. Thus, whilst largely determined by the concentration of finds, it has also been shown that the definitions of family farmsteads themselves were determined in part by the desire to create continuity within individual family-based households on settlement plots.

This approach contrasts strongly with the original conception of the *Hofplatz* as a multi-generational farmstead. These areas of settlement were not viewed as defined, static plots but emerged from the repeated construction of later houses near pre-existing (and likely abandoned) structures. For example, Boelicke *et al.* (1988b: 924) highlighted tensions between the need to distance a new house from its predecessor and, at the same time, the desire to be near to existing facilities such as storage pits, ovens and garden plots. Over time, this would have led to the gradual shifting of the *Hofplatz* 'area'—possibly in reaction to the movements of other neighbouring households.

The regular layout of longhouses and shared depositional practices around these houses demonstrates the importance of spatial relationships to daily life. It is reasonable to argue that spatial relationship would be equally significant between generations of houses within a single farmstead. Investigating the *älteste* settlement of Schwanfeld, Lüning (2005) suggested that such tightly bunched rows of houses may represent the development of the family farmstead over time. Whilst Lüning considered the presence of rows of houses in settlements, the above analysis highlights

that multiple patterns can be appreciated. In addition to Lüning's rows, the semi-circular clusters of Laurenzberg 7 and Langweiler 2 may also indicate long-lived family farmsteads, but ones which related differently to the past and present. Here, the significance of lived relations with neighbouring households or settlements outweighed or overshadowed the need to connect with the domiciles of past generations or even to communicate 'family' to the outside world.

Variations within the *Hofplätze* are not limited to the emerging pattern of the house sequence. If we assume that the visual and experiential cues of house clusters and house rows were intended to express 'connection', how should we interpret the more amorphous location of houses within these sites? In some cases, this lack of spatial relations can be attributed to an over-zealous desire to produce long-lived house sequences (for example, Farmstead 2 in Langweiler 9 and Farmstead 2 in Langweiler 2 discussed above). Freed from these assumptions, these areas could be re-defined as individual households that did not develop into a sequence. The reason for such non-development could be linked to the particular history of that household (lack of offspring, illness or other catastrophe, relocation) or could reflect longer-term trends towards alternative forms of the household – points that are picked up again in later discussion below.

The scarcity of finds and limited investigations at smaller LBK settlements like these described above mean that such sites are often overlooked in favour of larger, more impressive sites. However, they do offer us an intriguing view of longhouse living at the small scale and, as such, can provide us valuable information about structuring and development of the household.

5.3 House groups and households: scales of residence

Attempting to define a universal, normative model of settlement and social reproduction for the LBK, the original investigators working in the Merzbach and Schlangengraben valleys assumed that the family farmsteads identified in the smaller hamlets would also be present in the neighbouring village sites of Langweiler 8, Weisweiler 17 and Lohn 3. In contrast, discrete clusters of longhouses are more difficult to see in these larger, more densely populated settlements.

From their inception, these sites were comprised of multiple households (Stehli 1994; Krahn 2006; Münch 2009). The remains of multiple generations of longhouses crowd their site plans and obscure all but a few traces of the house-free gaps that divided contemporary households in smaller settlements. Committed to the *Hofplatz* model, Stehli (1994; Boelicke *et al*. 1988b) and Krahn (2006) allocated both dated and undated houses into spatially restricted house sequences that endured up to thirteen house generations. These allocations see longhouses being constructed up to the very boundaries of neighbouring farmsteads, whilst preserving the integrity of the *Hofplatz* itself. For instance, neither Stehli nor Krahn allow for later longhouses of one family farmstead to encroach on an area previously occupied by another household's abandoned houses.

Several recent studies have identified material and spatial links between houses that suggest the existence of supra-household groups within and between settlements (van de Velde 1990; Strien 2000: 135, 2005; Rück 2007, 2009). Whilst some of these studies have attempted to overwrite the *Hofplatz* model with an alternative universal model of LBK settlement (and organisation), many of them have described the relationships existing in particular places, without attempting to redefine LBK

settlement universally. The wards, neighbourhoods and rows illustrated present an integrated household, linked to its neighbours through daily activities, stylistic repertoire and shared identity. These examples highlight the presence of supra-household groupings within LBK settlements across central Europe but within the confines of relatively well populated areas of settlement. The question arises of whether these groupings reflect social relationships that existed within LBK society as a whole or represent the emergence of new ways of relating that were limited to specific places and times. Returning to the Aldenhoven Plateau, the following section considers the possibility of such collectives within the local areas of settlement and considers how these groupings may have interacted with the family farmsteads already discussed.

5.3.1   Alternative views of the supra-household group

As detailed above, the *Hofplatz* model is based on the assumption that LBK farmsteads were largely autonomous. These family plots were separated from one another physically as well as symbolically through stylistic and technical preferences. As the basic unit of social reproduction, the family farmstead, with its attendant fields and gardens, was inherited through the generations, leading to the long-term stability of these parcels of land. Detailed studies at several more recently excavated sites, however, have identified groups of longhouses that are clustered together materially and/or spatially (Table 5-4). In contrast to the *Hofplatz* model, researchers working at these sites argue that individual households were integrated into supra-household groups that were most likely defined through kinship relations and may have functioned, in part, as co-operative economic units. For example, typical household resources such as fields and particular decorative motifs may have been amalgamated and shared by the group as a whole. As a recent development in LBK studies, this is

Based on	Description	Internal relations	External relations	Stability
Dutch Limburg (van de Velde 1979a, 1990)	Kin-based 'wards' of 3–5 houses, operating as a discrete economic unit	Hierarchical, with family head residing in larger, more elaborate longhouse	Wards are comparable and unranked; village leadership roles ('chief') available to all	Stable throughout site occupation
Cuiry-lès-Chaudardes (Hachem 2000)	Intra-site variability highlights neighbourhoods with varying economic strategies			Pattern present throughout occupation
Vaihingen (Strien 2005; Bogaard *et al.* 2011)	Groups of 'related' houses sharing economic resources (e.g. fields)	Presence of house rows suggests some segmentation within house groups; presumably unranked	Economic inequalities and possibly ranking between different house groups Varying relations with other regional groups	Stable throughout Flomborn period; reorganised in Younger LBK
Weisweiler 110 (Rück 2007)	Settlements deliberated organised into extended rows of houses, equidistant from one another	Unclear; possibly chronological, topographical and/or socio-cultural		
Erkelenz-*Kückhoven* (Nockemann 2008)	Intra-site variability highlights two clusters of houses with differential access to raw materials		Economic inequalities emerging from variable access to materials through different social networks	House clusters present through occupation
Targowisko, Poland (Czerniak 2013)	Multi-house 'neighbourhoods' based on fixed plots	Some internal ranking, with local prominent family living in multi-house compound		Long-lasting, fixed and respected boundaries

Table 5-4: Example of supra-household groups within the LBK

an exciting area of research. Although different in detail, the collective examples of such supra-household groups hint that larger-scaled economic and socio-political entities operated within LBK communities.

The proposed wards, neighbourhoods and clan groups challenge the *Hofplatz*'s view of the autonomous farmsteads clustered loosely together for mutual benefit. Given the geographical spread of these examples, should we begin to think of these supra-household groups as a 'typical' feature of LBK settlement and social organisation? On the face of it, the supra-groups described above differ in terms of physical separation, boundedness, stability, ranking and direct association with external groups. These differences, however, may reflect the data inequalities with which the relevant researchers were working rather than different categories of house group. In the end, it may be more helpful to focus on the process of integration, definition and social reproduction that underlay these closely related groups of houses, and avoid the pitfalls of characterising a specific model of supra-household groups.

5.3.2 Supra-household groups in the Merzbach and Schlangengraben valleys

Three larger-scaled 'villages' of up to ten contemporary houses were uncovered in the neighbouring Merzbach and Schlangengraben valleys: Langweiler 8 along the middle Merzbach and the twin sites of Weisweiler 17 and Lohn 3 found approximately 2km from one another along the middle course of the Schlangengraben valley (for further discussion, see 6.1.2). The distribution of longhouses within these sites is much denser than that seen in the neighbouring smaller sites, and it is less easy to discern spatially separated clusters of longhouses in the densely populated site plans.

Over 100 house plans were uncovered at Langweiler 8 during excavations in 1972–4 (Boelicke *et al.* 1988a). Based on the original chronology, these were allocated to twelve different family farmsteads (*Hofplätze*), which were deemed to be occupied up to twelve (house) generations (Boelicke *et al.* 1988b; Stehli 1994; Münch 2009). These house plans were not distributed uniformly across the cleared settlement area, and at least four different larger-scaled clusters can be distinguished through house-free areas in the site (Figure 5-11).

During the Flomborn period, settlement was concentrated on the ridge running along the north-western half of the settlement. There appears to be a clear divide between the small cluster of houses situated at the far north of the site (Farmstead 6) and the main cluster of houses encircling a small depression to the south-west (Farmsteads 1–
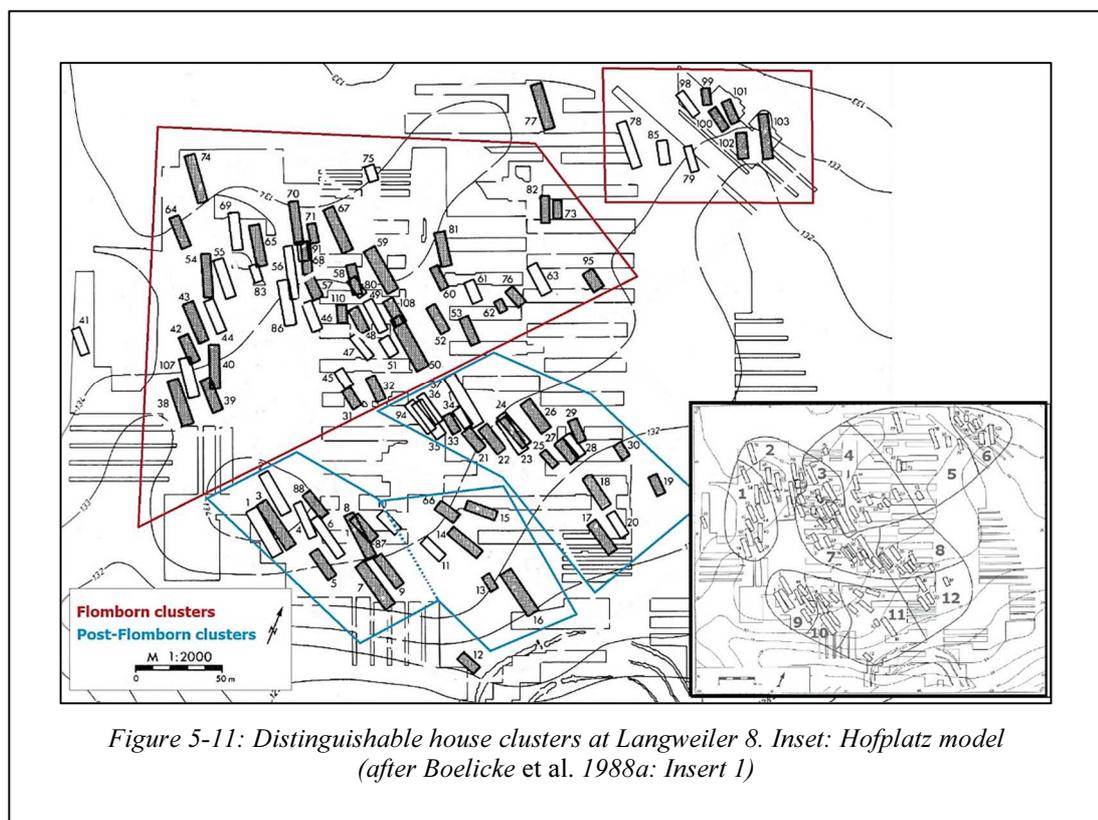
Figure 5-11: Distinguishable house clusters at Langweiler 8. Inset: Hofplatz model (after Boelicke et al. *1988a: Insert 1)*

4). Pottery analysis suggests that this division may have been meaningful. Moving from west to east, the relative proportion of vessels decorated with Band Type 1 steadily increased whilst the proportion of pieces with Band Type 8 and other rarer patterns decreased (Figure 5-12; Frirdich 1994: 244). Frirdich (1994: 246–7) also demonstrated that the speed of innovation in pottery decoration was slower in northern parts of the settlement.

Like Vaihingen, the community at Langweiler 8 underwent significant changes at the end of the Flomborn period. The inhabitants of the smaller cluster to the north abandon the settlement, whilst the construction of new houses along the eastern slopes signals the establishment of new house groups (Farmsteads 8–12) (Stehli 1994). Two, maybe three, distinct clusters of houses are easier to delineate in this area. Although the scarcity of dateable pits forced Frirdich to merge some of these clusters, her analysis demonstrated variations in the decorative spectrum utilised in these different areas of settlement (Figure 5-12; Frirdich 1994). In addition, newer motifs such at Types 2 and 13 were more common in the newly established groups, which Frirdich (1994: 248) attributed to the willingness of 'newer' areas to innovate and move away from traditional styles. This trend continued until the late LBK, with the last remaining houses of the western groups holding firm to the older Type 1 pattern. However, the lack of comparative statistics prevents us from concluding whether these variations were statistically meaningful.

Taken as a whole, spatial patterns suggest that the settlement may have been organised into longitudinal rows (as suggested by Lüning (2005)). The apparent popularity of longitudinal rows at Langweiler 8 may have been influenced by the local terrain. The
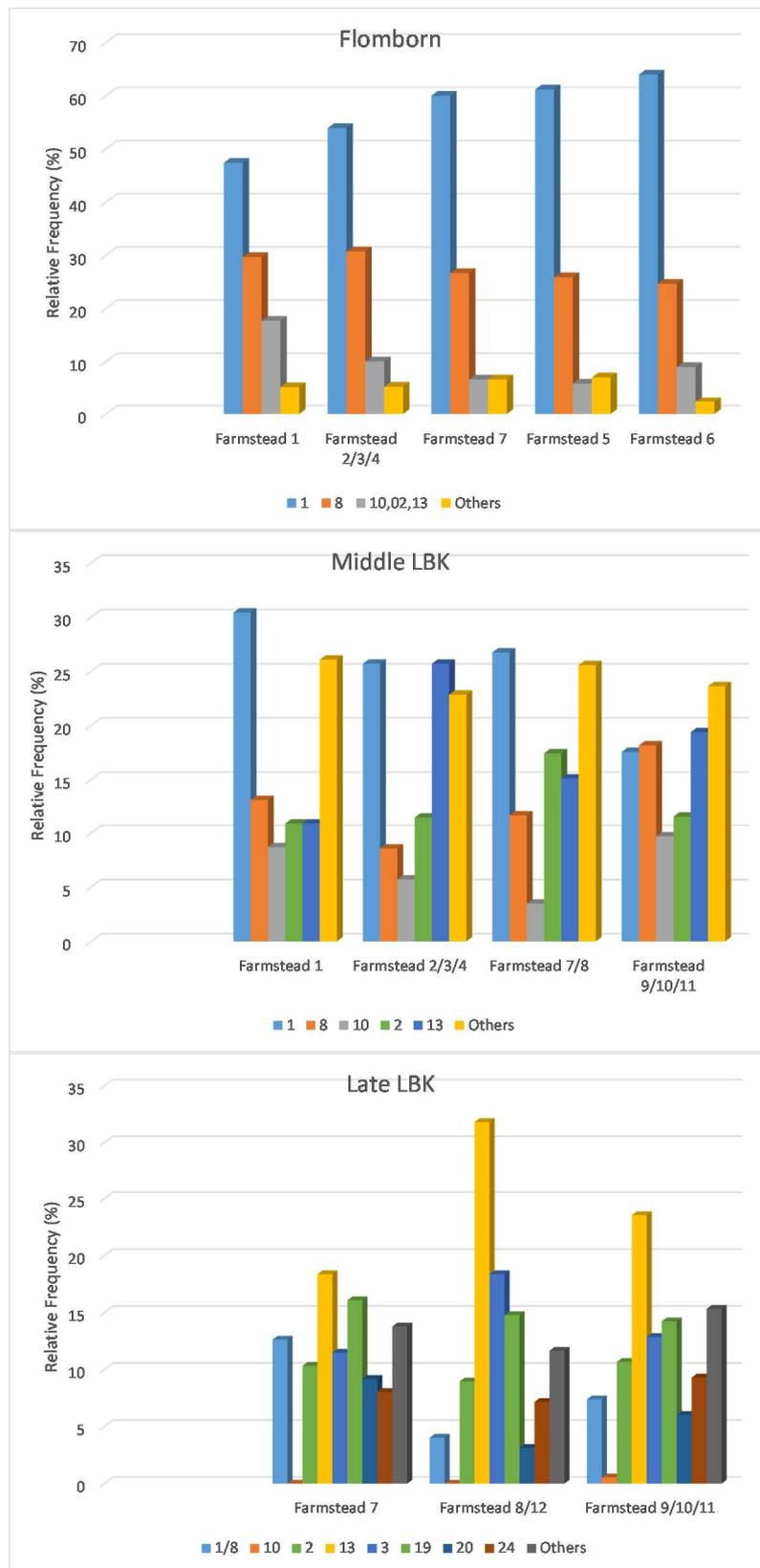
Figure 5-12: Frequency of band types across farmsteads at Langweiler 8 (after Frirdich 1994)

house-free area encircled by Farmsteads 1–4 and 7–8 is a shallow depression which leads to a dry channel to the river. This may have served as a convenient path to the river's edge. Rather than pursuing a more 'typical' settlement patterns of parallel house rows, the inhabitants of Langweiler 8 may have constructed their family houses along this depression, resulting in the gradual emergence of longitudinal house rows.

The close abutment of different household 'rows' makes it difficult to determine where one row ends and another begins, especially in/around Farmstead 2 and Farmstead 7. These rows, however, extend into multiple family farmsteads, conflicting with Lüning's assumption that each row reflected the continuation of a household through multi-phase longhouse construction. If these rows are seen as the practical consequence of social traditions as to where to build a new houses (referencing the ideological significance of different areas of space in and around the longhouse—see 5.2.1), then family groupings appear to have been either larger in size or subject to more frequent cycles of house construction at Langweiler 8. The lack of secure dating for the majority of house plans at Langweiler 8 limits what can be said about the temporal development of these house rows. The distribution of dated pits in Farmstead 1 indicates that later houses were concentrated in the south-western end of this area. At the same time, there are several examples of overlapping house plans in the neighbouring Farmsteads 2 & 3. These data suggest that the inhabitants of these family house rows sought to maintain their distance through separation, either by shifting where they built their houses or by building on abandoned plots.

More recently, Fröhlich (*in prep*) reinvestigated the distribution of material traits across the family farmsteads of Langweiler 8. His work suggests that the material practices of the local inhabitants were relatively homogenous, with a high degree of

overlap and few subtle differences emerging between the different areas of settlement. In contrast to other sites such as Vaihingen and Erkelenz-*Kückhoven*, there was little evidence of larger-scaled patterning in material practices at Langweiler 8.

Similarly, there is little evidence of more deliberate 'settlement' rows as proposed by Rück (2007; 2009) at Langweiler 8 (Figure 5-13). Rück's illustration lacks the areas of open space or possibly paths formed by gable end alignments, which typifies his other examples (e.g. Cuiry-lès-Chaudardes). Rück's rows are meant to order the internal space within the settlement. The lack of clearly defined alleyways at Langweiler 8 implies that such planning did not occur at this site. Any tendency towards parallel rows may be explained instead by the shared orientation of local longhouses.

Figure 5-13: Settlement rows proposed by Rück (2007: Fig. 90, 96) at Cuiry-lès-Chaudardes (left) and Langweiler 8 (right)
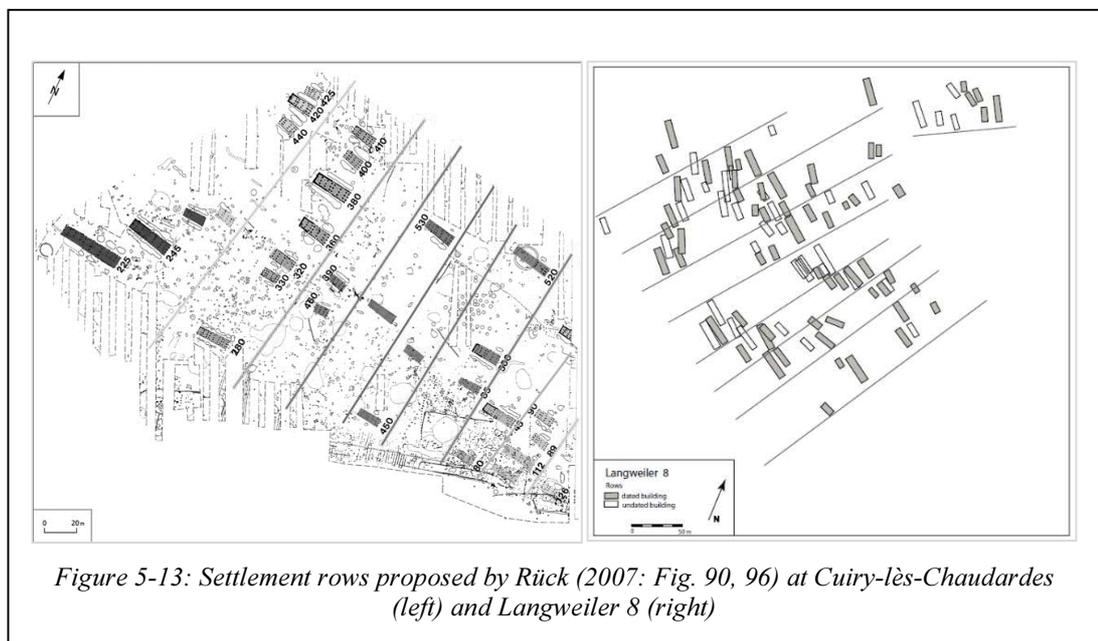
5.3.2.2 Weisweiler 17, Schlangengraben valley

The site of Weisweiler 17 was excavated through systematic trenching in 1983–4, uncovering 44 confirmed house plans[23] (Krahn 2006: 9, 19). Based on the original chronology, these were allocated to seven different family farmsteads (*Hofplätze*), which were deemed to be occupied up to thirteen (house) generations (Krahn 2006). Again, these house plans were not distributed uniformly across the cleared settlement area, and at least two denser clusters can be made out within the site (Figure 5-14).

Firstly, a dense row of 13 longhouses can be seen within the central area of Weisweiler 17 (Figure 5-15; from House 11 to House 4). Excavations in this area were very limited

Figure 5-14: Weisweiler 17 (after Krahn 2006: Insert 9)

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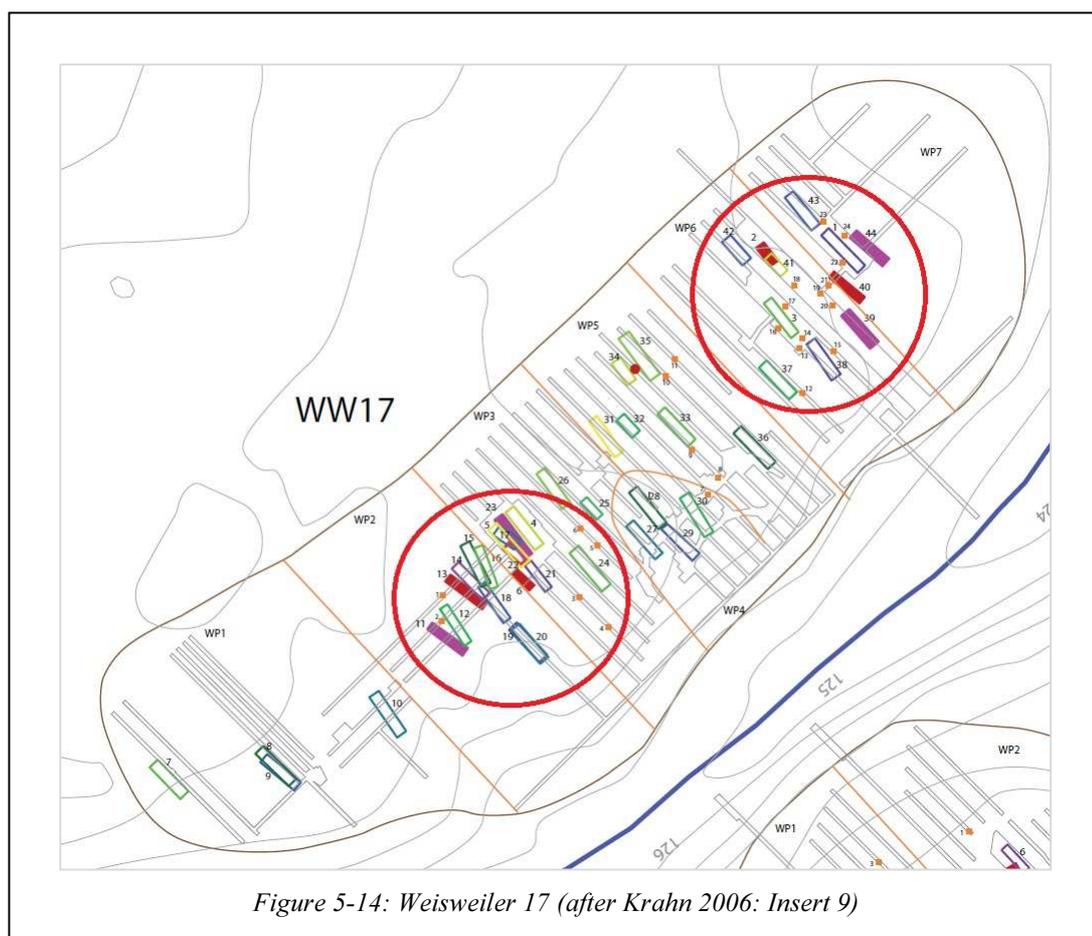
[23] Excavators also uncovered five suspected longhouses and 24 post structures which may have formed parts of former houses (Krahn 2006: Table 209). These are largely disregarded in the above analysis.

Figure 5-15: House clusters at Weisweiler 17 (after Krahn 2006: Insert 9). Left: Parallel row in Farmsteads 2/3. Right: longitudinal row in Farmsteads 6/7. Number: confirmed house plan; Small square: post structure, possible house
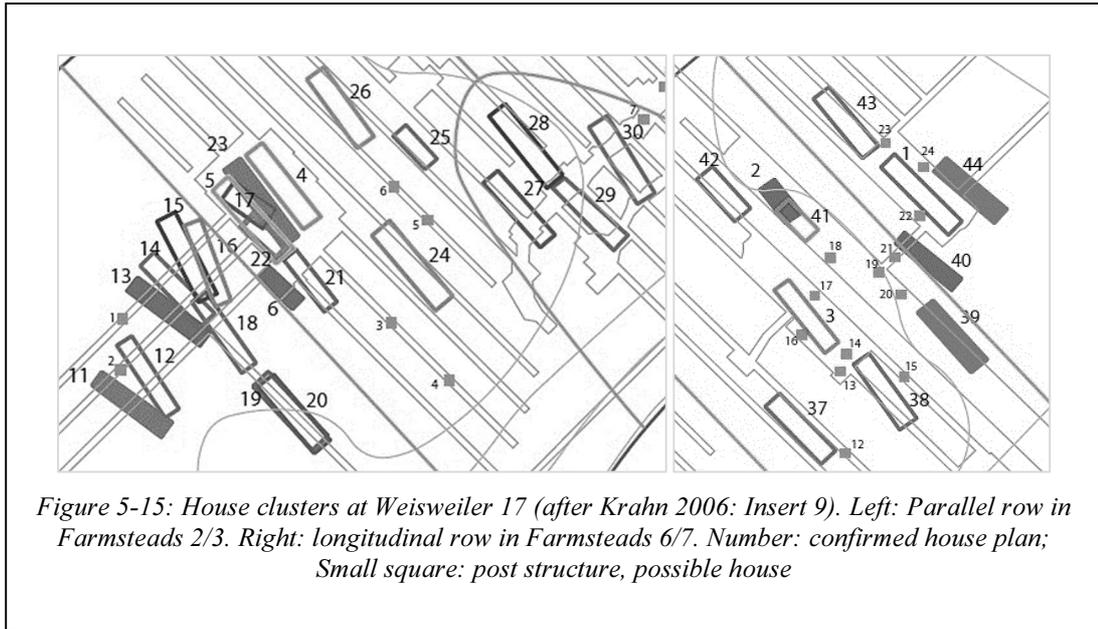
(due to time restrictions), and the house group could only be explored through a handful of narrow trenches. At thirteen, the number of houses found in this row is not inconsistent with the *Hofplatz* model, assuming that the area was settled early and inhabited throughout the settlement's occupation. The lack of dateable material in Farmsteads 2 and 3 prevents an assessment of this suggestion; only two pits could be dated in this area, both representing the Middle LBK (HG VIII & X) (Krahn 2006: Fig. 209). However, it is likely that more longhouses stood to the west and east of this dense row, similar to the wider field of buildings found in the more extensively excavated area to the north, since the single west–east trench dug in the area uncovered the remains of at least three house plans (Houses 18–20). Therefore, it remains unclear if this cluster represents an example of the tightly clustered (parallel) house rows associated with family farmsteads in the smaller sites above or a sub-section of a much larger group of longhouses.

Secondly, a more orderly arrangement of houses can be seen at the far northern end of Weisweiler 17 (Figure 5-15). Depending on one's point of view, these houses could

represent two longitudinal rows, similar to those seen at Langweiler 8, or three 'settlement' rows, following Rück's *Zeilensiedlung* model. At most, these rows extend no further than five houses and, thus, would represent a relatively short-lived household compared to the 12 consecutive (house) generations proposed by Krahn (2006)[24]. Significantly, the presence of multiple post structures intermixed with the confirmed house plans invites the possibility that several more houses may have once stood in this area, confounding these simplistic spatial patterns.

Albeit much smaller, a third possible house row can be discerned around Farmstead 4 (Houses 27–30), possibly incorporating Houses 24 and 36 as more distance extremes. Limited to a single dateable pit (HG XI), little more can be said about this group. Beyond these clusters, settlement at Weisweiler 17 takes on a looser arrangement of freestanding longhouses.

Unlike Langweiler 8, there have been no attempts to characterise the distribution of material traits (decorative motifs, tool production, raw materials used) across the different areas of settlement at Weisweiler 17.

5.3.2.3 Lohn 3, Schlangengraben valley

Located on a spur of land above the juncture of two rivers, the site of Lohn 3 was only partially excavated in 1979 (Krahn 2006: 7–8). The remains uncovered at Lohn 3 are dominated by a dense cluster of 30 overlapping longhouses (Figure 5-16). Outside of this cluster, the house plans of six overlapping structures (Houses 2, 3, 5, 6, 7 and 8) can be discerned. These houses are not built one on top of the other—for example, upcycling sections of abandoned houses for new constructions—but rather represent

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[24] Pottery within the local pits suggest this area may have been settled as early as HG III, but most of the dateable pit assemblages contain material from the Younger LBK (HG IX–XIII).
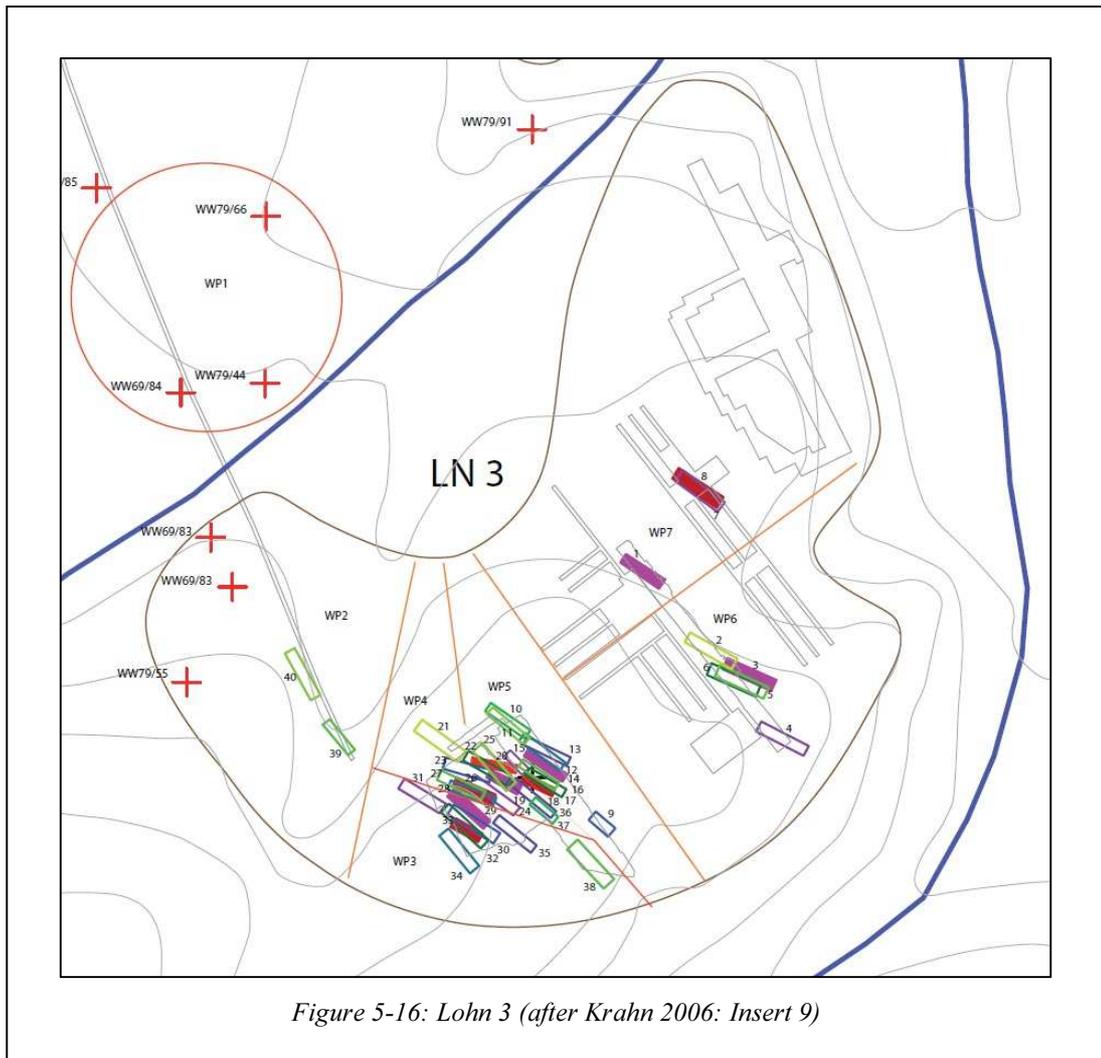
Figure 5-16: Lohn 3 (after Krahn 2006: Insert 9)

many generations of building within relatively tight areas[25]. As a palimpsest of some 200–300 years of occupation, the high density of house plans may indicate that the settlement at Lohn 3 was more heavily populated compared to its neighbours, resulting in new longhouses being repeatedly constructed over the plots of abandoned houses (to a much higher degree to that seen at Langweiler 8 and Weisweiler 17). However, the lack of house plans in the exploratory trenches around Houses 2–8 suggests that

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[25] The pottery found in this area ranges from the early Flomborn (HG II) to the late LBK (HG XII) (Krahn 2006: Fig. 216).

much of the surrounding area remained house-free and potentially available for house construction.

This pattern of settlement clearly differs from the loose arrangement of independent farmsteads that underlies the classic *Hofplatz* model but does not exclude this social structure altogether. The practice of building new longhouses over the plans of former structures may represent an alternative way of utilising spatial relations to demonstrate 'family' connections, i.e. asserting legitimacy by building as close to other related houses as possible. On the other hand, the volume of houses present (at least 30) is too great to represent a single family household. Committed to the *Hofplatz* model, Krahn (2006) attempted to divide Lohn 3's dense house cluster into three separate farmsteads (Farmsteads 3–5), without discussing why the distance required between contemporary farmsteads was so low. Unfortunately, the area around this dense cluster was not excavated, and it remains unknown how far this concentration of houses extended and how rapidly the density of houses declined around its edges.

Again, there have been no attempts to characterise the distribution of material traits (decorative motifs, tool production, raw materials used, and so on) across the different areas of settlement at Lohn 3.

5.3.3 The *Hofplatz* extended: understanding the processes behind house groups

In the absence of clear divisions, it is difficult to establish the frequency and duration of long-lived family farmsteads in these more densely populated areas of these settlements. Attempts have been made in the past to characterise 'household traditions' within the varying spectrum of pottery decorations used within the Merzbach valley (Frirdich 1994; Bentley and Shennan 2003; Krahn 2003). However, these studies have

accepted Stehli's defined farmsteads or *Hofplätze* as an *a priori* assumption and did not attempt to assess the appropriateness of these allocations themselves. Without such considerations, these studies do little to define individual 'households' themselves (although larger-scaled divisions are apparent, see 5.3.2.1). The appreciation of tightly clustered house rows, such as the staggered longitudinal rows of houses at Langweiler 8 and the dense row of overlapping houses at Weisweiler 17 discussed above, provides indirect evidence that such family farmsteads could also be found at these larger, more crowded settlements.

At the same time, larger-scaled collectives may have also operated at these sites. During the Flomborn period at Langweiler 8, we see the broad division between the main cluster of settlement and its isolated northern farmstead in terms of spatial separation and material traditions. Numbering more than 40 longhouses, this concentration is too large to represent a multi-phase family farmstead and likely represented a social grouping operating beyond the household itself. This distinct cluster can be traced back to the early settlement of Langweiler (HG II) and therefore likely represents social differences between settling families, such as dissimilar points of origin or lines of descent. In addition, the concentration of houses around Farmstead 1–4 (through its expansion into Farmstead 7) continued to distinguish itself materiality from the newly settled households constructed downslope during the Younger LBK. Thus, these supra-household groupings remain meaningful despite significant changes and developments within the local settlement community. Without the support of larger-scale material patterns within the sites of Weisweiler 17 and Lohn 3, it is difficult to establish the presence of supra-household groups within the settlement layout alone. However, the dense clustering of more than 30 longhouses at Lohn 3 reflects a radical shift from the 'typical' family farmstead model and thus points to

larger-scaled residential entities at this site. As such, parallels can be drawn between these broader groupings in the Merzbach and Schlangengraben valleys and supra-household clan groups identified at Vaihingen and other LBK sites.

Whilst lacking the larger-scale clustering witnessed at the larger 'village' sites, such supra-household clan groups also may have operated within the smaller hamlets and individual farmsteads within the Merzbach and Schlangengraben valley. In these cases, the supra-household groups may have been defined in terms of areas of settlement (i.e. site). For example, van de Velde (1990: 28–9) suggested that the smaller settlements strung out along the Merzbach river each represented their own hierarchical 'ward' in contrast with the 2–3 wards found within the larger settlement of Langweiler 8. As discussed in more detail in the following case study (6.1.4), there is increasing diversification in terms of decorative traditions, economic specialisms and social networks amongst the Merzbach valley sites during the Younger LBK (Frirdich 1994; Claßen 2006; 2009a; 2009b). Unfortunately, the sparsity of Flomborn-dated finds at these sites prohibits identifying if and to what degree these differences may be tracked back to early clustering in the founding settlers.

These supra-household groupings do not necessary mean that the LBK household, anchored to the longhouse, lost its structural role in the reproduction of LBK society. Seen as an alternative to parallel rows of houses, the repeated pattern of staggered longitudinal rows of houses at Langweiler 8 distinguishes multiple discrete family farmsteads within the main Flomborn settlement cluster. As mentioned above, Strien (*in prep*) also noted the presence of orderly rows of longhouses within the house groups at Vaihingen, and a similar pattern can be seen within the northern and southern cluster at Erkelenz-*Kückhoven* (Figure 5-17). Thus, the indirect evidence suggests that

Figure 5-17: Erkelenz-Kückhoven house groups. Areas inhabited during the Younger LBK are circled in red (after Koschik 2004)
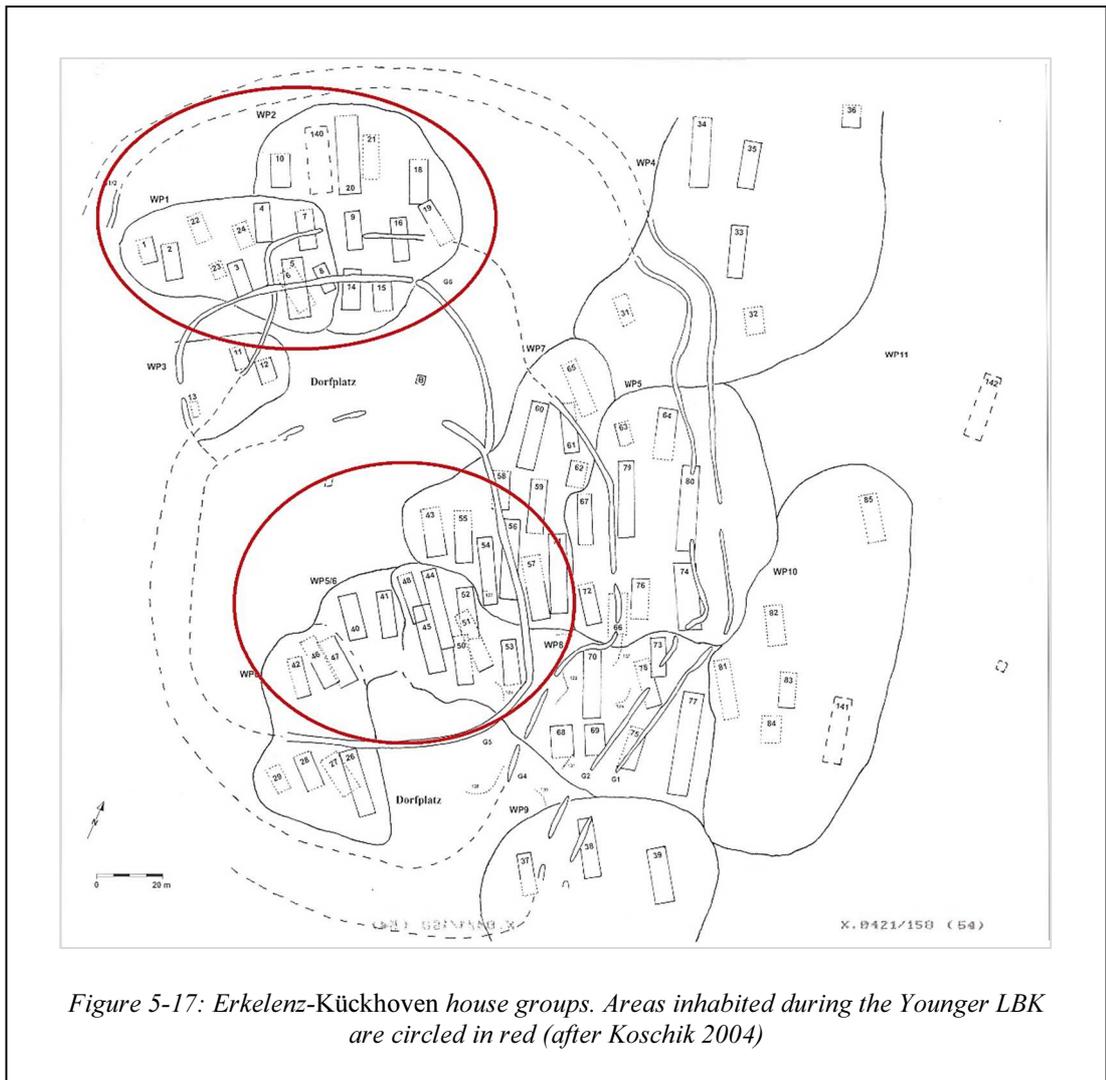
durable farmsteads continued to exist within these crowded sites. This very same crowding likely impacted the daily routines of these households, leading to increased interaction of neighbouring household groups and greater economic integration. The family farmstead is envisioned as the wider economic zone surrounding the longhouse, including small garden plots, rubbish zones and other subsistence activities. As the central areas of these more densely populated settlements were filled in with new longhouses (in addition to the respected plots of abandoned houses), there would have been less space available for these activities, and they may have been shifted away from the *Hofplatz* itself, possibly moved to areas of shared use. Daily activities that may have once helped to define the household now incorporated a wider body of

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neighbours. Thus, the continuation of family farmsteads in the guise of house rows does not preclude these supra-household groupings emerging as discrete economic units within the local settlement areas.

So far, this discussion has avoided the differences in the farmsteads' houses themselves. Given the predominance of large tripartite (or *Großbauten*) houses in the Merzbach valley, the typological difference between house types was largely ignored by the *Hofplatz* model. Comparisons with other sites in the Lower Rhine basin highlight the notable variation in house form and size within LBK settlements (Lüning 1982a: 16; Modderman 1988; van de Velde 1990), and it is clear to see that not all longhouses were created equal (see discussion in 3.1.1). The following section re-considers what house typology can tell us about the nature of household relations within the LBK.

5.4   House typology reassessed: walled houses as formal space

Variations in longhouse form and size have long been associated with social and economic differentiation. For example, larger houses have been interpreted as the residences of local prominent families or big men (Milisauskas 1972: 72–3; 1986: 215; Modderman 1970: 207; 1988: 96; van de Velde 1990). More recently, extremely large longhouses have been described in terms of the social aggrandizement of key individuals or local lineage segments (Pechtl 2009). Van de Velde's 'ward' settlement model (Table 5-4) also suggests that house typology can offer indirect evidence of social structures embedded within local communities (van de Velde 1990). Returning to the theme of longhouse as social anchor, the variable distribution of different house types within the Merzbach and Schlangengraben valleys suggests that the more prominent walled longhouses reflected yet another way of relating within the LBK.

5.4.1 Longhouse form and function

Noting the regularity of certain features, Modderman (1970; 1988) suggested that LBK longhouses were modular in nature and were composed of up to three functionally different parts (referred to as north/middle/south or rear/central/front, depending on the researcher's perspective) separated by narrow, transitional corridors (Figure 5-18). All houses consisted of a central living quarter, where the house's hearth presumably was sited (von Brandt 1988: 209–11, 230–3). Smaller longhouses (Type 3 or *Kleinbauten*) were limited to this central chamber alone. Some houses (Type 2 or *Bauten*) also consisted of a northern walled section, which varied in size (2–11 metres) and number of internal cross-rows (1–5 rows) (Modderman 1988: 94; Coudart 1989: 204). Early suggestions of animal stalls have been put aside because of the lack of corroborative phosphate data and the highly variable size of this section of the

Figure 5-18: Modderman's house typology (Modderman 1970: Fig. 12)
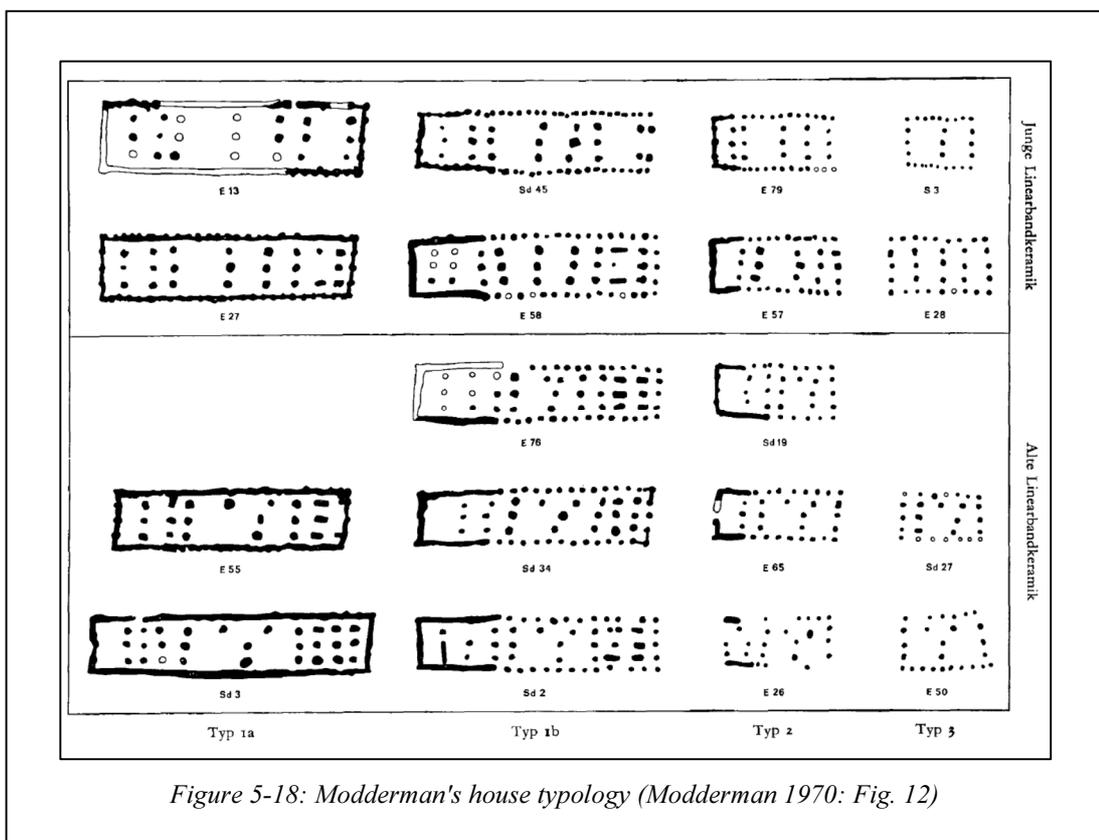
longhouse (Modderman 1988: 94; von Brandt 1988: 209–11; Stäuble and Lüning 1999). Because of its distance from the presumed location of the house's entrance, this northern (or rear) part has been seen as a "private" area for the house's inhabitants, serving as sleeping quarters or even an ancestral shrine (Lüning 1982a: 17; von Brandt 1988: 288; Bradley 2001: 53; Coudart 1998: 110). Finally, the larger tripartite houses (Type 1 or *Großbauten*) contained a southern (or front) section. The common feature of double post rows suggests that this part of the house may have contained a lofted area for grain storage (*cf.* Rück 2007; 2009). Given the lack of such storage facilities in other smaller structures, these lofted areas may have served as collective storage for a number of houses. As such, these southern areas may have represented a more "public" or "open" space in the house (Coudart 1998: 110). The vast majority of LBK longhouses can be characterised by this general typology; although atypical layouts, such as houses with a central and south section, are not infrequent.

As noted above (3.1.1), it has been difficult to demonstrate any clear social inequality between the different types of longhouse. Assuming that each of the three components of the longhouse represents an economic speciality, the lack of one or more of these specialisms within the smaller longhouses implies that their inhabitants did not have equal access to the resources or contacts needed to develop these economic functions (van de Velde 1990: 27–8). In general, there was no significant difference between the artefacts found in association with the different types, although some Type 1 longhouses have been shown to have greater numbers of highly-valued adzes and higher proportions of chaff (de Grooth 1987; Lüning 1982b; Milisauskas 1986; van de Velde 1979a: 141; 1990).

As Figure 5-18 demonstrates, some of the larger tripartite structures were fully enclosed with a wall trench, which is suggestive of more substantial split plank walls. These fully walled (Type 1a) longhouses thus represented a larger 'investment' in terms of time, labour and resource for their residents. With their more substantial walls, these longhouses would have also stood out physically from their wattle-and-daub covered neighbours. Surprisingly, little research has been conducted into better understanding why these different construction methods were pursued. However, the evidence at several Lower Rhine sites (Geleen-*Janskamperveld*, Sittard-*Thein Bunder*, Langweiler 9 and Langweiler 2) suggests that these substantial building may have been regularly burned down (van de Velde 2007b: 32), implying that walled longhouses were 'exceptional' structures that were somehow different to other longhouses. In addition, they may have served as part-time residences. Although demonstrating a similar distribution of artefacts to other Type 1 buildings, the fully walled longhouses at Geleen-*Janskamperveld* contained fewer artefacts overall compared to the more common partially walled structures (van de Velde 2007b: Table 15–6, 15–8).

Van de Velde (1979a; 1990) linked the distribution of the larger walled houses to local hierarchies found within family house compounds and within local lineage connections. He argued that the LBK settlement at Elsloo in the Dutch Limburg was segmented into hierarchical supra-household groups (or 'wards') that operated as discrete economic units. Ceramic seriation suggested that only one tripartite (Type 1) house was occupied at a time within each of Elsloo's wards (van de Velde 1990: 30). In contrast, only one Type 1a (walled) house was occupied during each of Elsloo's phases (Modderman 1970: 112; van de Velde 1990: 31). Although rare, these Type 1a houses were distributed evenly amongst Elsloo's wards, temporarily replacing the

Type 1b house that would typically be found in each ward. Because of this, van de Velde (1990: 34, 36) argued that the inhabitants of the "conspicuous" Type 1a house served as some sort of village chief. More recently, van de Velde (2007a) applied his ward model to the newly excavated site of Geleen-*Janskamperveld*, with slightly amended vocabulary (Figure 5-19)[26]. He argued that a central open space (only

*Figure 5-19: Geleen-*Janskamperveld*. Phases of occupation and site map (van de Velde 2007b: Fig. 15-1)*

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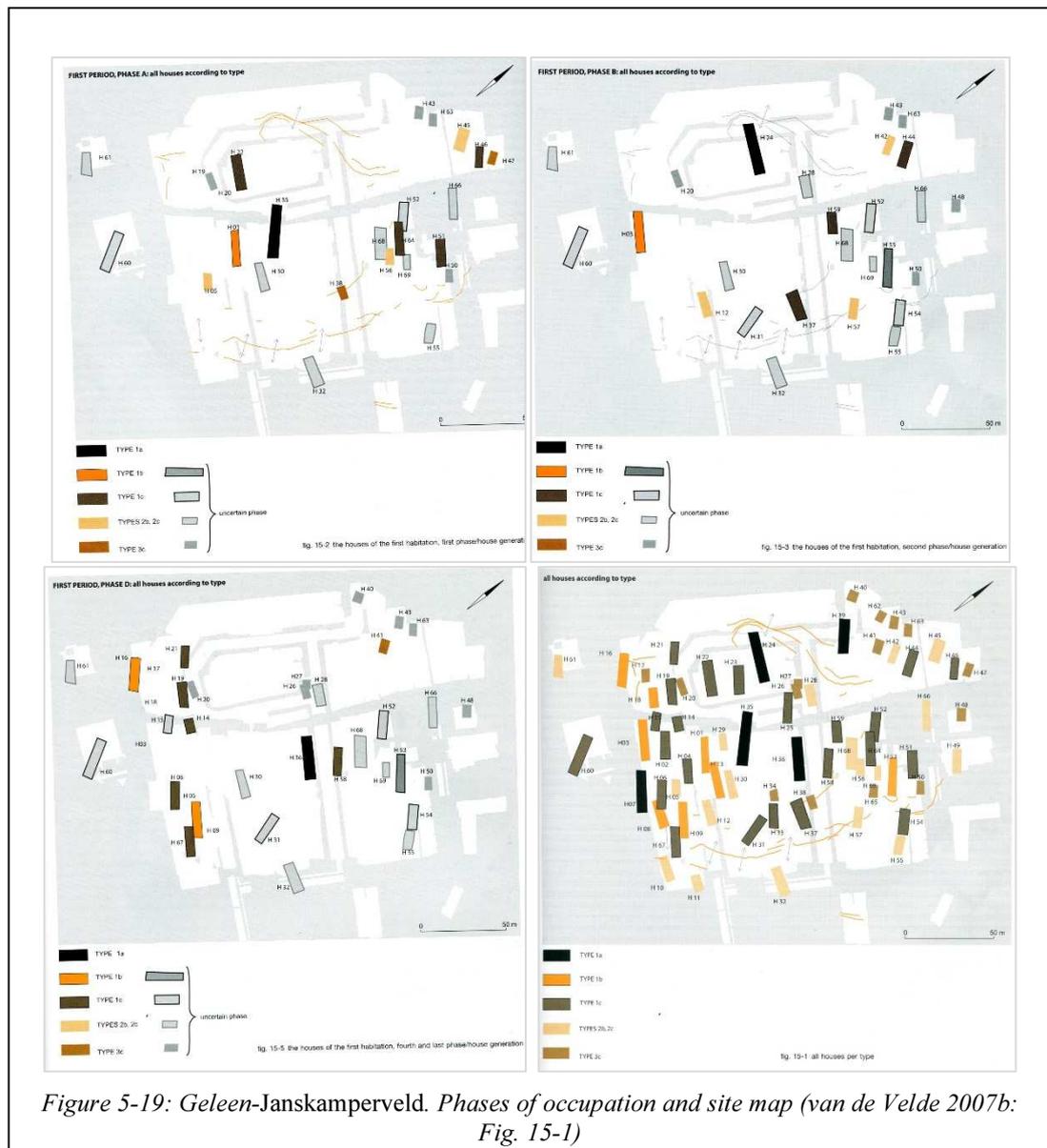
[26] Van de Velde's application of the 'ward' model to Janskamperveld again highlights the uneasy relationship between settlement structures and local chronologies. Taken as a whole, it is difficult to appreciate any sense of boundary or physical distinction between the proposed wards at Elsloo and Janskamperveld. The residential units only become 'visible' when the diachronic phases of settlement are compared. However, like the Merzbach sites described above, van de Velde's local chronology (2007c) for Janskamperveld can be best described as 'plausible' rather than 'confident'. Less than half

distinguishable when contemporary houses are mapped together) segmented the village into two 'wards', representing matrilineal moieties that practised virilocal marriage rules (van de Velde 2007a: 233, 237). The distribution of Type 1b houses within the settlement indicated that the south-western ward was further divided into two distinct house groups. The individual houses that comprise these groups were loosely scattered around a single contemporary Type 1a/b building, which served as the "lineage house" (van de Velde 2007a: 238).

When proposing his ward model, van de Velde (1990: 28–9) felt that it was applicable to other Lower Rhine sites. Based on number of house plans uncovered at Langweiler 8, he suggested that 2–3 wards may have been inhabited at Langweiler 8, although he did not have access to the published site plan for Langweiler 8 at the time. Now available, the data from the Merzbach sites deviate from the 'wards' identified in the Dutch Limburg but continue to imply a special role for the walled longhouses within the local community.

5.4.2   Distribution of house types within the Merzbach valley

5.4.2.1   *Merzbach valley*

Of the 157 longhouses identified within the Merzbach valley, 91 house plans (58%) were preserved enough to categorise their type (Table 5-5). Rather than representative of a selective few, the longer, more substantial Type 1 longhouses were a common

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of the houses can be dated ceramically (N=34). Another quarter can be roughly dated based on their internal post configuration (N=18). This leaves nearly a quarter of longhouses undated (N=17). Furthermore, van de Velde (2007c: 226) noted "the ceramic phases are only obliquely relevant to the establishment of house generations". Although derived from pottery seriation, van de Velde deviated from this relative chronology to ensure that one Type 1b house per ward and one Type 1a house was occupied each phase. Other houses were also reassigned to construct a more "expected" trajectory of settlement development (in terms of house numbers) (van de Velde 2007a: 226).

Table 5-5: Frequency table of house types for the middle Merzbach (Boelicke et al. *1988: Tables 4.5.8.3, .5, .7; Boelicke* et al. *1994: Tables 3.4.1–3.4.4)*

	LW8	LW9	LW16	LW2	LB7	NM4	LB8	Grand Total
Type 1a (fully)	8	2	0	3	1	4	0	18
Type 1b (partially)	35	12	1	7	1	1	0	57
Type 1b–2	1	0	0	0	0	0	0	1
Type 2/3	11	1	0	4	0	0	0	16
Indeterminate	43	1	2	5	7	3	4	65
TOTAL	98	16	3	19	9	8	4	157
Categorised (N)	54	15	1	14	2	5	0	91
Categorised (%)	55.1%	93.8%	33.3%	73.7%	22.2%	62.5%	0.0%	58.0%
% of all houses								
Type 1a	8.2%	12.5%	0.0%	15.8%	11.1%	50.0%	0.0%	11.5%
Type 1	43.9%	87.5%	33.3%	52.6%	22.2%	62.5%	0.0%	47.8%
% of categorised houses								
Type 1a	14.8%	13.3%	0.0%	21.4%	50.0%	80.0%	-	19.8%
Type 1	79.6%	93.3%	100.0%	71.4%	100.0%	100.0%	-	82.4%

feature of these sites and may have represented the 'typical' longhouses for these communities.

A large proportion of house plans identified in the Merzbach valley (42%) were too badly eroded to observe the characteristic features which define the different categories of longhouse form. It has been suggested that the larger longhouses may be more likely to remain 'legible' because they cover a larger surface area and/or were built more robustly. Thus, the 'illegible' house plans would be more likely to be the smaller Type 2 and Type 3 structures (raised and argued against by van de Velde (1990: 26)). In fact, house size/type does not appear to correlate with structural

robustness (van de Velde 2007a: 240), and these illegible house plans likely represent a variable distribution of house type. Even if we were to assume that the majority of these indeterminate structures relate to Type 2 or Type 3 houses, half of the settlement's houses would still be tripartite (both partially- or fully-walled). As confirmation of this, we see that the 15 of the 16 uncovered plans at Langweiler 9 are tripartite buildings, leaving at most two of the smaller models at this settlement.

The fully walled (Type 1a) longhouses are scattered spatially amongst the other houses of the Merzbach cluster (Figure 5-20; 12% of all houses). A single Type 1a house can

Figure 5-20: Distribution of attributable house types at Merzbach sites (after Stehli 1994; Boelicke et al. 1988; 1994)
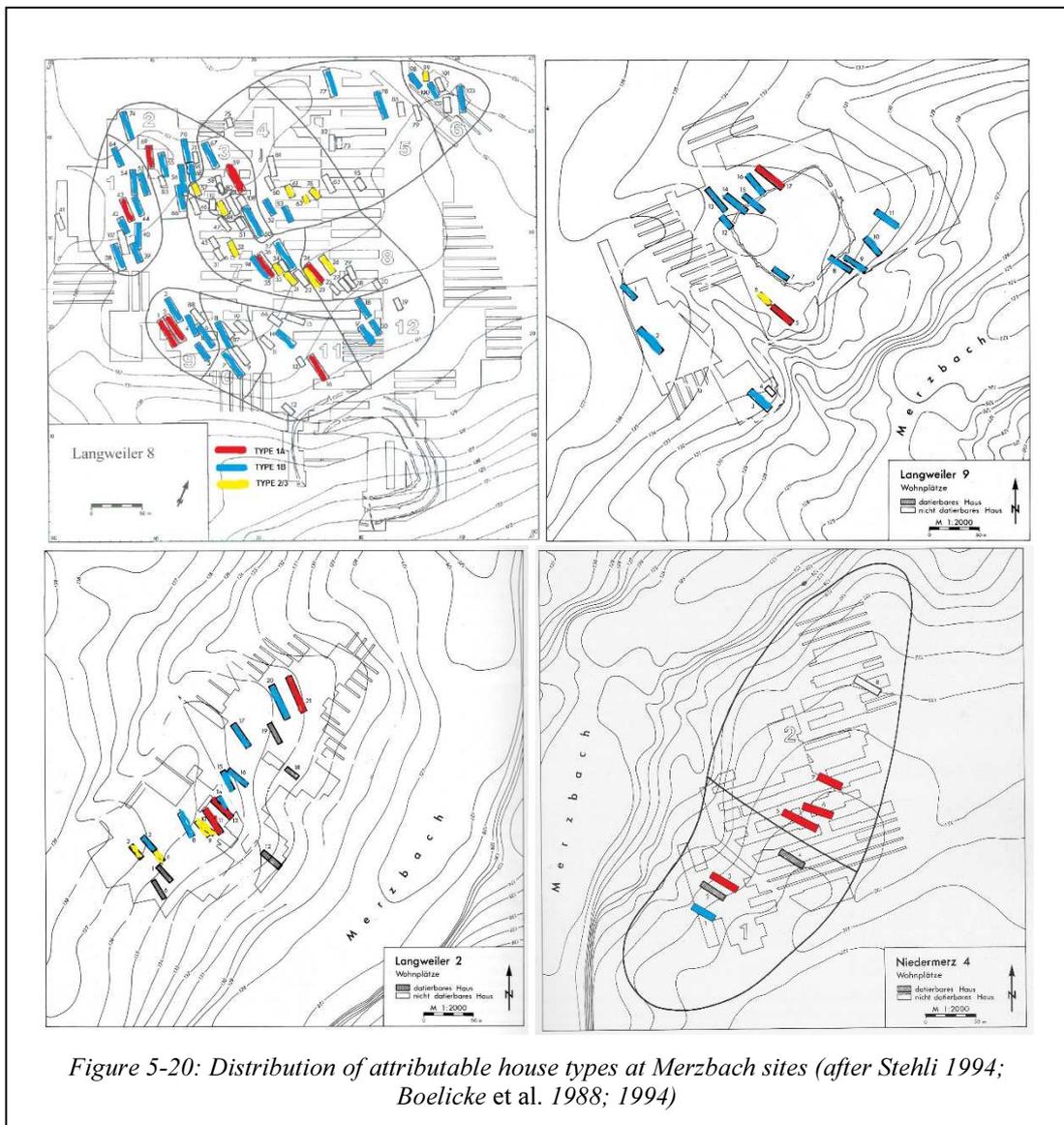
be found on many of the farmstead plots, although not all family farmsteads come so equipped. Most notably, the northernmost cluster at Langweiler 8 and the eastern cluster at Langweiler 9 lack such a structure despite these areas being occupied for more than 100 years. In addition, two Type 1a longhouses can be found in close proximity to one another on Farmstead 9 at Langweiler 8 and Farmstead 3 at Langweiler 2, and three of the four houses in Niedermerz's central cluster are fully walled. In each case, the houses were deemed to have been occupied within 1–2 generations of one another (Stehli 1994).

Significantly, these structures make up an equal if not larger proportion of houses at the smaller sites of the Merzbach (Table 5-5). Of the 18 Type 1a houses uncovered within the Merzbach sites, seven could be dated securely through their ceramic assemblages (Table

Table 5-6: Temporal distribution of fully walled (Type 1a) longhouses at Merzbach sites (securely dated houses only) (Stehli 1994; Münch 2009)

Site	House No.	Farm-stead	HG	Position in house sequence
LW8	43	1	IV	3 of 10
LW8	3	9	IX	3 of 7
LW8	24	8	XIV	8 of 8
LW2	11	3	X	3 of 6
LW2	13	3	XII	5 of 6
LW9	17	3	X	4 of 6
NM4	6	1	XIII	3 of 4

5-6; Stehli 1994; Münch 2009)[27]. Although concentrated temporally in the Younger LBK, there is no consistent pattern as to when these structures were constructed within the local house sequences; they appear early within some sequences and late in others.

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[27] As noted previously, I have limited my use of Stehli's local chronology to houses that are dated through the contents of the elongated clay borrow pits running alongside the long walls; see Appendix A for further discussion.

In contrast, the distribution of the smaller Type 2/3 houses is more concentrated (Figure 5-20 above). At Langweiler 8, these smaller structures are largely restricted to the centre of the settlement (in Farmsteads 7 and 8), although the large number of 'illegible' houses (especially in the south-eastern part of the site) could be distorting this. At Langweiler 2, the known Type 2/3 houses are located at the far southern part of the sites amongst an unusual pen feature. Lüning (1982a: 16) initially suggested that the smaller Type 2/3 houses were limited temporally to the middle and later LBK phases within the Merzbach sites, consistent with Rück's additive house construction model. Rück (2007: 103–11; 2009) argues that new LBK longhouses were initially limited to the central part (i.e. constructed as Type 3 houses). With time and productive success, the house's residents would extend the structure, first adding a rear gallery and then, eventually, a front porch. Evidence for such additions
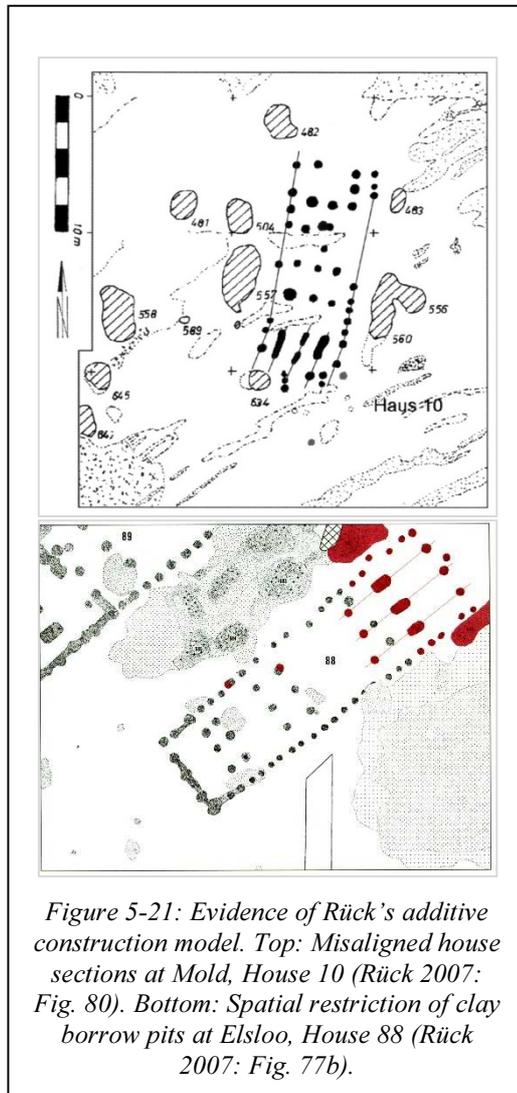
Figure 5-21: Evidence of Rück's additive construction model. Top: Misaligned house sections at Mold, House 10 (Rück 2007: Fig. 80). Bottom: Spatial restriction of clay borrow pits at Elsloo, House 88 (Rück 2007: Fig. 77b).

could be seen when the different sections were misaligned or when the adjacent clay borrow pits were limited to only certain sections of the house (Figure 5-21). Thus, smaller houses were more likely to appear in later phases of occupation, before they have had a chance to be extended. The subsequent chronology established for the Merzbach valley indicates that the bulk of Type 2/3 houses were constructed and

occupied during the middle LBK, when the local population was at its peak (Stehli 1994; Münch 2009).

5.4.2.2 Schlangengraben valley

Of the 91 longhouses identified within the Schlangengraben valley, only 34 house plans (37%) were preserved enough to categorise their type (Table 5-7). This lower preservation rate in the Schlangengraben valley is likely due to the less extensive nature of rescue excavations undertaken here. Compared to the Merzbach valley, the confirmed Type 1 houses make up a smaller proportion of the overall assemblage

Table 5-7: Frequency table of house types for the middle Schlangengraben (Krahn 2006: Tables 68–99, 188)

	WW17	WW6	LN3	WW29	Grand Total
Type 1a (fully)	7	1	7	-	15
Type 1b (partially)	1	1	5	-	7
Type 1b–2	8	3	4	-	15
Type 2/3	8	1	3	-	12
Indeterminate	20	1	21	-	42
TOTAL	44	7	40	-	91

	WW17	WW6	LN3	WW29	Grand Total
Categorised (N)	16	3	15	-	34
Categorised (%)	36.4%	42.9%	37.5%	-	37.4%

% of all houses

	WW17	WW6	LN3	WW29	Grand Total
Type 1a	15.9%	14.3%	17.5%	-	16.5%
Type 1	18.2%	28.6%	30.0%	-	24.2%

% of categorised houses

	WW17	WW6	LN3	WW29	Grand Total
Type 1a	43.8%	33.3%	46.7%	-	44.1%
Type 1	50.0%	66.7%	80.0%	-	64.7%

(37% compared to 48%) but still represent a significant percentage of the categorised house plans (65%).
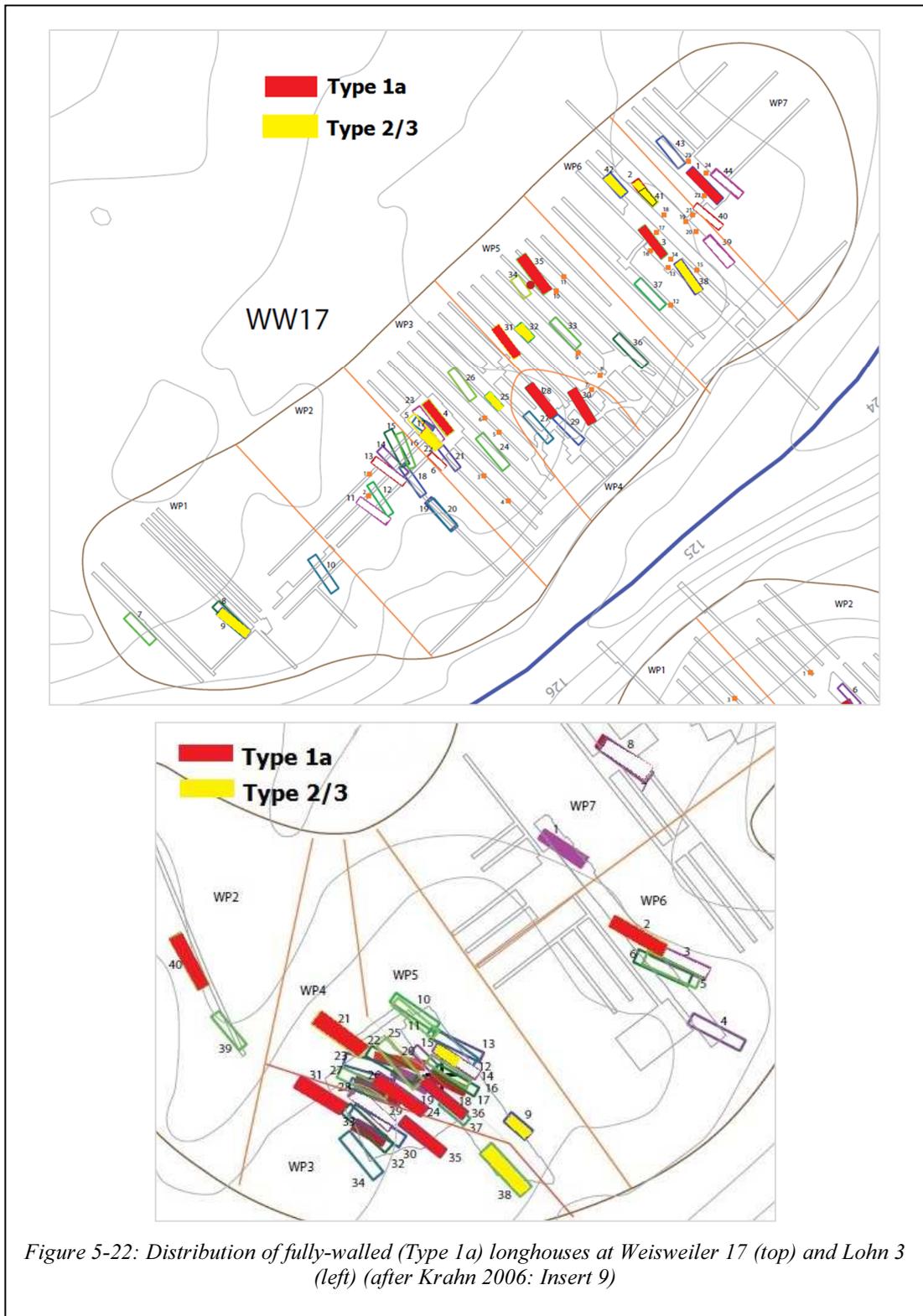
Figure 5-22: Distribution of fully-walled (Type 1a) longhouses at Weisweiler 17 (top) and Lohn 3 (left) (after Krahn 2006: Insert 9)

The fully walled (Type 1a) longhouses are more concentrated in the Schlangengraben sites (Figure 5-22; 17% of all houses). Like the Merzbach valley, there appears to be a one-to-one relationship between the tightly clustered house rows at Weisweiler 17 and fully walled longhouses; however, several more of these structures were located in the looser scattering of houses lying between these houses. This suggests that settlement may have been significantly denser in this area, despite the relative lack of preserved house plans (as suggested above, 5.3.2.2). Similarly, a number of fully walled houses crowd the dense cluster of houses found at Lohn 3. In contrast, the smaller Type 2/3 buildings (where identifiable) are more evenly distributed throughout the sites.

Of the 15 Type 1a longhouses uncovered within the Schlangengraben sites, proposed house generations could only be offered for six of the houses (Table 5-8). Like the Merzbach sites, these structures appear to be constructed both early and late in the local sequence.

Table 5-8: Temporal distribution of fully walled (Type 1a) longhouses at Schlangengraben sites (Krahn 2006; Münch 2009)

Site	House No.	Farm-stead	HG
WW17	1	1	X
WW17	31	5	II?
WW17	35	5	IV?
LN3	35	3	X
LN3	36	5	X
LN3	40	2	III/IV

5.4.3   Family-based or lineage houses?

According to van de Velde's 'ward' model (1990), LBK settlement in the Lower Rhine basin was segmented into hierarchical kinship-based residential groups comprising one partially or fully walled longhouse (Modderman's Type 1a and Type 1b) and 2–4 other lower-ranked contemporary houses. As shown above, the distribution pattern of house types within the Merzbach and Schlangengraben sites is not consistent with the Dutch Limburg data. Rather than representing the residence of family or lineage heads,

the larger tripartite longhouses dominate the Aldenhoven Plateau settlements and likely represented the typical household residence.

Whilst the settlements in the Merzbach valleys deviate from the 'ward' model in terms of the house composition of kinship-groups, it is still worth considering the special role that the fully planked Type 1a houses may have played within the community.

Table 5-9: Estimated number of Type 1a for village sites and each valley as a whole. Presumed longhouses: percentage of Type 1a house in all categorises houses x number of indeterminate house plans (Boelicke et al. *1988; 1994; Krahn 2006*)

	Confirmed Type 1a longhouses	Presumed Type 1a longhouses	Total
LW8	8	6–7	14–15
WW17	7	8–9	15–16
LN3	7	9–10	16–17
LW9	2	0	2
LW2	3	1	4
NM4	4	2	6
Merzbach	18	12–13	30–31
Schlangengraben	15	18–19	33–34

Although secure dates for the fully walled longhouses on the Aldenhoven Plateau are limited, the data suggest a wide temporal distribution for these structures (ranging from HG II to HG XIV). In addition, the estimated number of Type 1a longhouses found within the larger 'village' sites (Langweiler 8, Weisweiler 17, Lohn 3) is roughly consistent with the number of house generations proposed for the region (Table 5-9). As such, an argument could be made that only one Type 1a longhouse stood at a time in these sites, as suggested at Elsloo and Geleen-*Janskamperveld* (van de Velde 1990; 2007a). However, this relationship of one Type 1a house per generation is either lacking or exceeded in the smaller settlements in the areas. Only two such structures have been uncovered at the long-lived site of Langweiler 9, whilst at least six fully walled longhouses were constructed during Niedermerz 4's short four-generation occupation. Alternatively, if these settlement clusters were envisioned as integrated socio-political

units (see the following chapter for further discussion), more than one Type 1a longhouse was likely occupied at the same within the cluster as a whole.

In contrast, there is more of a one-to-one relationship between family clusters and fully walled (Type 1a) houses within the Merzbach and Schlangengraben sites, which suggests that these houses may have served a specialist function within family units[28]. As noted above, there is no pattern as to when these more substantial structures were built within their individual house sequences. This issue may be confounded by the house generation model itself. According to the original *Hofplatz* model, all longhouses were seen to be occupied for a generation, with some authors linking the construction of new houses to a defined inheritance system (Boelicke *et al.* 1988b: 894–5; Strien 2010a). The use-life of LBK longhouses, however, remains a matter of ongoing debate (see A.2.3.1), and exceptional buildings, such as these fully walled longhouses, may have been used for a much longer period (up to 100 years by some estimates (Schmidt *et al.* 2005)). In contrast to van de Velde's results at Geleen-*Janskamperveld* (2007b: Table 15–6), the pits associated with the fully walled longhouses at Langweiler 2 and Langweiler 8 contained greater quantities of all measured artefact types (Table 5-10). This is consistent with these structures being used for a greater period of time. Freed from these restricted time frames, the Type 1a structures in the Merzbach and Schlangengraben sites may have stood for several generations beside other occupied houses within the settlement's family plots or

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[28] Type 1a (walled) longhouses may have also served as a 'lineage house' for an evolving kin-based supra-household residential group, similar to that suggested by van de Velde 'ward' model. Incorporating multiple family farmsteads, these more elaborate structures could have offered as a communal focus for 'related' household groups with the location of the 'lineage' house shifted periodically between the row-redefined family farmstead found within these larger-scaled groupings. At other sites (Vaihingen, Elsloo, Geleen-*Janskamperveld*), the presence of moiety structures within the local settlement community have been indicated by the distribution of specific pottery types (van de Velde 1979a; 2007a; Strien 2005). To date, no such analysis has been completed using the Aldenhoven data and, therefore, this possibility remains hypothetical at this state.

Table 5-10: Comparison of assemblages associated with different house types at Langweiler 2 (top) and Langweiler 8 (bottom) (after Boelicke et al. *1988: Tables 4.5.8.3/7, Catalogue; Farruggia* et al. *1973: Catalogue C)*

Langweiler 2									
House Type	Pits (N)	Dec vessels (N)	Dec sherds (N)	Dec sherds (g)	Undec sherds (N)	Undec sherds (g)	Flint tools (N)	Flint artefacts (N)	Stone tools (N)
1a	14	19.10	39.70	-	146.30	-	17.30	65.60	3.50
1b	22	10.08	19.15	-	57.77	-	5.62	17.77	2.54
2/3	6	11.83	26.50	-	120.33	-	11.50	35.83	6.33
?	26	5.60	11.81	-	71.94	-	4.25	16.31	2.44
Total	68	10.84	22.09	-	90.82	-	8.51	30.29	3.22

Langweiler 8									
House Type	Pits (N)	Dec vessels (N)	Dec sherds (N)	Dec sherds (g)	Undec sherds (N)	Undec sherds (g)	Flint tools (N)	Flint artefacts (N)	Stone tools (N)
1a	28	12.52	24.63	271.26	95.22	1358.52	3.89	39.41	5.30
1b	152	6.38	13.31	179.48	47.00	686.74	1.56	10.40	2.76
2/3	47	6.28	14.13	179.17	46.76	708.76	2.00	14.76	3.07
1–3	11	9.80	17.10	294.00	69.50	961.50	3.70	18.30	3.00
?	103	5.40	12.81	114.29	40.80	528.05	1.62	11.91	3.12
Total	341	6.68	14.32	170.58	49.74	705.18	1.90	14.11	3.13

clusters. At other sites (Darion: Bosquet *et al.* 2008; Arnoldsweiler: Husmann and Cziesla 2014: 76), we see the evolution of early (pioneer) longhouses into specialist structures functioning as a welcoming post to the settlements themselves. The fully walled structures of the Aldenhoven Plateau may have served a similar purpose, offering a more formalised space for family affairs. Perhaps, this offers additional indirect evidence that multiple longhouses were occupied concurrently on each farmstead, requiring the need of a shared formal space.

Within this context, the dominance of Type 1a longhouses in the central cluster at Niedermerz 4 is exceptional. This site was settled relatively late in the Merzbach

occupation (HG XI–XIV), by which time the social meaning of these elaborated longhouses may have evolved from formal spaces associated with family-based activities to a more overt means of social competition. Thus, the repeated construction of fully walled longhouses at Niedermerz 4 could be argued to represent an attempt by its residents to demonstrate social status or familial longevity despite their recent establishment as a family farmstead. Similarly, the absence of a fully walled longhouse within some clearly defined house rows at Langweiler 9 and Langweiler 8 demonstrates that some families lacked the status, surplus or wider social networks needed to construct such a structure, either physically or by entitlement.

5.5   The embedded household: residential meshworks

In their search for a means to construct local chronologies, the authors of the *Hofplatz* model have presented us with a clear, if one-sided, vision of the LBK household: autonomous, stable and durable. Whilst finding evidence of such entities, a re-examination of the Merzbach and more recently excavated Schlangengraben valleys highlights other kinds of households and 'relating' within these communities. We can see traces of residential groupings operating on different scales: that of the dynastic household compound, the stand-alone household and broader clusters of 'related' households. However, these are not the scales of a nested hierarchical settlement system, but indicate different degrees of integration operating side by side within these neighbouring communities (Table 5-11). The emergence of these different settlement patterns may reflect the contingent emergence of supra-household meshworks, incorporating members from different household meshworks, local hierarchies and outside resources.

Table 5-11: Different scales of residential group

Scale	Settlement pattern	Where found	Key connections	Social standing	Implications for *Hofplatz* model
Stand-alone household	Looser scatters of 1–2 houses	Hamlets, villages	Kin groups within & possibly beyond settlement Opportunistic alliances	Dependent on local kin groups or temporary alliances Possibly lower status	Not all longhouses participated in house sequences
Dynastic household	Clustered house rows with fully walled lineage house	Hamlets, villages, single farmsteads	Familiar ties (past & present)	Semi-independent Corporate 'Houses' with flexible membership	House rows extend beyond family farmstead Evolving into family compounds of more than one house
Supra-household	Larger-scaled house clusters associated with different traditions in material culture	Village only	Wider kin relations (clan, lineage) likely extending beyond the settlement itself	Loose confederation of related households Social significance may have increased over time as resources shifted from house to lineage	Economic dependencies may have developed over time

5.5.1 Residential groups as an expression of 'relation'

Given the ubiquity and general uniformity of the longhouse, the LBK household remains the central platform of LBK society. As detailed by Whittle (2003) and Bickle (2008, 2009), the repeated activities in and around the longhouse brought people together in a variety of contexts, thus nurturing new relations. These relations extended beyond the farmstead itself, as members of the household moved through the landscape, interacted with each other within daily tasks, or took up residence in other

villages and households. These dynamic household meshworks are embedded in and overlapping with other forms of groupings based on the residential group.

The dynastic household of the *Hofplatz* model has dominated discussions of the social structure over the past forty years of research in the lower Rhineland. The contemporary household anchored to its residential longhouse is linked to past (and future generations) of the same 'family' line through the repeated construction of houses in spatial relation to one another, continuous use of tenanted resources (such as fields, gardens and ovens) and possibly the curation of family heirlooms and insignia (such as the decorative motifs found on pottery vessels). Whilst examples of such tightly clustered rows of houses are easier to identify in the smaller hamlets of the Merzbach valley, the predominance of house rows within larger settlements suggests that they may have played some role in the structuring of these local communities too. The practice of house rows within LBK settlements had its roots in the need to emphasise particular areas around the longhouse or particular familiar relations (Lüning 2005). Over time, this settlement pattern may have become an unconscious indicator of family 'connection', subject to alternation and local variation such as the longitudinal rows seen at Langweiler 8 and Weisweiler 17. The house rows constructed within these larger areas of settlement extend beyond the spatially restricted *Hofplätze* proposed by Stehli (1994) and others, incorporating more houses than available house generations. Likewise, the nature of 'family' relations captured by these house rows likely extended beyond the simple reproduction of a single nuclear family to incorporate secondary houses for an expanding family 'compound'.

This brings to mind the 'Houses' of Levi-Strauss' "*sociétés à maison*", which served as a kinship proxy within some of the coastal North-western communities in Canada

(see discussion in 3.4.3). As noted earlier, not all households achieved that dynastic or corporate status of 'House' within these communities. Returning to the LBK, it could be argued that the construction of a fully walled longhouse (Type 1a), either by building a new structure or re-purposing an older structure, reflected the emergence of a similar corporate or social identity amongst the local households. This may be key to the longevity witnessed within the family farmsteads of the Aldenhoven Plateau. Recent demographic models (Schliesberg 2010; Strien 2010a) have highlighted that many families would have lacked a viable heir due to childhood disease and early mortality (6.1.1). Accepting a certain degree of flexibility in defining 'family', household membership and clan leadership ensured the 'House' could continue to reproduce itself independent of personal circumstance. The construction of house rows served as a means for these flexible family units to reclaim their connection to history, emphasising their 'shared' links with past generations and shared ancestors.

At the same time, broader kin associations have been indicated in the larger-scaled clustering present in larger settlements of Langweiler 8 and Weisweiler 17. It is likely that these broader groupings represented settlers from different places of origin or from different lines of descent (lineages), expressed through variation in the decorative spectrum used within the households. Similar large-scaled groupings at Vaihingen and Erkelenz-*Kückhoven* have been associated with different social networks extending beyond the settlements themselves, and stylistic links between Langweiler 8's western and eastern cluster and other neighbouring areas of settlement are consistent with this supposition. Within these broader groups, the individual households continued to express their own identities and remain distinct from other 'related' households. Thus, we still see the continuation of rows of longhouses within Langweiler 8, indicative of the dynastic households described above. Furthermore, the inhabitants of the early

farmsteads at Langweiler 8 shifted residential focus away from 'encroaching' households or resorted to building over abandoned houses to retain their spatial distance from one another. However, the high degree of overlapping house plans at Lohn 3 suggests that this interplay between household and kin group could vary locally. The contemporary households at this site are repeatedly built in a very small area, preventing the maintenance of meaningfully distinct domestic zones around individual longhouses. This implies that supra-household groupings may have been more influential at Lohn 3, so much so that the dynastic household as economic and social unit had been completely subsumed by them.

The presence of small house clusters and stand-alone longhouses (most obvious in the smaller sites of the Merzbach but equally likely in larger sites) implies that some households remained more aloof from these local social structures. In many cases, these individual longhouses represent the failed household—that is, a household that could not successfully reproduce itself due to personal misfortune, failed crops or an inability to attract a cooperative labour force. Their residents may have re-settled elsewhere or were absorbed into the neighbouring households; although this need not be the case. The social pressure to emphasise deep family connections to a particular area of land through house construction were sometimes overridden by other factors for these households. For example, the inhabitants of these structures may have included lesser members of influential kinship or lineage groups residing elsewhere in the settlement/settlement cluster. The need to maintain positive relations with these kin necessitated the abandonment of one's own dynastic drive. Alternatively, the inhabitants of these longhouses may have pursued more opportunistic alliances, shifting the location of their longhouse to reflect their dynamic meshwork. Such relations are often visible within the material assemblages associated with these

houses—for example, lower quantities of finds, fewer exotic materials and prestige objects, close stylistic links with other households in the local area—and future work in this direction could offer further insights.

5.5.2 Settlement re-interpreted: implications for the *Hofplatz* model

The discussions above demonstrate that the autonomous and long-lived family farmsteads of the *Hofplatz* model were not universal, even within the confines of the Merzbach and Schlangengraben valleys. This does not mean such households did not exist. Rather, the independent farmsteads described above were the product of certain social relations within and between families[29]. Whilst the establishment of a dynastic 'House' may have represented an ideal within the local LBK communities, the presence of looser arrangements of houses and their individual longhouses suggest not all inhabitants resided in such durable family farmsteads. The extension of house rows beyond the boundaries of individual *Hofplätze* suggests that such farmsteads may have included more than one contemporary house, bringing the Aldenhoven Plateau *Hofplatz* more in line the Dutch 'ward' structure. At the same time, the high degree of overlap at Lohn 3 suggests the dominance of supra-household identities over the household in some places. Returning to the Aldenhoven Plateau, we see these different scales of residential group operating side-by-side — not as a nested hierarchy but as the variable expression of different ways of relating: family, origin/descent and opportunist alliance. They were the product of similar social processes but with varying emphasis.

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[29] This dynamism and sense of contingency also offer yet another argument against using the underlying assumptions of the *Hofplatz* model to 'date' house plans without dateable assemblages (see further discussion in Appendix A). Whilst this may lead to less well defined local chronologies, it engages more fully with the diversity inherent within the LBK data.

The traditional view of the household is best replicated at the small settlement at Langweiler 9. The presence of two tightly-clustered rows of parallel longhouses (of up to six houses over eight generations) materially represents the long-lived reproduction of the household and that household's commitment to a particular area. Not all families were so successful. Outside of these clusters, the longhouses of Langweiler 9 are more randomly distributed. Houses 1 and 2 on the western fringe of the site are staggered from one another and possibly separated by up to 100 years (Münch 2009). Separated by an intrusive channel, House 3 likely dates to the early Flomborn period; its nearest neighbour (spatially and temporally), House 5, lay more than 60 m to the north-east. At Langweiler 9, the long-lived family farmsteads envisioned by Boelicke *et al.* (1988b; see also Lüning 1982a) lived side-by-side with other more transient households.

Situated on the opposite bank, Laurenzberg 7 lacks the tightly-clustered rows of houses seen at Langweiler 9. New generations of houses were not constructed alongside the foundations of older buildings; instead, they were staggered, lacking any particular pattern. This lack of pattern may reflect the expansive nature of settlement at this site—that is to say, tight clusters become more loosely-aligned groups—as a result of the unknown economic specialism likely practiced here. Nevertheless, an alternative interpretation is possible. As a single farmstead settlement, the inhabitants of Laurenzberg 7 did not feel the need to communicate 'continuity' to the neighbouring households through house construction. The decorative motifs used by Laurenzberg 7 were very similar to those used at Langweiler 8, suggesting intense social contact and connection between these two areas (Frirdich 1994). The lack of family display at Laurenzberg 7 may have been linked to the farmstead's need to maintain these close relationships.

Generations of house construction at Langweiler 8 have filled the settlement area, obscuring the clustered longhouses of the family farmstead. Longitudinal rows of staggered houses and subtle differences in decorative spectrum hint at potential divisions within the settlement. Almost from the earliest stages, the individual households of Langweiler 8 cluster together into opposing supra-household groupings. During the Flomborn period, the main clusters of houses in the western half of the settlement lie separate from the isolated single household to the north. These groups undergo significant changes in the younger LBK: the northernmost household abandons the settlement; new groups of households establish themselves in the SE corner of the site, whilst the older households of the west are gradually abandoned. Similar changes are seen at Vaihingen and other sites (Bogaard *et al.* 2011) and suggest that this social reorganisation affected the LBK as a whole. Despite these changes, the local settlement continues to be organised into family compounds or 'Houses'.

Comparable in size, the longhouses at Weisweiler 17 are loosely strung out along the steep slopes of the Schlangengraben valley. A tight cluster of houses in the centre of the site indicates that certain households were more prominent in the community, emphasising their ties to the past by constructing their new houses parallel to former houses. The construction of longhouses in three rows deep on the northern fringe of the settlement alludes to similar connections with the past, but expressed longitudinally. Though related, these social practices could be argued to point to groups from different social traditions living together within the same settlement (Lüning 2005). Like Langweiler 9, Weisweiler 17 sees the co-existence of long-lived and communicative family farmsteads alongside more loosely connected households.

Finally, the site of Lohn 3 challenges the nature of the household itself. The dense cluster of 30 overlapping longhouses uncovered at this site is almost wholly inconsistent with the *Hofplatz* model. Multiple contemporary houses must have stood within this geographically restricted area. To some extent, this could reflect the distribution of the 'household' across multiple longhouses (as suggested by Czerniak 2013). In contrast to Langweiler 8, the lack of separation between households also implies that the household itself as unit of production was completely subsumed into larger social entities.

Thus, LBK settlement did not reflect the unconscious repetition of cultural norms but the flexible use of a range of settlement practices to emphasis relationships that were particularly meaningful and influential to residents. Within the relatively limited research area of the Aldenhoven Plateau, we see significant diversity in terms of the role of household and supra-household groups in household continuity, social organisation and group identities. Looking more broadly, one could argue that these differences are related to the nature and intensity of social relations that extend beyond the settlements themselves. Given the proximity of these sites to one another (all within 2km of each other), how should we interpret the social connections between households within and between neighbouring settlements? The following case study addresses this issue and considers the concept of "community" within these loose networks of neighbouring settlements.

6 Social relations at the cluster scale

Like the term "household", the concept of the "community" tends to be accepted uncritically within archaeology as a scale of generalised sociality lying somewhere between the intimate connections of the household and vaguer interactions present at the regional scale. As such, the collective group residing within settlements are often interpreted as 'communities' with an implied acceptance of shared identity, purpose and stability (see Yaeger and Canuto 2000; Harris 2014 for detailed critique).

Recent studies, however, have challenged these inherent assumptions and have attempted to develop a more reflective understanding of 'community' within living and prehistoric societies (Yaeger and Canuto 2000; Whittle 2003; Anderson 2006; Moore 2007; Varien and Potter 2008; Harris 2014). Although specific definitions remain elusive and quite possibly counterproductive, our understanding of communities has expanded beyond simple co-resident groups to incorporate the role of shared practices, values and morals. For example, Yaeger and Canuto (2000) argue that communities are continuously reproduced through interaction and the performance of shared practices ("communities of practice"). Isbell (2000) and Whittle (2003) argue that co-presencing and direct interaction may not be necessary in all types of communities. A shared value system or moral code can help to define "imagined" or "moral" communities incorporating persons that may never come in contact with one another. Finally, symmetrical archaeology and relational ontologies encourages us to think beyond humans and consider communities as assemblages of humans, non-humans and objects (Harris 2014). Thus defined, multiple cross-cutting "communities" can emerge through the collective routines and interactions practiced at any scale.

Establishing these "communities" within an archaeological context can be difficult. Within LBK studies, the "community" has most often been associated with residential settlements or, at the very least, with supra-household activities (e.g. Milisauskas 1972; Boelicke 1982; 1988). However, the construction of a new longhouse, excavation of substantial ditched enclosures or the use of a shared burial ground may have been similarly "communal", pulling together people from the local settlement area and wider afield (Bickle and Hofmann 2009).

The following case study explores some of the different 'communities' that operated at the settlement cluster scale within the LBK of the Lower Rhine basin. As outlined above, community is not necessarily a unitary mode; multiple communities can exist in parallel, serving different purposes and overlapping members. I investigate three LBK features frequently found at this scale: distributed settlement groups, cemeteries and enclosures. As the products of their communities, I argue that these features demonstrate the presence of multiple, overlapping 'communities' within settlement clusters and, as such, serve as an example of meshworks in action.

6.1   Settlement clusters: communal fluidity

LBK settlement in the loess zone was not continuous, but was concentrated typically on flat(ish) areas along the slopes of tributary river valleys (although upland and river deposit sites were also occupied, especially during the later LBK; Ilett *et al.* 1982; Bogucki 1988; Amkreutz 2010). Early researchers noted the concentration of several sites of variable size and duration within relatively close proximity of one another (Merzbach: Lüning 1982a; Graetheide: Modderman 1988; Bylany: Figure 6 1; Soudský 1962; 1966), referring to these dense pockets of settlement as 'settlement cells' or 'settlement clusters'.
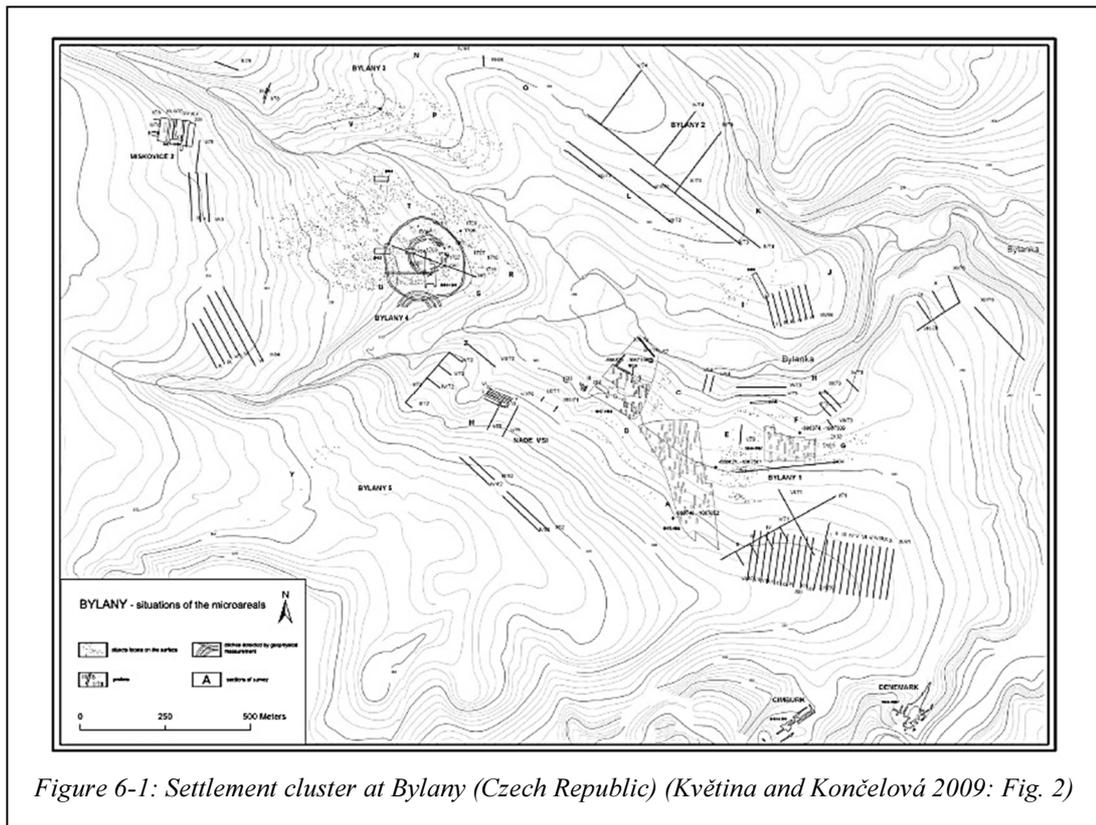
Figure 6-1: Settlement cluster at Bylany (Czech Republic) (Květina and Končelová 2009: Fig. 2)

The following section re-examines the evolution of the Merzbach and Schlangengraben clusters on the Aldenhoven Plateau through internal and external growth (see 4.4.2 for regional overview). The data suggest that these settlement clusters do not solely represent the growth and social fissioning of a few, founding households. They were likely composed of different social groups from their inception, representing the kin-based residential groups described in the previous chapter.

6.1.1 The dominant narrative of cluster development

Although not subject to an objective definition, Kruk (1980) provided a generalised description of these settlement clusters. They tended to contain up to nine settlements of varying size that were located within 1 km of one another (average distance 200–700 m). The clusters usually consisted of 1 or 2 larger, more permanent settlements

with the other smaller sites being interpreted as settlement offshoots or less permanent specialist sites. Somewhat surprisingly, these larger settlements could be found both centrally placed in the cluster as well as located on the edge of the local settlement area. Despite the small distance between these sites (as low as 200 metres in some cases), each site is generally treated as a distinct "settlement", with its own historical trajectory, social traditions and even identity (Frirdich 1994; Stehli 1994). The relationship between settlements in the same cluster is generally seen as cooperative but possibly asymmetrical (Bakels 1978; Zimmermann 1982; 1995).

At the larger scale, these settlement clusters (spaced at least 3 km from one another) group together to form distinct micro-regions of settlement (for example, the Aldenhoven and Graetheide Plateaus in the Lower Rhine basin). Despite these settlement 'breaks', material studies have demonstrated close social interaction between settlements within these micro-regions (Frirdich 1994; Krahn-Schigiol 2005; Claßen 2006) as well as more distinct affiliations (Bogaard *et al.* 2011). Social contact did not end at the 'borders' of these micro-regions; the movement of materials, non-local pottery (vessels or styles) and other shared practices between different regions of settlement confirm connections at even greater scales (Zimmermann 1995; Müller *et al.* 1996; Strien 2005; Claßen 2009a; 2009b; see further discussion in Chapter 7).

The dominant narrative for settlement clusters sees their development in terms of colonisation, population growth and internal division (e.g. Stehli 1994; Frirdich 1994; Krahn 2006). New lands are first explored and then settled by a pioneering group of households. Once established, these settlements grow. As the population rises, social pressures increase over access to the 'best' fields, exchange partners, potential mates and household stewardship. Social competition also may have encouraged the

establishment of new households and the clearance and settlement of nearby areas. Individual groups and individuals, especially marriageable females, may move into or out of the area; however, they are incorporated into the existing structures without significant impact. Over time, the wider area includes several pockets of settlement, linked together by a shared history, kinship ties and accepted structures of different rights and obligations. From this perspective, the newly established settlements are born fully integrated into the existing structures of the cluster. However, divergences in pottery styles and later shifts in lithic procurement suggests that these newly settled areas began to assert their independence, relying increasingly on negotiated alliances with other sites rather than traditional authority structures based on kinship and local distance trade (Frirdich 1994; Zimmermann 1995; Claßen 2009a; 2009b). The development of local burial grounds at the end of the Flomborn period and construction of earthwork enclosures in the later LBK have been interpreted as social mechanisms to establish social cohesion in this rapidly fragmenting world.

This accepted narrative of settlement cluster development emphasises the initial unity of the settlement area in the pioneer site, followed by the fragmentation of this unity and the establishment and increasing differentiation of the secondary settlements (Stehli 1994; Pavlů 1982; Lüning 1982a). Central to these narratives is the issue of social stability within a growing population. Within the *Hofplatz* model (see 3.2.1, 5.1), it was assumed that the fissioning of a household group and establishment of a new *Hofplatz* was a common mechanism for dealing with personal conflict in such small communities (Boelicke *et al.* 1988b; see also Milisauskas 1986: 217). Why these new households were founded at times on adjacent spur was not discussed but presumably, greater space was needed in some conflicts. Although estimates suggest that local resources such as land were freely available throughout much of the LBK

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(Ebersbach and Schade 2004), access to the 'best' land or temporary periods of shortage may have encouraged the establishment of some newly settled sites (Bogucki 1988: 114–7; Milisauskas and Kruk 1989: 406–7). Frirdich (2005) later suggested that the establishment of secondary 'daughter' sites during the Flomborn and later periods represented a mutation of earlier forms of prestige competition between lineage groups. Again, this proposition relies on a pool of 'excess' persons ready and prepared to establish these new households.

Initial discussions of the *Hofplatz* and settlement history emphasised the role of internal population growth. Boelicke *et al.* (1988b) suggested that family friction within existing households could lead to household fissioning and the foundation of new, independent households. More recently, Strien (2010a) and Petrasch (2012) linked this generalisation to marriage and inheritance norms within the community. Whilst the eldest son inherited the family stewardship, families with the necessary resources and social capital could amass community support to build additional longhouses for the heir's non-inheriting younger brothers. Thus, the growth witnessed within the settlements may have represented the expansive growth of successful families.

Recent demographic models called into question the significance of internal organic growth as the sole factor in understanding local population increases. Using the number of houses as a proxy (see discussion, A.3), Schiesberg (2010) argued that the LBK population remained static in the Rhineland through much of its occupation (HG II–XIV). Using this as a base point, she estimated that only one in five households would have multiple surviving sons, whilst over a third of households would have lacked any male heirs. Culturally determined forms of adoption may have served as

an acceptable method of securing a desired male heir as well as providing opportunities for younger sons (Schiesberg 2010). Although accepting adoption may have played a role, Strien (2010a) argued that a form of polygamy was practised in the LBK. Thus, the household would consist of the head of the family, his multiple wives, their children, his unmarried sisters and younger brothers, and, more rarely, his surviving parents. Such families would have a greater chance of producing a male heir (1 wife: 63%; 2 wives: 82.5%; 3 wives: 95%) and, presumably, increased the likelihood of competing brothers surviving until their majority. However, both Schiesberg's and Strien's study emphasised the precariousness of LBK family units based around a nuclear family or even a polygamous marriage, choosing to base their analyses on a background of a constant population size.

However, internal population growth was not the only source of increasing numbers in the LBK. Despite ongoing discussions about the role of local indigenous groups in the formation and spread of the LBK way of life (e.g. Zvelebil and Rowley-Conwy 1984; Whittle 1996; Gronenborn 1999; 2007), the LBK remains one of the best examples of a cultural diaspora—that is to say, the territorial spread of social practices and traits through the migration of small groups of people. The nature and cause of this colonising expansion have been much discussed, with ecological, economic, social and demographic factors being cited (Bogucki 2000; Whittle 1996; Gronenborn 1999; 2007). Although this is not the place to discuss these issues in detail, it may prove beneficial to consider the establishment of these settlement clusters in the larger terms of a colonising population.

However, population mobility was not limited solely to these colonising activities. Isotopic studies have demonstrated that LBK populations were far more mobile than

previously thought (Bentley *et al.* 2002; 2003b; 2008; Price *et al.* 2001; 2006; Hedges *et al.* 2013). Whilst some of this mobility may reflect different economic practices, the data also suggest that individuals and small family groups may have relocated during their lives as the result of marriage, death or seeking a better life. In addition, it is likely that LBK settlements shared their wider surrounds with local indigenous populations (3.5.2). Although limited in number, examples of La Hoguette and Limburg pottery have been identified in the Merzbach and Schlangengraben valleys, opening up the possibly that members of these and other indigenous groups may have been part of the local community in some way (Lüning *et al.* 1989; Gronenborn 2007; see further discussion in 7.4).

The development of satellite settlements—the defining characteristic of settlement clusters—poses an interesting conundrum. Although examples of such clusters have been found scattered throughout the LBK, this pattern is not universal (Petrasch 2003). Returning to the Aldenhoven Plateau, the growth in the number of sites established within the valleys themselves has also been attributed to internal factors. Stehli's original chronology for the Merzbach sites suggested that the pioneer settlement of Langweiler 8 was occupied for 4 or 5 generations before the establishment of the secondary sites in the valley (Stehli 1994). In an early work, Frirdich (1994) associated the rapidly appearance of secondary settlements in the late Flomborn with the breakdown of traditional social controls. The physical separation between the pioneer settlement of Langweiler 8 and the newly established farmsteads provided greater freedom to their inhabitants, which expressed itself in increased economic and stylistic differentiation. Thus, the foundation of secondary sites was a consequence of increasing tensions within the local social structures. The long-term stability of these sites suggested that the tensions were systemic rather than personal.

Frirdich later linked the establishment of these satellite (secondary) settlements to social competition between rival lineages (Frirdich 2003; 2005). She argued that lineages in the earliest LBK communities competed with one another by founding distant "daughter" settlements. Although these daughter sites may have been partly dependent on their "mother" communities in the early years of settlement, the physical distances between the two locations would have reduced interference, minimised tensions and encouraged growing independence. The form of this prestige competition had to change, however, once these communities reached the boundaries of Central Europe's loess region, resulting in "daughter" settlements being established closer to their founding communities. Frirdich suggested that the Merzbach's secondary settlements reflected such daughter settlements, with direct links to the lineages occupying Langweiler 8. With closer proximity came increased tensions between the mother/daughter sites, resulting in the increasing social disruption to traditional forms of authority witnessed in the younger LBK (Frirdich 1994). However, the recent reanalysis of the early LBK (Flomborn) pottery by Münch (2009) within these sites suggests that isolated patches of settlement were established very early in the occupation history of this stretch of the Merzbach (from HG II onwards), leading to new questions about the underlying causes or processes of these secondary site (discussed in more detail below).

Thus, a number of different mechanisms for population and site growth could be at play on the Aldenhoven Plateau, including local population growth, small-scale migration, conflict resolution and cultural value systems. Each of these factors could be turned on its head, with members of the local population leaving the valleys to reside elsewhere (either temporarily or permanently). Looking at the pattern of

settlement growth in the research area may provide clues as to how these different population levers may have interacted over time.

6.1.2 Settlement growth on the Aldenhoven Plateau

Given the selective nature of burial within the LBK (see 6.2.1 below), longhouse numbers have been used as a proxy to estimate the size of the local population (i.e. number of houses x 8–10 people per house) (Lüning 1982a; Zimmermann *et al.* 2009; Schiesberg 2010). The reliability of these estimates has been challenged on the basis that larger family groups (extended, clan) may have resided in these substantial houses (Soudský 1962; Rück 2007; 2009). Regardless of this on-going debate, longhouse form and size remained fairly constant throughout the LBK period (Modderman 1988; Coudart 1998), suggesting that the average size and composition of households did not vary over time. Thus, increases and decreases in the modelled number of longhouses likely captures movements in the local population.

Pottery seriation and the *Hofplatz* model have been used to establish local chronologies for these Rhineland site based on the 'house generation' (see Appendix A for a detailed description; Stehli 1994; Krahn 2006; Münch 2009). In brief, correspondence analysis was used to model a chronological axis upon which individual contexts (generally, sub-surface pits) could be ordered. Paired with the assumption that longhouses were typically abandoned each generation (with a replacement structure being built near to its predecessor; i.e. the *Hofplatz* model), this chronological axis could be roughly divided into sequential 'house generations' (HG). Initially devised as a 14- or 15-phase chronology for the middle Merzbach (Stehli 1989b; 1994), researchers working in other areas have linked their local phasing to

Stehli's framework. As a result, house generations are roughly equivalent across different sites.

6.1.2.1 Valley-wide

The settlement cluster found along the middle Merzbach valley, was uncovered during the "Settlement Archaeology of the Aldenhoven Plateau in the Rhineland" (SAP) project (1971–81) (Lüning 1982a). In total, six settlements, one cemetery and three
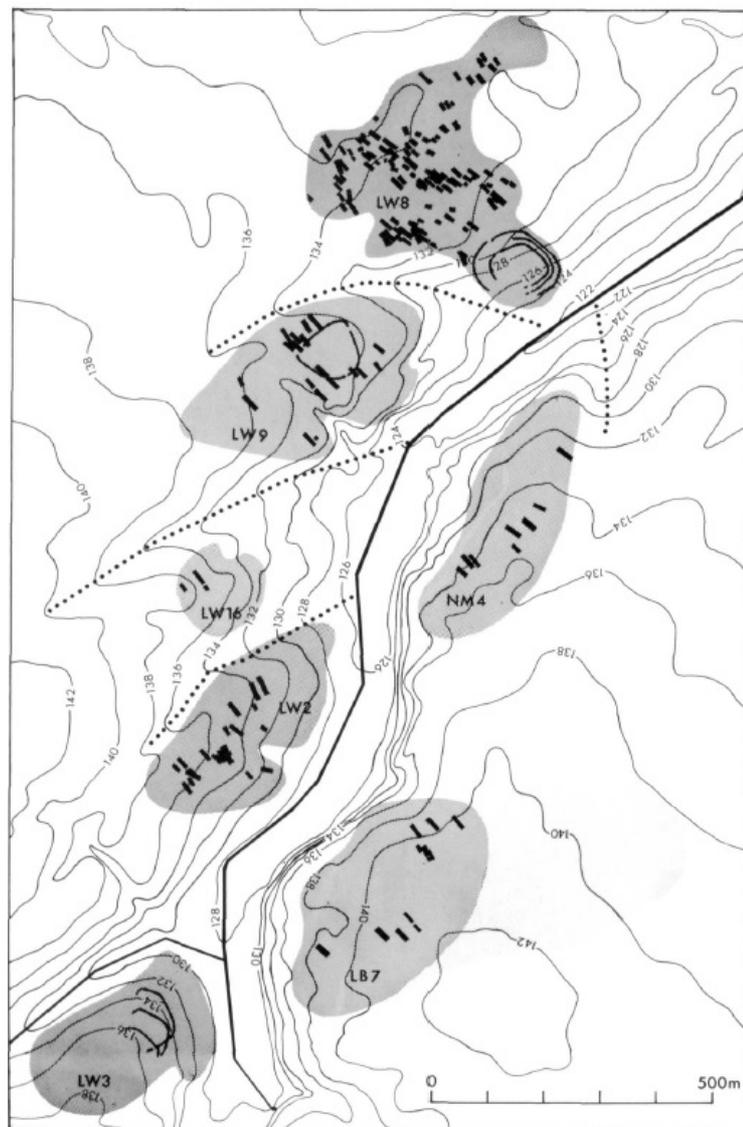
Figure 6-2: Merzbach settlement cluster (Lüning 1982a: Fig. 15)

enclosures were uncovered along a 1.3 km stretch of river (Figure 6-2). The valley's largest settlement, Langweiler 8, is found on the plateau and upper slopes of the western bank. Three smaller areas of settlement (Langweiler 9, Langweiler 16, and Langweiler 2) are located at short distances (up to 300m) on spurs of land formed by side channels. On the steeper eastern bank, two further settlement sites (Laurenzberg 7, Niedermerz 4) and a small cemetery (Niedermerz 3) were found. Later enclosures were uncovered on the lower slopes beneath the main settlement of Langweiler 8, within the former settlement area of Langweiler 9 and on an unoccupied spur south of Langweiler 2 (Langweiler 3). All of these sites are within 500 m of the river and have been thoroughly published (Farruggia *et al.* 1973; Kuper *et al.* 1977; Boelicke *et al.* 1988a; Lüning and Stehli 1994).
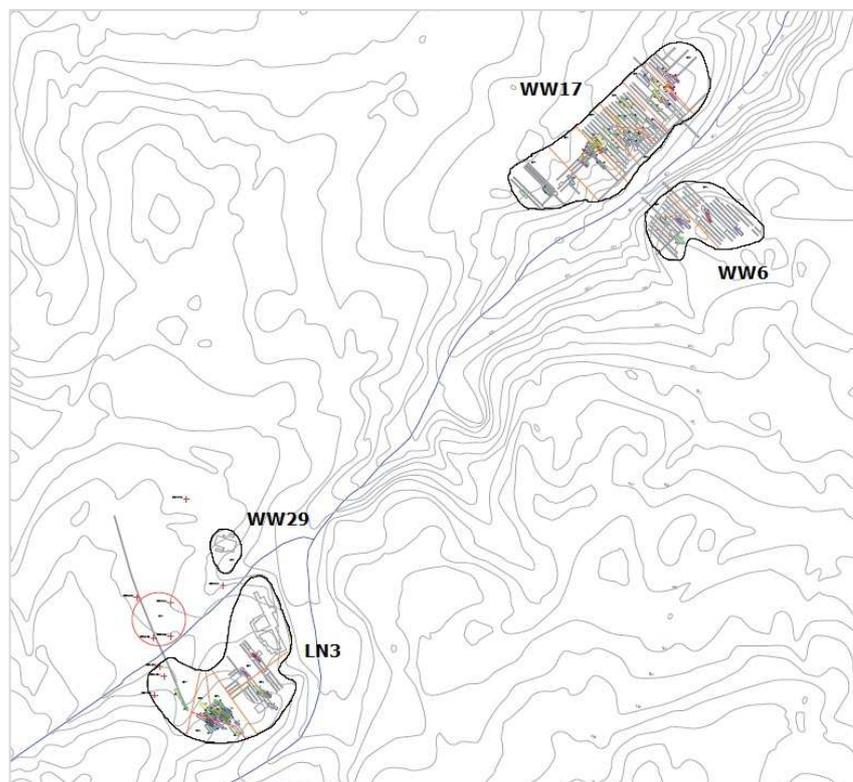
Figure 6-3: Schlangengraben settlement cluster (after Krahn 2006: Insert 9)

The Schlangengraben valley, the second well-studied cluster, lies some 3 km south-east of the Merzbach (Figure 6-3). Unlike the middle Merzbach, the LBK settlements of the Schlangengraben were not the subject of a large-scale research programme. Several small-scale excavations over the period of 1970 to 1984 identified the remains of three, possibly four, settlements within a 1.5 km stretch of the river. The two larger settlements (Weisweiler 17, Lohn 3) contained more than 40 longhouse plans, whilst a smaller settlement of eight houses (Weisweiler 6) can be found on the eastern bank across from Weisweiler 17. A fourth possible settlement was also found (through pits) across a water channel from Lohn 3, but no clear house plans were identified (Weisweiler 29). Like the Merzbach, there is evidence of enclosures associated with the Weisweiler 17 and Lohn 3 settlements. Although these sites were less extensively excavated (due to lack of time), they too have been published (Krahn 2006) and offer an interesting comparison to the Merzbach settlement cell.

Taken as a whole, the local populations of the middle Merzbach valley appear to have grown steady throughout much of its occupation (Figure 6-4). The number of inhabitants (using the number of longhouses as proxy) reached its peak during the Late LBK (HG XI) before rapidly declining during the final generations. The growth experienced in the Schlangengraben valley is more static during much of the Younger (Middle/Late) LBK but otherwise follows a similar trajectory.

It is difficult to judge how typical this pattern of population growth is given the lack of comparable sites within the Lower Rhine region. Very few areas of settlement have been excavated as comprehensively. As a broader comparison, we see that the number

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV
Merzbach	4	9	11	11	11	10	12	11	12	14	15	16	12	8	0
Schlangengraben	0	3	7	9	10	13	13	13	13	14	13	13	13	8	0
Kuckhoven	0	0	2	5	7	7	7	10	10	8	6	6	6	6	3
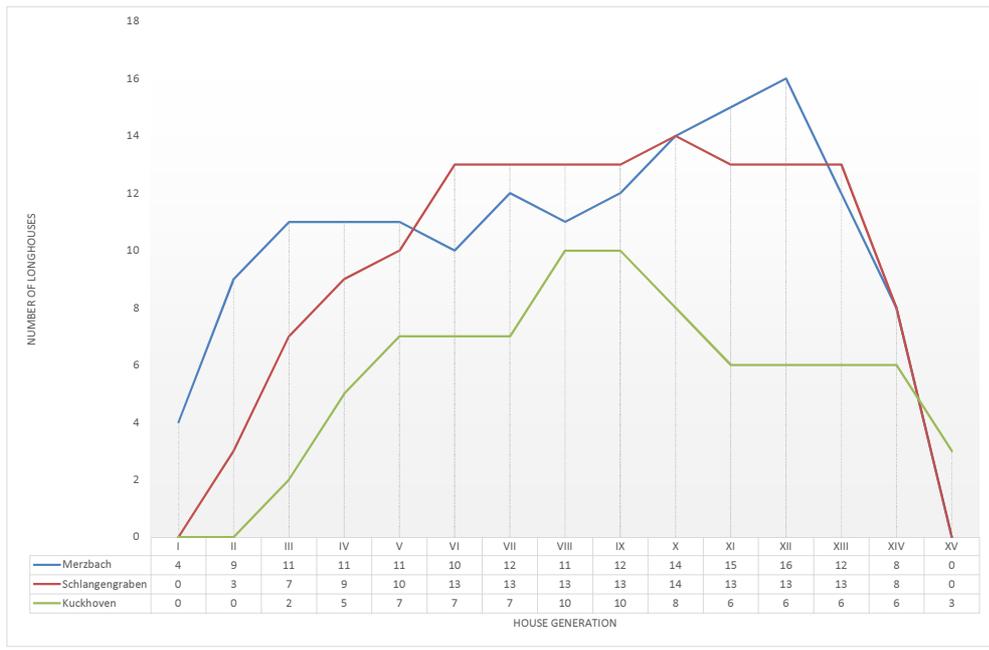
HOUSE GENERATION

Figure 6-4: Number of longhouses by house generation for settlement clusters and Erkelenz-
Kückhoven

of longhouses at the more isolated settlement of Erkelenz-*Kückhoven* (situated 25km north of the Aldenhoven Plateau) suggests an earlier and more gradual decline in its local population (Lehmann 2004a).

6.1.2.2 Pioneer settlements

It is likely that Langweiler 8 was the first permanent settlement established on the Aldenhoven Plateau (Stehli 1994; Krahn 2006). Pottery traits suggest it was established in HG I (circa 5300 cal. BC), and four house plans have been attributed to this foundation generation (Stehli 1994; Münch 2009). The pioneer settlements of Weisweiler 17 and Lohn 3 were settled in the following generation (HG II) in the neighbouring Schlangengraben valley. Although the data are sparse, it appears that these two settlements started with a modest 1–2 households but soon grew to a size more or less comparable to Langweiler 8.

Using the number of longhouses as a proxy for population size, these pioneer settlements experienced significant growth throughout the Flomborn period (especially during the early Flomborn; Figure 6-5). After this period, the population remained largely static before its sudden decline in the final generations of occupation. As a comparison, it is interesting to note that the growth pattern exhibited by these pioneer settlement is similar to that seen at the more isolated settlement of *Kückhoven* (Lehmann 2004a).

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV
Langweiler 8	4	7	7	7	8	8	9	9	7	7	7	7	6	4	0
Weisweiler 17	0	2	3	4	5	7	7	7	7	6	5	5	5	4	0
Lohn 3	0	1	4	5	5	5	5	5	5	5	5	5	5	2	0
Kückhoven	0	0	2	5	7	7	7	10	10	8	6	6	6	6	3

Figure 6-5: Number of longhouses by house generation for pioneer settlements
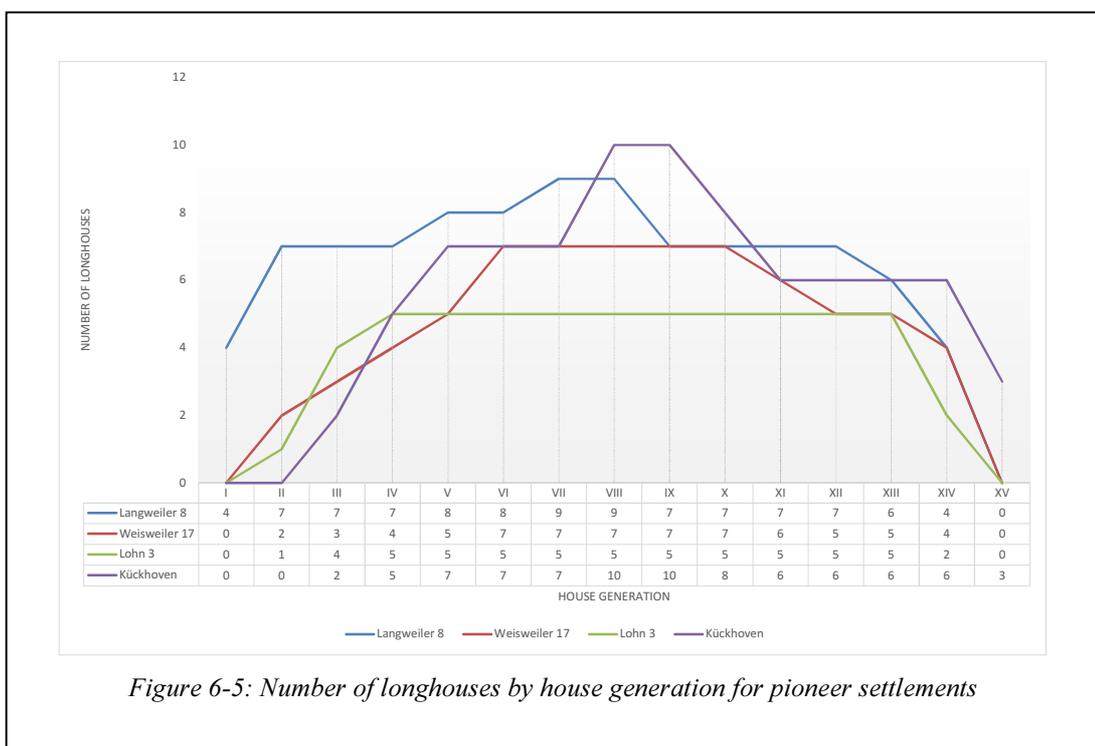
However, this overall stability obscures the fluidity found within the settlements themselves. Whilst the number of farmsteads in Langweiler 8 remained relatively static during the middle LBK, the shifting location of these farmsteads opens up the possibly that the mix of families at Langweiler 8 had changed. The founding farmsteads along the ridge of the site were slowly abandoned in favour of new plots closer to the river (5.3.2.1; Boelicke *et al.* 1988b). In the previous chapter, I discussed these farmsteads in terms of family plots, being handed down the generations. Under

this perspective, it could be argued that the abandonment of these early plots could represent the abandonment of Langweiler 8's founding households during the younger LBK. Whilst potential 'replacement' plots were founded in alternative locations on the site and wider locale (see discussion below), the abandonment of ancestral farmsteads may reflect significant breaks with past generations and connections.

6.1.2.3   Secondary settlements

In addition to the larger pioneer settlements, a number of smaller "satellite" sites have also been identified and excavated on both banks of the Merzbach and Schlangengraben valleys. Throughout their occupation, these hamlets were limited in size, never growing to more than two or three contemporary houses.

Stehli's original chronology (Table 6-1; Stehli 1994) suggested that the Merzbach valley's secondary sites were not settled until the later Flomborn period (HG V–VII). Once founded, the secondary settlements experienced very little growth; the number

Table 6-1: Number of longhouses by house generation for secondary sited sites. Top: Stehli's original chronology (Stehli 1994). Bottom: following reanalysis of Flomborn material (Stehli 1994; Krahn 2006: Münch 2009)

	Flomborn							Middle LBK			Late LBK				
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV
Langweiler 16						1	1								
Langweiler 9						3		1	1	3	3	3			
Langweiler 2							3		3	3	2	3	3	2	
Laurenzberg 7						2	1	1	1	1	1	1	1		
Niedermerz 4											2	2	2	2	

	Flomborn							Middle LBK			Late LBK				
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV
Langweiler 16		1	1	1	1	1									
Langweiler 9			1	1	1	1	2	1	1	3	3	3			
Langweiler 2			1	1	1		1		3	3	2	3	3	2	
Laurenzberg 7	1	1	1					1	1	1	1	1	1		
Niedermerz 4											2	2	2	2	
Weisweiler 6						1	1	1	1	2	2	2	2	1	
Weisweiler 29												1	1	1	

of households remained fairly constant despite these settlements remaining occupied for up to 7 house generations (Laurenzberg 7: HG VI–XIII; Langweiler 9: HG V–XII; Langweiler 2: HG VII–XIV).

Münch's re-analysis of the Flomborn pottery altered this picture significantly (Table 6-1; Münch 2009). Her work suggested that the Merzbach's and Schlangengraben's secondary sites were established much earlier in the valleys' histories than originally thought. She argued that the establishment of the local pioneer settlements were soon followed by the settlement of single farmsteads on the neighbouring spurs (within 1 or 2 generations). The pioneer settlements experienced rapid growth in the early Flomborn period (less so in the later Flomborn period), and this steady growth marked the importance of these sites to the surrounding farmsteads. The satellite sites (single farmsteads) did not increase in size, remaining single farmsteads throughout the Flomborn period (with the exception of Langweiler 9, which developed into a two-house settlement in the later Flomborn period). Münch argued that this pattern of settlement can be seen throughout the Aldenhoven Plateau and surrounding areas (including the Aldenhoven 3, Lamersdorf 2 and Erkelenz-*Kückhoven*). Her reanalysis was limited to the Flomborn material, so we are left with Stehli's earlier chronology for the middle and late LBK periods. If we accept Münch's alterations, some of single Flomborn farmsteads located in the valley experienced a growth spurt in the middle LBK (Langweiler 2 & Langweiler 9: 3 houses; Weisweiler 6: 2 houses) and then remained stagnant until their abandonment in the late LBK. In contrast, other sites remained stagnant throughout the period (Laurenzberg 7) or were abandoned altogether (Laurenzberg 8 & Langweiler 16).

The Late LBK saw the foundation of two new settlements within these clusters (Niedermerz 4 and Weisweiler 29). In both cases, the newly-established farmsteads were located in previously uninhabited areas on the opposing bank to a larger pioneer settlement. Beyond their relatively late settlement, there is little to distinguish these sites from their neighbours (Frirdich 1994; Zimmermann 1995; Claßen 2009a; 2009b; Krahn 2006).

6.1.3 Comings and goings

Taking into consideration the local variation in settlement size, the data provide a picture of periodic growth in both valleys (main settlements: early Flomborn; hamlets: middle LBK; later established settlements: late LBK; Figure 6-6). This gives the impression of slow and continuous growth (if the precise lines between house generations were blurred) but within different areas of the larger settlement area.
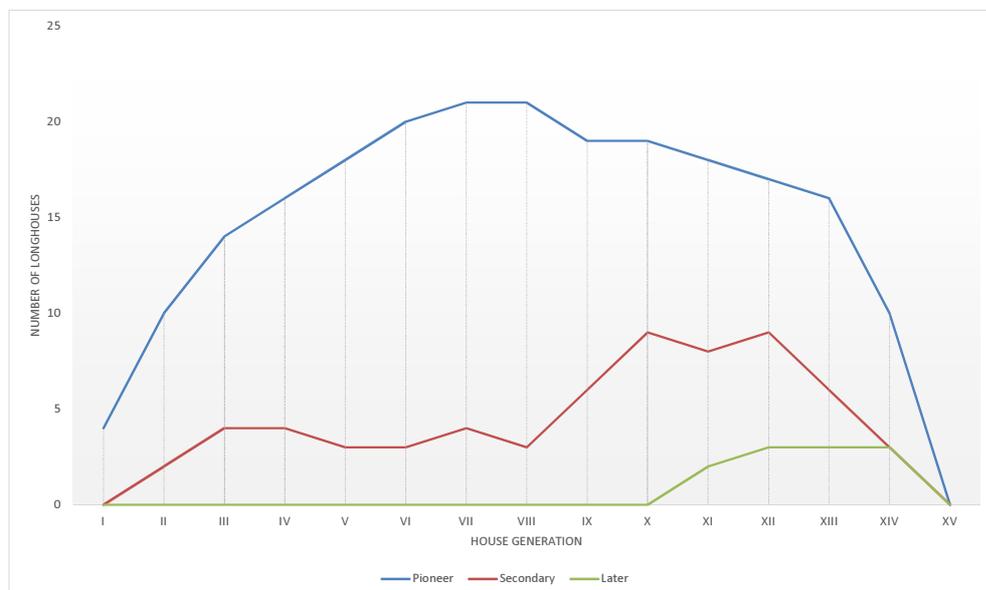
Figure 6-6: Number of longhouses by house generation for pioneer, secondary and later sites (Merzbach and Schlangengraben valleys combined)

Whilst some areas of settlement flourished, others did not and were ultimately abandoned.

Unlike Schiesberg's regional study (2010), estimates of the number of contemporary households in the Merzbach valley show a rapid increase during the middle to late LBK transition (HG VIII–XII) as well as the characteristic increase in the early Flomborn period (HG I–III) and rather rapid decline in the late LBK. The Schlangengraben valley also experienced the rapid growth and decline at the beginning and end of the LBK; however, the growth spurt during the mid–late transition is less apparent. Given recent demographic models (Schiesberg 2010; Strien 2010a), these distinct periods of consistent—if not rapid growth—are unlikely to be attributed sole to increasing birth rates without clear changes in other social practices (e.g. inheritance practices, the nature and composition of the household). Although modest growth through the expansion and subsequent fissioning of households may have played a role, a more likely scenario is that the early Flomborn period was marked by a relatively transitory population characterised by the migration of small family units. This may represent a set of social conditions that encouraged the small-scale migration into the Lower Rhine basin over several generations. Thus, the settling of this area was not a one-off event involving the appearance of several families in the valley, but represented an ongoing process that continued until the later Flomborn. Once established, the local pioneer settlements continued to attract incomers, presumably reflecting an outflow of families migrating for a variety of reasons (e.g. family dispute, opportunity to head own household, lineage obligations, seeking adventure). The lack of stylistic heterogeneity in early pottery may have help to integrate these incomers into their new communities (Milisauskas 1986: 217), with the

later regionalisation signalling the end of this period of high mobility and 'open communities'.

Whilst the overall number of longhouses suggests that the preferred location for the establishment of new households varied over time, such figures ignore shifts and changes witnessed within the settlements themselves. For example, as noted above, Langweiler 8 saw the abandonment of some of its founding farmsteads during the middle LBK, with newly established plots taking their place. The continuity of the secondary farmsteads is also open to debate during the middle LBK. As discussed in the previous chapter (5.2.2.3), not all houses necessarily belonged to an established family farmstead (or *Hofplatz*). The secondary sites provide several examples of isolated houses, which may represent incoming families who did not successfully integrate within the local "community" and chose to move on (Langweiler 2: Houses 12 & 18; Langweiler 9: Houses 1, 2 & 3; Niedermerz 8: House 8; Weisweiler 6: House 1). Examples of such farmsteads may have also existed in the pioneer settlements but are less easy to identify because of the density of house plans.

Although rarely discussed in detail, there is a tendency to see these settling groups as representative of LBK settlements, with each longhouse representing a typical family (e.g. Boelicke *et al.* 1988b). Thus, the first decades of settlement at Langweiler 8 would have included a sizeable group of 30–40 individuals, with Weisweiler 17 and Lohn 3 comprised of groups half that size (based on 8–10 inhabitants per house: Lüning 1982a). The local chronologies lack the fineness necessary to clarify whether the establishment of these sites represented a single settlement event (i.e. multiple families arriving at one time) or a piecemeal development over the course of a generation (i.e. the slow accumulation of individual families over time). As noted

above, Frirdich (2005) suggested that successful lineages may have competed by founding new settlements. Thus, we can envision pioneering groups being composed of families from the same lineage, supported by their kin remaining in "home" settlements. Given the population size of the typical LBK settlement cluster (7.25 houses or 55–70 persons: Zimmerman *et al.* 2009), the migration of such a sizeable group from a single settlement would have had a significant impact on that settlement's size. For example, the founding families at Langweiler 8 may have represented the relocation of a smaller settlement, the fragmentation of a larger settlement or possibly the aggregation of families from the wider area.

Reviewing the spatial distribution of houses in the early Flomborn period suggests that alternative locations were available to incomers. During the first few generations in the Merzbach and Schlangengraben, new households were established within existing settlements (e.g. Farmstead 4 at Langweiler 8), on the same spur of land but at a distance to existing houses (e.g. Farmstead 6 at Langweiler 8) or on neighbouring spurs along both sides of the river. It is tempting to treat these physical separations as a deliberate expression of social distinctions.

The very existence of these secondary settlements poses an interesting question. The establishment of additional farmsteads at Langweiler 8 during the Flomborn/middle LBK transition (Farmsteads 8–12) demonstrates that land was available in Langweiler 8 when the neighbouring areas were settled. Considering this question, Münch (2009: 84) pondered whether this physical separation was the choice of the independent farmsteads or imposed by the existing inhabitants of Langweiler 8. Given their dependence on the larger pioneer sites (Zimmermann 1995), she saw the separation as undesirable for the single farmsteads because of their dependence on the larger pioneer

settlement and, therefore, something imposed upon them. For example, more distantly related families or other problematic relations could have been encouraged to settle near enough to the main settlement to not hinder daily interaction and participation but far enough to maintain a distinction. However, the question should be asked whether we are making too much of the relatively small distances between areas of settlement. In other words, does physical separation in this case equate with social distinction?

6.1.4 Separate or distributed: satellite sites in context

The generic term 'settlement' (in German: *Siedlung*) is applied equally to all longhouse-containing sites within these settlement clusters, regardless of their size or length of occupation. When seen as synonymous with the archaeological term 'site', there is little harm referring to these areas as 'settlements'. However, the term 'settlement' also holds connotations of community, social cohesion and other forms of social definition. As such, the use of this term to each of these sites re-enforces their bounded-ness, treating each as a separate entity.

Attempts were made at the time of excavation to define the boundaries of each site through trial trenches (with variable success) (Farruggia *et al.* 1973: 20–2; Kuper *et al.* 1977: 17–8; Boelicke *et al.* 1988a: 33–6; Stehli 1994: 6, 10, 19, 29; Krahn 2006: 11–2). A quick look at the topography of the Merzbach and Schlangengraben valleys highlights the common location of LBK sites on the valley spurs formed by intrusive side channels (Figure 6-2, Figure 6-3)[30]. The local sites were located on the flat plateaus of land formed on the headlands between these channels. Soil studies have demonstrated that these local LBK settlements were situated almost exclusively on

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[30] It remains unclear whether these side channels were dry at the time of the early Neolithic or contained running water for all or part of the year.

loess soils (Schalich 1977; 1988). The present-day position of these soils shows the extent of erosion along the slopes of the river and side channels. As a result, it was not possible to identify the precise boundaries of settlement along these slopes. Away from these slopes, the site's boundaries were determined more easily by declines in artefact density. Based on these efforts, researchers were able to estimate the approximate size of the different areas of settlement (Table 6-2). Thus, the current extent of settlement features is smaller than in the Neolithic at many of the local sites.

From a bird's eye view, the valley's side channels appear to demarcate clearly the individual sites within both valleys. Thus, the topographical lay of the land helped to

Table 6-2: Determining settlement areas in the Merzbach and Schlangengraben valleys

Site	Excavated area	Settlement area	% remaining	Source
Merzbach				
Langweiler 2	35,000 sq m		65%	Farruggia *et al.* 1973: 22
Langweiler 9	39,200 sq m		100%	Kuper 1977: 14,18
Langweiler 8	99,650 sq m	450 x 450 m	100%	Boelicke *et al.* 1988: 29,33–4
Langweiler 16	4,800 sq m	2 ha (max)	50%	Boelicke *et al.* 1994: 6–7
Laurenzberg 7	39,120 sq m	20 ha	uncertain	Boelicke *et al.* 1994: 17–20
Niedermerz 4	23,200 sq m	11 ha (max); 550 x 200 m	uncertain	Boelicke *et al.* 1994: 9–10
Laurenzberg 8	1,800 sq m	100 x 110 m; 1 ha (max)	uncertain	Boelicke *et al.* 1994: 28–9
Schlangengraben				
Lohn 3	25,035 sq m	10 ha	uncertain	Krahn 2006: 7–8
Weisweiler 29	1,960 sq m	1 ha (min); probably much larger	uncertain	Krahn 2006: 8–9
Weisweiler 6		4.7 ha (min)	50%	Krahn 2006: 11–2
Weisweiler 17		14 ha	80%	Krahn 2006: 12

separate physically the dense concentrations of settlement activity. The difficulty researchers had in distinguishing sites/settlements along the right bank of the Merzbach emphasises this point (Lüning 1982a: 22). Laurenzberg 7 and Niedermerz 4 lie on the flat plateau stretching along the steep slopes found on this side of the river. Unlike the right bank, there are no topographical features to separate these two areas, and researchers relied on a perceived decline in artefact density and the lack of discoloured soils when defining their physical boundaries. There are exceptions to this generalisation. Both Langweiler 9 and Langweiler 2 were segmented, in part, by intrusive erosion channels. The impact of these channels can be seen in the possible construction of a fence along its length at Langweiler 2 (Farruggia *et al.* 1973: 50; Stehli 1994: 93). In these cases, the local topography was not seen as a physical boundary or divider between areas of settlement. In fact, as discussed in the previous chapter, Stehli (1994: 96) agglomerated longhouses on either side of the intrusive channel at Langweiler 9 into the same farmstead.

Whilst serving as a convenient boundary when defining sites and areas of settlement, these side channels likely served as convenient paths to get to the river's edge. We see the early houses at Langweiler 8 concentrated around the channels lying to the north and south. Similarly, the presence of an isolated pit near to the northern channel at Laurenzberg 7—and the later shift of the house plans in this direction in the mid LBK—suggests that this route may have served as a path to the river (Stehli 1994: 113). Viewed this way, the channels themselves may have served as important routes to the river edge shared by the neighbouring households rather than physical boundaries separating different residential groups.

Unlike some sites in the Lower Rhine region (e.g. Sittard, Geleen-*Janskamperveld*, Erkelenz-*Kückhoven*), there was no evidence of a surrounding palisade or ditch at the Merzbach and Schlangengraben sites. A combination of narrow ditches (*Gräbchen*) and postholes along the northern boundary of Langweiler 8 opens up the possibility that some sort of fence/palisade structure may have run here at some point (Boelicke *et al.* 1988b: 911). The site authors did not interpret these features as a continuous boundary marker; instead, they focused on the fences linked to the houses and suggested that these served as some sort of wind break or household protection from cattle and game (Boelicke *et al.* 1988a: 299). The other three sides of the settlement lack similar features and, thus, these fence segments are unlikely to represent a perimeter structure. For similar reasons, it is unlikely that the fence running along the erosion channel at Langweiler 2 represented segments of an encircling feature. Rather than define the boundaries of the site, this fence may have served as protection from these steep slopes (Farruggia *et al.* 1973: 50; Stehli 1994: 93). Therefore, we see little attempt to distinguish one local site from another through the construction of a space-defining fence or ditch.

Archaeologically, we see these sites as foci of settlement activity, separated by gaps of no settlement activity. These gaps could be seen as social boundaries, marking a buffer or no man's zone between separate groups (e.g. Zimmermann 2002). Frirdich's comparison of decorated pottery in the Merzbach valley attempted to define distinct 'household traditions' (Frirdich 1994; see also Bentley and Shennan 2003). Her analysis compared the relatively proportion of different band and rim decorations across the larger settlement of Langweiler 8 and the valley's secondary sites (see further discussion in 5.3.2.1). There was little to distinguish the settlement areas during the first 8–10 generations. The Middle LBK was marked by increasing innovation in

pottery decoration, with two stylistic traditions developing during the Late LBK. The residents at Langweiler 2 and Niedermerz 4 favoured a different decorative spectrum to those at Langweiler 8 and Laurenzberg 7 (and, to a lesser, extent Langweiler 9).

Frirdich treated the emerging differences in pottery spectrums as evidence of a growing social distance between the local settlements. However, Milisauskas (1986: 217) notes that fissioning groups may not have been representative of the community they were leaving (source of conflict?), resulting in small differences in material culture. These differences may have been exasperated by less frequent contact. Whilst Frirdich's study does highlight differences between sites, these differences are not subject to any form of statistically confirmation. As a result, the documented patterns may be random and unrepresentative of past pottery preferences. In addition, caution should be encouraged on theoretical goods. Thomas (1999) recently challenged similar examples of "ceramic sociology" because they ignore the complex role pottery plays within society. Sommer's (2001: 255) analysis of the social role of various forms of material culture in the LBK proposes a significant shift in the role of pottery from expressing cultural unity to "a medium to express tensions between generations and increasingly smaller regional groups". The use of similar motives may not have reflected static familiar binds but deliberate alliance. However blunt, Frirdich's work suggests varying comparability of the different areas of settlement within the Merzbach valley. Given their spatial and stylistic proximity, it may be more appropriate to think of Langweiler 9 as an extension of the Langweiler 8 residential "community" similar to the more isolated Farmstead 6 found at the latter site (see 5.3.2.1).

Questions of settlement continuity remain for the smaller satellite settlements in the Merzbach. As Table 6-1 above highlights, researchers were unable to locate occupied longhouses for all house generations at Langweiler 2 and Laurenzberg 7, and Stehli (1994) has argued for short-term hiatuses at some of these sites. Re-settlement following these hiatuses may represent the foundation of new 'settlements' during the middle LBK independent of previous occupants.

These studies, however, are plagued by a certain lack of clarity in their unit of analysis. In general, emphasis is given to the settlement as a whole. Thus, Bakels (1978) sees the Graetheide settlements as more or less independent units which shared an overlapping resource area and who cooperate on larger projects. Again, the central scale of analysis in Belgium is the site as a social whole. In contrast, the researchers working in the Aldenhoven Plateau danced between the family farmsteads (*Hofplätze*) that made up these settlements and the settlements themselves as a whole. This subtle foot play was more the result of limited data rather than a deliberate research strategy. Both Frirdich (1994: 243) and Claßen (2009b: 103) made clear that the *Hofplatz* (or family farmstead) represented their ideal unit of analysis; unfortunately, the lack of sufficient numbers of dated pits forced them to merge the data from different *Hofplätze* and/or aggregate the data for whole sites. Thus, depending on their unit of analysis, researchers find themselves discussing households, settlements and kin group traditions inter-changeability. Whilst such aggregations are sometimes accepted given the limitations of the archaeological record, one must question whether such a decision is appropriate within this context. As discussed in the previous chapter, the *Hofplatz* represents a pattern of settlement whereby the concept of "family" or connection with the past was visibly expressed through the sequential construction of longhouses on a particular plot of land. It was argued that this phenomenon was historically contingent,

and other settlement patterns—such as stand-alone and small clusters of longhouses—emerged from alternative expressions of social links. As a result, we must surely challenge studies that artificially blur the lines between these different scales and ways of relating within the LBK.

6.2 Cemeteries: the lineage 'community'

The treatment of the dead in the LBK appears to be contextual with a variety of options being available (Veit 1992; Jeunesse 1996, 1997; van de Velde 1997; Bickle and Whittle 2013a). Population estimates suggest that the dominant burial rite left little archaeological trace (e.g. exhumation, shallow features) (Lüning and Stehli 1989: 88; Modderman 1970: 71; van de Velde 1997: 86–7)[31]. Both cremations and inhumations are known, with the remains being found in settlement pits, in settlement enclosures and, in the younger LBK, in dedicated burial grounds. These burials offer an alternative means of exploring the social collectives which operated within the settlement clusters that dotted the LBK landscape. Whilst the decalcifying effect of the local soils has destroyed nearly all evidence of intermural burials in the Lower Rhine basin, a handful of cemeteries have been discovered and investigated within the region. The following section reviews the data from these cemeteries and explores how different scale of community were perform at them.

6.2.1 LBK cemeteries: who, where, why?

The creation of dedicated burial grounds separate from but adjacent to occupied areas of settlement represents a relatively late development within LBK groups. Although

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[31] It is often suggested that cremation may have been the dominant burial rite for the LBK and that the preservation of these graves would depend on them being buried deep enough to avoid being eroded away (Modderman 1970: 71; Lüning and Stehli 1989: 88). However, since relatively few cremations (and burial grounds in general) date to the older LBK, this hypothesis remains open to debate, and other less archaeologically visible burial rites may have been practiced (van de Velde 1997: 86–7).

the earliest known example (Vedrovice in Moravia) dates to the oldest LBK circa 5300–5100 cal. BC (Pettitt and Hedges 2008: 126, 130), the vast majority of burial grounds were restricted to the younger LBK (Whittle 1996: 167). The largest cemeteries contain more than 200 individuals; the smallest, less than ten (Veit 1992: Table 1).

As noted above, burial in a cemetery (either as an inhumation or cremation) represented only one of the possible funeral rites available within the LBK. It remains unknown what proportion of the population received this treatment on death. When compared to the estimated LBK population as a whole (circa 20,000 living persons in 51st century; Zimmermann *et al.* 2009: 13), the total number of known graves (3,000; Bickle and Whittle 2013: 17) seems incredibly small. Such a comparison led Lüning and Stehli (1989) to conclude that burial within a cemetery marked individuals out as exceptional. In contrast, comparisons on a smaller-scale suggests that burial may have been more common. For example, van de Velde (1992: 174; 1997: 86) estimated that at least half of Elsloo's population were buried in the neighbouring burial ground (113 graves compared to an estimated 120–180 persons). Thus, inclusion in the cemetery population may have been selective but not extraordinary. The basis of this selection is still unclear. Age was a likely factor; children are under-represented, especially so in cemeteries (Veit 1992: 121; Hedges *et al.* 2013: 373–4). In contrast, there is little evidence that sex (or gender) played a role in determining where an individual might be buried (Hedges *et al.* 2013: 373). Finally, the presence of associated burial groupings within some cemeteries may indicate that burial in these locations was influenced by family or lineage connections (see discussion below; Ulrich 1953: 30; van de Velde 1979a: 104; Nieszery 1995: 64; Jeunesse 1997: 106; Zvelebil and Pettitt 2008; Hedges *et al*. 2013: 382).

In addition to dedicated burial grounds, LBK burials were also placed in settlement pits and ditch systems. There has been a tendency to treat persons buried in these locations as somehow different to or marked out from the cemetery burials (see Hofmann 2009 for detailed discussion). Comparisons between the two populations (intermural and cemetery burials) have identified differences (Veit 1992, 1996; Hedge *et al.* 2013). Children are grossly underrepresented in cemeteries but less so in settlements. Whilst initial studies suggested that males were favoured within cemeteries (Veit 1992: 121), the recent Lifeways project demonstrates that the sex-profiles of settlement and cemetery burials were likely similar (Hedges *et al.* 2013: 373). Both contexts include similar types of grave goods: pottery, polished stone adzes, flint tools, and hematite. However, cemetery graves are more likely to be equipped with these grave goods and with more complex and varied assemblages. Again, a similar range of body position and orientation within the graves were reflected in both settlement and cemetery burials, but with intermural burials being far more variable (Veit 1992: 121; Hedges *et al.* 2013: 374).

This issue is further complicated by the limited presence of cemeteries within settlement areas. For example, in Bavaria, burial grounds tend to be found in association with the largest and longest-lived settlements (Hofmann *et al.* 2013: 246). As a result, Hofmann *et al.* (2013: 246) see the evolution of formal cemeteries a one of the social strategies which developed during the LBK to incorporate larger social groups together. The lack of such cemeteries in the tertiary hills of Bavaria, where settlement is generally smaller and shorter-lived, suggests that other means of 'group binding' were utilised in these areas, possibly involving monumental house building and enclosures (Pechtl 2009).

The degree of formalisation and variances in the type of grave goods included suggest that burials in a cemetery environment incorporated a wider audience or, possibly, community (Hedges *et al.* 2013: 374). For example, settlement graves were more likely to be equipped with objects that carried localised meanings, such as decorated pottery and personal ornaments. In contrast, polished stone adzes and flint tools, which were generally made from non-local materials acquired through exchange contacts, were 2–3 times more likely to be found in cemetery contexts (Hedges *et al.* 2013: 374). Greater formalisation within the funerary practices found in LBK cemeteries suggest an increasing attention to the public presentation and performance of group identities within this sphere, especially the presentation of male identities and their association with local authority structures (Hedges *et al.* 2013: 382). For example, Hofmann *et al.* (2013: 247) suggest that cemeteries may have provided an arena for inter-community or inter-household competition intended for a supra-settlement audience, especially in environments where settlement hierarchies did not exist.

The identification of these social groupings, however, is more complex than initially believed. Early burial studies suggested that co-resident groups or family lineages had direct links with groups of graves within cemeteries. For example, Nieszery (1995: 64) proposed five spatial groupings amongst the 228 burials at Aiterhofen (southern Bavaria) based on the presence of grave-free gaps. Similar clustering was also identified at Vedrovice (Moravia), Souffelweyersheim (Lower Alsace) and the Lower Rhine sites of Niedermerz and Elsloo (Ulrich 1953: 30; van de Velde 1979a: 96–8; Jeunesse 1997: 106; Dohrn-Ihmig 1983: 103–4; Podborský 2002; Zvelebil and Pettitt 2008). More recently, stable isotope analysis has identified contrasting dietary communities (exploiting different dietary sources) within individual LBK cemeteries but which do not necessarily overlap with the grave groupings previously recorded

(Bickle *et al.* 2011; Hedges *et al.* 2013: 375). Taken as a whole, these studies suggest burial practices may have encompassed multiple, overlapping communities.

As discussed in Chapter 7, the funerary rites of the LBK provided an arena for the performance of different scales of identity for both the living and the dead (Pavúk 1972; van de Velde 1979a; 1979b; Veit 1992; Nieszery 1995; Jeunesse 1997; Hofmann 2006; Hedges *et al.* 2013). Representing a restricted subset of LBK mortuary practices, the establishment of formal burial grounds by LBK communities reflected a shift in the scale of these performances. The degree of formality, selection of appropriate gifts and clustering of related graves suggest that shared group identities were given a more prominent role within the funerary rites of cemetery burials compared to other locations and rites. Paired with the data garnered from better preserved burials from across the LBK distribution, the cemeteries of the Lower Rhine basin demonstrate that other 'communities' operating within the settlements and clusters of the LBK, related to but independent of the residential groups discussed above.

6.2.2   Lower Rhine cemeteries

The distribution of cemeteries in the Lower Rhine basin is uneven. Whilst six burial grounds have been identify in the Rhineland, Elsloo on the Graetheide Plateau and Hollogne-aux-Pierres near Liège are the only confirmed cemeteries within the Dutch Limburg and northern Belgium (Hauzer and Jadin 2011; Ungerath 2014)[32]. This

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[32] Cahen (1984: 41) identified a single possible settlement burial at Darion in the Upper Geer valley in Hesbaye. The small pit contained two complete pots, other associated finds but no surviving skeletal remains.

difference is most likely the result of different research agendas than a reflection of historical practice (van de Velde, pers. comm.).

These cemeteries share many broad similarities. Grave goods included pottery vessels/sherds, adzes, arrowheads, blades, grinding stones and hematite. Other than Arnoldsweiler (see below), few skeletal remains were found in the graves due to the decalcifying effect of the loess soils. As a result, the determination of age and sex were based largely on the type and number of grave good (Dohrn-Ihmig 1983; van de Velde 1992), which introduced a certain degree of scepticism with their conclusions. The lack of grave intersection suggests that the location of the individual graves must have been marked in some (durable) fashion.

Of these sites, detailed monographs were published for the cemeteries at Elsloo and Niedermerz more than 30 years ago (as well as several subsequent discussions; van de Velde 1979a; 1979b; 1992; 1993; 1997; Dohrn-Ihmig 1983). More recently, an overview of the burials at Arnoldsweiler and Altdorf have been published (Heller 2014; Husmann and Cziesla 2014). The following discussion will call upon these four published cemeteries. A summary of these sites and key findings are presented in Table 6-6 (at the end of the chapter).

6.2.2.1   Aldenhoven Plateau: Niedermerz and Altdorf

Excavations in the Merzbach valley (1969–75) uncovered 102 burials and 15 cremations at Niedermerz 3 over an area of 110 x 70m (Dohrn-Ihmig 1983; Figure 6-7). This cemetery lay across the river from the valley's largest settlement, Langweiler 8, and approximately 500m north-east of the LBK settlement of Niedermerz 4 (Figure 6-7). Based on pottery decorations, the cemetery may have been

used as early as the late Flomborn period into the late LBK (HG VI–XIII or Phase Ic–IIc) (Dohrn-Ihmig 1983: 96; Stehli 1994; Frirdich 1994: 330–6).

There has been some contention concerning the relationship of the buried dead at Niedermerz with the surrounding settlement areas within the Merzbach valley (Dohrn-
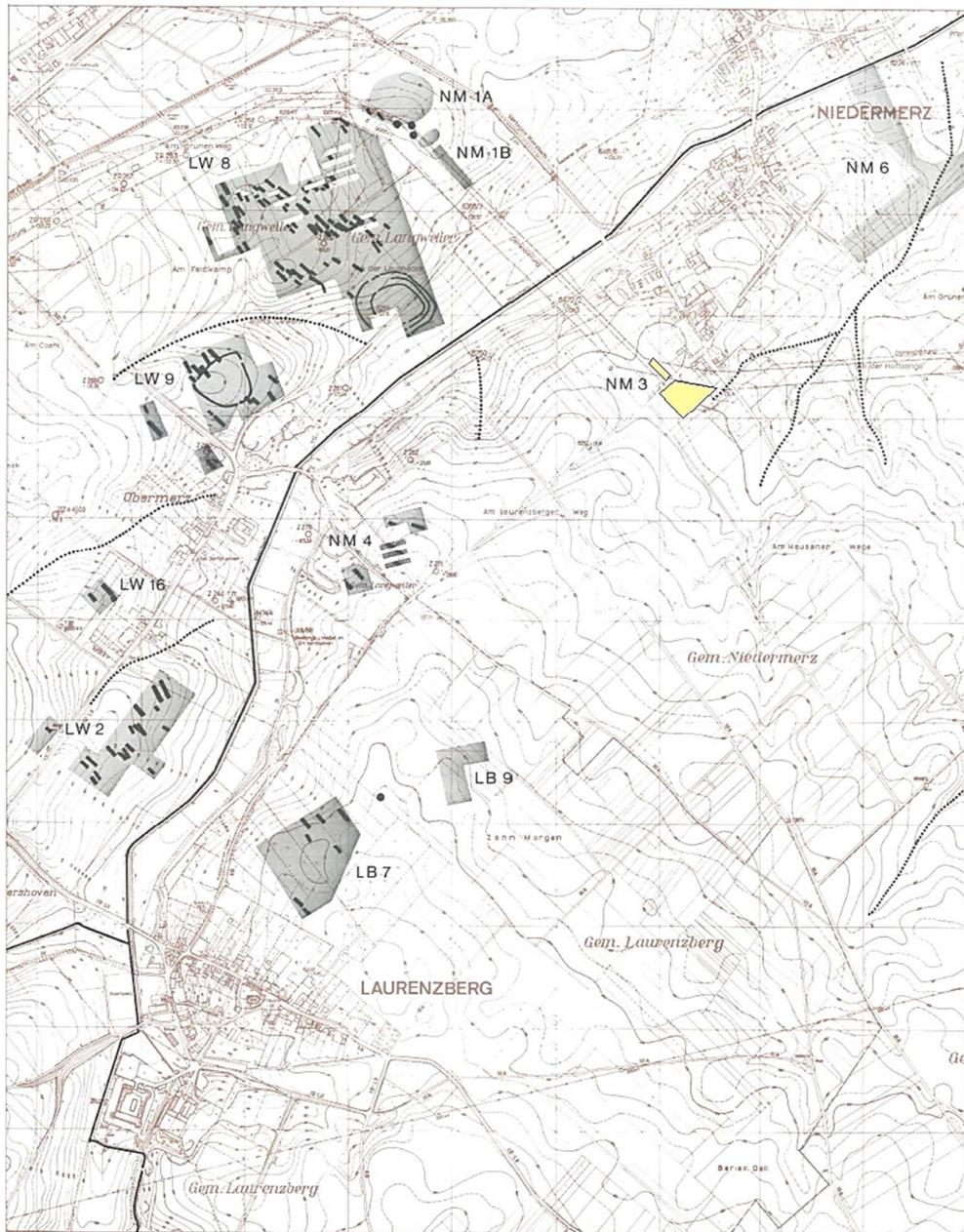
Figure 6-7: Location of Niedermerz cemetery (after Dohrn-Ihmig 1983: Fig. 1)

Ihmig 1983: 47, 99; Frirdich 1994: 344; van de Velde 1992: 174)[33]. However, Hoyer's recent study of the distribution of secondary motifs within the Merzbach sites (2009; 2010) demonstrated stylistic links between the Niedermerz cemetery and several neighbouring settlements (see below for more details). As such, it is reasonable to assume that this burial ground serviced this stretch of the Merzbach (at a minimum).

Two distinct burial groupings have been identified at Niedermerz (a southern and northern group) through differences in their grave goods and spatial proximity (Figure 6-8; Dohrn-Ihmig 1983: 104; Frirdich 1994: 340–4; Hoyer 2009; 2010). As a whole, the two clusters at Niedermerz were largely contemporary and interpreted as representing two different populations with distinct burial rites (Dohrn-Ihmig 1983: 67; Frirdich 1994: 344; 2003: 552). Within these groupings, however, smaller clusters of contemporary graves sharing similar
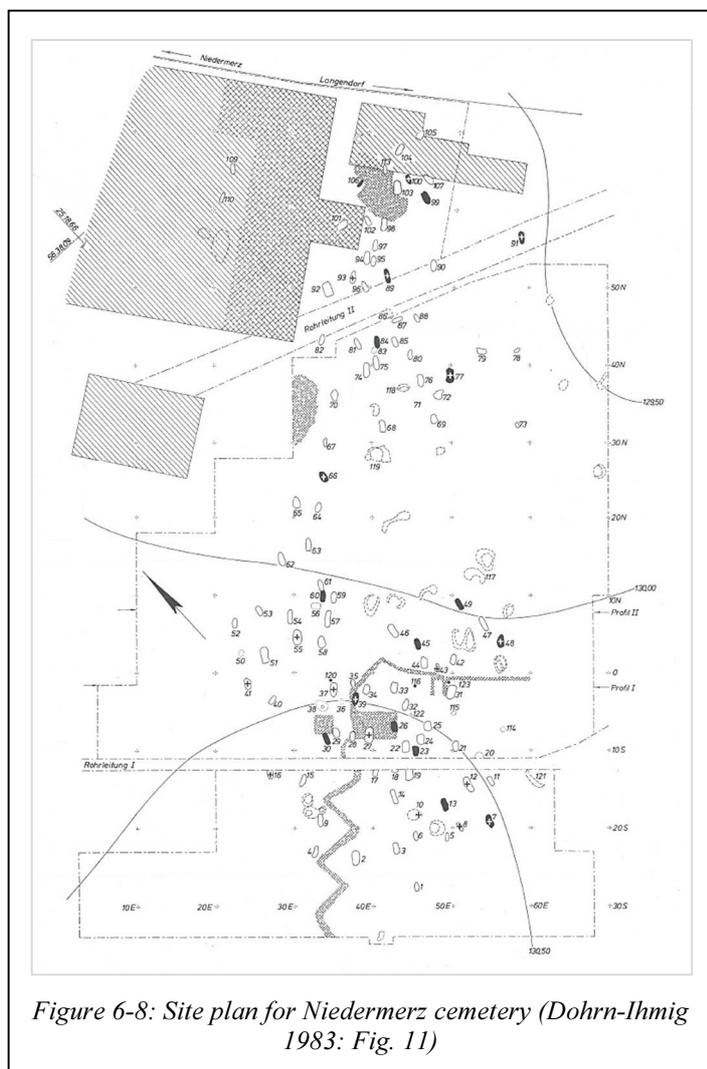
Figure 6-8: Site plan for Niedermerz cemetery (Dohrn-Ihmig 1983: Fig. 11)

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[33] Given that Niedermerz is the only burial ground located along this stretch of the Merzbach, it is generally argued that it serviced some or all of the local settlements. Influenced by his work at Elsloo, van de Velde (1992: 174) suggests that burial at Niedermerz was limited to the inhabitants of the largest settlement of Langweiler 8. The later publication of the evenly close settlement of Niedermerz 4 on the same bank as the cemetery makes this contention less likely (Boelicke *et al.* 1994).

orientations and decorated pottery may have reflected smaller family plots (Dohrn-Ihmig 1983: 103–4; Hoyer 2010: 50). Hoyer (2010) attempted to link materially the individual graves in the Niedermerz cemetery to specific household traditions within the neighbouring settlements. Accepting the assumption that the secondary decorations (*Zickelmotive*) on the pottery reflected family connections (Krahn 2003), she noted the presence (and absence) of these motifs in Niedermerz's graves and compared the resulting combinations to those seen in the local settlements. Overall, Hoyer concluded that it was not possible to link the graves at Niedermerz to individual households within the Merzbach valley (Hoyer 2010: 49). However, her study did establish similarities shared between the two broad groupings of graves in the cemetery and particular sites within the local cluster (northern: Niedermerz 4 and Langweiler 2[34]; southern: Langweiler 8 and Laurenzberg 7). A similar division was also discerned by Frirdich (1994) in the divergent pottery traditions emerging within the valley settlements during the Younger LBK. Thus, the northern and southern burial groups included members of different settlements within the local settlement cluster and, therefore, most likely represented related, but not co-residing, individuals (Dohrn-Ihmig 1983: 104; Hoyer 2010).

Niedermerz's two grave groupings existed throughout the use of the cemetery (although a general shift towards the north-east for both groups gives the impression that this division was less meaningful over time). Though co-residency may have

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[34] Hoyer's study was unable to establish clear affiliations for Langweiler 2 and Langweiler 9. Although not significantly different to the southern burial group, they shared similarities with the wider cemetery (Hoyer 2010: 45). However, Frirdich's earlier pottery study (1994) argued that Langweiler 2 and Niedermerz shared a distinct stylistic trajectory from Langweiler 8 and Laurenzberg 7. It is therefore likely that the residents of Langweiler 2 and Niedermerz 4 were closely linked.
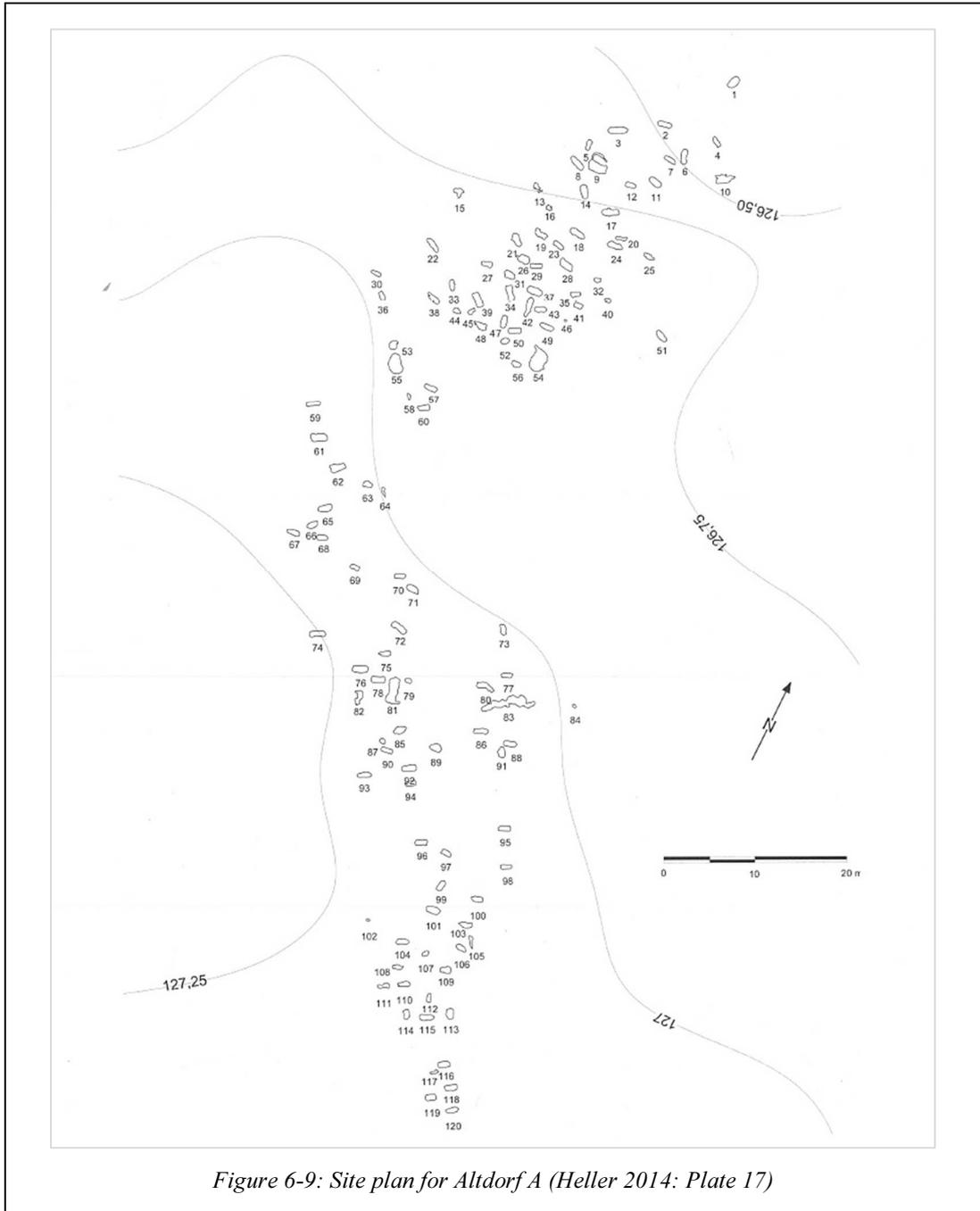
Figure 6-9: Site plan for Altdorf A (Heller 2014: Plate 17)

played a role in the structuring of the cemetery at Niedermerz, other identities were probably being played out in the two-part division seen in the graves.

The limited excavations in the Schlangengraben valley did not find any evidence of a local burial ground; however, recent investigations in the neighbouring Inde valley uncovered a small burial ground (Altdorf A) adjacent to a later LBK settlement

(Altdorf D) (Figure 6-9; Heller 2004; 2014; Graiewski *et al.* 2005). A total of 118 inhumations and 2 cremations were uncovered within the burial grounds. A single radiocarbon date placed the use on the cemetery at Altdorf in the younger LBK (5210–5000 cal. BC).
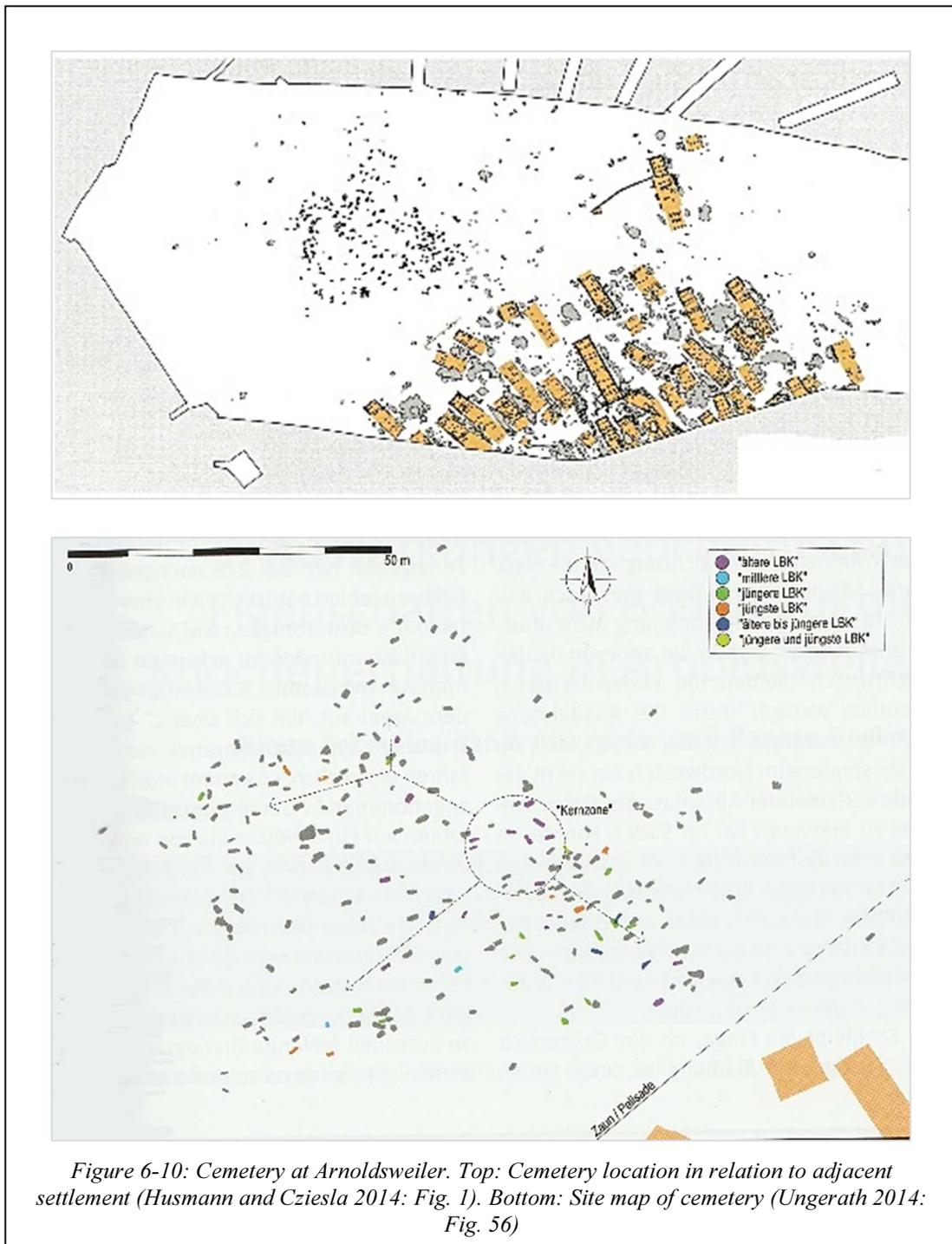
Figure 6-10: Cemetery at Arnoldsweiler. Top: Cemetery location in relation to adjacent settlement (Husmann and Cziesla 2014: Fig. 1). Bottom: Site map of cemetery (Ungerath 2014: Fig. 56)

6.2.2.2 Arnoldsweiler

With 229 burials (of which only three were cremations), the cemetery at Arnoldsweiler represents the largest known LBK burial ground in the Rhineland (Ungerath 2014; Figure 6-10). The graves were found concentrated in an area 130 x 90m just north-north-west of the adjacent Arnoldsweiler settlement. At its south-east edge, the outlying graves of the cemetery were less than 20m away from the nearest longhouse; however, the cemetery appears to have been separated from the settlement area by a fence or palisade (Ungerath 2014: 128–9). The grave goods suggest that the burial ground was first used during the early LBK and continue through to the youngest LBK (Ungerath 2014: 149). As a result, the cemetery at Arnoldsweiler may represent one of the first cemeteries within the Lower Rhine basin. Also noteworthy, skeletal remains were found in over 60% of the inhumations (N=140). However, this bone material was poorly preserved, and the sex of the buried individual could only be determined in 34 of the graves (16 x male; 18 x female). Researchers were more successful in determining age. The remains of 16 children (aged 2–12) were identified amongst the majority of adult graves.

There is little evidence of spatially-defined groups during the early usage of the cemetery at Arnoldsweiler. During the latest LBK, the distribution of graves extended beyond the core area into three or four different directions, signalling the possible emergence of different groupings within the local burial community (Figure 6-10).

6.2.2.3 Elsloo

A comparable number of graves (113) were uncovered at the cemetery at Elsloo on the Graetheide Plateau (Modderman 1970; van de Velde 1979a; Figure 6-11. These burial grounds were located adjacent of the large settlement (> 100 houses) sharing

the same name. The finds found in these graves suggest that the cemetery was used for a limited period of 3–5 generations during the late LBK (Phases 2c/d) (Modderman 1970: 65, 206–7; van de Velde 1979a: 84). Although the graves are only located 50m from the edge of the settlement, the physical gap between contemporary houses and
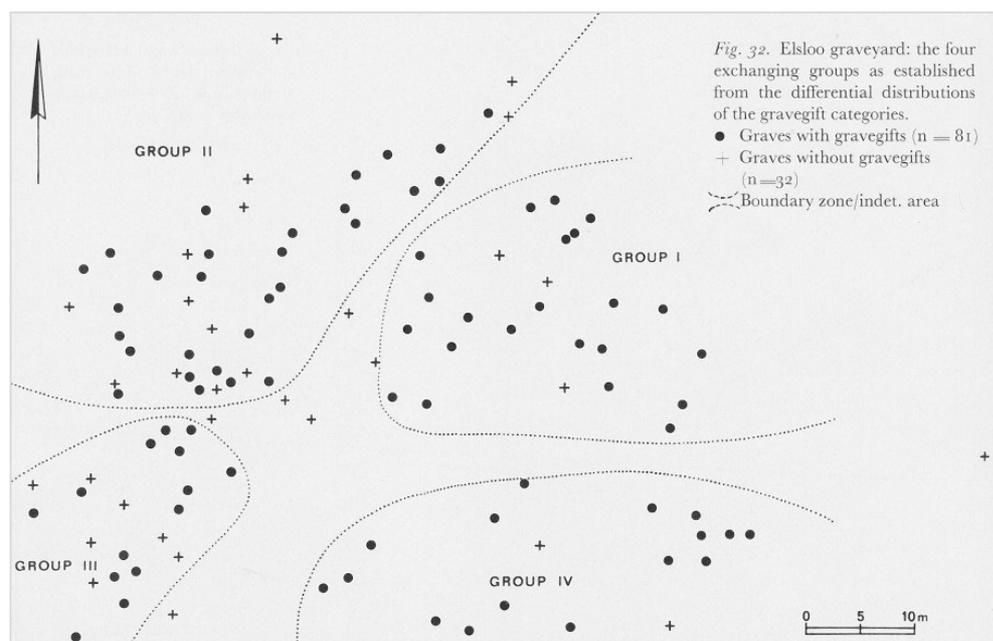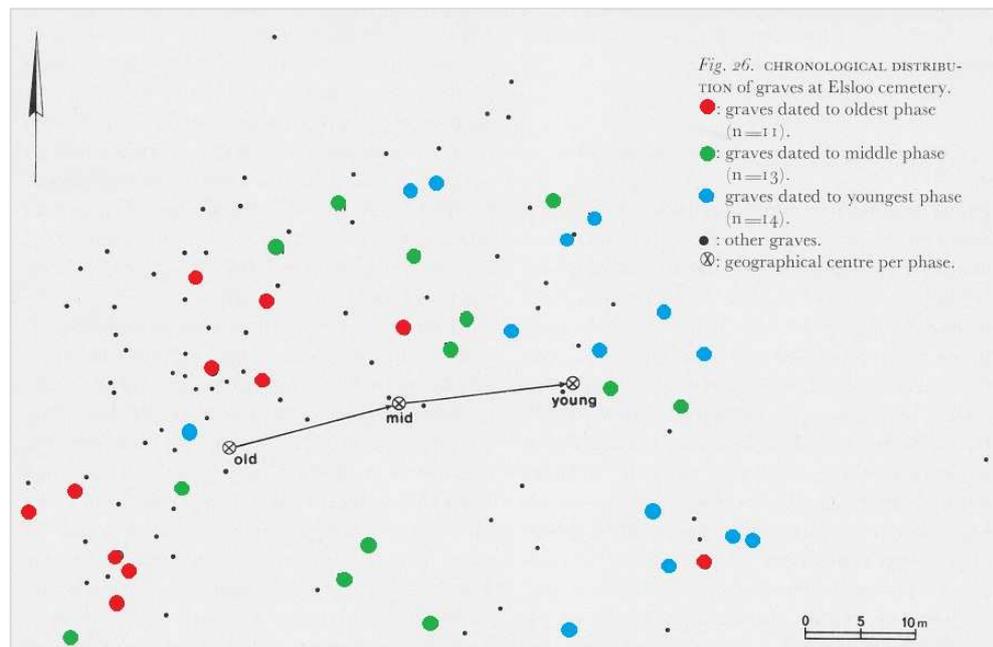
Figure 6-11: Cemetery at Elsloo. Top: Chronological map (after van de Velde 1979a: Fig. 26). Bottom: van de Velde's grave groupings (van de Velde 1979a: Fig. 32)

the burial may have been larger. Local chronologies suggest that the eastern half of the cemetery (which lies closest to the settlement) was used during the youngest LBK. The area of occupied settlement also shifted to the east during this time, maintaining a greater distance between graves and houses (Modderman 1970: 76). Compared to other Lower Rhine cemeteries, cremations represent a greater proportion of burials at Elsloo (Modderman 1970; van de Velde 1979a). Dohrn-Ihmig (1983: 99) and Lüning (1988a: 87) initially attributed the small number of cremations at Niedermerz (compared to Elsloo) to the more severe erosion suffered at the former site; however, the addition of Altdorf and Arnoldsweiler suggest that a re-think may be necessary on this point.

Modderman's initial work at Elsloo identified differences in the grave goods buried within the eastern and western halves of the cemetery (for example, the spectrum of decorative motifs and adze types; Modderman 1970: 73). He attributed this to chronological differences. More in-depth analysis of these inventories by van de Velde suggested the presence of four different exchange groups based on the spatial association of different categories of grave goods (van de Velde 1979a: 99–103). In addition, the almost exclusive presence of either rectilinear or curvilinear motifs on the decorated pottery of (presumed) female graves suggested a more formal matrilineal moiety structure shared by these groups in addition to the perceived virilocal residence (van de Velde 1979a: 108; van de Velde 1979b). Thus, these grave groupings did not simply represent the distinct residential groups identified within the settlement, but a more complex communication of both residence and descent ties (van de Velde 1979a: 145–6). Although van de Velde's association between recti-/curvilinear ceramic motifs and matrilineal descent groups has been subject of much criticism (for example, see *Comments* in van de Velde 1979a), more recent work at

Vaihingen has suggested a similar moiety structure from the variable distribution of a particular pottery motif (a single incised line running parallel to the rim) within the settlement (Strien 2005: 195). Though problematic (due to the lack of skeletal remains and reliable sex/age data), van de Velde's analysis may still be capturing a snapshot of the social reality within the Elsloo community.

6.2.3 Burial communities

The communities created through the shared funerary rites practised within the Lower Rhine cemeteries were clearly connected to but not wholly representative of the residential groups found within the neighbouring settlement(s). Spatial groupings of seemingly "related" graves have been identified at Elsloo and Niedermerz and, in the latest LBK, at Arnoldsweiler. Although smaller clusters and grave pairings suggest the presence of small family plots within the cemeteries representative of the durable family farmsteads found in the settlements, these are rare, and the household may not have been relevant in the burial community as a whole (Whittle and Bickle 2013: 389).

Instead, other relations such as descent lineages may have been more meaningful within funerary practices and may have helped to define where, if at all, a deceased person could be buried. The importance of such lineage relations have already been stressed in terms of social competition (Frirdich 1994) and settlement structure (house groups; Chapter 5).

The lack of such groupings at Arnoldsweiler until the latest LBK may reflect a shift in the role of the local burial ground within that community over time. Compared to Elsloo, Niedermerz and Altdorf, the burials at Arnoldsweiler are far less likely to be equipped (with durable objects). Grave goods are found in less than a third of burials

and, where found, are more likely to be limited to one or two categories of objects. As such, the graves at Arnoldsweiler may bear some resemblance to the more poorly-equipped burials generally found within settlements (Veit 1992; Hedges *et al.* 2013). This may not be surprising given the cemetery's close proximity to the neighbouring longhouses (within 10–20m). The data from Arnoldsweiler suggest that proximity to settlement may be related to the scale of the burial audience, with little to distinguish between settlement burials and those found immediately outside the settlement area. At the same time, the emergence of distinct grave groupings at Arnoldsweiler may suggest a developing emphasis on group identities more typical of LBK cemeteries over time (Hedges *at al.* 2013).

Noting an association between the more formal presentation of male and group identities within cemeteries, Hedges *et al.* (2013: 382) suggest that selection for burial within these contexts may have been influenced by belonging to particular male lineages. Within the Lower Rhine basin, the ratio of burial to number of inhabitants is far higher for the single-settlement cemeteries at Elsloo and Arnoldsweiler than for the cluster cemetery at Niedermerz. Given the general equivalence of these local populations, it is unlikely that this difference could reflect fewer lineages present within the local residential community. If the grave groupings seen as Elsloo and Niedermerz are interpreted at wider kin groups (van de Velde 1979a; Dohrn-Ihmig 1983: 67; Frirdich 1994: 344; 2003: 552), the recognition of four groupings at Elsloo, compared to Niedermerz's two clusters, may suggest that lineages may have held a more equal standing at Elsloo. This is consistent with van de Velde's assertion (1990) that Elsloo's settlement was divided into 3–5 house groups of even status. Alternatively, the lineages residing at Elsloo may have expressed social ranking or

competition through other means—for example, in the more restricted construction of larger tripartite houses (see 5.4).

Given the poor preservation of skeletal material in the Lower Rhine basin, we are limited in what we can say about body position and grave orientation within these cemeteries. Where identifiable, the Lower Rhine cemeteries are typical of the LBK (Veit 1996; Hedges *et al.* 2013: 374). Left crouched burials and certain grave orientations dominate the burial grounds, although the specific orientation favoured within each cemetery was locally-determined (Table 6-6). Outside of these dominate practices, a range of variation is witnessed. This relatively uniformity is consistent with the increased formalisation seen within cemetery burials at other LBK sites (Hedges *et al.* 2013: 381–2).

Compared to LBK cemeteries as a whole (Hedges *et al.* 2013: 374), the burials at Elsloo and Niedermerz are well-furnished (Table 6-3). Two-thirds of graves include at least one grave good, whilst a third of burials contain three or more different types of objects. The burials at Niedermerz were more likely to contain objects frequently

	Arnoldsweiler	Niedermerz	Altdorf	Elsloo
% equipped	29%	67%	69%	83%
% 3 or more categories	4%	38%	n/a	33%
% limited to locally-meaningful objects	39%	37%	n/a	51%
% limited to non-local materials	51%	24%	n/a	4%
% both locally-meaningful & non-local materials	7%	37%	n/a	44%

Table 6-3: Percentage of inhumations at each cemetery

acquired through trade (flint & adzes). However, given its closer proximity to Rijckholt outcrop favoured by the LBK in this region (7.2.1), the communicative power of these materials may have been reduced in these communities. Alternatively, the prominence of pottery within the Elsloo graves, which were likely imbued with more local significance, offers the possibility that smaller-scale group identities, such as those between Graetheide sites, may have been more relevant to the local community.

If inclusion within the burial community was determined at least in part by kinship ties beyond residency, the individuals buried within a cemetery may have extended, in theory, beyond the local population. The introduction of stable isotope analysis within LBK studies has highlighted an impressive degree of mobility within the local population (discussed above, 6.1.1). As a form of social competition, the establishment of formal burial grounds seeks to communicate to a wider audience. However, as a means of rooting particular family or lineage histories to a specific place, these cemeteries may have served as a beacon for a dispersed kinship group. One could hypothesise that the wider audience attracted to the burial performances at these cemeteries may have included visiting family members returned with the earthly remains of deceased kin.

At the same time, access to such cemeteries may not have been limited to lineage members. The very act of burying a person amongst the lineage's dead, the attending ceremonies and feasting and the wider audience attracted to the event(s) continually re-defined the status of the lineage, its figurative and authoritative heads and the body of persons who claimed membership to it. For example, the connection of the decreased to the lineage itself may have been more tenuous, based on close

interpersonal relationships or important trade contacts, but nonetheless served to unite the lineage as a collective body.

Although located near to contemporary settlements, the cemeteries in the Merzbach and Inde valleys are not found adjacent to the largest and possibly most influential local settlements (e.g. Zimmermann 1995). In both cases, the burial grounds were located opposite a large pioneer settlement (Langweiler 8 and Inden-Altdorf D) on the other side of the river. It has been argued that these settlements served as central places in the social landscape and may have held a privileged role in the maintenance of exchange contacts and the acquisition of non-local materials (Frirdich 1994; 2003; Zimmermann 1995; 2002; Krahn 2006). However, the influence of these sites diminished over time and may have been largely ceremonial by the late LBK (Frirdich 1994). Established in the middle LBK, the cemetery at Niedermerz was established during a period of change within the local residential groups. The founding households at Langweiler 8 were gradually being abandoned and new family farmsteads established at Langweiler 8 and adjacent sites. Within this social climate, the households of Langweiler 8 may have lacked the necessary social capital 'claim' the local cemetery.

Taken as a whole, the burial community represented the performance of kinship ties, especially descent lineages, both within and beyond the local settlement groups. However, other scales of identity or community were also performed within these acts. At the smallest scale, we see the presentation of age/gender sets through the selection of grave goods and more intimate groupings of marriage partners and close family plots. Extending out, the shared feasting of such events likely created, even if temporary, a large-scale co-operative body incorporating a disparate body of

mourners, including kin, neighbours and others. These were unlikely to be defined, bounded or stable groups but rather represented a complex interplay of residential, lineage and interpersonal relationships.

6.3 Later enclosures: communities in 'decline'

The construction of encircling or enclosing ditches appears to a recurrent if variable practice within the LBK (Lüning 1988b; Whittle 1996: 174–6; Kerig 2003). Much has been written in the past about the repeated forms and presumed functions to these features (Lüning 1988b; Keeley and Cahen 1989; Höckmann 1990; Kaufmann 1997; Golitko and Keeley 2007); however, more recently, greater interest has been shown in understanding what these substantial projects and the activities that coincided with their construction, use and later re-use can tell us about how LBK groups interacted (Kerig 2003; Boulestin *et al.* 2009; Pechtl 2009; Golitko 2015). The following section looks at enclosing practices within the Lower Rhine basin and considers the types of communities that may have been performed through the lifecycles of these features.

6.3.1 Enclosing features: an overview

Ditched enclosures are a common, if variable, feature in the LBK (Lüning 1988b; Höckmann 1990; Kaufmann 1997; Kerig 2003). In some cases, these enclosures encircle a settlement (*settlement enclosures*) and include unusually complicated gates and evidence of burning, leading some to focus on the defensive nature of such structures (Keeley and Cahen 1989; Golitko and Keeley 2007). In other cases, the enclosures were constructed nearby but independent to contemporary houses (*freestanding enclosures*). These "empty" enclosures, or earthworks, are found in association with debris generally associated with settlement activity (pottery, stone tools, grinding stones, evidence of grain processing, and so on) but of a different

character to the assemblages found within the settlements themselves (more diverse and better preserved pottery, functionally different flint artefacts, presence of ovens and fire pits, manipulated human remains, etc.) (Kerig 2003: 230). As a result, such earthworks have been interpreted as places of ritual celebration or social gathering (Whittle 1996: 176; Kerig 2003: 238). Given the variability in the shape, size and association of these enclosures, they likely played different roles within LBK communities, possibly all at the same time (Boelicke *et al.* 1988: 426).

Despite this ambiguity, the enclosure as 'communal project' has not been challenged. The construction (and maintenance?) of these polysemic places required countless hours of labour, which was far beyond the scale of an individual household or settlement (Table 6-4; Keeley and Cahen 1989). As a result, the presence of such features has been treated as a conscious attempt by local inhabitants to create a shared local community and present this group identity to the outside world (Whittle 1996: 176; Kerig 2003). However, the community who constructed and used these large features need not be limited to surrounded or neighbouring settlement(s) alone. Given

Table 6-4: Estimated labour requirements to construct settlement enclosure at Darion (Keeley and Cahen 1989: Table 2)

Basic unit costs
Earthmoving: 1.1 cu m/man/day (Coles 1973: 73; assuming 8 hours of
   continuous labor a day).
Tree-felling and trimming: one 35-cm tree felled with stone adze = 0.5
   man/hour (Coles 1973: 20); trimming and sizing one post = 0.25
   man/hour (estimate); thus, 11 posts (cut, trimmed, and sized) per man
   day.
Hauling and emplacing posts: 1 post per 0.67 man/hours (estimate) or 12
   posts per man/day.

Applications	
Ditch, 1600 cu m × 1.1 cu m/man/day	1450
Palisade	
post cutting and trimming: ca. 500 posts at 11/posts/man/day	45
hauling and emplacing: 500 posts at 12 posts/man/day	42
excavation of foundation trench and post holes, 110 cu m	100
Miscellaneous carpentry and construction (estimated):	30
Total labor cost (man/days) =	1667

the limited scale of settlement located at enclosure sites such as Darion (where only four longhouses have been found), local inhabitants may have pooled labour and resources from the surrounding uplands in order to construct their short-lived ditch system (Keeley and Cahen 1989: 168).

Whilst Keeley and Cahen (1989) saw this communal effort in terms of defence alliances, Pechtl (2009) suggested that such large-scale projects should be seen as a form of prestige competition between groups. Lacking rigid political structures beyond the settlement or settlement cluster, these vast labour projects had to attract manpower through social obligation and the promise of personal (or family) benefit. Only a successful group with

Figure 6-12: Distribution of LBK settlements with monumental longhouses and/or enclosures in south Bavaria (Pechtl 2009: Fig. 5)
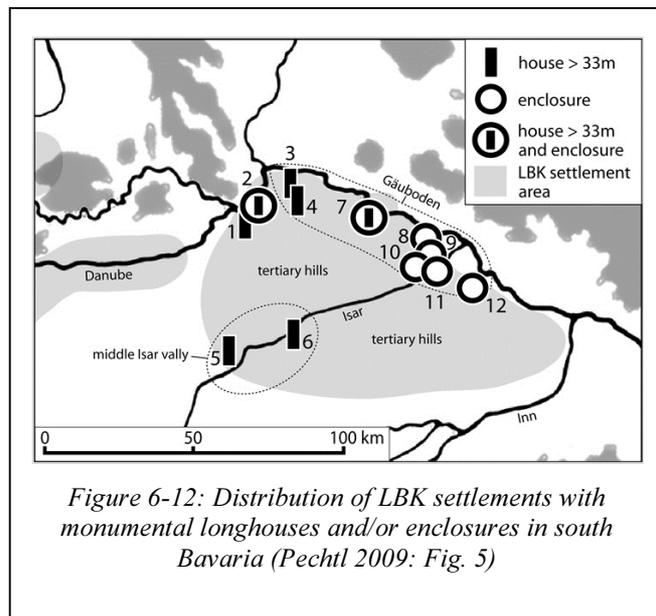
good connections to the wider community could pull together these resources. His work suggested that the scale on which people competed for social prestige may have varied locally and over time (Figure 6-12). The construction of monumental houses likely reflected the influence of household heads, suggesting a lower level of communal integration based on households and lineage membership. In contrast, more integrated communities with a developing social stratification competed at the settlement level, possibly organised by a big man or chief. Competition at this level may have expressed itself in the construction of enclosures.

Whilst distributed across the LBK, the majority of settlement enclosures were constructed during the Younger, especially Late, LBK. Kerig (2003) links the appearance of these enclosures to the emergence of larger-scaled and more tightly bound social units within the LBK (comparable in broad terms to the steady coalescing of tribal units from the loosely based band-like communities). The construction of these sizeable structures performed the dual purpose of demarcating settlement communities to the outside world whilst masking individual households and minimising social differentiation within the settlement (Kerig 2003: 239). In comparison, longhouse-free earthworks are limited to the final generations of the LBK (HG XIII–XIV). To date, this point and its implications have not been explored in any detail.

Again, enclosures were more prevalent at sites in the western half of the LBK. Emphasising their 'defensive' nature, Golitko and Keeley (2007) see this skewed distribution as reflective of increasing levels of violence along the 'Mesolithic' frontier. This function as fortification may not apply in all cases given the relatively shallowness of some ditches and number and size of passages within the enclosures (Whittle 1996: 176; van de Velde *et al.* 2009: 463). As a more prosaic alternative, one could argue that the prominence of enclosure settlements in the western LBK could simply reflect a regional trend within the larger collective body, similar to those found in burial and subsistence practices (see later discussion, 7.3).

6.3.2 Lower Rhine enclosures

As noted above, settlement enclosures and freestanding earthworks are a common feature of the LBK in the Lower Rhine basin. A recently published overview of presently known enclosures between Brussels and Cologne (Van de Velde *et al.* 2009:

Table 1) lists twenty sites within the region. The following discussion focuses on a subset of these features, again concentrating on better preserved and published sites. Fully details are listed in Table 6-7 and Table 6-8 at the end of the chapter. Until recently, excavations on the Aldenhoven Plateau had only discovered freestanding earthworks (Altdorf B and Altdorf D in the Inde valley are noteworthy exceptions; Clare 2014; Mischka 2014) and, as a result, emphasis will be given to these features foremost.

6.3.2.1 Freestanding earthworks

6.3.2.1.1 Merzbach valley

Three concentric circular enclosures were uncovered on the steep(er) slopes immediately adjacent to Langweiler 8 (Figure 6-13; Boelicke 1988). They were excavated at the same time at the neighbouring settlement (1972–73). Though broadly V-shaped, the cross-sections of these ditches are vary significantly and, therefore, may have originated as a continuous series of individually dug pits similar to Beek (see below; van de Velde *et al.* 2009: 467).

Figure 6-13: Merzbach valley enclosures. Left: Langweiler 8. Middle: Langweiler 8. Right: Langweiler 3 (Boelicke et al. *1988a)*
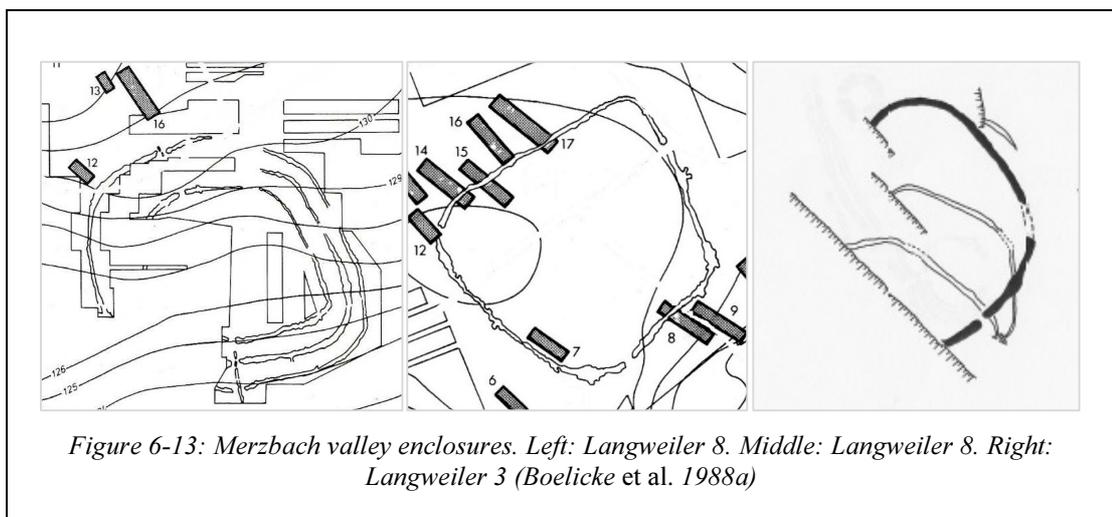
The enclosures at Langweiler 8 were not coeval. The inner enclosure was the first component constructed. This was in a state of disrepair when the middle enclosure was built and, later, partially re-excavated. The outer and therefore largest ditch was constructed last. It appears that both of the internal smaller ditches were only used secondarily at this time. The largest of these earthworks encloses an area of 0.59 ha. Across these different building phases, the location of the two known passage ways (in the north-west and south-east) remained unchanged.

In addition, single ditched enclosures were also uncovered at Langweiler 9 and Langweiler 3 (Lüning and Stehli 1977; Boelicke 1988; Figure 6-13). Again, these are substantial features, enclosing a relatively small area (up to 0.9 ha) with their deep V-shaped ditches. The enclosure at Langweiler 9 appears to encapsulate an area previously settled by longhouses. Three distinct construction phases were identified, with the later recuts followed the general path of previous ditches. The final phase of construction included alterations to the gate layouts and the addition of a fourth passageway. Three overlapping enclosures, representing up to four different building phases, were uncovered at Langweiler 3. In contrast to its neighbouring earthworks, there is no evidence of settlement activity on and near the location of the enclosures.

Pottery found in association with the enclosures at Langweiler 8, Langweiler 9 and Langweiler 3 suggest that they were constructed during the final generations of the valleys' occupations (HG XIII–XV; Stehli 1994). Given their proximity, Stehli (1994: 120–1) felt it was unlikely that these features were contemporary. As a result, he allocated the three earthworks to successive house generations—HG XIII (Langweiler 9), HG XIV (Langweiler 8) and HG XV (Langweiler 3). Without this assumption,

however, there is no evidence to suggest that the different building phases witnessed at these three sites did not overlap with one another.

6.3.2.1.2 Schlangengraben valley

Like the neighbouring Merzbach valley, multiple freestanding enclosures were uncovered in the Schlangengraben valley (Figure 6-14; Krahn 2006). These were subject to smaller-scale excavations in the 1970s.

Traces of a concentric three-ditch earthwork (similar to Langweiler 8) was found overlapping settlement remains at Weisweiler 17. The V-shaped ditches were shallower compared to other examples (up to 1.6m deep) and were estimated to enclosed a maximum area of 1.8ha. As such, the interior of the earthworks at Weisweiler 17 were much larger than average. Finds within the fill of the middle enclosure could be dated to HG XIII (or possibly HG XII); however, it was not possible to date the inner and outer ditches. Assuming that the three ditches were constructed within relatively short succession (i.e. within a generation of each other), four farmsteads remained inhabited at Weisweiler 17 during the construction and use of the neighbouring enclosures (Krahn
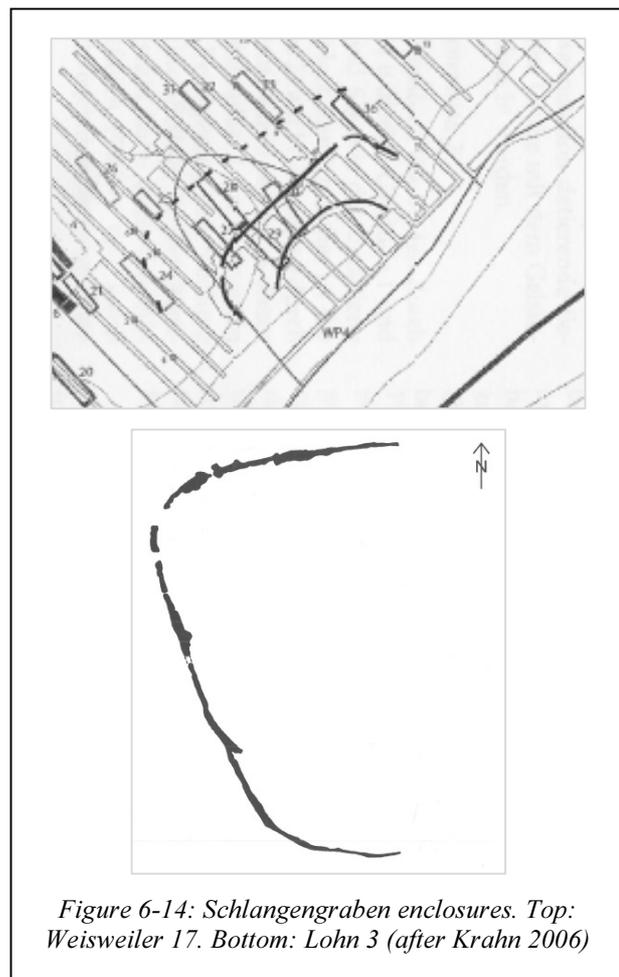
Figure 6-14: Schlangengraben enclosures. Top: Weisweiler 17. Bottom: Lohn 3 (after Krahn 2006)

2006: 222). This area of settlement (Farmstead 4) had been abandoned for at least two generations before the construction of these features.

In addition, a single-ditch enclosure was discovered adjacent to Lohn 3 in the south of the settlement cluster. No dateable finds were found in the ditch's fill so it was not possible to date this feature directly; however, pottery from nearby pits could be dated to HG XIV, suggesting that Lohn 3's enclosure was constructed and used in the Latest LBK. The settlement of Lohn 3 had been abandoned by this time but the isolated farmstead across the river at Weisweiler 29 was likely still inhabited.

6.3.2.1.3 Arnoldsweiler

A two-phase earthwork was discovered approximately 200m east of the settlement of Arnoldsweiler in the Ellebach valley (Husmann and Cziesla 2014). The feature was located at the transition zone between the upper and middle slopes of the valley. About half of the likely structure was excavated during road construction work in 2009.

Although two distinct building phases can be seen at Arnoldsweiler, the ultimate shape of the resulting enclosures remains unclear (Figure 6-15). The inner ring, with its

Figure 6-15: Enclosure(s) at Arnoldsweiler. Left: outer enclosure as annex. Right: outer enclosure as separate, overlapping feature (Husmann and Cziesla 2014: Fig. 111–2)

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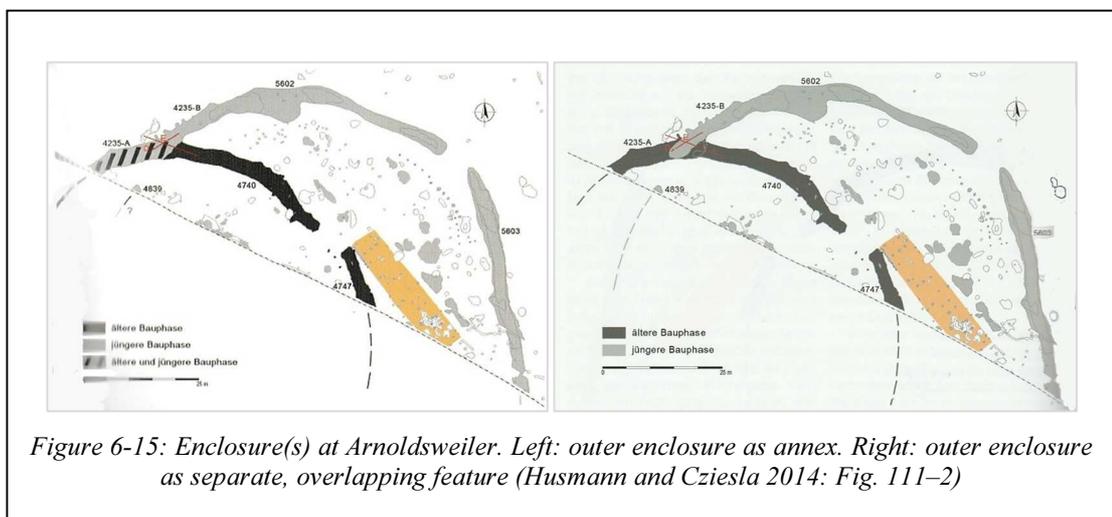
single passage, represents an earlier construction phase. The outer ring, also with a single passage, represents a later extension to this inner earthwork or, alternatively, represents a second circular enclosure overlaying the earlier earthwork. Together, the two ditch systems enclosed a 0.6 ha area. There is no evidence of palisades associated with either building phase, although stretches of parallel post holes alongside the outer enclosure suggest that the ditch may have been backed by an earthen wall. It is also likely that the ditches were in-filled with eroded soil soon after construction.

Relatively few finds were discovered within the enclosures' fill (pottery, flint artefacts, grinding stone fragments, a hammerstone). Based on a decorated sherd, the first enclosure was likely constructed in the Late to Latest LBK, and this date was confirmed by a single radiocarbon date (5226–4958 cal. BC)[35]. The date of the second enclosure/annex is unknown.

The remains of a single three-part longhouse can be found in the area between the inner and outer enclosure. The date of this house remains unclear as the nearby pits included pottery from across the settlement's occupation (Flomborn–Late LBK). Given its proximity to the inner enclosure, it is unlikely that this house was coeval with the earlier enclosure. Like Langweiler 9, the enclosure at Arnoldsweiler may have been built on top of an abandoned area of settlement.

6.3.2.1.4 Beek

Excavated in the spring of 2007, the earthwork at Beek represents the only known example of a freestanding enclosures in the Dutch Limburg (Figure 6-16; van de Velde

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[35] A second sample was dated to the Late Mesolithic (5619–5487 cal. BC) but deemed to be insecure (Husmann and Cziesla 2014: 113)

et al. 2009). The feature is located on the valley floor of the Keutelbeek and is situated on the periphery of the largely unexcavated LBK settlement of the same name.

Although only partial excavated, the uncovered traces suggest that the earthwork was oval in shaped. Two distinct building phases have been identified. The first phase was
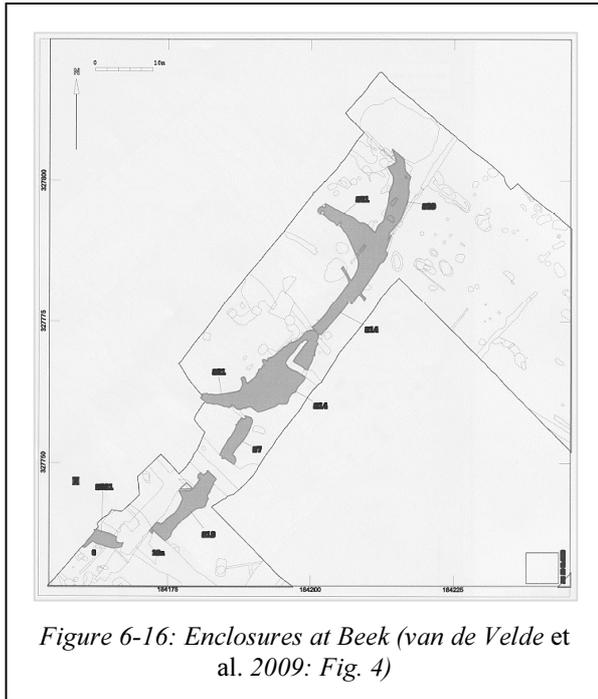
Figure 6-16: Enclosures at Beek (van de Velde et al. *2009: Fig. 4)*

characterised by the excavation of individual pits that joined together to form the resulting continuous V-shaped ditch (original depth = 2.5m). It is unclear if these pits were dug simultaneously or sequentially. During the second building phase, the earthwork was re-cut as a continuous shallow U-shaped ditch (original depth = 0.6 m). Following the same course, both phases of the earthwork enclosed an area of 0.8 ha. There is no evidence of a palisade or similar feature associated with either enclosure.

Finds within the fill of these ditches were limited to a single sherd dated to the Late LBK (IId) and two grinding stone fragments. The lack of more artefacts is attributable to the relative scarcity of LBK debris on the steep slope above the earthwork. Based on these limited finds, the first phase on construction (continuous chain of individual pits) was likely constructed during the Late LBK (IIc/IId or HG XIII/XIV). It was not possible to date the second phase of the earthwork due to the lack of any finds within its fill.

6.3.2.2   Settlement enclosures

6.3.2.2.1   Hesbaye

Settlement enclosures have been identified at several late LBK sites along the Upper Geer in the Hesbaye region (Figure 6-17; Keeley and Cahen 1989). The distribution of finds suggests that longhouses, pastures and possibly fields were circumscribed by these earthworks. The labour required to construct these features (1,650 man days for the enclosure at Darion; Keeley and Cahen 1989: Table 2) exceeded that available from the settlement's inhabitants, leading Keeley and Cahen (1989: 168) to sees their construction as a cooperative enterprise involving members of the wider population. However, these enclosed settlements are unlikely to be local seats of power because they are too close together (within 3 km of one another), are situated on the periphery of local settlement, vary in size and lack high status specialisms (Keeley and Cahen

Figure 6-17: Settlement enclosures in Hesbaye region (from Keeley and Cahen 1989)
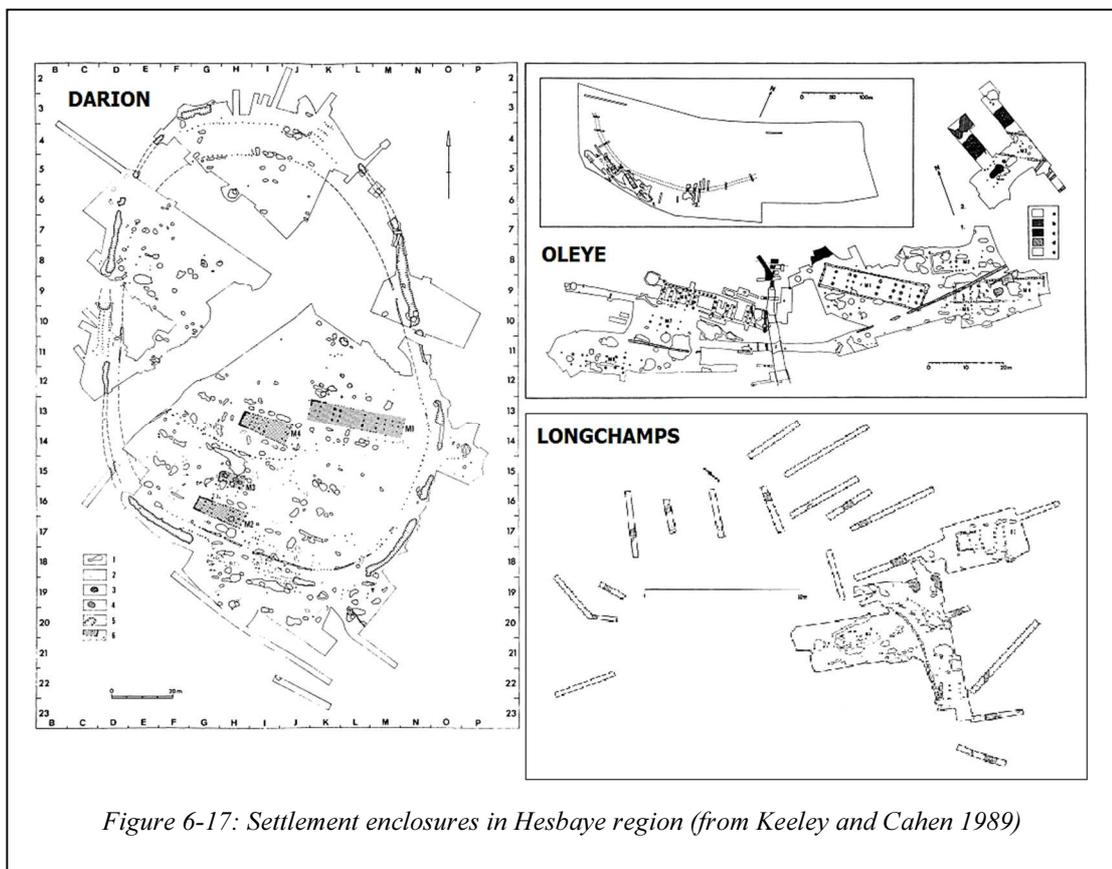
1989: 172). Instead, Keeley and Cahen (1989) emphasise the potential defensive role such enclosures may have played and see them as a response to a relatively short-lived threat from neighbouring indigenous groups to the north (see also Golicko and Keeley 2007; discussed further in 7.4.1).

In several cases, however, longhouses lie outside the enclosed settlements area[36]. Bosquet *et al.*'s recent study (2008) of this phenomenon suggests that these houses were constructed earlier than the main settlement group, representing a pioneer phase. Significant changes to the flint procurement strategies and increased ceramic diversity coincide with the establishment of the main settlement group (by the founding group, their descendants and/or newcomers). Despite their isolation, the early houses remained occupied until the construction of the enclosing earthworks two to three generations later. When constructed, the enclosure causeways (or village entrances) were placed in relation to these isolated houses outside their perimeters, suggesting that these 'pioneer' houses remained integrated with the main settlement despite their exclusion from the enclosed area.

Previous work at these later sites showed that erosional infilling began almost as soon as these enclosures were constructed, with the ditch at Waremme-*Longchamp* being two-thirds filled within 10–15 years (Keeley and Cahen 1989: 166). As such, they may have been temporary structures with little impact on the long-term structure of the local society.

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[36] Within Bosquet *et al.*'s study (2008), there is significant variation in the placement and relative distance between these isolated pioneer households and the main settlement group. The excluded longhouse at Remicourt stands 130 m from the enclosed area, whereas Waremme-*Longchamps* and Darion lie within 20 m of it.
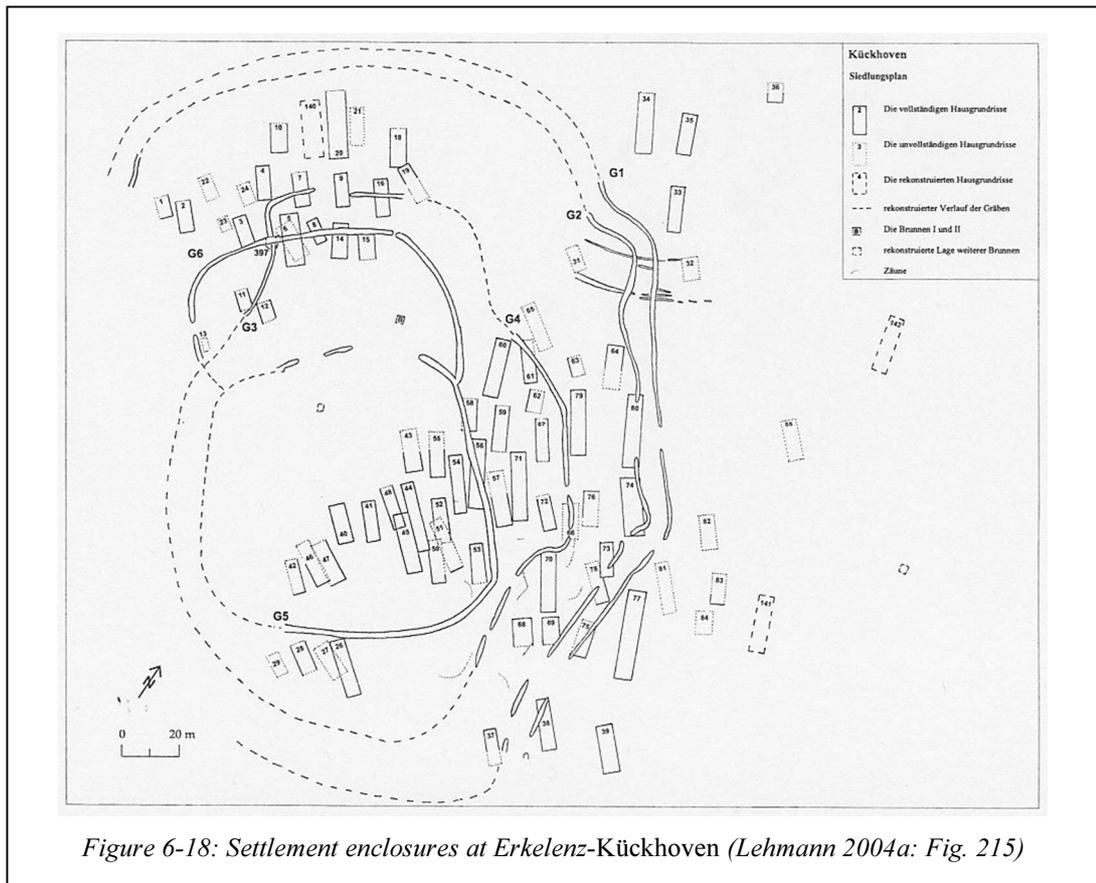
Figure 6-18: Settlement enclosures at Erkelenz-Kückhoven (Lehmann 2004a: Fig. 215)

6.3.2.2.2 Kückhoven

For several generations (HG III–IX), Kückhoven's settlement of up to ten contemporary houses remained unenclosed (Lehmann 2004a, 2004b). The Late LBK was marked by the construction of ditched enclosures of ever decreasing size (Figure 6-18). The first set of double enclosures (G1/G2) circumscribed a large area of approximately 4.3 ha and included the site's ten contemporary longhouses (HG X). The homogeneous fill in these ditches suggest that they were abandoned soon after construction (within a generation). A smaller set of enclosures (G3/G4) was built the following generation (HG XII). It appears that the courses of these earlier enclosures were affected by the presence of occupied farmsteads, leading to bulges along its north-eastern and north-western runs (around Houses 6, 67 and 72). Despite this, local chronologies suggest that a single longhouse (House 39) remained occupied

approximately 20m outside the second enclosure's south-eastern entrance. The third and final set of enclosures (constructed in HG XIII) enclosed a much smaller area and was more defensive-like in nature (smaller, deeper ditches). Settlement at this time was limited to the dense cluster of houses found in the eastern half of enclosure G5 and a pair of houses outside of the slightly later enclosure G6; the area around the formerly occupied House 39 was now abandoned. In addition to these houses, the enclosures also included a relatively sizeable house-free area with Kückhoven's well-known wells and several late LBK pits.

6.3.3 Enclosing 'practices' and the creation of community

Two distinct traditions of enclosure can be seen within the LBK of the Lower Rhine basin: the settlement ditches and palisades that encircle settlements of various sizes and free-standing earthworks. Whilst some settlements were enclosed during the older Flomborn period (for example, Geleen-*Janskamperveld*'s shallow ditch and fence structure, Table 6-8), the vast majority of known examples were constructed during the Late LBK (from HG XII onwards) and were filled in with eroded soil within a generation (10–15 years). There is little evidence to suggest that these settlement enclosures were regularly maintained although they may have been repaired in some places (e.g. stretches of 'double' ditches at Sittard). Whilst associated with the earliest periods of settlement at some sites (Darion, Geleen-*Janskamperveld*), many settlements stood for many generations before the construction of such features (e.g. Erkelenz-*Kückhoven*: 10 generations) and continued to be occupied well after the ditches were abandoned. As such, the construction of these features represented a response to a specific set of conditions beyond that of simple settlement, such as periodic episodes of local warfare (Keeley and Cahen 1989; Golitko and Keeley 2007; Golitko 2015) or social competition between neighbouring settlements (Pechtl 2009).

In contrast, this pattern of construction and relatively quick abandonment raises questions about Kerig's assertion that enclosure building signalled the emergence of larger-scaled and more tightly bound social units within the LBK. If the construction of such features signalled unity—or, more precisely, help to create that unity—how was it maintained in the absence of such a visual and performative act?

Later, at the tail end of the LBK's occupation, several freestanding ditched earthworks were built and re-built over subsequent generations. There does not appear to have been any prescriptive relationship between these features and areas of settlement (abandoned and contemporary). Enclosures were built within abandoned areas of settlement (Langweiler 9, Weisweiler 17 and Arnoldsweiler), in unoccupied areas adjacent to contemporary settlement (Langweiler 8 and Beek) and across the river from the closest inhabited longhouses (Lohn 3 and Langweiler 3).

In addition, it is not clear whether the multi-phase enclosures at Langweiler 8 and Weisweiler 17 should be seen as qualitatively different to the single-ditched earthworks found nearby. Little is known about the temporalities of activities taking place at these enclosure sites. Like the settlement enclosures above, there is little evidence that their ditches were maintained, and in-filling may have starting almost as soon as they were built. Van de Velde *et al.* (2009: 467) argues that several of these enclosures may have been dug at a chain of interlocking pits ('Rosheim' type), suggesting their construction is best represented as a series of small-scale events. Once built though, these freestanding earthworks are seen as central places for the local inhabitants to gather (Frirdich 1994: 348), possibly a shared site for ritual celebrations, harvest festivals and social gatherings of many types (Whittle 1996: 176; Kerig 2003: 238). Researchers have tended to assume that only one enclosure site was 'in use' by

a settlement cluster at a time and that they were used for at least a generation given the substantial labour required (Stehli 1994: 120–1; Krahn 2006: 222). This restriction is not imposed in the data itself. Whilst not necessary contemporary, the various building phases witnessed at these enclosures could have been intermixed between other enclosure sites within and between settlement clusters.

Across its distribution, the later periods of the LBK have been seen as a time of crisis and intensification of inter-communal violence/war (Boulestin *et al.* 2009: 979; Gronenborn 1999: 168; see discussion in 3.3.3). In the Lower Rhine Basin, the number of occupied houses and settlements was in decline, suggesting that the local population was abandoning these dense areas of settlement in favour of a less archaeologically visible lifestyle in the surrounding landscape or a retreat to the LBK 'heartland' in the Upper Rhine. Cultural innovations, such as the extraordinary collection of ritually modified skeletal material at Herxheim, suggest that this was a period of uncertainty and innovation (Zeeb-Lanz 2009). The later freestanding enclosures in the Lower Rhine basin could be seen in such a light. Although now physically dispersed, the former populations of the Merzbach and Schlangengraben were still connected through a complex web of social obligations. Periodic gatherings, centred on these large-scale theatres, brought this dispersed population back together again and provided an arena for maintaining social links to the wider community. The construction of impressive earthworks in the Latest LBK could have served the dual purpose of attracting the wider support network needed in the less populated landscape (similar to that argued in the Older LBK (Bogucki 1988)) and offering an means for the remaining groups to compete for social prestige (as suggested by Pechtl (2009) for settlement enclosures). Alternative, these features could have serves as an enticement for population growth in the later LBK. As noted earlier (6.1.2.1 above),

the population in the Merzbach and Schlangengraben settlement clusters continued to grow during the later LBK.

6.4 Creating communities: the "mesh-iness" of the settlement cluster

In the previous chapter, settlements in the Merzbach and Schlangengraben valleys were described as collectives of different households and kin groups living side by side. The creation of a shared community reflective of the encompassing settlement as a whole remained unquestioned and accepted. This case study has extended the argument and considered how various practices at the cluster scale help to create multiple, overlapping communities incorporating the local residents.

As noted above, the concept of 'community' represents more than just a co-residency group. Defined broadly, communities are continuously reproduced through shared experiences, practices and value systems. These practices include everyday activities of such as food preparation, deposition, and daily rituals (Hofmann 2010) as well as public displays such as monumental building project (Pechtl 2009). The discussion above demonstrates the contingence of these communities within a local setting, the Aldenhoven Plateau, and traces how the communities encompassed by settlement areas changes over the course of the LBK (Table 6-5).

The early LBK period was marked by significant growth within the local pioneering settlements. Recent demographic modelling show that this growth was founded on the successful expansion of early settlors as well as a continuing influx of immigrating families and households. A shared reliance on certain stylistic features and economic dependencies helped to integrate this diverse community. However, this integration was not complete. From the earliest generations, we see the establishment of isolated

Table 6-5: Temporal trends in the Merzbach and Schlangengraben valleys

	Early LBK (Flomborn)	Middle LBK	Late LBK	Latest LBK
Settlement	Rapid growth in pioneer settlements	Growth at pioneer settlement stabilises	Continued growth at secondary sites	Rapid decline of all remaining settlements
	Establishment of individual farmsteads on adjacent headlands	Gradual abandonment of founding farmsteads	Relatively late establishment of Niedermerz 4 and Weisweiler 29	
		at Langweiler 8 paired with the establishment of new household plots		
		Growth/resettlement of secondary sites		
Cemeteries	Lack of dedicated burial grounds	Establishment of cemetery at Niedermerz in Merzbach valley	Continued use of cemetery	Abandonment of burial grounds
Enclosures	None	None	None	Construction of multiple phases of freestanding enclosures in different locations

households on the neighbouring headlands of the Merzbach and Schlangengraben valleys. This spatial distance (and possibly economic specialisms) imply a social distinction that is not apparent in the material culture until the Younger LBK.

Evidence for economic and social diversity within LBK settlements is becoming ever more common (e.g. Hachem 2000; Strien 2005; Nockemann 2008). Nonetheless, within the settlement clusters of the Aldenhoven Plateau, this diversity is also reflected

in the establishment of satellite sites around larger settlements, which themselves were likely composed of heterogeneous groups. The establishment of these secondary sites so early within the valley occupation (from HG II onwards) suggests that something about the arriving settlors marked them as different to those groups already settled within the founding settlements, mostly likely in terms of place of origin or kinship (similar to that seen at Vaihingen (Strien 2005; Bogaard *et al.* 2011)). This difference remained relevant throughout the valley's occupation and may have contributed to these households abandoning the area (Langweiler 16) or developing their own stylistic tradition within the Later LBK (Langweiler 2 and subsequently Niedermerz 4).

The appearance of a dedicated burial ground at Niedermerz at the end of the Flomborn period coincided with the gradual abandonment of the founding farmsteads at Langweiler 8, the establishment of new family plots at Langweiler 8, the expansion of settlement at Langweiler 9 and the possible resettlement and/or expansion of Langweiler 2. In contrast to the first "pioneer" houses in the Hesbaye (6.3.2.2.1 above) and Arnoldsweiler (Husmann and Cziesla 2014: 76), the local communities did not ceremonialise the founding longhouses at Langweiler 8. Instead, we see the gradual appearance of a two-part division within the Merzbach cluster and within the burial grounds themselves. A similar separation can be seen in the two pioneer settlements within the neighbouring Schlangengraben valley. Stylistic similarities between Langweiler 8 and Weisweiler 17 on one hand and Lohn 3 and Lamersdorf 2 on the other hand suggest that these groupings were meaningful at a larger scale (Krahn 2006). Van de Velde (1979a) and Strien (2005) both suggest that such broad divisions may reflect a moiety structure within local populations. Equally possible, these

connections could be tracing the emergence of larger-scale identities such as the broadly-defined tribal groups suggested by Kerig (2003).

Regardless of definition, one could argue that the increasing prominence of these new identities reflected a hardening off of local groupings and, with that, the cessation of the more open local community of the Flomborn period. Material studies have demonstrated the social and economic significance of the inhabitants of Langweiler 8 throughout much of the LBK's occupation of this region (Frirdich 1994; Zimmermann 1995; Claßen 2009a; 2009b). Given this role, it seems unlikely that the founding families would have simply abandoned the local settlement area or failed as a group. Instead, one could argue that the larger-scaled connections replicated in the settlement layout and burial groupings grew in significance over time. The original settlers at Langweiler 8 may have ignored such distinctions initially because of the greater need to establish a wide support network and cooperative labour force within the sparsely populated valleys. As these connections grew in importance, the founding families may have re-established themselves within other parts of the cluster in order to take advantage of them.

Frirdich (1994) and Claßen (2009a; 2009b) have argued that increasing regionalisation in pottery decoration during the Younger LBK reflected an increasing insularity of local communities and consequently the reduction in the scale of social connections and networks over time. In contrast, burial practices and the appearance of enclosures in this region during the Younger LBK indicate the desire or need to communicate connections to an audience beyond the local settlement cluster. These larger collectives or communities provided an arena to interact and compete with other groups in the region, especially as the population of people living within these

settlements began to decline. The development of localised pottery traditions may have helped to distinguish the different participating groups.

The presence of similar stretches of heavily-clustered sites within the Lower Rhine region and the wider LBK distribution (e.g. Bylany, Morlener Bucht, Horn Basin in Lower Austria) suggests that the social conditions entangled with this settlement patterns were repeated at different place and times, but were by no means universal (Petrasch 2003). Within the Lower Rhine region, the presence of such cluster groups has been documented at Königshoven and the Hambacher Forst but remains conjecture for the larger sites of Köln-Lindenthal and Kückhoven and rejected for the Dutch Limburg and Hesbaye regions. More locally, there are several examples of lone settlements along the Merzbach and Schlangengraben valley systems (e.g. Laurenzberg 8, Aldenhoven 3, and Weisweiler 110). As argued previously, settlement pattern is the result of common social practices within contingent contexts. The evolution of settlement clusters within these contexts may reflect the specific composition of the early settlor groups attracted to a new settlement, the nearness of similar groups in the wider micro-region or even the personal characteristics of local figures of authority. We could also consider the impact of research histories within LBK studies. The expansive excavation programmes followed in the Merzbach and Schlangengraben valleys (due to mining activities) extended the areas of study well beyond the confines of the largest sites, contributing to the identification of lesser areas of settlement. Even accepting this inherent uncertainty, settlement clusters are more likely to represent a repeated but contingent pattern within the LBK rather than a normative model to which local inhabitants aspired.

Thus, the settlement clusters of the Merzbach and Schlangengraben valleys reflect a complex meshwork of different kinds and scales of connection which changed and evolved over time. In addition to the extended family connections discussed in the previous chapter, we can trace the possible influence of descent lineages, moiety structures and larger-scaled tribe-like affiliations within the local settlement, burial and enclosure practices. Rather than a single, nested hierarchy of differently-scaled residential groups, multiple, overlapping communities were likely represented in the local population. These linked the individuals, households, and house groups found within these valley to LBK communities within the wider region. The following chapter moves on to consider the nature of these regional connections in which these settlement clusters find themselves embedded.

Table 6-6: Comparison of cemeteries in the Lower Rhine basin

Site	Site details	Chronology	Grave inventories	Orientation/Position	Groupings
Altdorf Source(s): Heller 2014; Graiewski, Heller and Rupprecht 2005	Location: Inde valley, Aldenhoven Plateau; situated across the river from Altdorf D Excavation history: Excavated 2000–01 Size: 120 burials (118 inhumations; 2 cremations)	C14: single radiocarbon date placed the use of the cemeteries in the younger LBK (5210–5000 cal. BC)	Rate of inclusion: 69% (83/120) contained grave goods, dominated by pottery Of these: 10% (7/83) had three or more different types of objects 45% (44/83) were limited to locally-meaningful objects (e.g. pottery)	Grave orientation: Majority of inhumations oriented NE-SW (31%); 24% were oriented E-W	Broader "kin" groupings: Two groupings (northern and southern) based on spatial proximity and variations in preferred grave orientation and possibly placement of head
Arnoldsweiler Source(s): Ungerath 2014	Location: Ellebach valley, 10km south-east of Hambacher Forst cluster; immediately adjacent (within 10–20m) to Arnoldsweiler settlement (to the south-south-east) Excavation history: 82,500 m² area excavated during 2009–10 (including adjacent settlement and enclosures) as part of a motorway project;	Pottery: Used continuous from older (Flomborn) to latest LBK C14: single radiocarbon sample was too small to reliably date Patterning: early burials are concentrated in the central (eastern) part of the cemetery; later burials expand	Rate of inclusion: 29% of inhumations (67/229) contained grave goods Of these: <2% (1/67) had three or more different types of objects 39% (26/67) were limited to locally-meaningful objects (e.g. pottery)	Grave orientation: Vary significantly, with NE-SW being the most prominent Body position: Ranging from extreme crouched to completely outstretched; most common position is on back with legs outstretched or bent; largely uniform position of arms = placed together by cheek or chin	Broader "kin" groupings: Lack of clearly definable spatial groupings; denser clusters found during later phases of the cemetery in east/south-east, north-west and south

Site	Site details	Chronology	Grave inventories	Orientation/Position	Groupings
	cemetery may have extended further to the south-east (area not excavated) Size: 229 burials (222 inhumations; 7 cremations); Up to 300 burials likely	out in three different directions over time			
Elsloo Source(s): Modderman 1970; Van de Velde 1979a	Location: Middle terraces of the Meuse river, Graetheide Plateau; 50m north-north-west of Elsloo settlement Excavation history: Excavated in 1966; cemetery may have extended further to the south (built up area, not excavated) Size: 113 burials (66 inhumations; 47 cremations)	Pottery: Phase 2c/2d (younger/youngest LBK) Used: 100–150 years (3–5 generations) Patterning: graves shift to the east over time	Grave good present: 83% (55/66) of inhumations; 62% (29/47) of cremations Of these: 33% (18/55) had three or more different types of objects 47% (26/55) were limited to locally-meaningful objects (e.g. pottery)	Grave orientation: 80% (53/66) of inhumations oriented around NW-SE; other represented orientations include: W-E (11%); SW-NE (6%); NNE-SSW (3%) Body position: Where identifiable, 83% (10/12) of inhumation were in a crouched position; 85% (11/13) were resting on their left side	Broader "kin" groupings: Four exchange groups established from the differential distribution of grave gift categories (van de Velde 1979: 96–108)
Niedermerz	Location:	Pottery:	Grave good present:	Grave orientation:	Small "family" groupings:

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Site	Site details	Chronology	Grave inventories	Orientation/Position	Groupings
Source(s): Dohrn-Ihmig 1983; Frirdich 1994; Hoyer 2010	Merzbach valley, Aldenhoven Plateau; situated across the river from Langweiler 8 (c. 400m); 500m north-east of Niedermerz 4 Excavation history: 5,600 m2 area excavated between 1969 and 1975; cemetery may have continued to the north-east (Dohrn-Ihmig 1983: 56) Size: 117 burials (102 inhumations; 15 cremations)	Used continuously from as early as the late Flomborn (Ic/HG VI) to late LBK (IIc/HG XIII) (Dohrn-Ihmig 1983: 96; Stehli 1994; Frirdich 1994: 331–3) C14: 9 samples ranging between 4930–3750 uncal. BC Patterning: Dohrn-Ihmig's original chronology (1983: 95–6) suggests that the southern burial group shifts to the south-east over time; no discernible shift in northern burial group Frirdich's reassessment (1994: Fig. 118, 123) suggests both groupings may have shifted to the north-east over time	67% (68/102) of inhumations Of these: 38% (26/68) had three or more different types of objects 34% (23/68) were limited to locally-meaningful objects (e.g. pottery)	53% (54/102) of inhumations were oriented in the NE-SW direction; another 27% (27/102) were oriented in the opposite direction, SW-NE; other represented orientations include: N-S 14% (11%); W-E (3%); S-N (2%); NW-SE (1%), E-W (1%) Body position: Where identifiable, 90% (27/30) of burials were resting on their left side	Based on spatial proximity of broadly contemporaneous burials sharing a similar orientation (Dohrn-Ihmig 1983: 104; Frirdich 1994: 344); unable to establish links to specific household groups through pottery motifs (Hoyer 2010: 49) Broader "kin" groupings: Two groupings (northern and southern) based on spatial proximity and variations in grave goods (rates of inclusion, quantity of decorated pottery, proportion of flint materials used, length of unmodified flakes, and presence of red ochre and amphibolite adzes) (Dohrn-Ihmig 1983: 103–4; Frirdich 1994: 340–4; Hoyer 2010); may have been established as two "family" plots which expanded over time to include by extensive kin and economic relations (Dohrn-Ihmig 1983: 104)

Table 6-7: Comparison of free-standing enclosures in the Lower Rhine basin

Site	Location	Excavation	Form	Chronology	Associated features
Arnoldsweiler Source(s): Husmann and Cziesla 2014: 110–6	Ellebach valley,10km south-east of Hambacher Forst cluster Situated at the steepest part of the upper/ middle slope transition Multiple-phase enclosure constructed 200m east of contemporary Arnoldsweiler settlement	Excavated 2009 North-western half of enclosure(s) excavated	Phase 1: V-shaped ditches, > 2m deep; circular outline; no palisade associated with ditch although excavated soils may have been mounded up along the inside of the ditch Phase 2: V-shaped ditches, > 2m deep; construction of outer enclosure as either a separate, overlapping enclosure or as an annex to the original enclosure Area enclosed = 0.60ha	Limited pottery found within fill dates inner enclosure to the younger/ youngest LBK; confirmed by a single C14 date of 5226–4958 cal BC Little evidence to suggest that ditches were open for an extended time	Single house plan found within enclosure; neighbouring pits contain pottery from older, middle and younger LBK; unlikely to be contemporary with inner enclosure due to proximity
Beek Source(s): Van de Velde *et al.* 2009	South-western edge of Graetheide Plateau Adjacent to largely unexcavated settlement of same name	Excavated 2007 Excavation limited to a 100m stretch along south-west course	Phase 1: V-shaped ditch, 2.5m deep; oval outline; no evidence of palisade, fence or berm wall; inwardly directed "branches" seen as inner divisions within the enclosure Phase 2: U-shaped ditch, 0.6m deep, following the same course as the earlier enclosure; no evidence of palisade, fence or berm wall	Single pot sherd dates the first phase of construction to the Late LBK (IIc/IId or HG XIII/XIV)	Finds limited to one pot sherd and two grinding tool fragments
Langweiler 3	Merzbach valley	Excavated 1972 Approx. one-half to one-third of enclosure	Circular outlines, enclosing estimated 9,000 m^2 area	Dated to HG XIV-XV	No evidence of settlement in the immediate vicinity

Site	Location	Excavation	Form	Chronology	Associated features
Source(s): Boelicke *et al.* 1988a	Multiple, overlapping enclosures located on a spur of land south of Langweiler 2	ditches were excavated (not interiors)	V-shaped ditches, up to 2.5m deep, backed by a wattle wall	Seen as later than enclosures at Langweiler 9 and Langweiler 8	
Langweiler 8

Source(s): Boelicke *et al.*1988a; Stehli 1994 | Merzbach valley

Three concentric single-ditch enclosures constructed immediately adjacent to contemporary Langweiler 8 settlement | Excavated 1972–73

Three-quarters of enclosure excavated, including some interior | Circular outline

Phase 1: Inner enclosure constructed
Phase 2: Middle enclosure constructed; inner enclosure fills with secondary waste
Phase 3: Middle enclosure is re-dug
Phase 4: Outer enclosure constructed; inner and middle enclosure fill with secondary waste

Outer earthwork encloses a 0.59ha area; all three enclosures are V-shaped ditches, up to 2m deep, backed by a wall

Location of the two known passage ways (in the north-west and south-east) remained unchanged throughout all four building phases | Dated to HG XIV | No evidence of settlement found within the enclosures

Pits concentrated in the areas between enclosures and by the entrances |
| Langweiler 9 | Merzbach valley | Excavated 1972 | Trapezoidal outline, enclosing a 0.64 ha area (diameter = 120m) | Dated to HG XIII–XV | The enclosure was construction one (house) generation after the abandonment of the area for settlement |

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Site	Location	Excavation	Form	Chronology	Associated features
Source(s): Kuper *et al.* 1977; Stehli 1994	Multi-phase single ditch enclosure constructed over the abandoned remains of settlement at Langweiler 9	Completely excavated, including interior	V-shaped ditches, up to 2.5m deep and 4.6m wide, backed by an earthen mound up to 1.75m high Phase 1: Enclosure constructed Phase 2: Enclosure re-cut following a similar course Phase 3: Enclosure re-cut again, existing entrances were widened and fourth entrance created	Deposits suggest the ditch filled relatively rapidly	Evidence of activity limited to pits lying parallel to the ditch(es) and loosely scattered in the interior
Lohn 3 Source(s): Krahn 2006	Schlangengraben valley, Aldenhoven Plateau Multi-phase single ditch enclosure situated north-east of adjacent settlement (Lohn 3)	Excavated 1979 Approx. half of the perimeter excavated	Trapezoidal outline, enclosing a 0.99 ha area (diameter = 90–110 m) V-shaped ditch, more than 1.4m deep and 2.0m wide; no evidence of reinforcing wattle or palisade At least two distinct building phases, following the same course, can be detected	Unable to date enclosure directly; pottery from nearby pit dated to HG XIV Lack of extensive repairs or extension imply that ditches were not used for an extensive period	
Weisweiler 17 Source(s): Krahn 2006	Schlangengraben valley, Aldenhoven Plateau Three concentric single-ditch enclosures constructed over the abandoned remains of settlement at Weisweiler 17	Excavated 1983–84 Up to half of ditch (perimeter) excavated; remaining area not preserved due to erosion	Circular outline Outer earthwork encloses a 1.75 ha area (Middle enclosure = 0.9 ha; Inner enclosure = 0.3–0.35 ha); all three enclosures are V-shaped ditches, more than 1.59 m deep	Middle enclosure dated to HG XIII (or possibly HG XII) through associated pottery; it was not possible to date the inner and outer ditches	

Table 6-8: Comparison of settlement enclosures in Lower Rhine basin

Site	Location	Excavation	Form	Chronology	Associated features
Altdorf B Source(s): Clare 2014	Schlangengraben valley, Aldenhoven Plateau	Excavated 2000–01 Approx. 11% of ditch (perimeter) excavated	Circular outline, enclosing 1.4 ha area V-shaped ditch, 2.5–3.0 m deep; no evidence of earth berm or palisade Two-phase construction following the same course	Pottery found within fill dated to HG XIV Construction/use of earthwork and occupation of internal settlement likely overlapped, but the order of construction is unclear	Limited excavations have uncovered two house plans inside the enclosure
Altdorf D Source(s): Mischka 2014	Schlangengraben valley, Aldenhoven Plateau	Excavated 2000–01 Only a handful of sections excavated, although entire area subjected to a geomagnetic survey	Oval outline, enclosing 4.3 ha area U-shaped ditch, 1.2 m deep; no evidence of earth berm or palisade	Enclosure dated to HG X (if treated as a closed assemblage) Constructed one to two generations after settlement founded	Limited excavations have uncovered six house plans inside the enclosure
Darion Source(s): Keeley and Cahen 1989	Upper Geer cluster, Hesbaye	Excavated 1981–85 Majority of feature excavated	Circular outline, enclosing 1.6 ha area V-shaped ditch, > 2m deep, backed by internal palisade/berm Three entrances identified Estimated labour required = 1,667 man days	Constructed early in settlement history (prior significant land clearance)	Four house plans found within enclosure

Site	Location	Excavation	Form	Chronology	Associated features
Geleen-*Janskamperveld* Source(s): Van de Velde 2007b	Eastern edge of Graetheide Plateau	Excavated	Irregular series of V-shaped ditches, < 1m deep, which enclosed a 2 ha area of settlement at Geleen-*Janskamperveld*, likely backed by a palisade Roughly trapezoidal; course influenced by contemporary houses (e.g. houses 24 & 53) At least three entrances identified	Contemporary with earliest phase of settlement Deviating branches and short stretches of parallel ditches (especially in the north) suggest that the enclosure may have been re-dug (or possibly repaired) up to three times	Three houses (43–45) stood outside of the ditch system; all others were likely situated within the enclosure
Köln-Lindenthal Source(s): Buttler and Haberey 1936	Rhineland Two adjacent single-ditch enclosures encircled the settlement of Köln-Lindenthal	Excavated 1930s	Northern enclosure: circular outline, enclosing a 8,270 m^2 area; V-shaped ditches, 1m deep, backed by a wall Southern enclosure: circular outline, enclosing a maximal 32,580 m^2 area; V-shaped ditches, 1m deep	Two enclosures were not contemporary; the northern enclosure likely pre-dated the southern enclosure(s) Southern enclosure later replaced with a smaller (27,670 m^2) U-shaped ditch, 1.5m deep, backed by a palisade; a later ditch may have extended across this enclosure to divide the area into two halves	Human skeletal remains were found in the ditches of the northern enclosure
Kückhoven					

Site	Location	Excavation	Form	Chronology	Associated features
Lamersdorf Source(s): Lüning and Stehli 1992	Inde valley Possible enclosure?	Excavated 1975	Short stretch of U-shaped ditch (25m) found running across excavation trench	Find found within the ditch's fill suggest it was dug in the Late LBK	
Waremme-*Longchamps* Source(s): Keeley and Cahen 1989	Upper Geer cluster, Hesbaye	Excavated 1987 Excavation limited to a 50m stretch along south-west course and multiple cross sections	Circular outline V-shaped ditch, > 2m deep, backed by internal palisade/berm	Constructed early in settlement history (prior significant land clearance) Ditch began to fill in almost immediately; with 10–15 years, ditch was two-thirds full	Limited excavations have uncovered one house plan inside the enclosure and one outside
Oleye Source(s): Keeley and Cahen 1989	Upper Geer cluster, Hesbaye	Excavated 1986–87 Southern third of enclosure excavated	Circular outline V-shaped ditch, > 2m deep, backed by internal palisade/berm	Constructed sometime after settlement (after significant land clearance)	Limited excavations have uncovered eight house plan both inside and outside the enclosure
Sittard Source(s):	Eastern edge of Graetheide Plateau Two adjacent single-ditch enclosures encircled the	Excavated 1953 Approx. half of enclosure(s) excavated	Series of ditches which enclosed a 1 ha area, likely backed by a palisade Two distinct areas recognised: the larger area (south-west) is roughly trapezoidal in shape and possibly	Ditch system has not been dated, although a house dated to the early LBK may have formed part of the enclosing stockade	Several house plans are located outside of the ditch system; it is not known if any of these were contemporary with the enclosure(s) due to a lack of local chronologies

Site	Location	Excavation	Form	Chronology	Associated features
Modderman 1958/59; Modderman 1988: 102	settlement of Sittard-*Mgr Classen*		influenced by contemporary houses; the smaller area (north-east) is more circular and may represent an extension (or annex)	Short stretches of parallel ditches suggest that enclosure may have been re-dug at some stage Enclosure was abandoned during later periods of settlements; several houses cut through the earlier ditch system	

7   Social relations at the regional scale

The multi-directional flow of materials, objects and ways of doing things demonstrates that LBK communities were embedded in social networks—or meshworks—which extended beyond the local settlement groups, incorporating areas more than 1000 km away and non-LBK groups outside the loess region. The need for information, materials, and security (inter alia from enemies and natural disaster) encouraged groups to establish long-term social relationships with members from other communities (Bogucki 1988). Gift-giving and marriage alliance among other relations played a pivotal role in the establishment and maintenance of these relationships, leading to the establishment of regional exchange or communication networks (Sahlins 1972; Zimmermann 1995; Strien 2000; 2005; Krahn 2006; Claßen 2006; 2009a; 2009b). Beyond these generalities, however, the nature of these regional meshworks remains poorly understood.

The following case study explores the evidence for interaction and social integration amongst LBK communities at the regional and supra-regional scale. I investigate these relationships by considering the geographical and temporal distribution of particular raw materials, stylistic traits and shared practices within the Rhine-Meuse area, including the involvement of non-LBK groups within the everyday activities of local settlements. These material patterns demonstrate the presence of multiple, overlapping social meshworks emerging within and between regional areas of settlement. I argue that the trend towards regionalisation witnessed within the later LBK is linked to changes within these social meshworks.

7.1 Defining the regional scale

The first issue that arises is defining 'regional' as a scale. On the one hand, this term is used to indicate physical distance and is contrasted against more 'local' resources and contacts. Thus, we can talk about particular settlements or areas of settlements exploiting local, regional or exotic/exogenous materials. In this context, Bakels' home range (30–40 km) or the assumed limits of self-procurement (up to 60 km for querns; Kegler-Graiewski and Zimmermann 2003; Kegler-Graiewski 2004: 416–7; Graefe 2009) could be seen as being roughly equivalent to the regional scale.

However, the term is also used in the context of increasing regionalisation witnessed within pottery decoration over the course of the LBK (especially during the later LBK). The pottery of the earliest LBK was remarkably uniform across its distribution (Cladders 2001; Sommer 2001)[37]. This uniformity helped to create a shared sense of 'LBK-ness', which facilitated the needed social interaction and intra-cultural mobility amongst the widely distributed settlements of the earliest LBK (Lüning 1988a: 37; Cladders 2001: 113–5; Sommer 2001: 258). The early LBK saw the emergence of broad stylistic provinces: Flomborn in the Rhine-Main-Neckar area, Ačkovy in Bavaria, Zofipole in Silesia, and Notenkopf/'Music Note' in the Middle Danube (Pavúk 2005). This trend towards regionalisation increased in the younger LBK, resulting in clearly identifiable 'regional' stylistic pottery groups throughout the western LBK (Figure 7-1; Meier-Arendt 1966; 1972; Jeunesse 1995b; Jeunesse *et al.*

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[37] Strien (2009) claims that, with closer inspection, isolated regionally specific traits can be identified in the oldest (*älteste*) LBK, suggesting that regionalisation may have existed throughout the LBK. However, without the full details of his analysis (*in prep*), it is difficult to comment on the applicability of this conclusion.

2009).[38] These traditions were defined by the prevalence of distinctive decorative techniques, which could become less distinct around any one regional group's periphery (Meier-Arendt 1966). The use of statistical modelling has allowed researchers to segment these large-scale stylistic traditions into ever smaller groups (Kaufmann and York 1985; Kneipp 1998; Strien 2000; Kerig 2010). Hence, Kneipp (1998) could distinguish three 'regional' styles (ranging from 30 km to 150 km in diameter) and two 'local' styles (ranging from 20 km to 30 km in diameter) within the LBK sites of Hesse and Westphalia.

There has been a tendency to associate these regional style provinces with distinct social groupings, defined as interaction spheres or socio-political entities (e.g. Jeunesse 1995b; Kneipp 1998: 188; Schade 2004: 213; Kerig 2010). Thus, the condensing scope of these material patterns signalled a corresponding reduction in the

Figure 7-1: Regional pottery groups of the western LBK (after Jeunesse et al. *2009: Fig. 15)*

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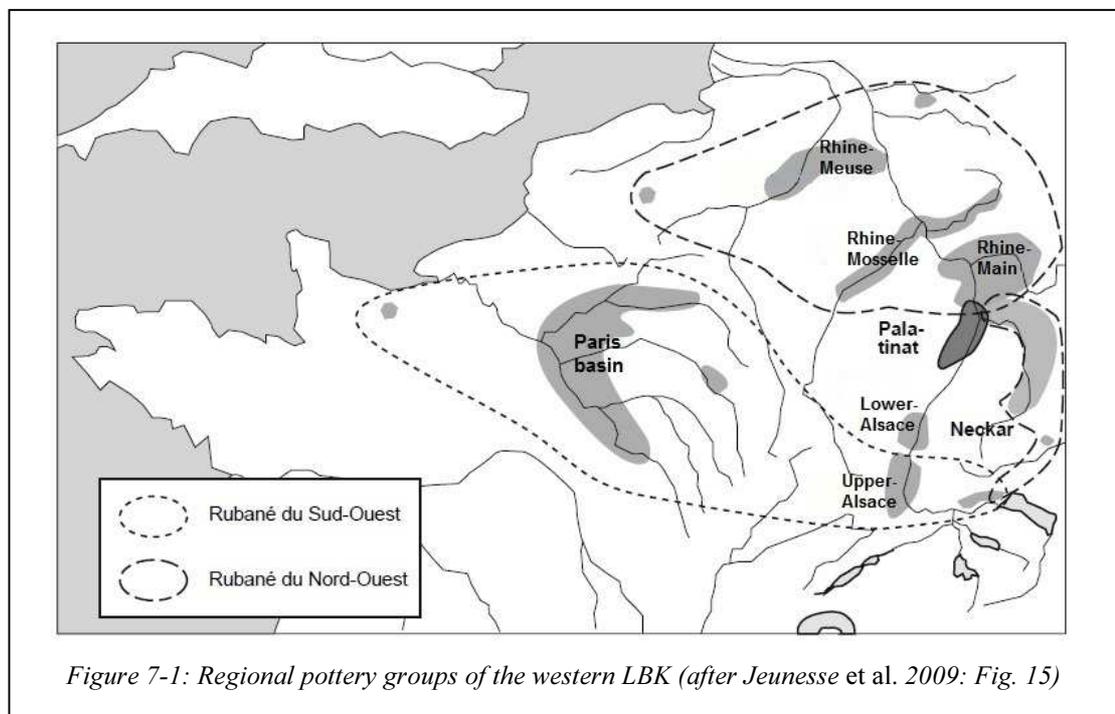
[38] Although seen largely as a later phenomenon, the regional pottery traditions represented in the younger LBK may have had their roots in subtle variations in the Flomborn (*ältere*) period (Kerig 2010) and may thus trace distinctions that emerged earlier in the LBK sequence. See also Footnote 37.

scale of cooperative social groups within the LBK (possibly mirrored in the shift to more regionally- and locally-available raw materials; Bakels 1978: 112; 2007; Ramminger 2009). Considering the underlying factors contributing to this contraction, researchers have often cited increasing inter-communal competition and conflict arising from a growing population, changing settlement patterns, limited access to suitable resources, and localised climate change (Frirdich 1994; Gronenborn 1999: 186–8; Golitko and Keeley 2007). These developments may also have been associated with changes in traditional kinship systems and the authority structures embedded in these (Frirdich 1994; Strien 2005). Within this context, divisions between different areas and groups intensified, leading to increased insularity and smaller social groups within the wider LBK community.

Thus, the term 'regional' is largely contextual within the LBK, dependent on what aspect of the LBK is under consideration. As a broad definition, this case study focuses its attention on the settlements occupying the Rhine-Meuse region, including most prominently the Rhenish sites on the Aldenhoven Plateau, the Limburg sites of the Graetheide and Heeswater clusters, and the Hesbaye cluster in north-east Belgium (see Chapter 4 for a regional overview). As demonstrated in the previous chapters, this region has been influential in our understanding of LBK social relations at the local and micro-regional scale. The nature of local social networks, founded on shared activity and kinship ties, has been extensively explored (Frirdich 1994; Zimmermann 1995; Krahn 2003; Krahn-Schigiol 2005; Claßen 2009a; 2009b). The extension of this to the regional scale is less well founded. Situated on the north-west fringe of the LBK, the Lower Rhine region provides an exciting setting in which to explore the nature of social relations beyond the tightly-knit communities of the settlement cluster.

7.2   Materials on the move: raw material procurement

The materiality associated with the LBK way of life included a variety of materials, including clay, timber, reed, and stone, amongst others. The bulk of these resources could be found in abundance within a short walk from home settlements, allowing households to satisfy their own needs (Bakels 1978). However, some materials such as the stone needed for tools and ornamental shells lay outside this vicinity, necessitating journeys into the wider landscape as well as the development of multidirectional exchange networks. The movement of these materials, or their distribution, can serve as a material trace of social interaction and contact between different groups, and there is a fine tradition of material studies that tackle this issue of connectivity, often referencing 'networks' explicitly (Lech 1989; 2003; Zimmermann 1995; Müller *et al.* 1996; Mateiciucová 2004; 2010; Claßen 2009a; 2009b; Ramminger 2009).

The following section reviews the procurement strategies pursued within the LBK settlements of the Rhine-Meuse region. The development of two distinct supra-regional exchange networks within the region highlights the significant role played by certain materials in linking different parts of the western LBK. Within the Rhine-Meuse area itself, these exchange networks were not uniform, highlighting the contingencies of some within-group relations. In addition, changes within these procurement networks suggest a gradual shift of social emphasis away from the LBK heartland towards more peripheral regions along the north-western fringe.

7.2.1 Eastern Rhine-Meuse area

Roughly speaking, the LBK settlements east of the Meuse relied on regionally-available Rijckholt flint tools, amphibolite and basalt adzes from further east, and locally-available sandstones for groundstone tools. As such, they were embedded in exchange networks focused towards the Rhine corridor from which their founding settlers likely emigrated. Dark to light grey in colour, Rijckholt (or Lanaye[39]) flint is found in the Gulpen formations south of the Geul River (along the modern Dutch and Belgium border) (Figure 7-2; de Grooth 1987; 2007; Zimmermann 1995). This material could be easily accessed in the chalk beds outcrops along the valley slopes or
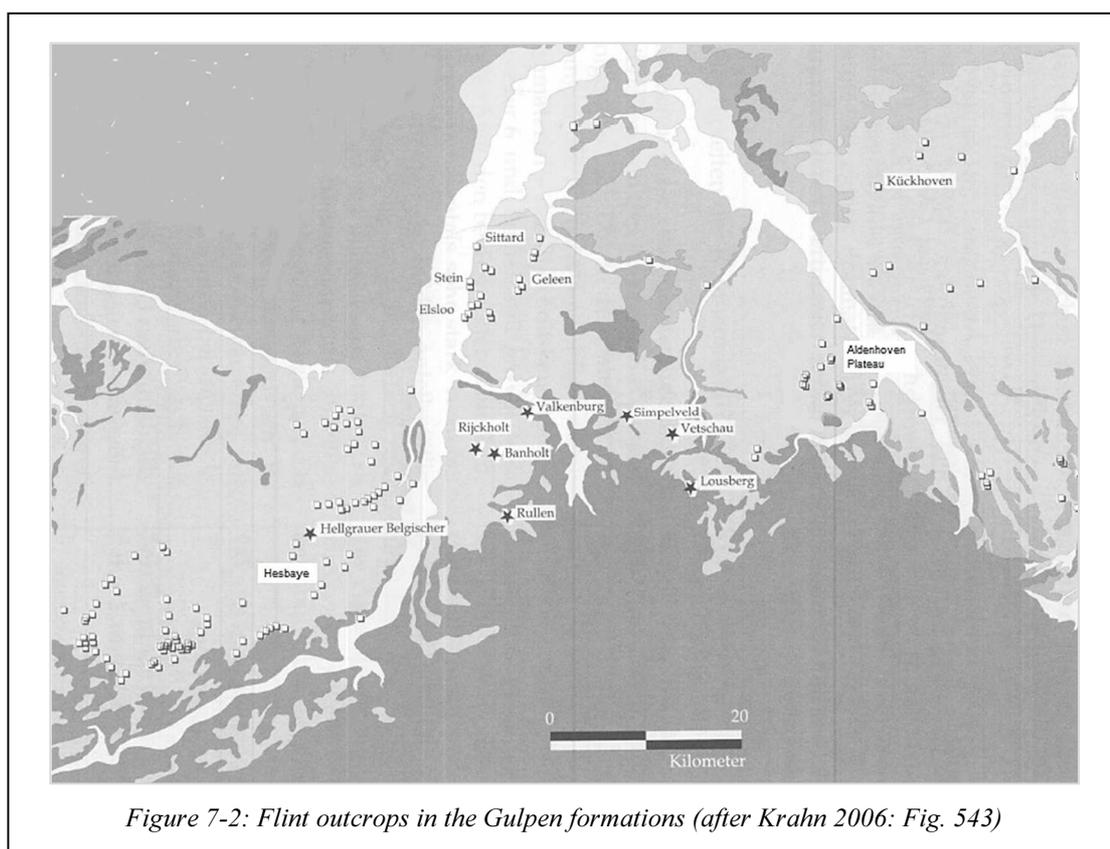
Figure 7-2: Flint outcrops in the Gulpen formations (after Krahn 2006: Fig. 543)

[39] A recent survey of the Gulpen limestone region has identified discrete materials within the Rijckholt outcrops (Rijckholt, Mheer-Hoogbis and Banholt; de Grooth 2007). Comparisons of LBK inventories from the Graetheide area suggest that the early Neolithic groups preferred the materials collected around Banholt. Consequently, de Grooth (2007: 150) argues that we should be using the more generic term of "western Lanaye(-Lixhe)" when describing "Rijckholt" materials. For clarity's sake, this thesis continues to use the term 'Rijckholt' to define the broader spectrum of materials associated with this area.

as weathered residual deposits on the slopes themselves (de Grooth 2003: 402; 2007: 148).

Rijckholt flint dominates the lithic assemblages of most sites found east of the river Meuse (> 85%; Table 7-5 at end of chapter; Zimmermann 1995; de Grooth 2003; 2007; Amkreutz *et al.* 2012). Variations within the typological composition of Rijckholt artefacts found at these sites suggest that the larger, pioneer settlements may have served as producer sites, collecting and preparing Rijckholt artefacts for exchange with more distant villages or with smaller neighbours (Figure 7-3; de Grooth 1987; 2003; 2007; Zimmermann 1995; 2002). Thus, inhabitants of Langweiler 8 and Weisweiler 17 on the Aldenhoven Plateau acquired Rijckholt flint and prepared blades and tools made from this material. This was through a mixture of direct procurement from source and exchange with the Graetheide settlements of Geleen-*Janskamperveld* and Elsloo. These settlements then went on to exchange these materials and their own produced blades and tools with the other settlements in the Lower Rhineland (see further discussion in 6.1.1). The significance of these distribution patterns should not be overstated. Quantitative analysis suggests that the relations in this network were distributed fairly equally, consistent with more or less egalitarian exchange. The presence of several 'local' producer sites meant that alternative sources could be found should personal relationships become troubled, preventing the development of a more differentiated and hierarchical network (Claßen and Zimmermann 2004; Claßen 2009a; 2009b).

Whilst Rijckholt flint dominates the LBK inventories in this area, it was not the only siliceous rock available in the region. Several outcrops of suitable flint were located within a 5–10 km radius of the Rijckholt source (Figure 7-2; Zimmermann 1995: 20).

Figure 7-3: Simplified diagram of producer and consumer sites for Rijckholt flint in the western Rhine-Meuse region (after de Grooth 2007: Fig. 10-8; Claßen and Zimmermann 2004: Fig. 8)
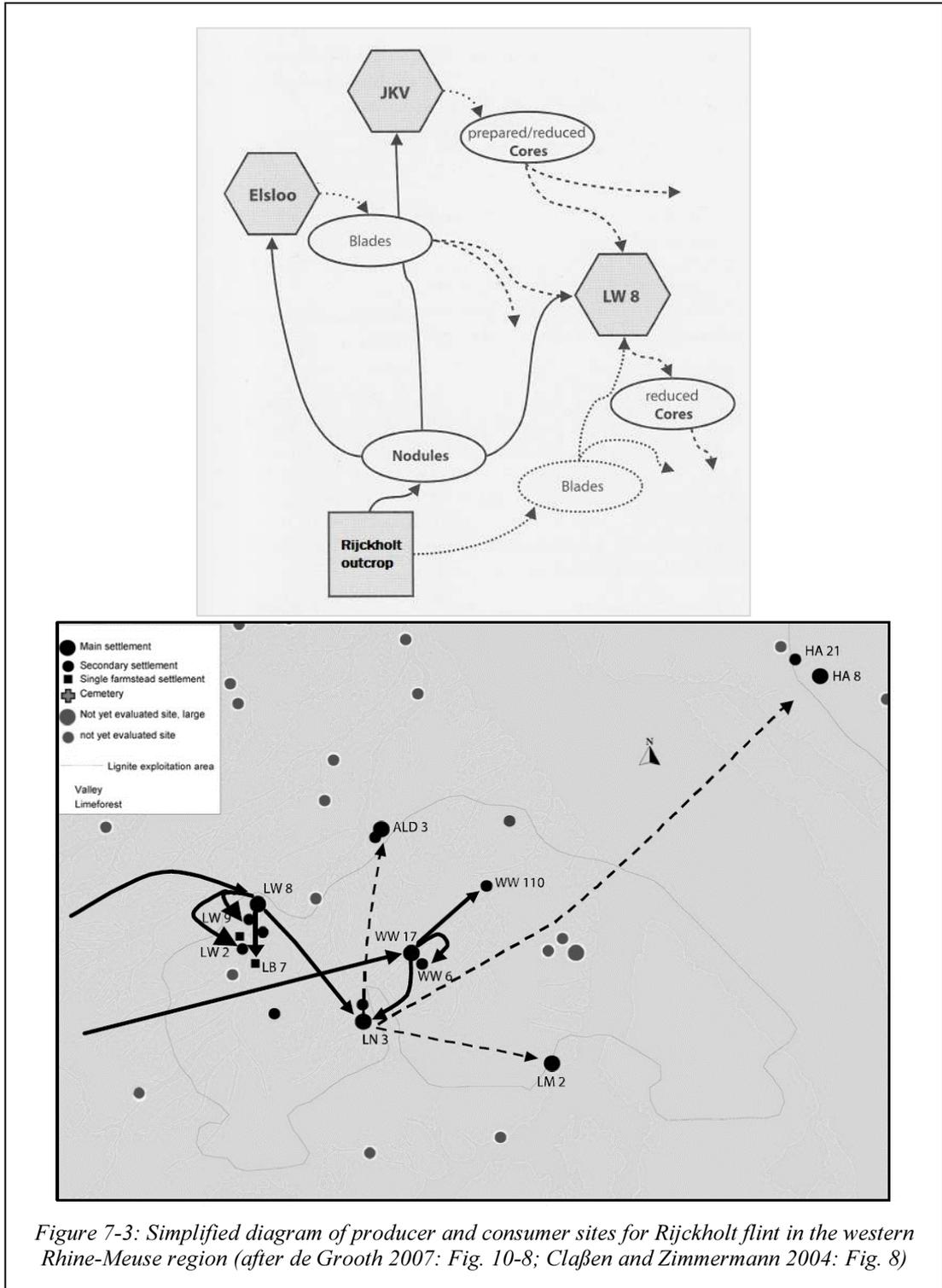
In addition, erratic flint could be collected from the gravel bars accumulated along the main river courses (Bakels 1978: 103; Weiner 1997). Variations in the relative quantities of these secondary materials demonstrate an element of choice, flexibility or possibly restrictions within the wider regional network. For example, several

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smaller sites located in the Dutch Limburg were much less dependent on Rijckholt flint (Figure 7-4; Amkreutz *et al.* 2012). Over a third of the flint artefacts found at Geleen-*Seipeenstraat* were sourced from the Valkenberg outcrop (also high at Beek-*Kerkeveld* and Beek-*Molensteeg*). Meanwhile, the sites of Geleen-*Urmonderbaan* and Geleen-*Bergstraat* had a high percentage of the fine-grained flint available in the Hesbaye cluster further west (see 7.2.2). Further east, atypically high proportions of gravel flint were used at Erkelenz-*Kückhoven* and Langweiler 9, suggesting that these sites were especially Rijckholt-deprived (Table 7-5; Kegler-Graiewski 2004: 380). In contrast, several settlements on the Aldenhoven Plateau (Weisweiler 17, Lohn 3, Aldenhoven 3 and Lamersdorf 2) relied more heavily on Rullen flint compared to the neighbouring Merzbach sites (Krahn-Schigiol 2005).

In addition to the flint available from regional sources, low volumes of exogenous materials are found within the Rhine-Meuse region, such as Ghlin and Obourg flints

	Beek Molensteeg (sample N=231)	Geleen Bergstraat (N=44)	Geleen Seipgensstraat (N=377)	Geleen Urmonderbaan (N=197)	Stein Steinderveld (N=118)	Maastricht Klinkers (N=3994)	Maastricht Belvédère 1925 (N=431)	Maastricht De Waal (N=341)
Lanaye cortex general	13,40	13,30	4,00	6,30	4,20	9,10	15,00	21,10
Lanaye cortex Banholt	25,20	4,40	11,90	3,40	36,40	13,90	16,40	15,00
Lanaye cortex gravel	1,30	2,20	2,10	10,30	3,40	12,80	12,50	11,10
Lanaye no cortex	53,70	35,60	40,30	16,00	54,20	52,10	40,40	44,30
Rullen	0,00	6,70	0,30	0,60	0,00	2,50	2,30	2,90
Valkenburg	7,40	0,00	35,50	1,10	0,00	2,40	0,50	0,60
Hesbaye	0,00	33,30	2,40	56,30	0,80	6,70	9,90	3,50
Others	0,00	4,40	3,10	5,80	0,80	0,50	0,90	1,50

Figure 7-4: Distribution of flint materials used at smaller Limburg sites (after Amkreutz et al. *2012: Fig. 6)*

from the Hainaut region, Romigny-Lhéry flint from the Paris basin, and Baltic flint from the North European plain (Table 7-5).

The integrated system of Rijckholt producer and consumer sites which emerged in the Limburg/Rhenish areas underwent significant changes during the late LBK (Claßen and Zimmermann 2004; Claßen 2009a; 2009b). Local production centres shift
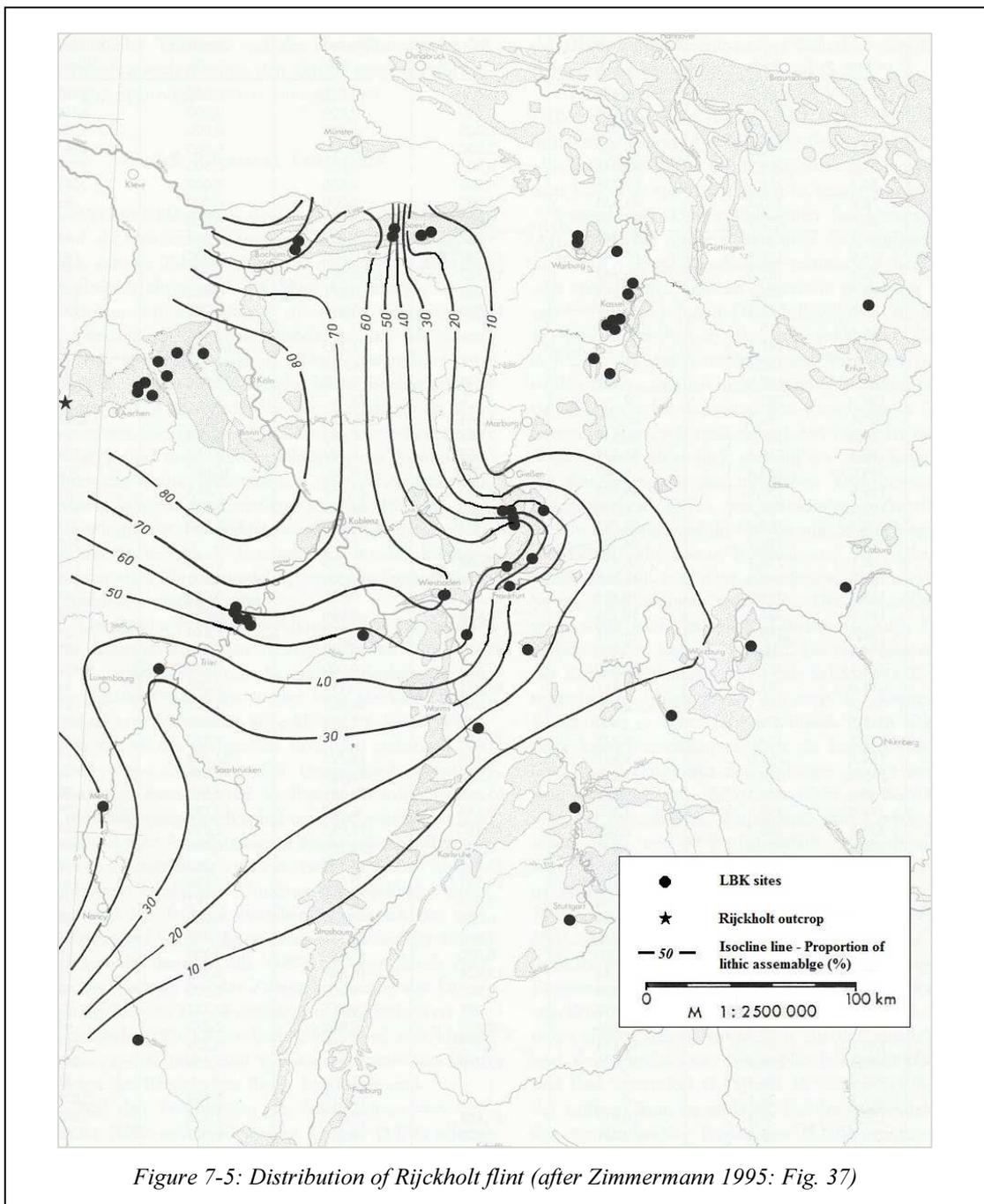
Figure 7-5: Distribution of Rijckholt flint (after Zimmermann 1995: Fig. 37)

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location, and there is an increasing reliance on alternative materials such as gravel flints and other Gulpin outcrops. Zimmermann (1995: 96) treated this shift as a consequence of the loss of influence of former 'central places' within the settlement hierarchy and a general population decline (see also Frirdich 1994; Claßen and Zimmermann 2004; Claßen 2009a; 2009b).

Beyond the Rhine-Meuse region, Rijckholt flint was distributed throughout the Rhine corridor and served as an important raw material for sites as far as the Rhine-Main area (Figure 7-5; Zimmerman 1995). Significant volumes of Rijckholt flint were found in the earliest (*älteste*) LBK sites of Steinfruth and Bruchenbrücken in the Wetterau region (Gronenborn 1997: 114–6). Therefore, Rijckholt flint was known to and favoured by LBK groups prior to their occupation of the Rhine-Meuse area. These earliest settlements may have acquired these materials through informal exchange links with local hunter-gatherer groups (see further discussion below, 7.4.2; Gronenborn 1997; 1998).

It has been suggested that the supra-regional Rijckholt trade may have been established as a means to access socially-significant materials or objects that were not available within the Rhine-Meuse region itself (Bakels 1987: 81). For example, the majority of adzes found on these sites were made of amphibolite from the Jistebsko region of the Czech Republic[40] or basalt from the Siebengebirge and Eifel mountains near modern-day Bonn (Figure 7-6; circa 70 km from Aldenhoven Plateau; Bakels 1987; Christensen *et al.* 2006). Adzes have been interpreted as high-valued status

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[40] Isotope analysis recently confirmed that the 'amphibolite' adzes found in LBK contexts were of a homogeneous actinolite-hornblende-schist type (AHS) sourced from a single outcrop at Jistebsko within the Czech Republic (Christensen *et al.* 2006). This material (or the objects made from it) was circulated up to 600 km and was likely distributed along major river systems throughout much of the Neolithic.

Figure 7-6: Source of regional and exogenous adze materials. Settlement areas: (1) Hesbaye, (2) Graetheide Plateau, (3) Aldenhoven Plateau

symbols or cult objects within LBK groups associated with land use and male identities (e.g. van de Velde 1990; Müller *et al.* 1996; Hedges *et al.* 2013: 378). The scarcity of early stages of adzes production at local sites indicates that these objects arrived as finished products (Bakels 1987: 66). In addition, these polished stone adzes often show signs of wear and may have been used for extensive periods before their deposition in LBK graves and settlements (Ramminger 2009). As such, these prized objects may have possessed their own history and significance, independent of any person in whose charge they rested.

The majority of adzes associated with the early occupation (Flomborn) of the eastern Rhine-Meuse region were made of amphibolite. Over time, there is a shift to basalts from the Siebengebirge region and, during the latest LBK, to locally-collected erratic materials (Figure 7-7; Bakels 1987: 68; 2007: 187). Bakels (1978: 112; 2007) treats
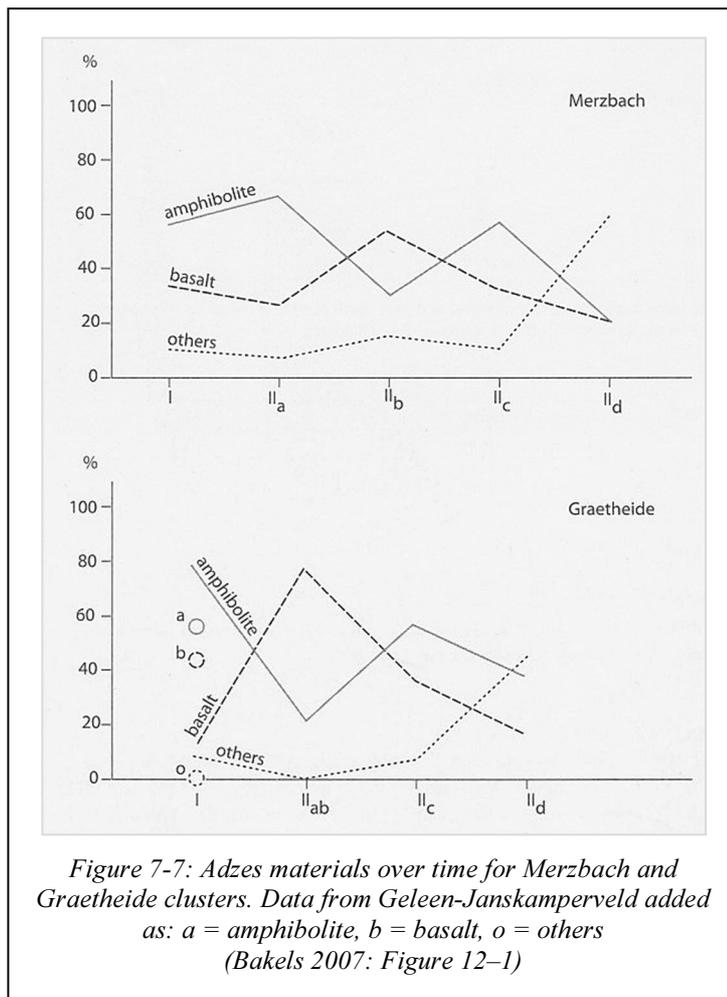
Figure 7-7: Adzes materials over time for Merzbach and Graetheide clusters. Data from Geleen-Janskamperveld added as: a = amphibolite, b = basalt, o = others (Bakels 2007: Figure 12–1)

this shift to more regionally based basalts as evidence of regionalisation in the younger LBK and the "shrinking of social networks"; medium distance contacts were cultivated preferentially to long-distance contacts. In contrast, Ramminger (2009) argues that communities turned to regional alternatives such as basalt, sedimentary rocks and lydite when population growth outstripped amphibolite supply during the late LBK. Faced with restricted access, groups began to exploit regional alternatives that may have required the establishment of new trading partners, marriage alliances or just increased the intensity of such pre-existing relationships.

Although the poor preservation of organic materials in the Lower Rhine region prevents confirmation, *Spondylus* shell or ornaments from the Adriatic (or Aegean) sea may have travelled the 1000-plus kilometre journey to the Rhine-Meuse region (Müller *et al.* 1996: 94). *Spondylus* ornaments are found (in low volumes) throughout the LBK, typically within a burial context although settlement and isolated finds are also known. They have been associated with the performance of age and gender within the LBK (Nieszery 1995; Hofmann 2006; 2009; Fromont 2013). As such, these objects

may have served as items of display or markers of status for use in the public arena during communal festivities or rituals (Müller *et al.* 1996: 94).

The desire to access Rijckholt flint can also be seen in the use of certain regional materials for other ground stone tools, such as querns and grinding stones. In contrast to the integrative exchange network that evolved for flint and adzes, the distribution of quern and grinding stones suggests that these materials were procured directly from the deposits and transported back to home settlement as blanks (Kegler-Graiewski and Zimmermann 2003; Kegler-Graiewski 2004: 416–7; Graefe 2009). Down-the-line exchange was unlikely for these objects due to their heavy weight (15–20 kg; Kegler-Graiewski and Zimmerman 2003: 33; Kegler-Graiewski 2004: 426); however, certain

Figure 7-8: Sources of dominant sandstone materials used for groundstone tools in the lower Rhineland. Settlement areas: (1) Merzbach, (2) Schlangengraben, (3) Altdorf, (4) Hambach Forst, (5) Erkelenz-Kückhoven, (6) Königshoven
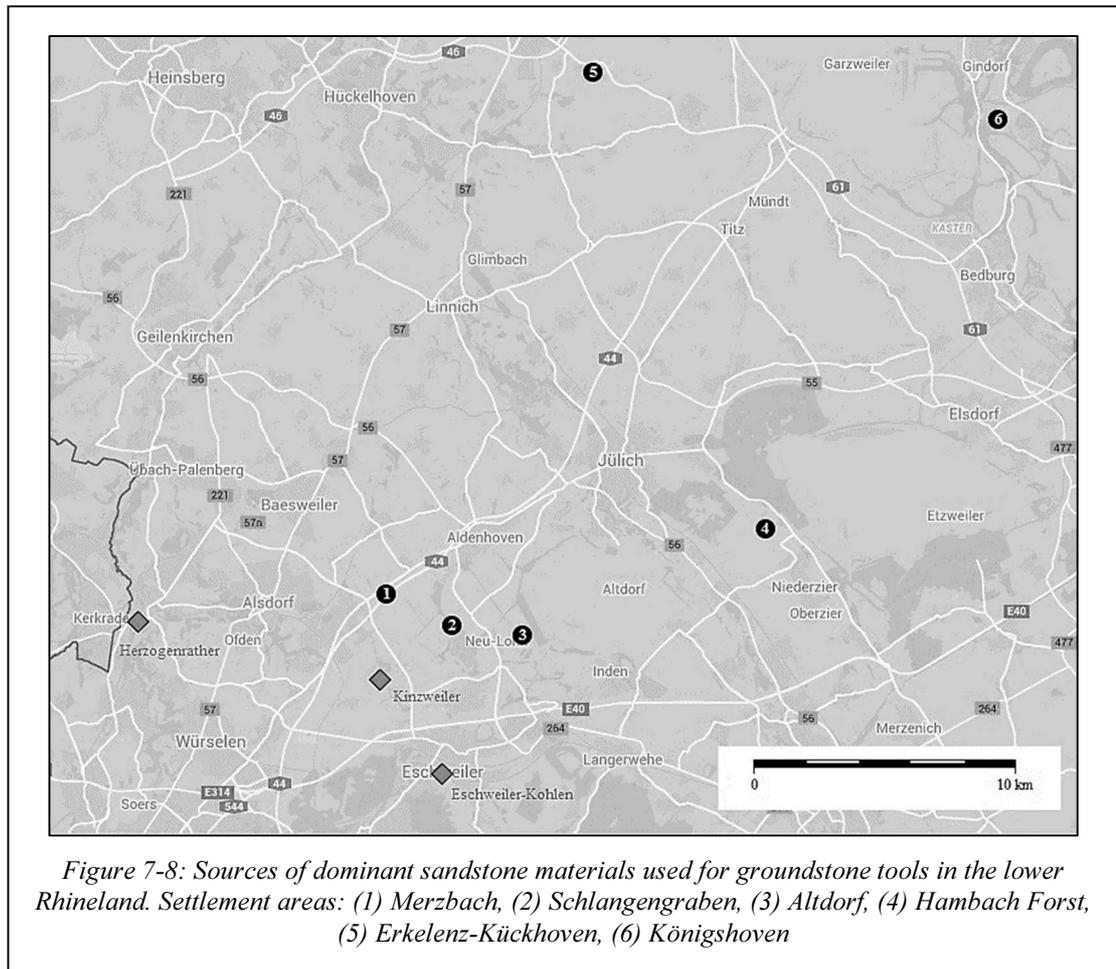
materials may have been favoured, leading to their high rate of usage some 60 km away from source (Graefe 2009). For example, three local outcrops of sandstone located in the foothills of the Eifel range (Figure 7-8) were favoured by the LBK groups in the lower Rhineland: Eschweiler-Kohlen, Kinzweiler and Herzogenrather sandstones. The first material was used for the production of querns, whilst the latter two were more common in grinding and polishing stones. Although local (< 10 km) for the LBK settlements on the Aldenhoven Plateau, the distance of these outcrops for other Rhineland sites was much greater, representing a significant effort. It may not have been the quality of these sandstone materials which inspired their use, but rather their close proximity to regional suppliers of Rijckholt flint (e.g. Langweiler 8, Weisweiler 17, and Lohn 3). As Table 7-1 shows, Erkelenz-*Kückhoven* was poorly equipped with Eschweiler-Kohlen querns compared to other lower Rhineland sites. Mentioned above, this site also relied more heavily on gravel flints and was seen as Rijckholt-deprived (Kegler-Graiewski 2004: 380). Given that these materials were almost certainly self-procured, this pattern highlights possible divisions within the perceived harmony of the regional LBK society, with social factors (such as kinship ties)

Table 7-1: Querns. Proportion of Eschweiler-Kohlen sandstone (after Kegler-Graiewski 2004: Fig. 46; Mischka 2014: Fig. 169). Distance = straight line distance

Settlement	Eschweiler-Kohlen (%)	Total sample (N)	Rijckholt (%)	Distance (km)
Langweiler 8	99.4	341	83.9	< 10 km
Langweiler 2	97.1	69	79.6	< 10 km
Weisweiler 17	?	?	76.1	< 10 km
Lohn 3	?	?	84.5	< 10 km
Inden-Altdorf D	98.3	240	64.2	< 10 km
Hambach 8	96.0	50	85.5	16 km
Erkelenz-Kückhoven	82.5	120	72.8	29 km
Frimmersdorf 53	92.3	26	83.5	34 km

influencing *Kückhoven*'s access to and reliance on specific regional materials (Kegler-Graiewski 2004: 417).

Within the Graetheide cluster, the majority of these ground stone tools were made from sandstone cobbles, although a wider range of sedimentary, metamorphic and igneous stones were used opportunistically (Verbaas and van Gijn 2007). These materials could be collected relatively near to the settlement areas, along the banks of the Meuse (Bakels 1978: 114).

7.2.2   Western Rhine-Meuse area

The loess areas west of the Meuse were settled during the later LBK (IIc/IId), presumably by settlers from the Dutch Limburg area (Golitko 2015: 57). Procurement was embedded within a (micro-) regional system of economic specialisation (Cahen and Keeley 1989; Golitko 2015)[41]. Whilst Rijckholt flint and amphibolite adzes can be found in low volumes within the earliest phases of settlement (Bosquet *et al.* 2008; Golitko 2015: Fig. 79), the inhabitants of this area relied largely on locally-available Hesbayen flint tools, micaceous sandstones from the Meuse valley, and phtanite adzes from further west.

The Belgium sites relied almost exclusively on local flint outcrops and residual deposits found scattered along the valley slopes of the Meuse (Cahen *et al.* 1986). Two main materials were used: a fine-grained Hesbayen flint (*silex à grain fin de Hesbaye*, or SGH) and a coarse-grained variant (*silex gris grenu*, or SGG). Procurement

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[41] Blade, adze and ceramic production appears to have been concentrated within specific settlements (blade: Darion-*Colia*, Verlaine; ceramics: Oleye-*al Zèpe*; adze: Wange, Overhespen). Golitko (2015) links this increasing economic integration with the need to establish (military) alliances (see below for further discussion).

strategies appear to have varied at the local scale. Within the Upper Geer settlement cluster in northern Hesbaye, the fine-grained Hesbayen flint dominants the assemblage at Darion (> 90%), whilst the neighbouring settlement of Waremme-*Longchamps* relied on the coarse-grained flint (>70%) (Golitko 2015: Fig. 79).

In contrast to the producer/consumer sites found to the east, a "genuine blade production economy" developed using fine-grained Hesbayen flint within the Hesbaye
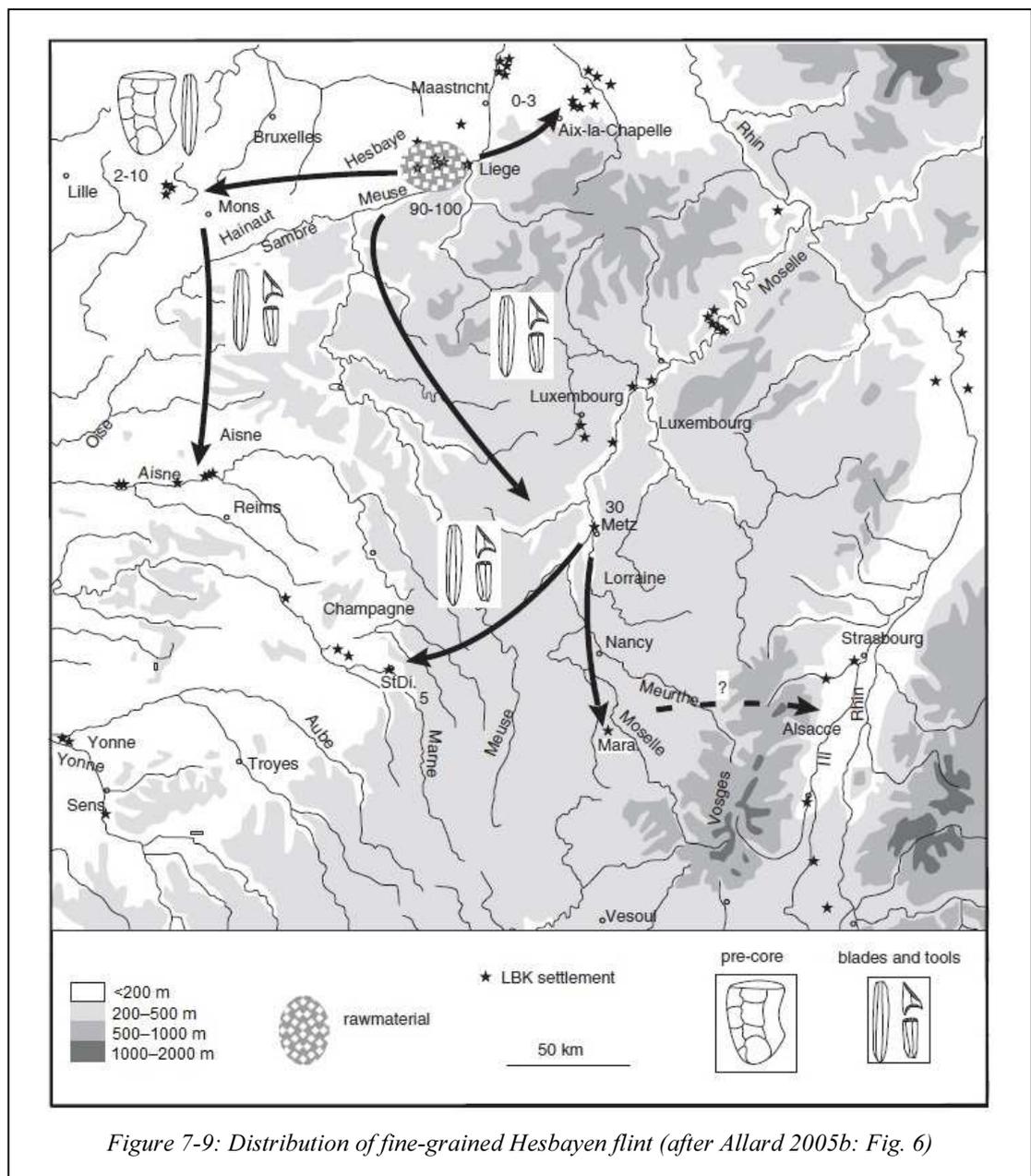
Figure 7-9: Distribution of fine-grained Hesbayen flint (after Allard 2005b: Fig. 6)

(Allard 2005a; 2005b: 218). The quantity and quality of the lithic assemblages at Verlaine 'le Petit Paradis' and Darion suggest that surpluses were produced by skilled knappers for (long-distance) exchange with areas further west (Hainaut) and south (the Moselle and Lorraine valleys) (Figure 7-9; Keeley and Cahen 1989; Allard 2003; 2005a; 2005b; Golitko 2015: 125). The scale of this supra-regional exchange was comparable to that seen with Rijckholt flint. Hesbayen flint makes up approximately a third of assemblages in the Moselle valley (Figure 7-9; distance: 200 km), whilst Rijckholt flint represents 30–50% of the lithic artefacts in the Rhine-Main area (Figure 7-5; distance: 175 km). In addition, these specialist sites also supplied finished blades to neighbouring settlements. An increase in the proportion of fine-grained Hesbayen flint at Waremme-*Longchamps* during later phases of settlement suggests that this local trade intensified over time (Golitko 2015: 125).

Toussaint and Toussaint's survey of Belgium adzes (1982) demarcated four different procurement zones within the region (Figure 7-10). Amphibolite and volcanic rocks (basalt) were favoured in the north-eastern sites (in Zones I and II) near to the Dutch Limburg. The southern Hesbaye sites relied on a micaceous sandstone found in the adjacent Meuse valley, whilst the northern Hesbayen sites depended on phtanite (the locally used term for lydite) located 40 km to the west. Keeley (2002: 389) interpreted this as a social division between the Hesbayen clusters, with hostility preventing access to micaceous material. However, this difference may actually represent a chronological shift in material usage; based largely on surface finds, Toussaint and Toussaint's survey could not take temporal differences into consideration. The adze assemblage found at Waremme-*Longchamps* (northern Hesbaye) demonstrates a greater reliance on the micaceous sandstone during early settlement (IIc) with a shift towards phtanite during late phases (IId) (Golitko 2015: 126).
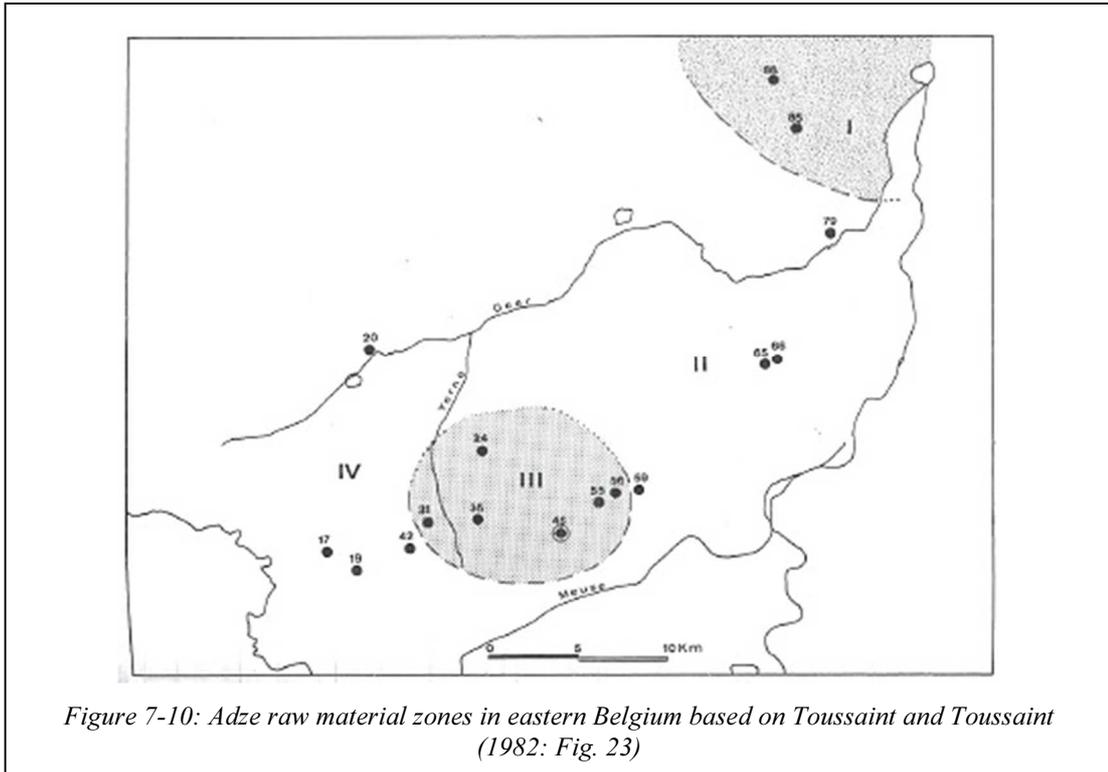
Figure 7-10: Adze raw material zones in eastern Belgium based on Toussaint and Toussaint (1982: Fig. 23)

It is likely that the phtanite adzes found in the Hesbaye sites were imported from the isolated LBK settlements in the Petite Gette (or *Kleine Gete*) in exchange for Hesbaye blades/tools (Lodewijckx 1984; Lodewijckx and Bakels 2000). Phtanite is found near Ottingnies, more than 40 km away from the closest LBK settlement (Figure 7-6 above). How residents acquired this material remains unclear. Whilst indigenous groups may have played a role, this distance is no so great as to preclude self-supply, especially as the outcrop is found in the general direction of LBK settlements in the Hainaut, and exchange with this area is testified through Ghlin flint in the Hesbaye and Hesbaye flint in Hainaut.

7.2.3 Procurement as social tie

Throughout the Rhine-Meuse region, certain raw materials were preferred by local settlements, although which particular materials were favoured varied on either side of the Meuse. In the Limburg and Rhenish sites, Rijckholt flint and imported

amphibolite and basalt adzes consistently dominate the material assemblages of LBK sites. These materials all represent a degree of continuity with procurement practices from the Rhineland, suggesting the conscious curation of social contacts with distantly-related kin. At the same time, these relations ensured access to prized objects such as amphibolite and basalt adzes and, in all likelihood, *Spondylus* ornaments. In exchange, the Rhenish and Limburg settlements produced tools made from Rijckholt flint, which were distributed up to 200 km away. Although seen as ubiquitous in the Rhine-Meuse area[42], Rijckholt flint may also represent a symbolically-valued material within the wider LBK context. Despite lying outside the then-existing LBK boundaries, Rijckholt flint was known to earliest (*älteste*) LBK groups in the Wetterau region prior to the settlement of the Rhine-Meuse area (Gronenborn 1997). This long-distance acquisition of Rijckholt flint (through western contacts) may have invested the material with symbolic meaning (Helms 1988)[43]. The mutual significance of both long-distance contacts and access to prestige items encouraged the continuation of these importance exchange routes until the latest LBK.

Analyses of lithic assemblages have tended to focus on this dominant material and have ignored the variability present within the local-choices of secondary flint materials. These materials lacked the symbolic meaning associated with Rijckholt and, therefore, represented the underlying dynamism inherent beyond this structural procurement network. Although it is difficult to establish clear trends within the data

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[42] The reduced quantities of Rijckholt along the fringes of its distribution (for example, at *Kückhoven*) may have reduced its 'ordinariness' and bestowed greater social meaning to it (Kegler-Graiewski 2004: 422–4).

[43] Traditionally, lithic materials and technologies have been seen as devoid of symbolic meaning within the LBK based on the lack of typological similarities and the absence of higher status for producer sites (Zimmermann 1995: 107; Sommer 2001). However, these traits also apply to polished stone adzes and shell ornaments, which have been shown to hold social significance for LBK groups (e.g. van de Velde 1990; Fromont 2013; Hedges *et al.* 2013).

(due to the general decline in Rijckholt flint usage during the later LBK), settlement clusters may have jointly focused their energies on particular resources beyond Rijckholt tied to their wider social meshworks.

Although more variable in early settlement (IIc), Belgian settlements in the late phase (IId) relied heavily on tools made from fine-grained Hesbayen flint and phtanite adzes[44]. These materials marked a radical deviation from the 'traditional' Rijckholt flint and amphibolite/basalt materials favoured east of the Meuse. Given the importance these materials played in the maintenance of long-distance contacts along the Rhine corridor, the abandonment of this circulation by the inhabitants of the Belgian sites suggests that regular relationships with the Limburg and Rhenish settlements were no longer valued, were now problematic or were abandoned in favour of new contacts established through the movement of Hesbaye blades towards the west and south. This was unlikely to represent a matter of expediency and, instead, may represent the deliberate 'breaking' of social ties with wider kin to the east.

The movement of materials across the western and eastern 'halves' of the Rhine-Meuse region suggests a permeable border involving sporadic interaction. Blades and tools made from fine-grained Hesbayen flint are a typical, albeit rare (<3%; Table 7-5), feature of lithic assemblages in the Limburg and Rhenish settlements (Amkreutz *et al.* 2012; Krahn 2006: Fig. 467). Similarly, a recent overview summary of the Hesbaye cluster around the Upper Geer demonstrates a low volume of Gulpin flints (<0.5%) within local assemblages (Golitko 2015: Fig. 79), although the locally-defined grainy Hesbayen flint may, in fact, represent materials collected from the Rijckholt and

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[44] Within the Hesbaye cluster, this dominance may represent the increasing economic specialisation and integration developing within the micro-region, possibly as a means of establishing military alliances in the face of aggressive hunter-gatherers residing to the north (Golitko 2015: 135).

Rullen outcrops (Allard 2005a: 174). Several lydite adzes fragments have been identified at Erkelenz-*Kückhoven* (the most northerly of the Rhenish sites). This material is generally lacking from the intervening Aldenhoven sites (Kegler-Graiewski 2004: 416). The amount of Hesbayen flint at Aldenhoven sites established during the latest LBK (Weisweiler 29 and Inden-Altdorf B) includes significantly higher rates of Hesbayen flint (upwards of 8%; Krahn 2006: Fig. 467; Ismail-Weber 2014: Fig. 6), suggesting that contact across this 'border' may have increased over time.

In Westphalia (near Werl/Soest), the eastern boundary of the Rijckholt procurement network overlays other breaks in cultural practices, such as pottery decoration and tool production techniques (Zimmermann 1995: 110). Zimmermann (1995: 114) interpreted this discontinuity as a border between two different interaction zones (possibly linked to socio-political units such as tribes). The lack of interaction between groups on either side of this (conceptual?) boundary suggested that they were unable to live peacefully together. The frequency and context of interpersonal conflict within LBK society remain an open discussion amongst researchers (see detailed discussion in 3.3.3). Massacre sites as Talheim, Asparn/Schletz and Schöneck-*Kilianstädten* demonstrate episodes of significant violence between LBK communities during the latest LBK (Teschler-Nicola 2012; Wahl and Trautmann 2012; Meyer *et al.* 2015), and such frosty relations have been imagined between regional groups (Kneipp 1998; Zimmermann *et al.* 2009: 20).

To date, there is no evidence of inter-personal conflict or warfare between the south/west facing Hesbaye settlements and the Rhineland-focused Limburg and Rhenish settlements (although this certainly does not preclude periodic feuding

between neighbouring groups as illustrated in the well-known massacre sites)[45]. Researchers working with the enclosed settlements of the northern Hesbaye interpreted these features as 'fortifications' erected during a particularly violent period during the latest LBK, but directed towards Late Mesolithic groups to the north (see further discussion below; Keeley and Cahen 1989; Golitko and Keeley 2007). However, this does not mean that animosity was not also a feature of regional interaction within this and other areas. Situated on the northern extreme of Rhenish sites, Erkelenz-*Kückhoven*'s relationship to the Aldenhoven Plateau may have been strained, resulting in less access to Rijckholt flint and Eschweiler-Kohlen sandstone and closer ties to communities west of the Meuse in northern Belgium. Noting the role economic specialisation plays in establishing military alliances within the ethno-historical record, Golitko (2015: 138) equates the increasing economic integration witnessed in the Belgium Hesbaye with a developing atmosphere of tension and potential conflict during the latest LBK. Although less extreme, such economic differentiation may have also emerged within the settlements of the Aldenhoven Plateau (Lüning 1982a: 23; Stehli 1994: 91; Boelicke *et al.* 1994: 45–59).

Taken as a whole, variations in the procurement strategies pursued within the Rhine-Meuse area highlight an emerging division between the Rhineland-influences maintained through the colonisation period and the developing 'peripheral' LBK situated on the western fringes.

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[45] Evidence of three violent deaths within burials at Elsloo (van de Velde 1979a: 89; 1992: 178)

7.3 Regional traditions: large-scale variation within the LBK

LBK communities were not only linked through the movement of raw materials, but also through shared ways of doing things. Since the early twentieth century (Childe 1927), the appearance of similar traits amongst archaeological sites has been interpreted as trace evidence of social contact and common cultural origins. Consequently, increasing dissimilitude is treated as an indication of an emerging social gulf. This culture-historical approach to material culture and practices lies at the heart of our understanding of regionalisation within the LBK. However, growing evidence within the LBK demonstrates that diversity was a significant factor in the LBK at all scales and that this variability was not limited to the late LBK. The following section explores the large-scale variations recognised within wider LBK practices and considers whether the increasing regionalisation witnessed within pottery decoration is shared by other aspects of cultural life.

7.3.1 Pottery groups

The settlements of the Rhine-Meuse region represent the Rhine-Meuse stylistic group

Figure 7-11: Kammstich ornamentation, Langweiler 8 (Boelicke et al. *1988: Plate 15–6)*
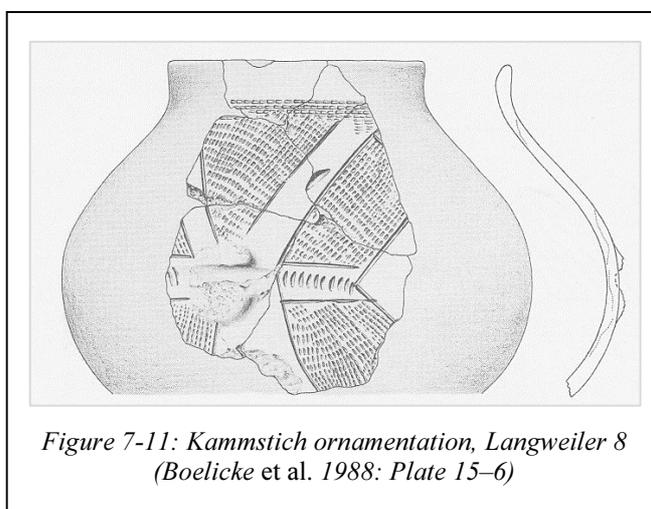
(see Figure 7-1 above). This pottery tradition is characterized by the adoption of *Kammstich* motifs, whereby rows of indentations are applied to the body of the pots with the help of a multi-toothed tool (Figure 7-11; Meier-Arendt 1972)[46]. The range

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[46] It is likely that the *Kammstich* ornamentation that defines the Rhine-Meuse pottery group was a modification of decorative elements within the Mediterranean Cardial tradition, acquired through contacts with local indigenous groups to the west (see 7.4 below; Meier-Arendt 1966: 69). This technique is also found outside of this Rhine-Meuse group (for example, in the Middle Elbe-Saale

of this pottery group is defined broadly as north of the Moselle and Lahn valleys and west of the Rhine and incorporates the Belgium Hesbaye (= "Omalien") as well as the Limburg and Rhenish settlements.

Intra-regional comparisons of decorated pottery within the Rhine-Meuse area have tended to focus on establishing regional chronologies rather than distinguishing internal variability within the data (Stehli 1988: 472–3; 1994; van de Velde 2007c). The pottery assemblages found within the Rhenish, Limburg and Belgium micro-regions are broadly consistent with the stylistic framework set out by Modderman (1970), subject to regional variations (Stehli 1994; van de Velde 2007c; Golitko 2015: 57). Despite this, there remains a tendency to treat each of these micro-regions as distinct assemblages; thus, there have been no detailed regional pottery studies for the Rhine-Meuse group which compares variations within and between micro-regions.

The trend towards regionalisation—or the discrimination of smaller material groupings—has been traced in greater detail in the decorated pottery of the Rhenish sites (Frirdich 1994; Krahn 2006; Claßen 2006; 2009a). Increasing innovation in the newly-settled households of the Merzbach valley led to the emergence of two distinct pottery traditions within that settlement cluster during the later LBK (Frirdich 1994). Frirdich (1994; 2005) associated this stylistic differentiation with new opportunities offered by changes to the local settlement pattern. The establishment of secondary satellite settlements in the Merzbach valley allowed the local population to diversify and establish medium- to long-distance contacts independent of the dominant influence of traditional authority figures residing in the large pioneer settlement of

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region of central Germany) but appears as a later innovation or is used much less frequently (Meier-Arendt 1972).

Langweiler 8. This "emancipation of the younger generation" included the freedom to distinguish one's group through stylistic innovation, something previously discouraged because of the need to maintain the approval of local elders in Langweiler 8 (Frirdich 1994: 355). As a consequence of these developments, Frirdich (1994: 357) argued that the influence of traditional authority structures, which ensured the early uniformity in pottery decoration and maintenance of long-distance contacts, steadily weakened over time, resulting in new forms of legitimisation such as the construction of enclosures (although see discussion in 6.4).

The distribution of secondary motifs amongst the Rhenish settlements (which have been

Figure 7-12: Results from Claßen's study demonstrating changes in the social network of the lower Rhine (Claßen 2009a: Fig. 3)

linked to individual potters and post-marriage mobility; Kolhoff 1999; Krahn 2003) again suggests the dissolution of the area's earlier social cohesion into smaller social

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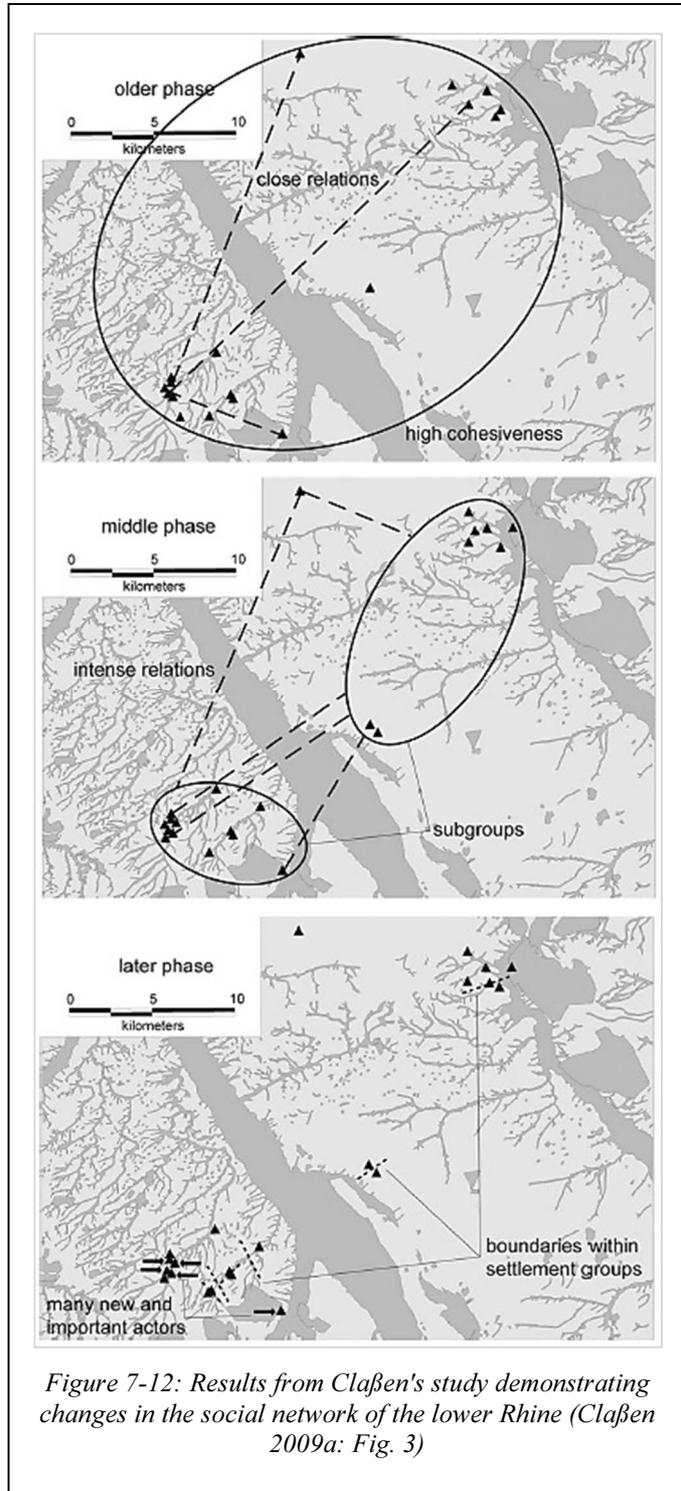
units (Claßen 2006; 2009a, 2009b)[47]. Using secondary ceramic ornaments as a proxy for kinship relations (especially affinal), Claßen (Figure 7-12; 2006; 2009a, 2009b) demonstrated that the intensity of contact between areas of settlement reduced over time, suggesting an increasing insularity within the micro-region. Furthermore, the lack of shared motifs within individual settlement clusters (indicated by the dashed lines in Figure 7-12, bottom) implies that these social groupings sub-divided local areas of settlement. Linking these changes to the re-organisation in local flint production centres, Claßen (2009b: 105) attributed this growing insularity with the "breakdown in long lasting kinship ties".

This increasing heterogeneity may not apply to the Rhine-Meuse area as a whole. Recent analysis of the clay matrix and pastes used within the Hesbaye clusters suggests that pottery production was becoming more homogeneous in this area, due in part to the increasing economic specialism seen within this cluster (Golitko 2015). Unfortunately, this study did not consider the impact of this homogeneity on the selection of ornamentation used to decorate the vessel surfaces.

Thus, we see that multiple scales of identity were communicated in the incised lines and ornamentation decorating the surface of LBK pottery in the Rhine-Meuse region. Membership or association with particular households or dynastic houses (see 5.2.3) could be highlighted through the main band and rim decoration. As such, ornaments may have only been locally meaningful. The secondary motifs which fill the space

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[47] Van Berg (1987) was able to trace the distribution of pots made by the same potter within the northern and southern Hesbaye sites (displaying similar form, decoration and firing). Van Berg saw these movements as evidence of the specialist production of pottery at sites such as Oleye-*al Zèpe*.

between these bands were even more individualised, more closely linked to individual potters than to particular social groups.

Both Frirdich (1994) and Claßen (2009a; 2009b) call upon the role of kinship as structuring durable social relations and legitimising positions of local authority and see pottery decoration as a means of communicating these relationships. How such stylistic differences at this scale would have been perceived by the LBK inhabitants remains unclear. Kerig (2010) found that the regional differences exhibited in the Rhine-Main area were based more on the execution of decorations (i.e. gestures) and only distinguished through varying proportions of shared patterns (see also Jeunesse 2008). In many cases, the distinct traditions are defined in terms of differing proportions of particular elements (Frirdich 1994; Jeunesse 2008; Kerig 2010), which would not be 'visible' in the isolated pot. It is unlikely that variation at this scale (sub-groups within the larger regional traditions) would be consciously acknowledged within the communities themselves.

Within this context, what meaning could the large-scale concentration of particular decorative techniques (e.g. *Kammstich*, cross-hatching, music-notes) possess? The social implications of these regional traditions remain subject to discussion. In some cases, such as in the Werl/Soest area in Westphalia, the border of the local pottery groups appears to correspond with regional exchange networks (Zimmermann 1995: 110; Kneipp 1998). These areas have been interpreted as a buffer zone between two distinct interaction spheres, possibly concomitant with socially-defined tribal or kinship units that possessed different social, religious and economic structures (Kneipp 1998: 188; Schade 2004: 213; Kerig 2010). Such distinction may have emerged during the migration process as different areas of settlement engaged in

alternative regional exchange networks, inhibiting exchange and social interaction (Kerig 2010: 481). Thus, the regional pottery styles that emerge during the later LBK may reflect a lack of communication or knowledge rather than a deliberate act to distinguish (Kerig 2010: 481). In contrast, Schade (2004: 213) argued that the boundaries traced in material culture "maintained territorial boundaries of political groups" equivalent to regional settlement groups (German: *Verbände*) [48]. Thus, the development of distinct material culture such as decorative pottery was a conscious act to create a unique identity and distinguish oneself from others.

Nevertheless, this shared pottery tradition (Rhine-Meuse) spans the 'core' production zones of two influential supra-regional exchange networks—the flow of Rijckholt to the (south-)east and fine-grained Hesbayen flint to the (south-)west. The movement of materials across this procurement 'divide' and into the neighbouring regions indicates ongoing relations between these areas, and there is little evidence of the cross-border violence suggested in other parts of the LBK (7.2.3). Thus, it seems unlikely that the large-scale stylistic pottery traditions trace the presence of clearly-defined—and closed—tribal territories as suggested by Zimmerman (1995: 114), Kneipp (1998: 188) and Schade (2004: 213). Rather, pottery decoration was increasingly used to negotiate relations between differently scaled social groups within an increasingly heterogeneous and mixed LBK community within these broadly defined stylistic groups (Sommer 2001: 255).

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[48] Schade also proposes that several local settlement groups may have been integrated into superordinate regional settlement groups with a higher-level 'central place'—for example, the site of Nieder-Mörlen "Auf dem Hempler" in the Mörlener-Bucht (Schade 2004: 242).

7.3.2 Burial practices

As discussed in the previous chapter (6.2.2), relatively few large cemeteries are known in the Rhine-Meuse area and, where found, they generally lack the physical remains of the deceased (due to decalcification). Our understanding of burial practices within this region is based almost exclusively on two well-studied cemeteries: Niedermerz in the Merzbach valley and Elsloo on the Graetheide Plateau (Limburg). Where evidence is preserved, the burials uncovered at these locations are typical of the LBK in terms of body position, orientation and grave goods (van de Velde 1979a; Dohrn-Ihmig 1983; Veit 1996; Hedges *et al.* 2013: 374).

Reviewing patterns in body position, orientation and grave goods, Jeunesse (1995a; 1996; 1997) defined two broad mortuary traditions within the western LBK. Marking the two main east–west axes of colonisation, Jeunesse (1995a) argues that these two traditions represent an early division within LBK society as well as influences of acculturated indigenous groups[49]. Encompassing the Paris basin and southern Alsace, Tradition I was characterised by graves oriented to the east, the prevalence of personal ornaments and dustings of powder ochre. Graves in Tradition II, ranging from the northern Alsace, through the Rhineland and into central German and Bavaria, were more likely to be oriented to the west and contain lithic artefacts, stone grinding tools and lumps or fragments of ochre and haematite. The burials attributed to Tradition II were more variable than those in Tradition I and provided greater evidence of developing social differentiation amongst the burial population. These 'traditions' are

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[49] The dominance of LBK traits within the resulting cultural hybridity suggest that this relationship was not balanced (Jeunesse 1995a: 145).

not equivalent to the regional pottery groups described above but encompassed them into yet larger scales of shared practices.

Jeunesse included the burial grounds at Elsloo (Limburg) and Niedermerz (Aldenhoven Plateau) within his original study, and the inhumations found there broadly represent his Tradition II (Jeunesse 1995a: Table 1). Since Jeunesse's study two more sizeable cemeteries have been discovered within the Rhine-Meuse region: Altdorf in the Inde valley and Arnoldsweiler along the Ellebach (see 6.2.2 for an overview). Again, the burials at these graves are characteristic of Jeunesse's Tradition II. The majority of graves are orientated towards the east, and the grave inventories generally consist of pottery, flint and groundstone tools, and lumps of ochre. Few personal ornaments are found (Heller 2014; Ungerath 2014).

Hedges *et al.* (2013) take a different view of regionalism within LBK burial practices. Pulling together isotopic, osteological, and archaeological data, they argued that regional variations exposed in the data represent local communities making use of a shared range of social practices to express "the differences that mattered most to them"
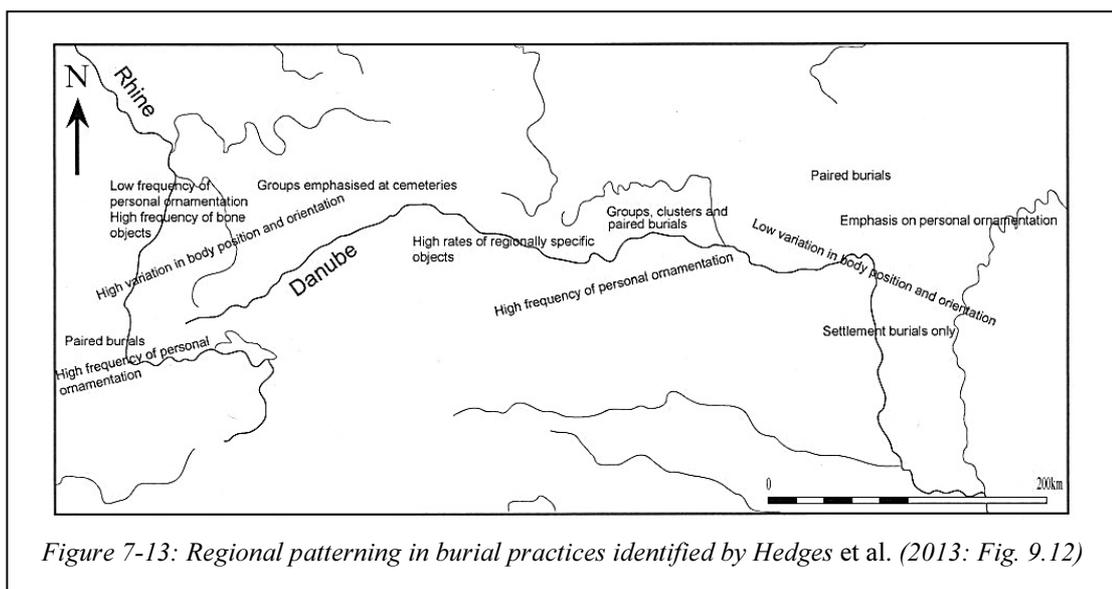
Figure 7-13: Regional patterning in burial practices identified by Hedges et al. *(2013: Fig. 9.12)*

(Figure 7-13; Hedges *et al.* 2013: 382). Thus, there is greater variability in body position and orientation in regions where larger groups are emphasised within the cemetery (e.g. northern Alsace, Baden-Württemberg and upper Austria). In contrast, position and orientation are more uniform and personal ornamentations (such as objects made of *Spondylus*) are more prevalent in areas where small-scale relationships are accentuated (e.g. southern Alsace, southern Bavaria, Moravia and western Slovakia). Sadly, the Rhine-Meuse region was not included in the Lifeways Project, which is not surprising given the lack of preserved skeletal material. Despite this, we can see its burial practices as broadly consistent with those seen in the Baden-Württemberg area.

7.3.3 Subsistence

LBK groups have typically been seen as sedentary agriculturalists who relied on cereal cultivars (especially emmer and einkorn wheat) and domesticated animals (cattle, sheep/goat, and pig) first introduced in south-east Europe. The main crops associated with the LBK are emmer, einkorn, barley, lentil, peas, poppy and flax, subject to some regional variation (Figure 7-14; Lüning 2000: 60[50]; *contra* Kreuz 2007: 270). All of these crops are represented in the Rhine-Meuse region[51].

Whilst it is often stated that emmer wheat represented the dominant crop, the relative importance of emmer and einkorn wheats may have varied regionally within the LBK (Bogucki 1988: 54; Bakels 1991: 280; Lüning 2000: 60; Salavert 2011: 326–7).

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[50] The discovery of barley in the Moselle valley, eastern Belgium and Paris Basin led Lüning (2000: 60) to reallocate these areas to Zone 2. To date, no traces of barley cultivation have been found in the Rhenish areas of the Rhine-Meuse region.
[51] Lentil cultivation appears to have been abandoned during the later LBK within the Rhine-Meuse area, possibly because it was less suitable to the local climate (Bakels 2003: 227; 2007). However, the presence of lentil within later LBK pits at Geleen-*Janskamperveld* suggests that cultivation of this crop may have continued within some sites in the region (Bakels 2007)

Einkorn wheat appears to have dominated east of the Rhine (in Hesse: Kreuz 2007)[52], whilst there is a clear bias for emmer wheat in the Belgium and Dutch sites (Salavert 2011: 326). Neither emmer nor einkorn dominate the archaeobotanical assemblages

Figure 7-14: Regional cereal cultivation zones (after Bickle and Whittle 2013b: Fig. 1.4)

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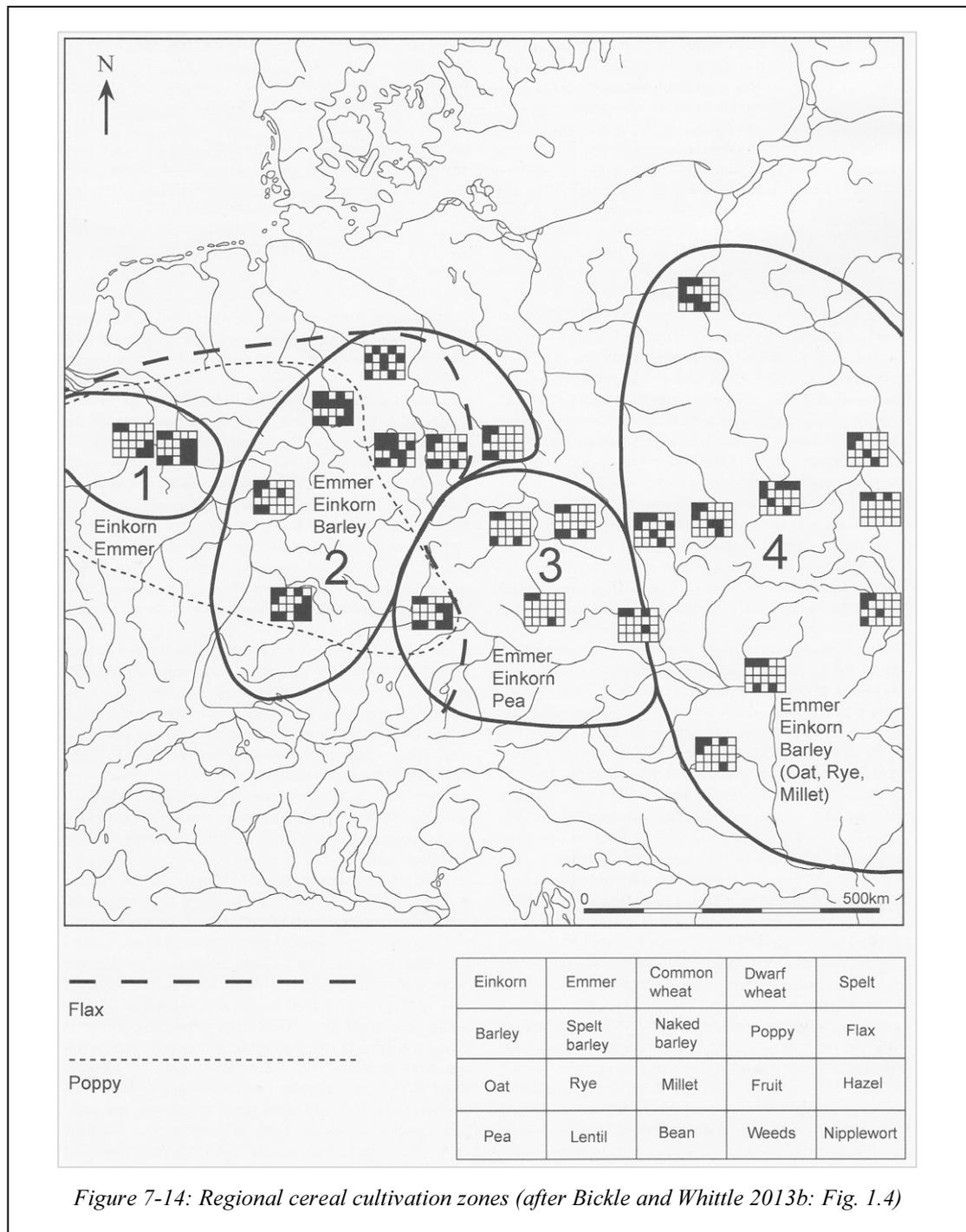
[52] The preference for einkorn over emmer wheat may represent local adaptions to a colder, wetter local climate (Kreuz 2007: 271).

on the Aldenhoven Plateau, suggesting that this area may have served as a transition zone between these two cultivation zones (Knörzer 1988; 1997; Salavert 2011: 330).

The cultivation of poppy and flax is limited to the western LBK. Unlike the other crops associated with the LBK, poppy was not part of the original 'Neolithic' package formulated in south-east Europe and its adoption into LBK subsistence strategies may betray influences from the south-west Mediterranean (Bakels 1982; Kreuz 1990: 172). The crop and the weed flora associated with it were likely acquired from non-LBK groups, such as La Hoguette, who inhabited the western areas beyond the loess regions (see 7.4.2 below; Lüning 2000: 60; Kreuz 2007: 281). Flax is also limited to the western LBK (Lüning 2000: 86). As a cultivar from south-east Europe, no clear reason has been offered for its absence in eastern parts of the LBK.

To date, naked barley has only been found at a handful of settlements in the Dutch Limburg and Belgium sites despite intensive sampling at other sites (e.g. Geleen-
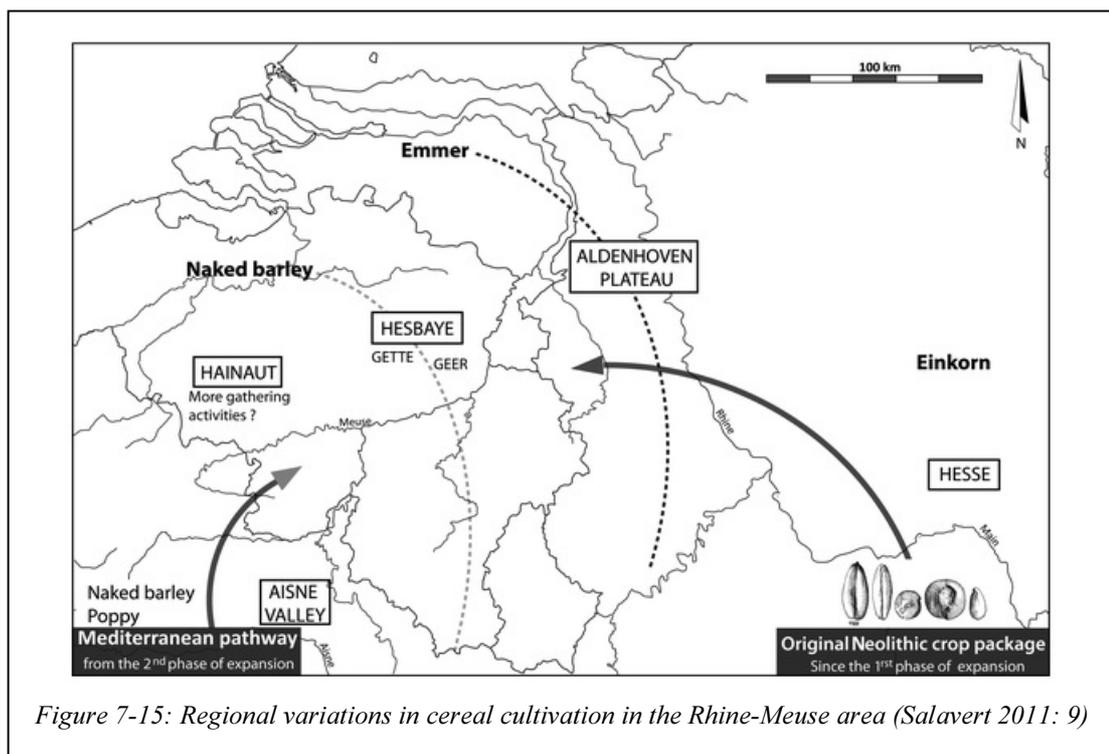
Figure 7-15: Regional variations in cereal cultivation in the Rhine-Meuse area (Salavert 2011: 9)

Janskamperveld; Bakels 1992; 2003; 2007). Whilst hulled barley was common in eastern parts of the LBK, naked barley has only been found in the Rhine-Meuse area, Paris Basin, Moselle valley and occasionally east of the Rhine (Hesse, Baden-Württemberg). Its presence suggests the influence of western contacts as there is significant evidence of its cultivation in southern France and on the Iberian Peninsula (Salavert 2011: 328). Naked barley is sometimes considered to have been a weed in LBK contexts because of its low frequency (Kreuz 2007); however, this grain appears in similar volumes to other species at the *Petite Gette* sites of Wange and Overhespen, suggesting that it was a normal component of domestic waste. These northern Belgium sites are somewhat unusual due to their isolated position, use of Wommerson quartzite (favoured during the Late Mesolithic; see 7.4.1 below), and specialist role in phtanite adze production (Lodewijckx 1984; Lodewijckx and Bakels 2000). The presence of this crop in the *Petite Gette* may represent the influence of western contacts (Bakels 1992; Lüning 2000: 60; Kreuz 2007: 270).

More recently, Bogaard (2004) established clear variations in the intensity of tilling, weeding and manuring undertaken within several Rhineland regions by comparing their weed assemblages. She argued that these variations were correlated with local settlement patterns (Bogaard 2004: 145–6). The close proximity of fields associated with more dispersed settlement areas (such as the Merzbach cluster in the Lower Rhine-Meuse region) may have allowed for more consistent and intensive crop husbandry, reflected in increase productivity and soil disturbance.

Large-scale regional differences in the preference for domesticated animal species and reliance on wild food sources have also been demonstrated within several regions of the LBK (Figure 7-16; Döhle 1993; Lüning 2000: 109–10). Sheep are more prevalent

in the eastern LBK (Hungarian and Austria) and in the Alsace (Arbogast 1993), whilst

pig constituted a larger proportion of assemblages along the Danube and Upper

Rhineland (Döhle 1993; Lüning 2000). In addition, wild animals remained an

Figure 7-16: Domestic animals (top) and domestic versus wild animal frequencies (bottom) by region. 1) Lower Saxony, 2) and 3) Poland, 4) Hungary, 5) Lower Austria, 6) Bohemia, 7) Bavaria, 8) Baden-Württemberg, 9) Alsace, 10) Paris basin (Bickle and Whittle 2013b: Fig. 1.5, 1.6)
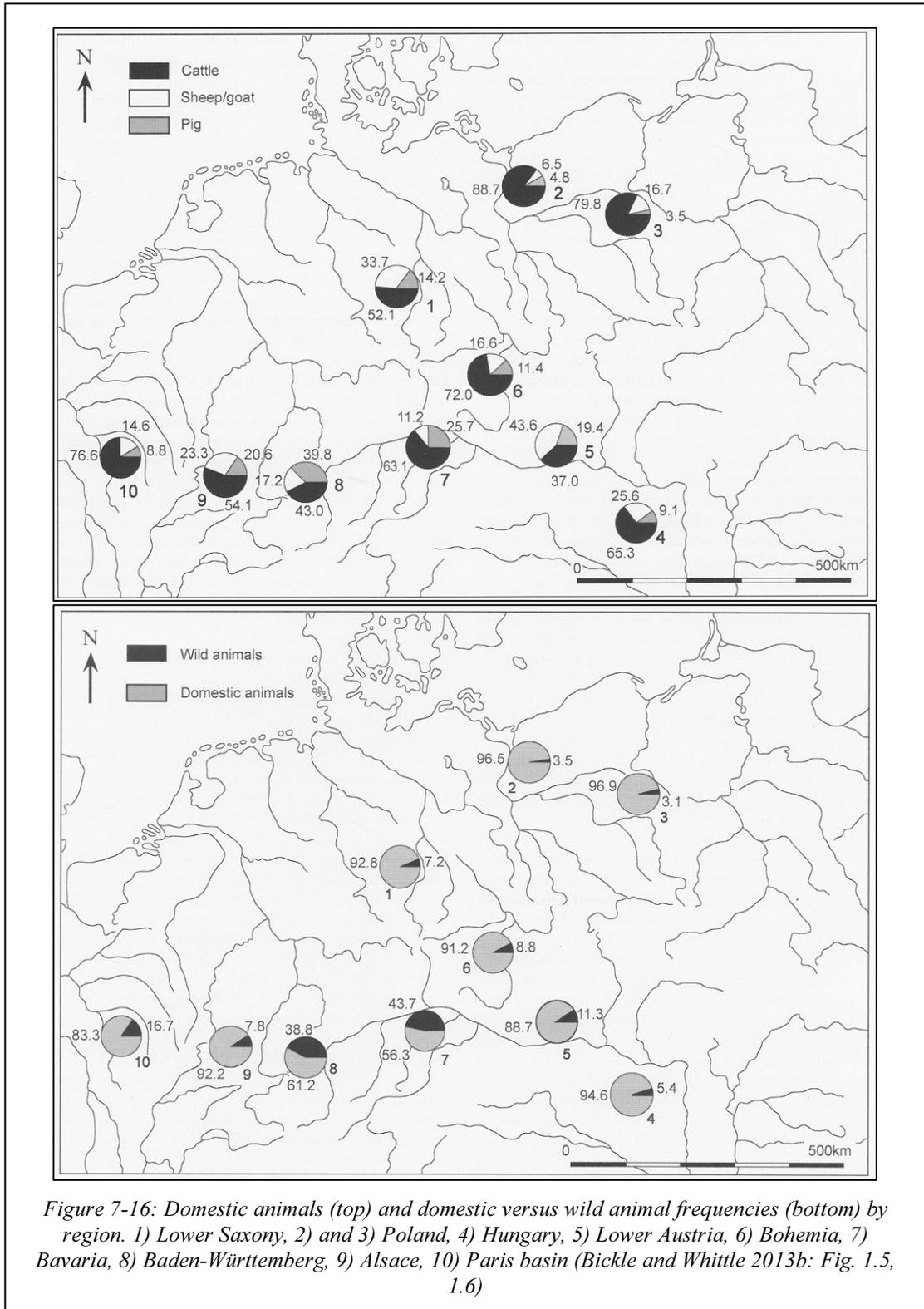
important food source for LBK settlements in southern Germany (Lüning 2000: 115). Although terrain, ecological factors and local Mesolithic continuities may have influenced these preferences (Sielmann 1971; Döhle 1993: 121; Uerpmann and Uerpmann 1997), these variations are typically seen as the result of cultural preferences (Lüning 2000: 112; Arbogast and Jeunesse 2013). The lack of Lower Rhine sites within these studies reflect the scarcity of well-preserved bone material as a result of the decalcifying effects of the local loess soils (see, for example, Bogucki 1988: 85; Knipper 2011: 35). As result, we have no definitive evidence of animal husbandry practices in this region.

Stable isotope studies have demonstrated local variations in animal husbandry practices, such seasonal pasturing and reliance on winter fodder (e.g. Knipper 2011). On a regional scale, LBK settlements in the Rhine catchment area made greater use of forest resources as fodder and/or grazing. Furthermore, these studies highlight possible regional differences in diet (meat and/or milk was consumed in greater quantities in the western LBK; Hedges *et al.* 2013).

7.3.4 A patchwork of practices

This brief overview of decorative, burial and subsistence practices in the Rhine-Meuse region has highlighted distinct supra-regional traditions within the western LBK. These traditions, however, do not mark out clearly-defined and distinct regional 'territories'. Rather, they highlight multiple patterns operating in different directions and on different scales (Figure 7-17).

The emergence of regionally distinct pottery traditions can be seen as early as the early (*ältere*) phase of the LBK and continued to differentiate at ever smaller scales into the
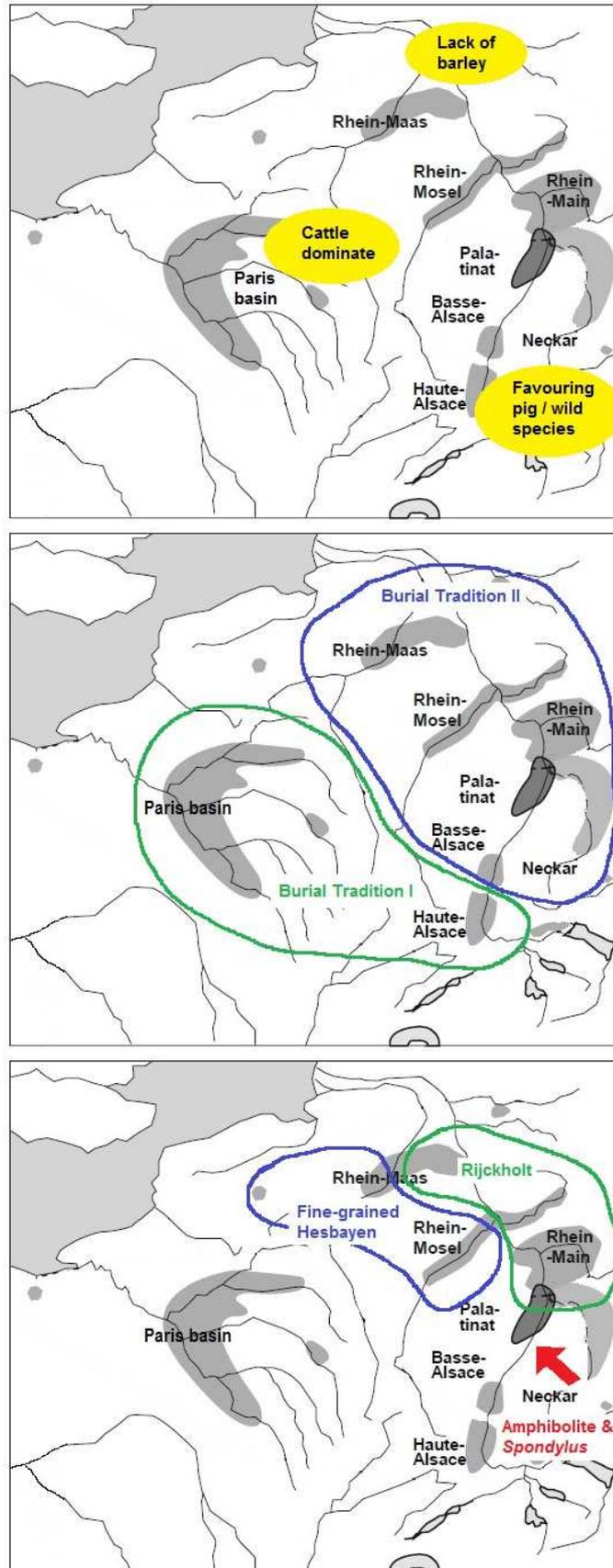
Figure 7-17: Map of regional patterns in subsistence (top), burial practices (middle) and dominant flint material (bottom)

later LBK. Thus, we see the Flomborn style associated with the early settlements of the Lower Rhine basin evolving into the regionally distinct Rhine-Meuse group. Subtle variations in preferred ornamentation in the micro-regions of this area coincided with the emergence of distinct household/settlement traditions within the settlement clusters of the Merzbach valley (Frirdich 1994). The spatial displacement of secondary motifs, linked to the preferences of individual potters, and shifts in the local flint production centres in the Rhenish settlements suggest that this regional trend towards more localised pottery traditions reflected important changes to local kinship structures. Seen as a marker for group identity, it is argued that this regionalisation traces the fragmentation of LBK society into ever smaller social groups and the corresponding reduction in long-distance contacts.

This trend towards insularity is not reflected in other aspects of LBK life. Large-scale (i.e. regional) variations in subsistence practices, such as the relative importance of different faunal species (domestic and wild), are apparent throughout the course of the LBK. Sadly, the lack of preserved faunal assemblages from (all?) sites in the Rhine-Meuse area prohibits us from ascertaining what animal husbandry strategies were practised in the area. More data are available for cultivation practices, where the limited presence of barley in the area (limited to a single settlement in Belgium) suggests that this crop may have only been cultivated by a subset of groups in the area or acquired through long-distance contacts in the Moselle or Paris Basin region. The reasons for these regional differences is unclear and may include environmental factors, cultural preferences or, more exceptional, continuities with local hunter-gatherer groups. If smaller-scale regionalisation did occur within the local and regional subsistence practices in the Rhine-Meuse area, maybe we should be looking towards

variations in the secondary crops cultivated within LBK communities as highlighted by Bogaard *et al.* (2011) at Vaihingen in the Neckar valley (5.3.1).

Similar to the procurement networks fostered by settlements in the eastern Rhine-Meuse, shared burial practices may indicate the influence of migration routes and maintained links to mythical 'homelands'. Although the earliest known burial ground (Vedrovice in Moravia) dates to the earliest (*älteste*) LBK circa 5300–5100 cal. BC (Pettitt and Hedges 2008: 126, 130), the vast majority of burial grounds were restricted to the younger LBK (Whittle 1996: 167). Therefore, the practice of inhumations in shared cemeteries was not a common LBK trait when the Rhine-Meuse area was settled (early Flomborn, IIb). Knowledge of this new cultural practice likely passed through the long-distance ties through which these raw materials flowed. Given the Hesbaye supra-regional trade with areas further west, it is likely that some of its local inhabitants may have experienced the alternative burial practices associated with Tradition I (for example, in the Paris Basin). Unfortunately, no cemeteries have been found in the Hesbaye region to date (although several cremations were uncovered at Hollogne-aux-Pierres near Liège; Hauzeur and Jadin 2011).

Combining these regional trends in subsistence practices with the regional pottery stylistic groups discussed above (7.1), Bogaard proposed that these regional trends reveal social cohesion at the regional scale (Table 7-2; Bogaard 2004: 151). For example, the similar husbandry practices and weed floras suggest that the communities within these regions may have circulated seed corn alongside other integrative activities such as exchanging livestock, surplus crops and inter-marrying (Bogaard 2004: 151). If so, such cohesion was not homogenous. For example, Hachem (2000; 2011) has demonstrated how different economic strategies were pursued by the

Table 7-2: Regional subsistence patterning identified by Bogaard (2004: Table 6.4)

	Lower Rhine-Meuse	Neckar valley	Southern Baden-Württemberg	Lower Bavaria
Crop growing conditions	High productivity and moderate disturbance	Low productivity and disturbance to medium productivity and high disturbance	Medium productivity and high disturbance	Medium productivity and high disturbance to high productivity and moderate disturbance
Crop spectra	Barley virtually absent	Barley present	Barley present	Barley absent
Faunal spectra	(High cattle?)	High pig and wild	High pig and wild	High pig and wild
Regional ceramic group	Rhine-Meuse group	Württemberg group	Württemberg group (Upper Rhine group)	Bavaria-Danube group

inhabitants of Cuiry-lès-Chaudardes in the Aisne valley (focused respectively on cattle, sheep and non-domesticated animals). Similarly, different groups within the settlement of Vaihingen in the Neckar valley may have differentiated themselves in the Younger LBK by the mutually exclusive cultivation of poppy and feathergrass (Bogaard *et al.* 2011).

Large-scale variation in a range of cultural practices was clearly inherent within the widely dispersed LBK communities of central Europe. Given its amenity to categorisation and typology, undue emphasis may have been given to regional pottery groups in understanding the divisions potentially present within the wider LBK community. Taken as a whole, we see the criss-crossing of regional trends, overlapping in some place and encompassing in others. However, these regional 'traditions' are not limited to the cultural practices of the LBK communities. Within

the Rhine-Meuse area, there is significant evidence of contact with non-LBK groups living beyond the loess.

7.4 Beyond the loess: interaction with non-LBK groups

Whilst LBK settlements dominated the loess areas of Central Europe, groups with other cultural affinities occupied the adjacent terrains. To the north, hunter-gatherer groups continued in their traditional way of life, relatively unchanged by the incoming farmers to the south. To the west, the presence of pottery that is both stylistically and technically different to LBK ceramics suggests that other pottery-producing groups may have lived in these areas (see discussion in 3.5.2). To date, the vast majority of this non-LBK pottery has been found within LBK settlements, leading some to suggest that these vessels represent a specialist form or group within the larger LBK milieu (Constantin *et al.* 2010). Others maintain that these objects represent a largely archaeologically invisible cultural group which adopted elements of the Neolithic 'package' as a result of interaction with Cardial groups settled along the Mediterranean (Gronenborn 1999; Price *et al.* 2001). Indications suggest that the LBK social network may have extended to include these 'foreign' communities. However, the nature of this contact varied in time and place, suggesting varying degrees of permanency between these connections.

7.4.1 Forager communities

Prior to the arrival of LBK settlers, the Rhine-Meuse area was inhabited by local hunter-gatherer groups associated within the Rhine-Meuse-Scheldt (RMS) complex (Keeley 1992; Verhart and Groenendijk 2005; Golitko 2015: 54–5). These groups are associated with the heavy exploitation of Wommerson quartzite (from northern

*Figure 7-18: Left: Distribution area for Wommerson quartzite during Middle and Late Mesolithic. The point marks the quartzite's source. Right: Distribution area for mistletoe (*feuilles de gui*) points (Verhart and Groenendijk 2005, 165)*
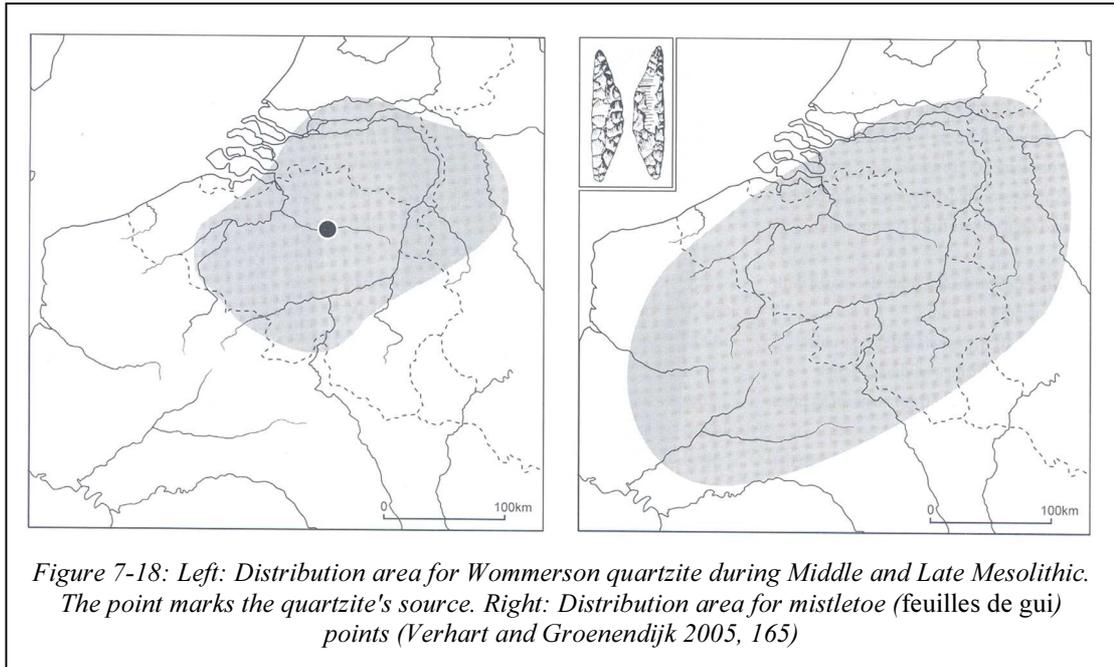
Belgium; Figure 7-6) and the production of so-called "mistletoe" (*feuilles de gui*) surfaced-retouched points (Figure 7-18), although recent research in Belgium has highlighted a high degree of inter-regional variability within these Late Mesolithic assemblages (Robinson *et al.* 2013). Relying almost exclusive on more ephemeral surface scatters, it has been difficult to establish clear chronologies for these groups during the Late/Final Mesolithic (Verhart 2000; 2008; Verhart & Gronendijk 2005). However, flint scatters in and around the loess zones of southern Limburg and northern Belgium suggest that these forager groups may have actively avoided the LBK communities established in the loess zones by withdrawing into former areas of occupation (Vanmontfort 2008). Separated from the early agriculturalist, these Late Mesolithic groups continued to prosper in the northern coversands and wetlands of the Rhine and Scheldt basin (Wansleeben and Verhart 1990; Keeley 1992; de Grooth and van de Velde 2005; Louwe Kooijmans 2007).

There is relatively little direct evidence that members of 'Late Mesolithic' groups resided in or visited LBK settlements in any great number. A recent survey by Amkreutz *et al.* (2009: 17; Table 7-3) identified a dozen or so examples of 'Late Mesolithic' artefacts within LBK contexts; however,

Table 7-3: Mesolithic artefacts in LBK contexts (after Amkreutz et al. 2009: Table 2)

site	artefact	context
Geleen-Janskamperveld	3 Mesolithic points, including 1 point with unretouched base and 1 with inverse retouch	LBK pit
Elsloo	2 feuille de gui	LBK pit
Maastricht-Klinkers	pieces of Wommersom quartzite	LBK pit
Blicquy-Couture du Couvent	1 mistletoe point	LBK pit
Vaux-et-Borset	feuille de gui	?
Tilice-Flexhe-Slins	feuille de gui	?
Verlaine-Sur les forts	feuille de gui	?
Darion-Colia	2 points with invasive retouch; 2 trapezes, pieces of Wommersom quartzite	?
Oleye-Al Zepe	3 points with invasive retouch; 1 trapeze	?
Liege PSL	several Mesolithic artefacts	LBK pit

these objects likely represented residual deposition rather than contemporary associations. Citing continuities in lithic industries, it has been argued that acculturated hunter-gatherers formed an important component in LBK communities in the Rhine-Meuse region (Löhr 1994; Gronenborn 1997; 1998; Jeunesse 2002). However, recent studies have demonstrated that, on closer and more systematic analysis, these similarities have been exaggerated (Robinson 2008; Robinson *et al.* 2013). Inter-cultural contact appears to have had little impact on the lithic industries of Late Mesolithic and LBK groups. Similarly, early isotopic studies suggested that individuals with non-local strontium isotope values (associated with upland resources) represented the inclusion of Late Mesolithic peoples within LBK communities (e.g. Price *et al.* 2001; Bentley *et al.* 2002). Given the oft-quoted propensity for these individuals to be female, it was been argued that women from 'local' hunter-gatherers groups married into LBK groups (Price *et al.* 2001; Bentley *et al.* 2002; 2003b; 2008). Correlations with different body positions and grave goods also suggested that distinct

social identities may have been maintained (Price and Bentley 2005). Subsequent isotopic studies have pulled away from such simplistic forager/farmer dichotomies and emphasised the different modes of mobility inherent within the LBK communities themselves (Bickle and Hofmann 2007; Bentley *et al.* 2008; Zvelebil and Pettitt 2008; 2013; Knipper 2011; Bentley 2013; Hedges *et al.* 2013).

However, LBK and Late Mesolithic groups likely came into contact with one another whilst exploiting their wider environments. The discovery of LBK artefacts and ephemeral sites in a 20–30 km zone around settlement areas indicates that LBK groups may have regularly exploited the unsettled areas surrounding their villages, especially during the younger LBK (Louwe Kooijmans 1993: Fig. 11; 2010; Amkreutz *et al.*
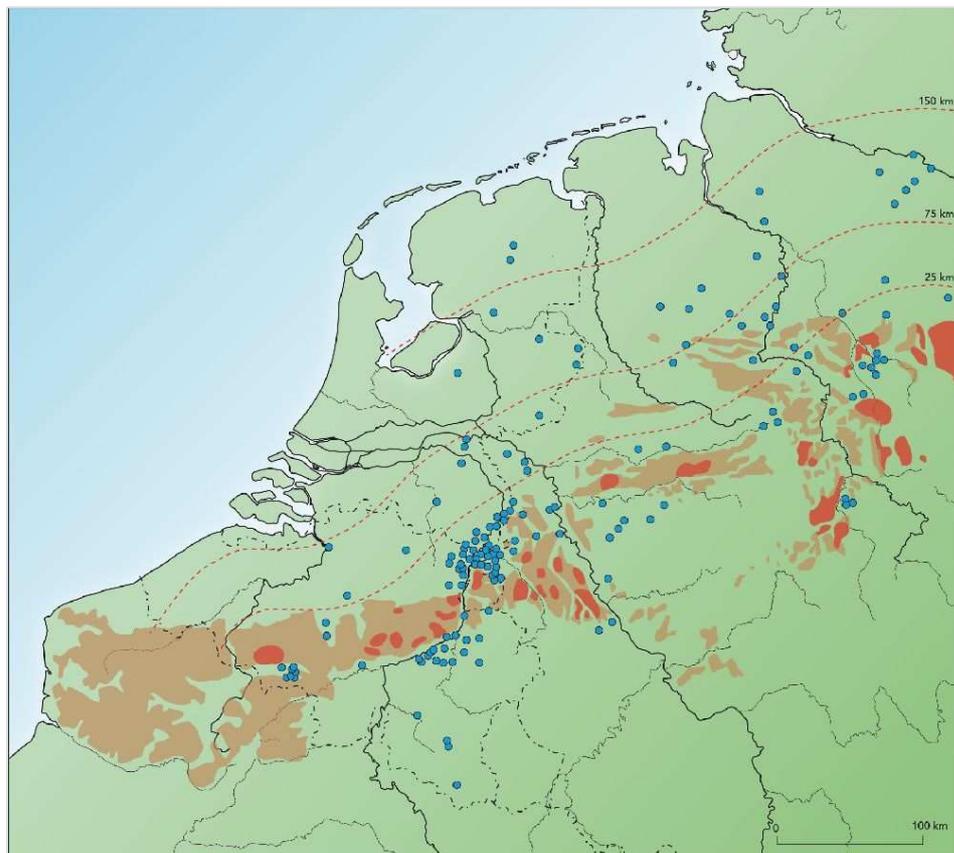
Figure 7-19: The distribution of adzes in the Rhine-Meuse region outside the loess and LBK settlement zone (Verhart 2012: Fig. 3). Pink: loess; red: LBK settlement areas; blue dots: adzes; dotted lines: distance to LBK settlement zone

2009). Ranging in size from isolated finds to larger concentrations, these assemblages likely represent specialist off-site activities of LBK communities—for example, transhumance or raw material acquisition (Verhart 2000; Amkreutz *et al.* 2009: 23). There is also a notable lack of Late Mesolithic-type finds at these special activity sites.

Beyond this LBK exploitation zone, surface finds of LBK polished stone adzes, points and pottery have been found up to 100 km from known LBK settlements (Figure 7-19; Verhart 2000). How these artefacts arrived at these destinations remains a matter of speculation. Although it has been suggested that these objects may have been abandoned by LBK people (as grave goods following an untimely death whilst 'abroad' or as intentional acts of deposition: Bakels and Hendrikx (1999)), the sporadic distribution of these artefacts beyond the loess region has been interpreted as evidence of contact and exchange between LBK and local forager groups (Verhart 2000; Louwe Kooijmans 2007).

Whilst these artefacts have been found in spatial association with Late Mesolithic lithics as well as other non-LBK pottery (La Hoguette, *Begleitkeramik* and Limburg), taphonomic factors generally prevent secure contexts for many of these multi-traditional complexes. There are noteworthy exceptions. LBK-type arrowheads and other tools have been found at Weelde *Paardsdrank*, Weelde *Voorheide* and Ede *Frankeneng*; and LBK pottery has been identified at Lommel *Molse Nete I* (Amkreutz *et al.* 2010; Brounen *et al.* 2010). Hardinxveld in the central river district provides a rare example of a securely dated LBK artefact within a 'Late Mesolithic' context (Louwe Kooijmans 2003; 2007). A LBK point made of Rijckholt-type flint was found and dated to 5300 cal. BC, suggesting direct contact with loess regions during the early phases of settlement. However, these examples are few in number. Paired with the

limited zone of LBK exploitation outside the loess region, it is unlikely that these interactions resulted in the long-term and regularly maintained contact we see between LBK settlements within the Rhine-Meuse region and may have been more opportunistic in nature.

The involvement of imported adzes within this trade is intriguing. As discussed above, these objects were relatively rare within the local LBK communities and have been interpreted as valued status symbols of maleness and connection to land. As such, they were likely exchanged—and displayed—within the ritualised context of periodic aggregations of regional settlements (until their final 'gifting' with the buried dead). Given this context, it seems inconsistent that such prized possessions would have been offered in exchange for mundane items available in these forested regions (such as furs, honey, hunted meat). Noting this contradiction, Louwe Kooijmans (2010: 35) suggests that these items may represent a form of bridewealth, as payment for the lost labour and future children of a women married out of her natal group. This type of wealth transference is common within pastoralist societies and may have been part of the LBK tradition. However, Verhart (2000) highlights how 'exotic' objects are often re-evaluated when entering a new cultural context (for example, across the farming/forager divide), sometimes adopting unexpected significance. Whilst highly valued within the LBK, these adzes may have represented 'foreign' trinkets to the receiving hunter-gatherers that were easily abandoned or lost.

The relationship between these different communities may not have always been peaceful. Noting the 'fortifications' of LBK settlements along the northern boundary of the Hesbaye cluster, the destruction of longhouses by fire, and the function of the adzes and arrowheads distributed beyond the loess regions as possible weapons,

Golitko and Keeley (2007) argue that short, sharp periods of inter-group violence erupted along this frontier zone between LBK settlors and nearby Late Mesolithic hunter-gatherer groups (see also Keeley and Cahen 1989; Golitko 2015). However, as discussed above, this data could also point to interpersonal conflict amongst the LBK communities themselves.

Overall, the evidence of interaction between forager and LBK communities is common but limited in nature, representing opportunistic exchange and general avoidance. However, to the west, there is evidence to suggest the coexistence of non-LBK groups who may have adopted some aspects of a 'Neolithic' way of life—in particular, the production of distinct pottery—which allowed them to better integrate with the LBK groups living on the loess.

7.4.2   Non-LBK pottery groups

As a body, LBK pottery has been well defined and characterised. The presence of ceramics that vary significantly from this established tradition have been recognised in the western LBK since the early excavations at Köln-Lindenthal (Buttler and Haberey 1936; Modderman 1970: 141). In addition to the defined La Hoguette, Limburg and *Begleitkeramik* ceramic styles, other examples of atypical and ambiguous pottery are known in the Rhine-Meuse area (Lüning *et al.* 1989; Crombé 2009; van de Velde 2010). The social meaning of these artefacts (as the product of distinct pottery-making groups or as regionally-defined objects used in special contexts) remains heavily debated (see summary in 3.5.2). However, in either circumstance, these vessels demonstrate connections which extend beyond the insularity of the loess region.

Distinctive in manufacture and design, La Hoguette pottery was first recognised by Jeunesse in 1986 (although a local variant concentrated in the Rhine-Meuse area, *Begleitkeramik*, was defined later) (Jeunesse 1986; 1994). The vast majority of La Hoguette pottery is found in LBK contexts in association within the earliest (*älteste*) LBK (in southern Germany) and later phases (further west and along the Rhine corridor) (Figure 7-20; Gronenborn 1999: 138; Lüning *et al.* 1989: 381–2), although La Hoguette pottery has also been found outside of LBK sites (e.g. at Sweikhuizen in the Dutch Limburg and the reference site La Hoguette; Gronenborn 1999; 2007).
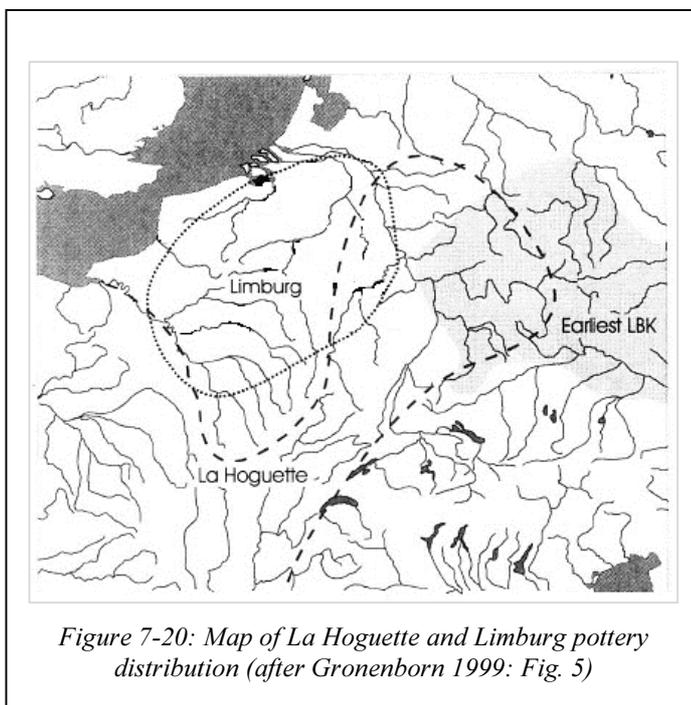
Figure 7-20: Map of La Hoguette and Limburg pottery distribution (after Gronenborn 1999: Fig. 5)

It has been argued that La Hoguette pottery was produced by local indigenous groups, who adopted aspects of the 'Neolithic' package (pottery production, small-scale pastoralism) following contact with Cardinal groups in the western Mediterranean, prior to the arrival of LBK groups to western Europe (Lüning *et al.* 1989: 360; Gronenborn 1999; 2007; Jeunesse 2002). Gronenborn (1999; 2007) attributes the brief hiatus in LBK expansion at the end of the earliest (*älteste*) LBK to a period of acclimatisation needed when incoming LBK groups came into contact with these potential pottery-producing indigenous groups. This interpretation is not universally agreed, and many researchers continue to argue that La Hoguette pottery may represent a component of the LBK (Constantin 1985; Constantin *et al.* 2010). It is interesting to note that chemical analysis indicated

that the La Hoguette pottery found at Bruchenbrücken was manufactured from local clay (Maletschek 2010).

Representing a later development, Limburg pottery is found almost exclusively in association with later LBK settlements in the north-west LBK (Rhine-Meuse area, Lorraine and Aisne valleys) (Gronenborn 1998; 1999). It is rarely found east of the Rhine, suggesting an effective boundary of sorts (Lüning *et al.* 1989). Like La Hoguette, some have argued that Limburg pottery represents the adoption of pottery by local indigenous groups from a yet-unknown source (Gronenborn 1998; 1999). However, regional specialists tend to argue that this pottery represents a specialist form within the LBK repertoire (Constantin *et al.* 2010; Gomart 2014).

Limburg pottery is well represented in the Rhine-Meuse region. Most sites in the Limburg region included at least one or two sherds of this style (Amkreutz *et al.* 2012). Limburg pottery is known in the Hesbaye and Hainaut clusters in northern Belgium (Constantin 1985). Strikingly, it represented nearly a quarter of all pottery at Aubechies-*Coron Maton* (in the Hainaut area of northern Belgium; Constantin 1985: 105). Several vessel pieces have been found at Langweiler 8, dated roughly from the end of the Flomborn period (HG VII) to the younger LBK (HG XII) (Lüning *et al.* 1989: 384). Sherds at Langweiler 2 also dated to the younger LBK (HG XII). Other examples were found at Kückhoven, Köln-Lindenthal and Königshoven 1, with the latter representing the youngest known Limburg date in the region (latest LBK, HG XIV). These dates suggest that Limburg pottery was produced or used here for one or two generations longer than in other areas of the Rhineland (Claßen 2010: 122).

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In contrast, La Hoguette is far rarer. Isolated finds of La Hoguette pottery have been found within a single younger LBK pit at Langweiler 8 (Lüning *et al.* 1989: 384), at smaller Limburg sites (Sweikhuizen-*De Hei*, Geleen-*Nijssenstraat*, Ittervoort-*Damszand*), and unusually at Ede-*Frankeneng* north of the Rhine river (Brounen *et al.* 2010). Overall, the rarity of these La Hoguette vessel suggests limited direct contact in the northern loess regions.

The vast majority of non-LBK pottery is found within the daily waste disposed of within LBK settlements (Crombé 2009: 481). Although only representing a small proportion of the local pottery assemblages, the wide distribution of these finds across the settlement pits suggests that these vessels were handled and used by a large audience within these areas (Constantin *et al.* 2010; van de Velde 2010). This wide access may not be universal. Bosquet (2010) notes that the three sherds of 'foreign' pottery (Limburg, ambiguous) found at Fexhe-le-Haut-Clocher (northern Belgium) were limited to the special status pioneer house isolated from the remainder of the settlement. A recent study of the *chaîne opératoire* associated with Limburg pottery in the Aisne valley and Belgium found that 'Limburg'-style decorations were imitated on 'LBK'-formed pots (Gomart 2014).[53] In contrast to these imitations, 'pure' Limburg pottery was concentrated in marked areas of settlement (for example, in particular neighbourhoods or in association with communal buildings or pioneer households). Based on these results, Gomart (2014: 320) argues that Limburg pottery had a "marked cultural role" within LBK groups, with 'pure' vessels being produced by a distinct sub-group within the LBK. It is interesting to note within this context the

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[53] Sommer (2001: 252) notes a similar relationship with La Hoguette pottery. There are rare imitations of La Hoguette patterns on LBK vessels but not vice-versa (e.g. LBK patterns on bone-tempered pottery).

lack of Limburg and La Hoguette pottery within the grave goods buried at Niedermerz 4 (Dohrn-Ihmig 1983) and Elsloo (van de Velde 1979a). This specialist role did not appear to extend to the burial community.

Isolated examples of these non-LBK pottery traditions have also been found beyond the loess, sometimes in association with Late Mesolithic scatters (Jeunesse 1986; Lüning *et al.* 1989; Brounen *et al.* 2010). However, these sites lack any clear sign of domestic activity, such as pits or houses, preventing any unambiguous statements about who produced these objects.

Regardless of social distinction, the overlapping distribution of LBK settlements and non-LBK pottery types demonstrates connections with the non-loess regions of Western Europe. If interpreted as a specialist form with the LBK tradition, the groups who produced and used these pots were clearly more mobile than the 'typical' LBK person. On the other hand, if tracing the movements of distinct pottery-making groups (who continued to live a largely 'Mesolithic' way of life), the commonality and widespread distribution of La Hoguette and Limburg pottery within many LBK settlements indicate the inclusion of these groups within LBK communities. This does not necessarily mean the acculturation of indigenous peoples as full-time residents of LBK settlements; instead, this could reflect the integration of these groups into the wider kinship networks which underlay the regional interaction networks.

7.4.3 Impact of extra-cultural contact

Along the western fridge of the LBK, there is evidence of contact with non-LBK groups living beyond the loess. During the pioneer stages of settlement, local indigenous groups may have influenced local lithic industries (Löhr 1994; Gronenborn

1997; 1998; Jeunesse 2002; *contra* Robinson *et al.* 2013). The presence of non-LBK pottery in LBK settlements extends through much of the LBK sequence in many areas along the western fringe. However, the nature of this contact varies, suggesting that some border villages were far more inward-facing then other. For example, the inhabitants of Erkelenz-*Kückhoven* did not exploit the Baltic flint outcrops lying in the fields to the north, despite this suitable material being geographically closer than the more popular Rijckholt (Kegler-Graiewski 2004). The reasons for this behaviour may be two-fold: the greater significance of participating in the Rijckholt exchange network and a lack of significant contact with hunter-gatherer groups to the north. Despite clear evidence of LBK exploitation in the cover sand north of the Graetheide Plateau, relatively few Mesolithic-type objects have been found within the local LBK settlements. Similarly, LBK objects are rarely found in clear association at Mesolithic sites further to the north.

In contrast, pieces of non-LBK pottery (La Hoguette, Limburg, *Begleitkeramik* and other as-yet undefined styles) are commonly found within LBK settlements all along the western fringe. As discussed earlier, the cultural or social context of these artefacts remains subject to ongoing debate. Whether these ceramic traditions represent local groups influenced by Mediterranean influences or specialist groups within the wider LBK community, it seems likely that their adoption of aspects of the 'Neolithic package' may have helped to facilitate social connections with neighbouring LBK settlements—something lacking with 'pure' foragers groups to the north and elsewhere.

7.5 Regional meshworks: connections writ large

This case study has explored three different strains of evidence—procurement strategies, regional trends, and extra-cultural contact—in order to illuminate the regional and supra-regional connections which linked LBK communities in the Rhine-Meuse area. On the one hand, these connections reflect an extension of the household and community meshworks discussed in the previous case studies, but on a significantly larger-scale. On the other hand, the growing divergence between settlement clusters on the either side of the Meuse suggests the emergence of a sort of social 'divide' between these neighbouring micro-regions. Seen as inter-linking social meshworks, these data demonstrate the meshwork nature of LBK society at the regional scale.

7.5.1 Extending the 'local' meshwork

In the previous chapters, social interaction at the local scale (i.e. within households and settlement clusters) was discussed in terms of expansive meshworks based on family, exogamous marriage and lineage or kinship relations. These meshworks were not amorphous or homogeneous. In some cases, hierarchical relations between households and settlements are demonstrated in the movement of raw materials (Zimmermann 1995; Claßen and Zimmermann 2004). In addition, similarities in pottery ornamentation suggest certain preferences in contact influenced by kinship, marriage alliance and access to long-distance networks (Frirdich 1994; Zimmermann 2002; Krahn 2003; Claßen 2009a; 2009b). Though long-term, these connections were dynamic, witnessed in shifts and changes in the social patchwork of connections within local and regional contacts.

Seen as the product of these meshworks, the procurement strategies pursued within the Rhine-Meuse area highlight the manifestation of different kinds of 'relating' within the movement of materials and finished tools amongst the dispersed settlements of the LBK. Firstly, we see the development of (intra-)regional exchange networks focused on the primary use of dominant flint materials. The shared reliance on Rijckholt or fine-grained Hesbayen flints may have helped to create a sense of community stretching across the scattered clusters of settlements in the eastern and western halves of the region, drawing the dispersed population to 'central' producer sites for regular exchange and social interaction. The variable use of secondary flints by the Limburg and Rhenish sites demonstrates that other meshworks operated in tandem with this dominant system, linking pockets of settlement with other communities scattered in the larger Rhine-Meuse area. These more localised relationships may reflect the dynamic and opportunistic, familiar and interpersonal ties in which LBK persons were embedded. Finally, the long-distance, supra-regional exchange of objects such as amphibolite adzes and *Spondylus* ornaments (and others) raises the possibility of geographically dispersed meshworks linking prominent members of local communities or roaming individuals.

The ego-centric networks of LBK people extended beyond the confines of their home settlement and, with that, dislocated the context and meaning of these interactions. The need to pasture herds, collect raw materials and hunt may have led some community members to spend a significant amount of time on the move (as confirmed by recent isotope studies), and ephemeral sites and surface scatters suggest that a 20–30 km zone was exploited regularly around LBK settlement groups. Given the limited distance between the Aldenhoven, Graetheide and Hesbaye clusters (within 60 km of one another), individuals and groups from these different communities may have regularly

interacted and even established long-term personal relationships. Periodic gatherings of dispersed LBK communities at various scales have also been suggested by evidence of communal feasting in the Kujavia region (Marciniak 2004; 2005) and the construction of freestanding enclosures in the latest LBK (6.3.3). In addition, recent isotopic analyses demonstrate that life-time mobility was not uncommon within the LBK (Price *et al.* 2001; 2006; Bentley *et al.* 2002; 2003b; 2008; Price and Bentley 2005; Bentley 2007; 2013; Zvelebil and Pettitt 2008). These shifts in residence need not preclude the continuation of relations with one's natal group, and it may have been common practice to visit one's wider relations on a regular basis (as the fulfilment of family obligation or the opportunity for a social visit). Although patrilocality has general been stressed within the LBK (Bentley 2007; 2013; Eisenhauer 2003; Krahn 2003), matrilineal ties may have also been important in other social spheres (van de Velde 1986; Bogucki 1988: 120–2; Whittle and Bickle 2013: 392). It is not possible to estimate just how far such kinship relations could extend. The presence of exotic materials and non-local ceramics highlight the potentialities for long-distance connections. For instance, Krahn-Schigiol (2005) was happy to accept the shared presence of particular secondary motives within the Aldenhoven Plateau, central Germany and Bohemia as evidence of marriage ties despite the significant distances involved.

Material studies have tended to focus on hand-to-hand exchange between related groups in neighbouring villages, possibly facilitated by local elites or prominent families (de Grooth 1987; 2007; Frirdich 1994; Zimmermann 1995). Ethno-historical examples remind us that direct contact could be made over long-distance within formalised or ritualised settings (such as the kula ring of the Trobriand Islands; Irwin 1983) and in more sporadic and personal journeys (Gronenborn 2010b). Although less

visible than the long-term structural connections established within the region, it is likely that the sporadic connections between individuals may have linked groups across significant distances. For example, Gronenborn (2003a) and Whittle and Bickle (2013: 391) consider the presence of non-residential sodality groups within LBK society, pooling together its dispersed membership. The remarkable collection of regional pottery uncovered at the Latest LBK enclosure site of Herxheim in the Palatinate (Upper Rhine) demonstrates a potent example of contact and interaction over hundreds of kilometres at the very end of the LBK (Boulestin *et al.* 2009). The fragmented high-quality pottery buried there reflects the decorative traditions of regional groups as far as 400–500 km away to the north and east (Boulestin *et al.* 2009: 971; Turck *et al.* 2012: 152). The relative completeness of many of the smashed pots demonstrates that the pottery arrived at Herxheim in an undamaged state, only to be smashed in the course of a ritual at the side of the open pits, prior to the vessels' deposition (Zeeb-Lanz *et al.* 2009: 213). The ceramics were not the only non-local item deposited; Turck *et al.* (2012) recently revealed that the fragmented bones at Herxheim displayed non-local strontium signatures consistent with sandstone or crystalline rocks in upland areas.

Given its uniqueness, supra-regional gatherings such as seen at Herxheim may not have been a feature of LBK life in all places and at all times. However, this example does support the general view that long-distance mobility and social interaction beyond the home settlement served as an important means of 'connecting' dispersed settlement areas, even within the heavily regionalised context of the latest LBK. These 'extended' contacts likely functioned like the 'weak' links of Granovetter's study (see 2.2), providing the concentrated local networks of communities with materials and information from afar.

7.5.2   An emerging transition zone

The Rhine-Meuse area represents a transition zone between two different 'traditions' within the western LBK: the Rhineland LBK associated with settlement clusters along the Rhine corridor and a 'peripheral' LBK associated with the Paris Basin, Moselle valley and Hainault areas settled during the later LBK. As noted, regionally-distinct burial, subsistence and material practices developed within these areas, marking out subtly different ways of doing things. Within the regional meshworks of the Rhine-Meuse area, we see a growing divergence between neighbouring micro-regions as a result of interaction within these different strains of the LBK (Table 7-4). Whilst initially 'plugged' into the wider influences of the Rhineland LBK, the settlement clusters located west of the Meuse re-orientated themselves towards 'peripheral' LBK settlements areas further west and south.

The continuity of certain cultural practices over large geographic areas may represent historic waves of colonisation. Thus, we see that the settlements of the eastern Rhine-Meuse region shared broad similarities with their founding groups in the middle Rhineland in terms of pottery decoration (rooted in the earlier Flomborn style), burial practices (Jeunesse's Tradition II), and crop preferences (ignoring the lack of barley cultivation). The potential reasons for these ongoing similarities are multiple. On one hand, these similarities can be seen as further evidence of the inherent conservative nature of LBK groups (Sommer 2001). Without external influence or the internal pressures to distinguish themselves, LBK peoples held firm to traditional ways of doing things (possibly influenced by social controls inbuilt in the kinship structures; Frirdich 1994). On the other hand, these similarities may reflect the conscious decision to demonstrate cohesion with these other groups as a means of accessing valued items,

Table 7-4: Comparison of various cultural traits within micro-regions of the Rhine-Meuse area

	Hesbaye	**Dutch Limburg**	**Rhenish**
Procurement strategies	Early reliance on Rijckholt/amphibolite replaced by specialist production of local Hesbayen flints, micaceous sandstone and western phtanite Rarity of Rijckholt tools during later settlement	Continued reliance on 'Rhineland' materials, such as Rijckholt flint, amphibolite and basalt Hesbayen flints and phtanite are present but in low volumes; possibility of increasing volumes of these materials during the latest phases of settlement	
Pottery	Consistent with Modderman's framework, but demonstrating 'regional' peculiarities Increasing homogeneity within pottery production	Consistent with Modderman's framework, but demonstrating 'regional' peculiarities	Consistent with Modderman's framework, but demonstrating 'regional' peculiarities Increasing insularity in shared decorative schema
Burial practices	No cemeteries found to date	Consistent with 'Rhineland' burials practices (Jeunesse's Tradition II)	Consistent with 'Rhineland' burials practices (Jeunesse's Tradition II)
Subsistence	Present of naked barley in Petite Gette settlements Absence of faunal remains	Minimal evidence of naked barley at one or two sites; possibly a weed? Absence of faunal remains	No naked barley found Absence of faunal remains
Forager contact	Rare finds of Late Mesolithic armature within LBK contexts Use of Wommerson in Petite Gette sites	Rare finds of Late Mesolithic armature within LBK contexts	Rare finds of Late Mesolithic armature within LBK contexts
Non-LBK pottery	Limburg pottery found within LBK settlements Absence of La Hoguette pottery Concentration of 'pure' Limburg pottery in particular areas of settlement link pottery to integral sub-group within community	Limburg and La Hoguette pottery found within LBK settlements	Limburg and La Hoguette pottery found within LBK settlements
Supra-regional influence	Western 'peripheral' LBK	Rhineland LBK	Rhineland LBK Growing influence of western 'peripheral' LBK during latest phases?

such as amphibolite adzes and *Spondylus* ornaments. Like the longhouse, the use of these materials may have played a key role in the embodiment of an LBK way of life (Whittle 2003; Bickle 2008). The distribution of adzes and adze fragments within graves suggests that they were entangled with concepts of land tenureship, masculinity and status (Milisauskas 1986: 215; Nieszery 1995; Whittle and Bickle 2013). Similarly, *Spondylus* ornaments have been linked to the performance of gender and rites of passages (Nieszery 1995; Hofmann 2006; Fromont 2013). Whilst regional substitutes were increasingly used in the later LBK—possibly because of increasing demand from a swelling population (Ramminger 2009)—both materials remained significant throughout the LBK.

These cultural affinities were likely maintained through the 'weak' links of the 'extended' social meshworks discussed above. Maintaining these 'traditional' ties, however, did not preclude the development of social connections and stylistic affinities with other parts of the LBK and non-LBK world. The LBK settlements established in northern Belgium during the later LBK appear to have shifted their focus from their 'homeland' in the east to new relationships with LBK groups in the Hainaut, Moselle valley and Paris basin. The presence of barley within a limited selection of Belgian and Dutch sites suggests that these ties extended beyond the mere 'economic' trade of flint tools. Sadly, the lack of preserved organic materials prevents us from establishing the adoption of other cultural practices from the Paris basin, such as the prevalence of personal ornamentation within burials and dominance of sheep/goat over pig in the faunal assemblage.

It is difficult to determine with any clarity why the inhabitants of the Belgian sites chose to make this social 'break'. Above (7.3.1), it was suggested that these

settlements were founded by a sub-group within the Limburg (and possibly Rhenish) communities, similar to that seen in the Alsace region (Jeunesse 2008). However, this break was not complete. Several settlements within the Limburg and Rhenish micro-regions maintained closer ties to this area, indicated by higher-than-average volumes of fine-grained Hesbayen flint and phtanite (lydite) adzes within their collected inventories. If we accept that the Hesbaye clusters were founded by a sub-group from within the Limburg (and possibly Rhenish) settlement areas, these connections may represent the continuity of kinship links and interpersonal ties between these two geographically separated communities. On the other hand, these connections reflect problematic relations between different groups within their own micro-region (as suggested for Erkelenz-*Kückhoven*; Kegler-Graiewski 2004: 417). In addition, closer attention to the scattered settlements within the Heeswater cluster along the Meuse may indicate that this break may have been more gradual, reflecting a general gradient between the strong western influence in the Hesbaye clusters and the strong Rhineland influences of the Aldenhoven Plateau.

7.5.3   Territoriality & larger-scaled socio-political entities

As presented here and in earlier chapters, it may be appropriate to discuss LBK society in terms of overlapping social meshworks. The multi-directional flow of materials, objects, shared stylistic traditions and ways of doing things demonstrates that these meshworks extended beyond the local settlement groups, incorporating areas more than 1000km away and non-LBK groups outside the loess region. However, these meshworks were not uniform and, over time, distinct alliances emerged between different settlements, whilst previously prominent settlements lost much of their social influence.

Though a useful trope for exploring the nature and intensity of social relatedness, the meshwork itself does not address or define social institutions or meaningful forms of identity within that population; it merely traces the 'connections' that link one thing and another (see discussion in Chapter 2). Although this theme of identity will be pursued in more detail in the following chapter (8), it is worth considering the existence of social structures or patterns of organisation beyond that of the settlement area and clan. As social assemblages, such entities emerge from and are maintained by the ongoing performance of shared activities, symbolism and territorialisation by its member groups.

The regional groups described above exhibit some of these properties: a shared reliance on Rijckholt flint and later regional basalt sources, the development of a recognisably distinct pottery tradition, and regional distinct subsistence practices. By sharing these practices, these groups of settlement areas may have developed a unique sense of 'we' when interacting with other groups and individuals from outside this regional communication network. However, the continued use of shared markers of 'LBKness' demonstrate that this emergent identity did not exclude local groups from the wider LBK network within which they continued to trade and relate.

In general, the emergence of distinct stylistic traditions within the younger LBK did not preclude the continuation of supra-regional connections. Through reduced in volume, the long-distance procurement of pan-LBK materials such as amphibolite and *Spondylus* continued until the end of the LBK (Jeunesse 1995a: 132; Müller *et al.* 1996; Fromont 2013). Even the regional pottery traditions themselves incorporated ongoing influences from other parts of the LBK (Blouet *et al.* 2008; 2013). The emergence of regional pottery groups during the later LBK did not necessarily inhibit

stylistic or economic exchange with other areas. The movement of prestige materials such as amphibolite and *Spondylus* ornaments continued throughout the LBK (Müller *et al.* 1996; Ramminger 2009; Fromont 2013) as did other significant supra-regional networks (Zimmermann 1995). Given this, how should we interpret the regional groups within the LBK? Rather than assuming a basket of shared LBK practices, we should follow the approach taken by Hedges *et al.* (2013). Whilst accepting that some aspects of funerary practices may have been more conservative, Hedges *et al.* (2013: 381–4) see burial in the LBK as inherently innovative, offering an arena to express different scales of identity and to negotiate ongoing relations similar to decorated pottery outlined above. Practices were defined on local rather than regional terms, representing local circumstances and concerns.

Over time, these regional assemblages of settlements, clusters, and clans could have solidified into more defined and 'closed' social identities; however, other social or economic factors instead resulted in the rapid de-population of LBK settlements and, with that, destabilised these regional groups. The latest phases of settlement in the region are associated with slow dissolution of regional connections that provided the Rijckholt and adzes in previous generations. As noted above, this trend towards localisation may have represented weakening of traditional social structures (e.g. kinship) and the increased insularity of smaller social groups within the wider LBK community. Thus, increasing social complexity at the local scale re-focused social attention on establishing and maintaining 'good' relations in the relatively 'crowded' society of the late LBK. Whereas earlier generations could simply plug into the traditional power structures based on lineage, age, gender and principles of seniority, members of later settlements had to navigate through competing kinship, settlement and alliance groups. After many generations of settlement, connections to past

homelands may have been less relevant and the longer-distance relationships became more distant within the ego-centric personal networks of local LBK people. The important 'weak' links continued to connect people into a wider social network; however, population growth and increasing settlement density reduced the geographical scale of these links.

Thus, this examination of 'connections' on the regional scale has returned us nicely to the complexity of social relations at the local scale. As the past chapters have shown, various scales of identity and interaction impacted the daily lives of the LBK people. The next chapter examines the interaction of these different scales in the meshwork and considers how this approach helps us to better understand the sources of uniformity and diversity within the LBK.

Table 7-5: Frequency of flint materials used in Rhenish settlements (after Kuper et al. 1977: Table 51; Boelicke et al. 1988: Table 576; Gaffrey 1994: Table 7, 8; Rück 2007: Table 12, 13; Hoymeyer 1997: Table 16; Schwitalla 1997: Table: 3)

Settlement (areas)	Chrono-logy	Rijckholt	Gravel flints	Rullen	Valken-berg	Vetschau	Fine-grained Hesbayen	Obourg	Lousberg	Baltic	Romigny-Lhéry	N
Merzbach valley		81.2%	7.1%	3.8%	0.1%	1.0%	0.7%	0.1%	0.1%	0.0%	0.0%	26,776
Langweiler 8	Flom-Latest	83.9%	5.6%	3.1%	0.0%	1.1%	0.5%	0.1%	0.1%	0.0%	0.0%	9,611
Langweiler 9	Flom-Late	79.0%	10.7%	3.0%	0.0%	0.4%	2.5%	0.0%	0.1%	0.0%	0.0%	2,712
Langweiler 16	Flom	86.5%	2.5%	2.7%	0.1%	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	710
Langweiler 2	Flom-Latest	79.6%	9.9%	3.8%	0.2%	0.8%	0.2%	0.1%	0.1%	0.1%	0.0%	3,941
Laurenzberg 7	Flom-Latest	85.3%	2.7%	4.8%	0.0%	1.1%	0.2%	0.0%	0.0%	0.0%	0.0%	6,904
Niedermerz 4	Late	57.8%	24.5%	5.6%	0.3%	2.4%	0.8%	0.2%	0.6%	0.0%	0.0%	625
Laurenzberg 8	?	60.9%	8.7%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	23
Aldenhoven 3	?	73.9%	7.5%	4.7%	0.1%	0.8%	0.6%	0.0%	0.0%	0.0%	0.0%	1,632
Niedermerz 3 (Cem)	Mid-Late	79.1%	15.8%	1.3%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	158
Langweiler 3 (Encl)	Latest	38.9%	36.7%	4.3%	1.3%	0.9%	7.6%	0.9%	0.4%	0.0%	0.0%	460
Schlangengraben valley		80.1%	4.5%	7.6%	0.1%	1.0%	0.7%	0.0%	0.1%	0.0%	0.0%	5,995
Weisweiler 17	Flom-Latest	76.1%	7.7%	6.6%	0.1%	3.1%	0.5%	0.1%	0.0%	0.0%	0.0%	1,019
Weisweiler 6	Later	86.8%	4.4%	4.4%	0.0%	1.9%	0.3%	0.0%	0.0%	0.0%	0.0%	365
Lohn 3	Flom-Latest	84.5%	1.3%	9.3%	0.1%	0.3%	0.2%	0.0%	0.1%	0.0%	0.0%	3,658
Weisweiler 29	Latest	55.0%	18.8%	9.9%	1.1%	0.7%	7.4%	0.0%	0.7%	0.0%	0.0%	282
Weisweiler 110	?	54.8%	19.1%	0.7%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	283

Settlement (areas)	Chrono-logy	Rijckholt	Gravel flints	Rullen	Valken-berg	Vetschau	Fine-grained Hesbayen	Obourg	Lousberg	Baltic	Romigny-Lhéry	N
Weisweiler 111	Flom-Latest	79.6%	5.9%	1.5%	0.3%	2.8%	1.0%	0.3%	0.0%	0.0%	0.0%	388
Inde valley		70.4%	13.4%	2.6%	0.2%	0.6%	1.2%	0.0%	0.1%	0.0%	0.0%	6,539
Inden-Altdorf B	Latest	60.6%	16.6%	2.3%	2.0%	0.0%	6.6%	0.0%	0.0%	0.0%	0.3%	302
Inden-Altdorf D	Late-Latest	64.2%	19.8%	1.0%	0.2%	0.3%	0.8%	0.0%	0.1%	0.0%	0.0%	3,918
Lamersdorf 2	?	82.2%	2.1%	5.3%	0.1%	1.2%	1.1%	0.0%	0.0%	0.0%	0.0%	2,319
Other Rhenish		80.9%	7.2%	2.0%	0.2%	3.4%	0.9%	0.1%	0.1%	0.1%	0.0%	5,573
Erkelenz-Kückhoven	Flom-Late	72.8%	15.7%	1.9%	0.6%	0.6%	1.8%	0.2%	0.3%	0.3%	0.0%	1,858
Hambach 8	?	85.5%	2.6%	1.8%	0.0%	5.5%	0.3%	0.0%	0.0%	0.0%	0.0%	3,174
Frimmersdorf 53	?	83.5%	5.4%	3.3%	0.0%	0.8%	0.8%	0.0%	0.3%	0.0%	0.0%	369
Hasselweiler 1	?	81.4%	7.2%	4.1%	0.0%	0.0%	2.1%	2.1%	0.0%	0.0%	0.0%	97
Hasselweiler 2	?	72.0%	4.0%	6.7%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	75

8 LBK meshworks: a multi-scalar discussion

This thesis set out to explore social relations within the Early Neolithic LBK communities of central Europe using the 'meshwork' as a methodological framework. In doing so, I hoped to better understand how different scales of sociality may have been experienced within the LBK, to illustrate the interplay between these different scales, and to consider the social context in which both shared and diverse practices were permissible. The preceding case studies have demonstrated the general applicability of these approaches in describing the web of connections that linked people, places and things within the LBK and, through this, to consider the nature of diversity within the LBK. The following chapter pulls together these case studies and considers the issue of scale in more detail. Within it, I argue that meshwork thinking and the insights it provides offer a refreshing complement to more traditional forms of analysis within the field.

8.1 From structure to meshwork: LBK society reimagined

The LBK of early narratives (Childe 1927; 1929; Clark and Piggott 1965; Behrens 1975) encapsulated a simple, largely egalitarian agrarian society governed by cultural norms and conservative traditions. As outlined in Chapter 3, research over the past forty years has begun to pick apart this cultural and social homogeneity. Variations in settlement, burial, subsistence and material practices suggest that LBK communities were more diverse and segmented than previously expected (Jeunesse 1995b; 2008; Hachem 2000; Strien 2005; Bogaard *et al.* 2011; Knipper 2011; Whittle and Bickle 2013). These new data challenge us reconsider the nature of LBK society as a diverse and multi-scalar phenomenon, without ignoring the general semblance of uniformity that continues to define the LBK as a whole.

This thesis has been inspired by several more theoretical discussions of 'the meshwork' as an ontological metaphor describing the emergence of self and social collectives from practical engagements with 'others' of many types and forms (see Chapter 2 for detailed discussion). These meshworks allow plurality without requiring uniformity, strengthened in part by the tensions and contradictory currents that exist between its member constituents. Unlike quantitative network models, the meshwork is purely descriptive, encouraging the researcher to trace the myriad of connections linking the various actors involved in social interaction. The goal in this endeavour is not to establish (linear) causation but to describe the complex and general sense of embeddedness inherent in the constitution of the 'social' landscape—what Hodder might describe as 'entanglement' (Hodder 2012). As such, it offers an alternative to more traditional descriptions of LBK social relations that continue to emphasise rigid social structures and/or default to universal normative rules and practices. Such an approach allows us to tackle the need to better understand the social environment which allowed for both uniformity and diversity of practice and the need to move away from rigid social institutions by recasting LBK 'society' as the composition of overlapping, self-organising and heterogeneous meshworks.

The meshwork is not a holistic system but a conglomeration of semi-permeable domains that inter-connect both horizontally and vertically. Potentially boundless, certain limitations must be accepted in order to progress. This study was structured into separate case studies focusing on the nature of connections at three different heuristic scales of analysis: the everyday activities in and around the house (household scale), the interconnections shared between neighbouring areas of settlement (cluster scale) and the various connections linking more distant communities (regional scale). Each of these scales represents a popular focus of past research, with certain models

dominating (household: the *Hofplatz*; cluster: central places; regional: interaction spheres). A re-examination of these different models, and the diversity found within them, provided a framework in which to trace significant connections and, through that, elucidate the complexity, tensions and opportunities for negotiation within LBK society.

The first case study focused on social interaction at the household scale and considered the emergence of individual households, household complexes and co-operative groups of households within the Merzbach and Schlangengraben valleys. The household as the basic unit of production and reproductive has been well studied (Modderman 1970; Lüning 1982a; Coudart 1998; Last 1998; Whittle 2003; Bickle 2008; Borić 2008). Building on this work, my analysis compared and contrasted longhouse form, spatial relationships within individual 'farmsteads' and the variable representation of clan-like house groups within the Merzbach and Schlangengraben valleys and demonstrated the variable influence of family, kinship and other flexible meshworks operating at this scale. In some cases, the familiar connections (past and present) dominated, traced in the tightly clustered rows of longhouses seen at Langweiler 9 and other sites. In other cases, looser clusters around more durable walled (Type 1a) longhouses suggest the clan-like house groups or wards suggested at Elsloo and Vaihingen. What is most significant is the juxtaposition of these different influences within the shared confines of localised settlement clusters. This research suggests that the local meshwork was composed of dynastic 'Houses' (*sensu* Lévi-Strauss' *société à maison* (1982; 1987)), clan-based wards and more loosely-affiliated households. Though based on familial and kinship bonds, these heterogeneous assemblages extended beyond these 'defined' boundaries, integrating persons, places and things in the wider social landscape.

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In the second case study, I went on to explore the interplay between competing family and clan/lineage identities at the scale of the Aldenhoven Plateau cluster or micro-region. Subjected to intense study for more than forty years, a coherent narrative has emerged based on steady growth, increasing social distancing and eventual fragmentation over the valleys' occupations (Frirdich 1994; Stehli 1994; Krahn 2006; Claßen 2009a; 2009b; Münch 2009). Exploring local growth patterns, the emergence of burial grounds and later periods of enclosure construction, this research re-casts this narrative. Instead of initial unity, the collective data suggest that the early 'pioneer' settlements may have been far more diverse from the start, integrating unrelated households through shared practices. The meshwork at this scale included a diverse assembly of persons, households, and clan groups connected by shared practices, kinship and marriage ties, local hierarchies and circumstance. Over time, new communal practices involving the dead and ceremonial gathering can be seen as a reaction to increasing social complexity within the settlement cluster. More kinds of people required more ways of interacting, and the kin-based links of the household were no longer sufficient on their own.

The final case study zoomed out to the regional scale of the Lower Rhine basin, tracing more geographically spread patterns in the material culture as well as interaction with non-LBK groups beyond the loess regions. The network has already proved a useful trope at this scale, with the distribution of materials, styles and peoples being described in terms of exchange, communication or marriage networks (Zimmermann 1995; Krahn 2003; 2006; Claßen 2009a, 2009b). As shown, meshwork-thinking can offer insights even in these well-trodden subjects. Though brief in scope, my research highlights the polysemic meanings of materials within the LBK. Local preferences for certain raw materials reflect more than access rights; they demonstrate the

materialisation of different scales of identity within changing contexts. Parallel trends in regionalisation and localisation were defined in terms of personal relations. Whilst the relative size of one's personal network remained unchanged, the geographical spread of these ego-centric networks became ever-more concentrated in the growing populations. However, far-reaching contacts of certain individuals—such as Gronenborn's hunter/warrior sodalities (2003a) or Frirdich's family heads (1994; 2005)—maintained the important long-distance contacts through which prestige items and materials flowed. As suggested in Chapter 6, the enclosures of the later LBK may indicate the increasing formalisation of these contacts and theatres of exchange. The distribution of 'cross-cultural' artefacts, such as non-LBK pottery in LBK settlements or vice versa, demonstrates that these 'weaker' connections extended beyond the LBK settlement area, bringing into focus what it meant to be 'LBK'.

These case studies demonstrate how more dynamic social models, such as meshwork thinking, can help us to tackle specific research questions about the nature of social life within such prehistoric contexts. In order to be truly multi-scalar, we need to expand our analysis to engage with all scales of social interaction within the LBK. Within relational models, there is a risk of simply treating social meshworks as a sort of fractal phenomenon. Large-scaled entities—such as the descent groups and regional exchange networks described above—emerged unconsciously from the mutual interaction of individual humans on the ground, epitomised in Ingold's 'becoming' (2000) or DeLanda's 'assemblages' (2006). Such a simple explanation denies the LBK people any degree of agency. To inject this sense of agency, choice and creativity within the lived experiences of LBK communities, we need to consider how these different scales of sociality may have been experienced within the LBK and, through

that, how the resulting social 'mesh-iness' created an environment where diversity was permitted.

8.2   Scales of 'belonging': how scale was experienced

Initial assumptions about the homogeneity of LBK society have been replaced by ever more detailed descriptions of diverse segmentation within LBK communities at all scales. Whereas early syntheses emphasised a few key social groupings (such as households, settlements or wider exchange networks), more recent research continues to add to this list. In the following section, I summarise the main scales of identity and social interaction evidenced within the LBK data and consider what this research has to add to the debate.

8.2.1   Clans, lineages and descent

As discussed previously (3.4.1), there is a long tradition of attempting to characterise LBK kinship systems in terms of residence and descent. The presence of patrilocal residence groups has been suggested by distribution patterns within the material culture (van de Velde 1979a; 1979b; Strien 2000; Krahn 2003), stable isotope and odonatological studies (Price *et al.* 2001; 2006; Bentley *et al.* 2002; 2003b; 2008; Eisenhauer 2003; Price and Bentley 2005; Bentley 2007; 2013; Hedges *et al.* 2013) and settlement studies (van de Velde 1990; Strien 2005; this study). In contrast, descent systems remain far more difficult to identify in the archaeological record (Deetz 1968). Whilst patrilineal remains a popular option (e.g. Eisenhauer 2003; Bentley 2007; 2013), others have called for bilateral descent reckoning (possibly, context-specific) or greater regional flexibility within the LBK (Bogucki 1988: 183, 217; van de Velde 1979a; 1979b; 1986; Whittle and Bickle 2013: 390–1).

This study identified supra-household groups in the large pioneer settlement of Langweiler 8 in the Merzbach valley (Aldenhoven Plateau), suggesting that families from similar clans or lineages may have clustered together. From very early in the settlement's occupation (HG[54] II), two distinct clusters of longhouses (associated with different material culture) could be distinguished within the site, likely representing acknowledged social differences between settling families. Likewise, the establishment of secondary sites within close proximity of Langweiler 8 (within 300–1000 m) within the earliest phases of occupation (from HG II onwards) suggests that something about the arriving settlers marked them out as different to those groups already settled within the founding settlements, mostly likely in terms of place of origin or kinship. This difference remained relevant throughout the valley's occupation and may have contributed to some households abandoning the area (Langweiler 16) or developing their own stylistic tradition within the Later LBK (Langweiler 2 and subsequently Niedermerz 4).

Clan[55] or lineage affiliations have also been traced within LBK burials at Aiterhofen (southern Bavaria), Rutzing (Upper Austria) and Souffelweyersheim (Alsace) and may have reflected an important selection criterion for determining which individuals could or should be buried within these formal areas (Whittle and Bickle 2013: 389). Though cemeteries are underrepresented within the Rhine-Meuse area, the data at Niedermerz, Elsloo and Arnoldsweiler indicated the presence of similar selection and grave groupings amongst their inhumations. The appearance of these dedicated burial

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[54] House Generation – see Appendix A
[55] Within anthropology, the term 'clan' refers to a group of people who are related to one another through shared (real or perceived) ancestry. The form of this ancestry varies significantly within the ethnographic record and can include real, fictionalised and nonhuman totemic ancestors. As a result, clan membership can be flexible and responsive to particular circumstances (compared to more defined descent lineages).

grounds at the end of the Flomborn period coincided with the gradual abandonment of the founding farmsteads at Langweiler 8 and the establishment of stylistically distinct family plots within this and other nearby sites. The gradual appearance of a two-part division within the Merzbach settlements and within the associated burial ground (Niedermerz) suggested the emergence of larger-scale identities such as the broadly-defined tribal groups suggested by Kerig (2003).

The long tradition of kinship studies within anthropology has demonstrated that kinship categories prescribe how one should interact with another person (e.g. appropriate attitudes and behaviours) (Good 1996: 312). However, kinship status itself is as much socially constructed as it is bestowed at birth (Carsten 2004; Sahlins 2011a; 2011b; 2013; Schneider 1968). Moving away from strict definitions imposed by traditional kinship studies, Sahlins (2011a) refers to a 'mutuality of being' established through sharing food, other substances and experiences (see also Carsten 2004). As a result, kinship is mutable; it can be made and unmade. Whilst the social obligations and duties associated within kin categories may have been dictated by cultural practice within the LBK, the potential fluidity of these social collectives as meshworks allowed people in the LBK to change their status relative to one another. The reciprocal exchange of gifts created mutual obligations, cementing social relations between unknown persons. Affinal relations could be created through inter-marriage (fictive if necessary). Descent could be overcome through adoption. Social ties could be broken as well as formed. Whilst the underlying 'logic' of LBK kinship rules could have been rigid, the social collectives associated with these rules could have been more malleable, fluid and mesh-like.

8.2.2   Households, settlements and settlement clusters

The role of the household remains important to our understanding of the LBK. Linked almost exclusively to the large timber longhouses that dot LBK settlements, there has been a tendency to treat these collectives as fixed, clearly defined and subject to duplication each generation. Membership was likely more fluid that previously believed. Whilst membership of the LBK household has traditionally been defined in familial terms (either nuclear or extended family groups; Lüning 1982a; Modderman 1988; Strien 2010a; Schiesberg 2010; *contra* Rück 2007; 2009), Whittle (2003) and Bickle (2008) have called upon ethnographic studies to demonstrate the role of the physical structure in bringing together different kinds of persons (kin, neighbours, rivals, strangers) in and around the longhouse. Thus, the constitution of the household varied, expanding and contracting as people went about their daily lives and through their life courses.

Household membership likely served as an important form of group identity within the LBK. Pottery studies in the Merzbach and Vaihingen suggest the emergence of household traditions within pottery decoration, associated with particular decorative motives (Frirdich 1994; Strien 2005). Nevertheless, household membership may have been contextual, coming to the fore only when necessary or relevant. For example, we see the absence of household identities being expressed within the cemeteries at Niedermerz and Elsloo (although smaller clusters and grave pairings suggest the presence of small family plots within the cemetery; Dohrn-Ihmig 1983; van de Velde 1979a). Household members were invariably part of the complex funerary rites practised over the deceased, but this scale of identity may not have been considered relevant within this context. Not all households were equal. The dynastic 'Houses' seen within the Merzbach valley represented the full expression of the household as

social collective and corporate actor. Spatial association and the development of 'lineage houses' demonstrate a conscious effort to link multiple phases of longhouse occupation together, signalling deeper links with history and place. It remains unclear what made these households special. Did membership of such a 'House' differ to participation with more 'mundane' households within the local area? Did this, in fact, represent two different kinds of relating: firstly, to the performance-based household of residence and, secondly, to the symbolically defined relation to the dynastic 'House'? More research is needed.

The repeated construction of longhouses in particular areas of settlement (Lüning's *Hofplätze*) has led to the conclusion that these households were fixed and stable, embedded in the lifecycles of their inhabitants. Recent demographic models (Schiesberg 2010; Strien 2010a), considerations about physical use life of longhouses (Schmidt *et al.* 2005; Rück 2007; 2009) and the appreciation of household complexes (Czerniak 2013) have introduced doubts about the assumed generational replacement of these structures. At the same time, the continued occupation of a longhouse does not guarantee household continuity. Similarly, this research demonstrates the variability present in the physical expression of these durable farmsteads within the Merzbach valley and other areas of settlement; the relative homogeneity of the longhouse as an object does not necessarily equate with the homogeneity of LBK households. Tensions between the household members—their personal desires, internal hierarchies, and commitments to other meshworked communities—pushed and pulled the household as a social collective. The household as a social collective may have been more fragile than the *Hofplatz* model implies, and this may be reflected in the varying size and forms of generational longhouses.

As the aggregation of households, the settlement itself has rarely been scrutinised as a social collective. However, increasing evidence of intra-settlement diversity within several LBK 'villages' encourages us to reconsider the genesis and long-term continuity of these settlements (Hachem 2000; Strien 2005; Nockemann 2008; Bogaard *et al.* 2011). Evidence of community building practices are limited (e.g. surrounding ditch enclosures), although shared experiences and daily activities may have played an important role (Hofmann 2010). As noted above, the secondary settlements in the Merzbach valley may have been settled by different clan or lineage segments, although larger village settlements were likely mixed. The practice of enclosing these larger, more diverse communities with ditches and/or palisades may have reflected the need to harmonise the aggregated households and kinship groups residing within the village. Such practices may not have been necessary in all places. For example, the development of Langweiler 8 suggests the dominance of one group over time. The movement of specific motifs within the bounds of settlement at Elsloo and Vaihingen has been linked to shared village leadership (such as a local chief), possibly based within moiety structures (van de Velde 1979a; 1979b; Strien 2005). Thus, the loose-bounded inhabitants of larger LBK settlements may have formed a single socio-political unit (Behrens 1975). In addition, households within settlements may have participated in economic specialisms such as the economic integration seen in the Hesbaye cluster or the smaller scaled specialisms suggested in the Merzbach valley.

The evidence of socio-political collectives beyond the settlement itself is limited. Extending Zimmermann's 'central places' model, Schade (2004) has argued that settlement clusters were integrated in larger-scaled settlement associations (*Siedlungsverbänden*). Within this study, such evidence is limited to the economically

integrated communities in the Hesbaye region in Belgium during the later LBK. It has been suggested that this integration served as a means of establishing wider alliances in the face of threatened aggression from Late Mesolithic hunter-gatherers residing to the north (Keeley and Cahen 1989; Golitko and Keeley 2007; although contested by others, see Footnote 10) and may therefore represent a very specific reaction to localised conditions.

8.2.3   Regional and supra-regional connections

Material regionalisation within the LBK, especially during later phases, has been associated with the emergence of distinct social identities (and possibly socio-political organisation) beyond the tightly clustered residential groups anchored to settlements or settlement clusters (Kneipp 1998; Kerig 2003; 2010; Schade 2004). Evidence for such groups can be seen in the development of regional stylistic traditions in pottery, the construction of ritualised communal spaces such as later enclosures, and rare (and possibly exceptional) examples of inter-group conflict at 'massacre' sites (Meier-Arendt 1972; Kerig 2003; Teschler-Nicola 2012; Wahl and Trautmann 2012; Meyer *et al.* 2015).

As discussed in the previous chapter, it is difficult to establish the presence and boundaries of these proposed regional groups within all classes of objects. Within the Rhine-Meuse area, ceramic decoration and form are shared by micro-regions which participated in two widely different procurement networks. The limited movement of favoured materials across this boundary indicates the rather restricted maintenance of social contact between these different parts of the Rhine-Meuse area. As argued, it seems unlikely that these diverging groups would continue to self-identify with one

another and, more importantly, signal this shared membership through pottery ornamentation.

The case studies are consistent with the overarching view of increasing integration of LBK communities at even greater scales. For example, the development of formal burial grounds in the Rhine-Meuse area during the middle LBK provided an arena for the participation of long-standing descent groups within a wider audience. This (economic? socio-political?) integration became ever more important during the latest LBK, when several local populations began to decline. The construction of freestanding enclosures served as a focus for periodic gatherings, social competition and the maintenance of social contacts within this contracting social landscape.

Thus, the regional collective of the LBK may mark the shift from socially recognised categories of 'belonging' to emergent meshworks that coalesced through mutual interaction. Their diverse collectives of individuals, households, clans/lineages and settlements were linked together through innumerable, inter-connective multiple connections, including the fluid movement of people between different communities over the course of their lives (Zvelebil and Pettitt 2008; 2013; Knipper 2011; Whittle and Bickle 2013). The apparent stability of regional social networks (Zimmermann 1995; Claßen 2009a; 2009b) gives testament to the frequent comings-and-goings between neighbouring areas, inclusive of personal relationships, (possibly prescriptive) kinship ties and more formal social gatherings. Central to regional collectives, the wide range of decorative elements which covered the surface of everyday vessels were polysemic, referencing relationships operating on different scales (main motifs: household (Frirdich 1994); secondary motifs: personal 'learning circles' (Kolhoff 1999; Krahn 2003); semantics: distinct social groups (Jeunesse

2008)), serving as a sort of social 'bar code'. The decorative traits which characterise these regional pottery traditions also are used in other regional groups, but to a lesser degree (Meier-Arendt 1966; 1972). Thus, shared ways of doing things (such as making the right kind of pot) formed part of the wider non-human elements participating within these regional meshworks, without necessarily serving as distinct social markers.

Social interaction beyond the regional groups has traditionally been described in terms of expansive exchange networks emerging from reciprocal gift-giving between related groups in neighbouring villages and more formalised ceremonial exchange between local elites. These indirect connections link the far corners of the LBK, traced through the widespread distribution of highly valued, prestige objects such as amphibolite stone adzes and *Spondylus* shell ornaments (Müller *et al.* 1996; Frirdich 1994; Christensen *et al.* 2006; Ramminger 2009). Furthermore, these exchange networks may represent the adoption of pre-existing Late Mesolithic social networks by the earliest (*älteste*) LBK communities (Mateiciucová 2004; 2010). At this scale, social interaction is seen in terms of unbounded social networks (here, meshworks), with little regard to group identity.

Other scales of social identity may have been emerged from the long-distance movement of regional materials. For example, I argue that the more mundane Rijckholt flint may have acquired a sense of esoteric value within the western settlements in the earliest (*älteste*) LBK due to its distant location beyond the then-occupied LBK territories. As a result, access to this material may have been restricted to certain families, groups or sub-classes within the local population when the Rhine-Meuse area was settled in the early (*ältere*) LBK. Despite the presence of suitable

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alternatives, Rijckholt flint dominated the assemblages of the eastern Rhine-Meuse area. Could this shared and uncontested reliance on a single material be linked to the expression of a shared identity? What about the subset of local inhabitants who played a more significant role in the acquisition and production of Rijckholt blades and tools? Within the last case study, I argued that the LBK settlements within the eastern Rhine-Meuse valley maintained communication links with their homeland in the Rhineland, sharing similar material preferences, burial practices and (possibly) subsistence practices. One wonders how far a shared identity expressed in the daily use of Rijckholt tools may have extended.

At the same time, we can see a long discourse between western LBK communities and other non-LBK groups such as Late Mesolithic foragers and the producers of La Hoguette, Limburg and *Begleitkeramik* pottery along the western fringe of the LBK. These relationships were not consistent across space and time. A short period of extreme violence may have flared up between expanding farming communities of the Hesbaye cluster and northern hunter-gatherer groups during the later LBK (although this view is contested). However, if present, this violence did not last more than a generation and did not extend into neighbouring LBK clusters. The wider evidence for the Rhine-Meuse region suggests a greater degree of interaction—and possibly incorporation—of foraging groups within more eastern settlements (possible allies? temporary labour?).

As the collective assemblage of these cross-cutting and differing scaled meshworks, the LBK itself can be described as fluid, permeable and performative. As the nexus of action, LBK settlements aggregated a diverse assemblage of individuals including local residents, visiting kin, journeying strangers, associated hunter-gatherers and

emigrating incomers. These individuals were linked through various kinds of association: shared activities, kinship (descent and alliance, real and fictive), local authority structures, opportunistic neighbours. Regardless, these individuals were broadly linked by a shared ways of doing things. Accepting the integrative role of material culture within LBK communities, it could be assumed that LBK peoples from different parts of Central Europe would have recognised some sort of camaraderie with one another—what Whittle and Bickle (2013) characterise as moral or imagined community.

8.2.4   The meaning of social distance

This leads to the question of how scale was experienced within the LBK. Referring back to Gamble's ego-centric networks, the qualities of sociality likely varied at each of these scales. Gamble (1998) argued that the personal networks of 'intimates' were created and recreated through use of emotional resources. Though time-consuming and intensive, these relationships tended to be the most stable and durable. The use of material resources characterised the practical exchange that dominated the everyday life of individuals with their 'effective' network of 20 or so persons. On the other hand, the establishment and maintenance of the larger-scale extended (personal) network required the use of symbolic resources that had the effect of extending the social presence of the individual in time and space.

Whilst I argue for the 'localisation' of social collectives and identities (to be affective, see below), this does not necessarily mean that these assorted scales of interaction were not valued and experienced differently within the LBK. As implied in Chapter 6, increasing scales of interaction, such as the large-scale gatherings proposed during funerary rites and within freestanding enclosures during the later LBK, may have been

subject to increasing formality, similar to the effect of social distancing in kinship terms mentioned above (8.2.1). In contrast, the overlapping kinds of relating shared amongst LBK people within smaller scales of sociality (such as the household) likely engendered a greater sense of intimacy and personal expression (Bickle 2009: 137).

This social distance did not necessarily equate to geographical distance. The ongoing cultivation of social relations across long distances is suggested by the long-term continuity of supra-regional procurement networks, low volumes of exotic materials and the occasional use of similar decorative motifs within decorative pottery. As argued in Chapter 7, these connections represented the 'weak ties' that served as important routes of knowledge and exchange within the dispersed LBK communities. On a personal level, these contacts may have been based on intimate ties, such as shared natal group; however, the often-times 'otherness' of distant things and relationships could have imbued these relations with a sense of sacredness or symbolic significance beyond the everyday (Helms 1988: 264). For example, the amphibolite adzes and *Spondylus* shell transported up to 1000 km played an important role in the expression of personhood within the LBK (Milisauskas 1986: 215; Nieszery 1995; Hofmann 2006; Fromont 2013; Whittle and Bickle 2013).

8.3   'Localising' the global: the manifestation of scale in a shared arena

Unlike the 'network', social meshworks are not confined to human actors. As noted, these meshworks emerge from the mutual interaction of humans, non-humans and 'things'. So far, this discussion has focused on the social relations which formed between LBK people through various kinds of 'relating'; nonetheless, we should not forget the important role played by these other, non-human actants in the expression of social scale within the LBK. Previously, I have highlighted how various objects and

practices were incorporated in the performance of the social meshworks in the LBK. We can now turn this discussion on its head and consider how these same objects and practices can 'presence' social identities and collectives at all scales in the shared arena of lived experience.

Inspired by Latour's presentation of distributed agency (Latour 1993; 2005), I argue that these multiple scales of interaction, identity or collective must be present on the local scale in order to have effect. Meshworks operate in the here-and-now, continuously being re-made through the mutual interaction of their various parts. They do not operate on some other plane but emerge from the mutual interaction of actors (agents? actants?) at the local scale. As Latour asserts, the network is always local (Latour 1993: 117).

Timber longhouses represent one of the main characteristics of the LBK way of life. Pollen data suggest that the loess regions favoured by the LBK remained largely forested during the Early Neolithic, with the local settlements (and their fields) appearing as clearings in a sea of vegetation (Kalis and Meuers-Balke 2003; 2005). The longhouses dominate these clearings, presenting an ever-present visual reminder of the prominence of the household in these small-scale communities. Gardens, outbuildings, and the detritus of abandoned longhouses surround each occupied house, providing an enduring connection with past generations and 'traditional' ways of living.

These households were not autonomous and co-operated with others in many activities. Communal efforts in tending the fields, preparing food around shared ovens, building houses, pasturing livestock and various craft activities brought together

different work groups, incorporating both kin and non-kin. The detritus of these activities could be found on the cleared land around the settlement and in its many open pits. In addition, individual households may have been associated with particular pottery motifs, family heirlooms, household shrines and other intangible 'assets' which characterised the collective unit as a social entity with history and social status. These shared activities helped to cement interpersonal relationships; the fields, objects and places served as an ever-present reminder of these connections.

Connections with other settlement areas can also be seen. Isotopic data demonstrate that mobility remained high throughout the LBK (although sadly missing in the Lower Rhine region due to de-calcification of the loess). At any point in time, the household could include exogamous marriage partners, adopted heirs, poorer relations or visiting kin from afar. Although sharing a broadly LBK way of life, these incomers would have also introduced local particularities, linking the different communities. Thus, we see a broad range of decorative motifs being used within the Merzbach site, including techniques representing many different regions. The diverse collection of raw materials found at these sites (albeit in low volumes) could also be linked to these incomers—either as materials brought with them when relocating, collected on visits to their natal villages or gifted by visiting relations. The presence of these people, objects and materials served as a constant reminder of the kin relations (and obligations) linking communities.

Other features in the valley presenced connections within the wider LBK community and beyond. Exchange played an important role in the establishment and maintenance of needed social relations. The ubiquity of certain preferred regional materials suggests that these materials were either self-procured or exchanged as gifts between

'related' groups. In contrast, prestige goods were likely used and exchanged within a more formal framework of ceremonially display and aggregation. Such events would be charged with the mixture of household, kin and lineage, and the location and debris from such events would continue in the mind of local inhabitants. Furthermore, ceremonial gatherings likely occurred in and around the house of the sponsoring family (lineage?) for much of the LBK, imbuing these prominent families with earned respect and prestige. This may have been reflected in decorative elements of the house, titles or respected voice in communal matters. In turn, this bestowed authority instantiated the regional network of acquisition of the local community. During the latest LBK, formal gatherings and the socially meaningful exchange of title and status occurring at these were concentrated in the newly constructed enclosures at Langweiler 8 and Langweiler 9. These features reinforced the integration and authority of these regional connections to the local inhabitants.

Seen as a segmentary society, lineages played a significant role in legitimising authority, social inequalities and wider social contacts. At the local scale, the presence of the lineage is witnessed in the clustered households of related households and their localised material practices. Within the Merzbach valley, this is best illustrated by the loose collection of houses (or settlements) spread along the slopes of the river. The decision to build one's house within one area or another may have represented an unambiguous acceptance or rejection of lineage membership and its attendant obligations. Similarly, the 'gathering' of the dead into lineage groups within the local burial ground reinforced the continuity of the lineage and reminded local members of the consequences of exclusion. The possession of prestige items, such as amphibolite adzes or shell ornaments, may have transferred the legitimacy of the lineage to local prominent figures, allowing them to enact the collective agency of the lineage as a

local level. Other local instances of the 'global' lineage may not be (directly) visible in the archaeological record—for example, title, emblems, and myths—but may be reflected in the conditions that supported local inequalities: access to preferred fields, suitable marriage partners and regional/supra-regional materials.

Social meshworks extended far beyond the physical confines of settlements and settlement clusters. The presence of exotic objects and materials inspired thoughts of a world beyond the known territories of everyday life and called to mind the few individuals in the local community who may have visited these places (through life-time mobility, procurement/hunting expeditions or indirect kinship ties). Situated on the western fringe of the LBK, the meshworks of the Rhine-Meuse area incorporated peoples who followed a different way of life: Late Mesolithic hunter-gatherers and pottery-making groups who lived beyond the loess regions remain stubbornly enigmatic (although more is certainly known about the foraging groups residing in the river districts north of the loess zone; Louwe Kooijmans 1993; 2003; 2007). The juxtaposition of these different cultural systems brought into focus what it meant to be 'LBK' and may have created in this time and place a shared sense of 'LBK-ness'. This 'global' collective was presenced in the here and now through routinised practices in architecture, settlement, craft production and subsistence.

These 'things' did not just reference the presence and authority of different scales of social interaction within the LBK, but actively participated in the emergence and durability of these social collectives. As meshworks, the households, settlement communities, kinship groups and other socially recognised social categories found within the LBK were performative, continuously made and re-made through the mutual interaction of human 'actors' as well as through their use, production and re-

production of different non-human 'actants' (such as objects, materials, stories and emblems). For example, kin relations were created through the sharing of food and other substances; without these 'things', there is no 'mutuality of being' and no kinship. Similarly, the household as meshwork was as dependent on longhouses, building plots, pottery motifs and other less tangible things (such as kinship ties) in additional to the daily interaction of human beings within the course of their daily activities. Whether this participation should be seen in the same light as the conscious actions of humans has been extensively debated (e.g. Dobres and Robb 2000; Tilley 2004; Webmoor and Witmore 2008; Olsen 2010). Regardless, it is the mutual interaction of these heterogeneous elements of the meshwork which continuously re-formulates the meshwork and gives breath to its emergent properties. Thus, these non-human 'actants' contributed to the creation of social collectives as various scales and, through that, instantiated these collectives in the local settings of practical engagement.

8.4 Diversity in uniformity: meshworks in action

Recent developments in archaeological thinking—such as heterarchy, complex systems and the meshwork perspectives utilised here—emphasise the myriad of relationships that provide a framework for what is appropriate and inappropriate behaviour (Kohring and Wynne-Jones 2007). As highlighted above, many of these structures come into play on the local stage of action, leading to what Souvatzi (2007: 51) refers to as 'transformative tensions'. As collective meshworks, individuals and, through them, collectives can call upon a cloud of connections when determining which strategies to follow. This ambiguity or contextual choice permits creativity and, ultimately, change within the system. Thus, the complex, inter-connective meshworks that characterise social interaction serve as the fuel for diversity and change. Can these

theoretically informed interpretations help us to better understand the nature of diversity within the Early Neolithic of Central Europe?

As highlighted in the case studies, multiple scales of meshwork and social identity operated side-by-side within LBK communities, and this social 'overlap' provided opportunities for the local residents. For example, I attributed much of the variability seen in settlement layout in the Merzbach valley to the competing influence of household and local clan-based communities. Simultaneously, the potential fluidity of these social meshworks allowed local inhabitants to build new social allegiances, which would be reflected in their use of material culture and practices.

Previous research into the LBK has tended to emphasise certain social institutions, such as the descent system, and regional pottery groups. Whilst there may be a tendency to treat these structures as clearly defined cultural norms—that is to say, the widely accepted way to live a good life—my analysis in the previous case studies demonstrates that these collective entities can be seen as social meshworks, emerging from the mutual interaction of heterogeneous elements. Rather than the unconscious repetition of specific (and essentialist) cultural forms, the recurring presence of these social collectives highlights the repeated performance of different ways of relating within the embedded contexts of pre-existing social meshworks. Formed and re-formed through these interactions, social meshworks are likewise fluid. Membership of these meshworks are not predetermined, but defined (or performed) through interaction within other constituent elements within the meshwork (as discussed in terms of kinship relations above). As such, the form, organisation and membership of these popular collectives were contingent, and the variability expressed within them represents the expression of this contingency.

As a case in point, the seemingly simple decision as to where to build a new longhouse within the LBK provides an excellent example of how these social meshworks provide the conditions in which this diversity materialised within the broad bounds of uniform practices. Labour estimates suggest that house construction was a labour-intensive project requiring the cooperation of others beyond the immediate household (Startin 1978). In order to build even the smallest longhouses, a household would need to pool together the resources of neighbouring households, other nearby settlements and lineage connections. Each of these would bring along their own sense of the appropriate form, size and location for the new house. Decision-making was likely based on general consensus; although older, more respected persons may have held greater sway in the group (Behrens 1975; van de Velde 1986). In garnering this cooperation, wider clan members may be less inclined to offer support to dynastic households who signalled their independence through tightly clustered settlement rows. Incoming families may have attempted to curry favour with and support from influential local families or clan/lineage groups by building their new longhouse near to theirs. Families or neighbours in conflict may have attempted to break their shared social ties (with each other and past generations) by relocating to new parts of the settlement or abandoning the settlement altogether. Thus, we see the desire to create (or abandon) social ties and relations underlying where to build a house.

In each of these situations, the future residents had several options available to them: to site the new house adjacent to pre-existing households as a means of establishing/continuing dynastic households, to site it near related households as a visual signal of their connection/co-operation, to re-locate to another part of the settlement to break their connection with past generations or conflicting family members, or to abandon the settlement altogether and develop new ties elsewhere. The

resulting location of the longhouse would thus bring its residents and their wider interpersonal networks into interaction with others in the local community, merging new relations and abandoning former ties. Local household, kinship and interpersonal meshworks would evolve and change in tandem as a result of these new engagements, creating new opportunities and obligations. At the same time, the residents themselves (as social meshworks) would be altered as they incorporated new identities through these relations.

The physical traces of these individual moments of choice, strategy and luck form the basis of the diverse archaeological record that survives to this day. Though based on a shared way of doing things, the practical experiences of implementing these common practices in a dynamic and evolving social landscape can be said to drive the 'diversity' within the LBK's 'uniformity'. What then drove this uniformity?

8.5   Cultural cohesion and the meshwork

The purpose of this thesis was to reimagine the LBK communities of the Early Neolithic as a complex web of connections linking people, places and things over spatial and temporal distances—in other words, as interconnected meshworks. The resulting multi-layered relations provided space to negotiate power, meaning and identities as well as fuelling short- and long-term change. Although necessarily selective in their scope, the case studies have traced many of the overlapping meshworks and hierarchies that constituted LBK society or, more appropriately, that served to connect dispersed communities practising similar (LBK) ways of life. Returning to the theme of cultural totalities, can our meshwork approach offer any insights into how to interpret the large-scale material patterns associated with the LBK

and archaeological cultures in general? Although extending beyond the scope of this thesis, I would like to hazard a few preliminary thoughts in answer to this question.

The concept of the archaeological culture remains largely under-theorised and taken-for-granted (Whittle 2003: 15; Roberts and Vander Linden 2011). Distinct from but related to anthropological and sociological 'cultures', these complexes of shared material traits are generally interpreted as tracing a broadly defined social collective with shared value systems encoded into the routines of everyday life. The term 'culture' is well travelled within the social sciences, undergoing many transformations in reaction to changing paradigms and research agendas (Kuper 1999; Sahlins 1999). Initially called in to describe the uniquely different ways of life practiced by communities around the globe, the anthropological (or ethnographic) concept of culture encompassed the collective norms and values practiced by collective groups. The nature of this culture—as social learning, symbolic engagement or political ideology—continues to be debated to this day. In contrast to anthropology, the archaeological concept of 'culture' is tied to the material practices of everyday life as traced in the surviving objects. The shared use of such materiality is implicitly linked to the shared way of life or cultural identity as described in ethnographic accounts (without necessarily implying political unity; Whittle 1996: 116).[56]

Ongoing research in the LBK, however, has fragmented the cultural 'totality' of the LBK. On one hand, the accepted uniformity of the twentieth century has been increasingly replaced with ever more detailed studies of diversity within LBK communities at all scales and in all aspects of life. The cultural hegemony of LBK

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[56] Earlier interpretations of archaeological cultures marking a distinct 'people' or 'ethnicity' have been largely discredited (Jones 1997).

complex has become replaced by a more contingent assortment of possibilities and eventualities. At the same time, the demographic makeup of LBK communities may have been significantly more diverse than originally believed (although recent aDNA studies tell a different story; Sykes 1999; Bentley *et al.* 2003a; Haak *et al.* 2005, 2010; Bramanti *et al.* 2009; Brandt *et al.* 2014a; 2014b). Increased interest in Late/Terminal Mesolithic groups has resulted in calls for 'multi-traditional' communities within the LBK cultural sphere, incorporating both farmers and hunter-gatherers in some capacity, especially along the LBK's western fringe (Whittle 1996: 208–10; 2003: 142–3; Gronenborn 2007; Zvelebil and Pettitt 2008; 2013; Crombé 2009: 485). Certainly, this thesis argues for the inclusion of these groups within the regional meshworks of the Rhine-Meuse area. Variations within the earliest (*älteste*) and early (*ältere*/Flomborn) communities also suggest that these apparent chronological phases may represent two distinct social traditions within the early Neolithic communities of central Europe (Pavlů 2005). The cultural landscape of LBK communities appears to have been significantly more complex than originally presented.

This cultural 'fuzziness' is a characteristic of observed cultural groups. Despite common misconceptions, anthropological cultures were never intended to be viewed as monolithic and homogenous (Sahlins 1999: 405) but, rather, represented a sort of public discourse involving many disparate elements (Kuper 1999: 246–7). As a collective, the 'LBK' community remains most elusive. Given its scale, the LBK as a way of life is unlikely to represent a single, cultural group. Rather, I would argue that multiple cultural groups, ethnicities and even tribal affiliations operated within the inter-connected communities of the LBK meshwork, varying in scale and permeability depending on local and regional context. As highlighted with ethnicity (Moerman

1965; Barth 1969; Jones 1997), these social identities were largely self-defining, variable and unlikely to be traced simplistically in the material culture.

Returning to the theme of meshworks and identity, I affirm that meshworks are descriptive, tracing the connections that bring meaning and context to everyday activities. In themselves, they do not define socially meaningful groups or institutions, although such entities do emerge from the interaction and connective practices within these meshworks. As described above, LBK communities were embedded in complex webs that included people, places and objects not directly associated with LBK ways of doing things. This does not discount the social significance of sharing similar cultural practices, but it does emphasise that 'cultural' identities, where meaningful, represented yet another scale of social interaction within the social meshworks of LBK communities.

8.6   Final comments

To summarise, the meshwork has proved a useful framework to describe the dynamic social structures which emerged from the interaction of LBK persons (and 'things') operating on various scales. These social collectives were not preordained, carbon copies of one another but, rather, represented the expression of shared social processes in contingent environments. The diversity witnessed at every scale in the LBK is a testament to the variable ways in which these prehistoric communities negotiated the tensions and opportunities offered within these overlapping meshworks. As such, this exercise in meshwork-thinking has enhanced our understanding of social relations within the LBK and the multi-scalar complexities inherent within their seemingly simple social structures.

9 Conclusions

This thesis offers another example of the value of the meshwork in understanding social integration, cultural homogeneity and change within a prehistoric context. Although not deductive, the methodology is data-driven and offers the advantage of engaging with multiple categories of data and scales at the same time. Although far from comprehensive, I believe that this research has achieved its goals. It demonstrates the role that dynamic assemblages or meshworks played in creating an environment where both shared and divergent social practices were acceptable and describes how these differences reflected the variable performance of different scales of identity. As such, it extends the successes of earlier meshwork studies and offers new avenues of research.

9.1 Aims re-considered

The goal of this thesis was to explore the different scales of sociality (or social interaction) found within the LBK through the lens of a broadly meshwork-based perspective. At its heart, I sought to evaluate the hypotheses that people in the LBK social world recognised multiple levels of community; that these different scales of social interaction overlapped, resulting in negotiation and tension; and that the interplay of these different scales of interaction could help explain the degree of uniformity and diversity witnessed in the LBK. In order to achieve this, this thesis recast LBK society as a series of inter-connected meshworks operating on different scales. Inspired by various relational models (including, most notably, Latour, Ingold and DeLanda), these meshworks were heterogeneous collectives that emerged from the shared interaction of their constituent members. They were fragile, needing constant maintenance or reification in materials and practices in order to survive.

Over the course of the three case studies, my research demonstrates how significant social structures within the LBK are better represented as dynamic meshworks instead of the clearly defined, impermeable social building blocks so often relied on. Rather than bounded wholes, the households of the LBK were dynamic and fluid, connecting 'core' family members to the past, neighbours, kin and strangers through personal experiences of movement, interaction and the stabilisation of 'things'. Larger-scaled residential groups (such as wards, rows, settlements and clusters) are characterised as heterogeneous assemblages of households, 'Houses', clan groups, herds and fields. Cooperative projects such as shared fields, ditches, cemeteries, and economic interdependencies highlight the emergent properties of such collectives even if they lacked a socially significant shared identity. Kinship structures, such as descent lineages and residence rules, were similarly fluid, representing the dynamic interaction of social obligations, personal preference and historical contingency. Furthermore, these meshworks were self-organising, with larger-scaled meshworks emerging from the collective interaction of households, lineages, settlements and materials on a regional and supra-regional scale.

The thesis has also demonstrated how different ways and scales of 'relating' operated in tandem within the LBK and provided detailed examples of how variations in the material, settlement, burial and other practices could be linked to the negotiation of these different scales of 'being'. As such, it revealed how the mesh-iness of social relations within the LBK offered an environment in which people could affect their social landscape by redefining their relations with others. Kinship ties could be created or abandoned. Unknown strangers could be incorporated into the shared community through the sharing of food, the exchange of small gifts or inter-marriage. Social bonds of obligations and personal connection were established and maintained through co-

operative labour in and beyond the residential settlement. These possibilities were not endless nor unrestricted, but the social fluidity created by these opportunities is clearly reflected in the variable expression of shared practices at all scales of the LBK.

In doing so, this thesis sits alongside other studies (e.g. Bickle and Whittle 2013a) which consider the conditions in which diversity was possible within the LBK. This issue of diversity permeates contemporary LBK research. The early acceptance of a monolithic LBK culture or tradition has been replaced by a widespread recognition of variation within all aspects and at all scales of LBK cultural life. This research, therefore, rejects the simplistic culture-historical association between heterogeneous practices and sub-groups within LBK communities and explains these variations in terms of individual and collective agencies operating within the potentially open and fluid meshworks of ever-changing social relations. With the help of meshwork-thinking, it presents a far more nuanced and multi-scalar model of social interaction within the diverse communities of the LBK.

On a more concrete level, this research also offers new perspectives on the applicability and cultural foundations of influential models such as the *Hofplatz*, central places and interaction spheres. Rather than representing cultural norms universally practised throughout the LBK, these repeated patterns of settlement and interaction were found to be historically contingent. Emerging from the repetition of shared social processes within variable social meshworks, they represent the dominance of certain scales of identities over others. Shifting our focus towards the underlying social processes associated with material and social practices may offer a more effective means of understanding cultural cohesion whilst maintaining a role for individual agency.

Focused largely on the mutual interactions of human actors (whilst acknowledging the role of non-human actants), this study sits on the periphery of other studies which tackle relational ontologies more directly (e.g. Herva 2009; Fowler 2013; among many others). Despite this, this study serves as yet another example of how archaeology should continue to challenge human-centric models when seeking to understand the lived experience of prehistoric communities. The 'social' relationships with which we describe and structure past societies do not encompass the entirety of mutual interactions from which these social collectives emerged. Looking forward, certainly more could be done to integrate the human focus of traditional models of social interaction and the more conceptual relational models currently being experimented with.

9.2   Meshwork-thinking: an assessment

Loosely defined, the meshwork approach adopted by this research integrated the ontological concept of continuous growth and 'becoming' with more traditional network concepts. I have argued that all social entities are composite, emerging from the mutual interaction of their constituent parts. Such meshworks are dynamic, unbounded and in possession of emergent properties and capacities. As such, they reflect the fluid constitution of social interaction within the real world. In contrast, meshwork-thinking offers little in terms of prescribed methodology. As contingent entities, these social meshworks emerge as singularities, not as repeated copies. Descriptive and historical, the meshwork encompasses the interaction and subsequent conjoined growth and development that is shared by participants.

Despite this rather woolly definition, the concept of the meshwork served as a useful tool to envision the social connections and relations which embodied social interaction

in the LBK. In contrast to more conventional network approaches, this broad methodology treats social collectives as entities in their own right, subject to growth, development and change over time. These collectives are not defined by their participant members but do evolve as a result of the ongoing interactions from which they emerge. Thus, individual actors maintain their own agency, whilst contributing to the constitution of larger-scaled social entities. Envisioned as such, meshwork-thinking provides a more realistic view of prehistoric life as potentially fluid, dynamic, and permeable. In addition, it brings into focus the entanglement of human and non-human actors within the lived constitution of social reality.

Whilst the advantages of this meshwork approach are clear, significant limitations or drawbacks remain. As noted before, meshwork-thinking offers a means of tracing connections and interactions; it does not, in itself, identify socially recognised labels of identity or group affiliations. Also, these relational models do not engage with relations of power or domination within these meshworks, highlighted by the notable lack of discussion within this thesis of social hierarchies within the LBK. Finally, as dynamic and unbounded entities, it is not possible to quantify and qualify the nature or structure of these meshworks; as a result, social meshworks are not comparable over space or over time.

In short, meshwork-thinking is a descriptive tool which provides the researcher with a vocabulary and broad methodology for tracing the multitude of connections which link heterogeneous components and, through that, give rise to the larger-scaled social collectives which populate society. Within this context, it is, in my view, largely successful.

9.3   Future opportunities

This research offers an encouraging start to a more nuanced understanding of social relations within the Early Neolithic LBK communities of Central Europe. However, much remains left to do.

First, more work is needed to understand the nature of social complexity within the LBK and what impact changes in this complexity had on the nature and intensity of social interaction within the LBK. There remains a tendency to treat social complexity as the emergence of political centralisation and ignore the creative potential of different kinds of people interacting within the course of daily life. As documented in the Aldenhoven Plateau, population growth over time led to increasing differentiation and segmentation within local communities. For example, innovations in pottery designs suggest a greater need for negotiation in social conduct. Research into modern-day political movements as meshworks may help us to better appreciate the tensions emerging within these contexts and, through that, demonstrate the influence of these tensions in creating new ways of interacting and group building within these prehistoric communities.

Secondly, more work is needed on modelling (or considering) large-scale phenomena in the LBK as self-organising patterns or entities that emerge from the interaction of heterogeneous collections of smaller-scale units (i.e. complex adaptive systems; Bentley and Mascher 2001). Whilst the meshwork framework may be more intuitive at the scale of personal interaction, DeLanda argues that smaller-scaled meshworks and hierarchies interact to form large-scaled meshworks. My thesis has argued that LBK-wide belief systems embodied in certain objects and materials and the formal gatherings in which these objects were used linked separate regional meshworks

together into the wider LBK distribution. Historical trends in other regional patterns (such as burial traditions or subsistence practices) demonstrate a complexity in the emergence of these meshworks that has yet to be fully understood.

Finally, we need to return to material studies to reconsider alternatives to the culture historical approach that continues to dominate LBK studies. Group definition relies repeatedly on the shared use of similar materials and stylistics traits at all scales of interaction. It is well time for this implicit assumption to be questioned within the LBK context. The strategic use of material culture in different circumstances helped people to negotiate the complex web of relationships from which LBK society coalesced. Through meshwork-thinking, we can begin to unravel these different contexts and unpick the variable use of different 'things' (and their agencies) in the maintenance and establishment of LBK groups as many scales.

Although reliable local chronologies remain problematic within the LBK, the growing numbers of large-scale excavations provide a powerful and challenging dataset for exploring these issues. The relational meshwork model espoused in this thesis can provide an important complement to more 'traditional' archaeological approaches favoured by many within LBK studies, blurring social boundaries and rooting social phenomena in the daily interaction of people, places and objects. I hope that this line of research continues, providing colour, definition and dynamism to the 'simple' communities of the LBK.

A   House generation chronologies: a critique and way forward

As part of the SAP project centred on the large-scale excavations in the middle Merzbach in the 1970s, Stehli developed a series of assumptions and methodologies (based in part on the *Hofplatz* model) which allowed him to advance detailed local chronologies at the fine temporal scale of 25–30 years (Stehli 1982; 1994; Boelicke *et al.* 1988b). These so-called 'house generations', based on the repeated abandonment and construction of LBK longhouses, proved an invaluable tool for narrating settlement development and exploring the nature of contemporary and diachronic settlement. With the help of multivariate statistical modelling and some inductive reasoning, features such as house plans, pits and ditch systems

Table A-1: Sites dated using Stehli's 15-phase chronological framework

Sites	Source
Merzbach valley	Stehli 1994
Hambacher Forst cluster	Cladders 1997; Hohmeyer 1997
Erkelenz-Kückhoven	Koschik 2004
Königshoven cluster	Claßen 2006
Schlangengraben valley	Krahn 2006
Altdorf valley	Clare *et al.* 2014

could be attributed to specific House Generations (HG, ranging from I to XV) within Stehli's initial 15-phase temporal framework[57]. This approach to dating has been widely used within the lower Rhineland (Table A-1).

Bound intrinsically with the *Hofplatz* model, this approach is not without its critics (e.g. Rück 2007; 2009; Petrasch 2012; *contra* Zimmermann 2012). Within this context, how can the local chronologies established by Stehli and others be reliably used? The following section revisits how the concept of the 'house generation' emerged as a methodology for establishing local chronologies, discusses the inherent

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[57] Strien (2005: Table 2.3) later extends the Rhineland house generation scale to "XVI"

uncertainties found within this approach and proposes a restricted use of the local chronologies so established.

A.1 The evolution of the 'house generation'

The *Hofplatz* model emerged out of the mid-twentieth century debate about the nature of LBK settlement. The accepted view at that time presumed that settlements were relatively short-lived and were relocated periodically due to falling crop productivity and population pressures (Buttler and Haberey 1936: 164; Sangmeister 1951; Soudský 1966: 103; critiqued in Tringham 1971). Sites such as Köln-Lindenthal and Bylany were seen as the cumulative product of multiple phases of abandonment and re-occupation. Modderman (1970) later challenged these assumptions and argued that sites such as Elsloo were settled permanently. Responding to this research agenda, the "Settlement Archaeology of the Aldenhoven Plateau in the Rhineland" (SAP) project[58] aimed to better understand the settlement history of the Aldenhoven Plateau region, focusing particularly on the issue of settlement continuity. Key to achieving this goal was the development of local chronologies.

The initial excavations at Langweiler 2 and Langweiler 9 in the Merzbach valley (1971–72) demonstrated that finds were not distributed evenly across the site but were concentrated into discrete areas that were separated by gaps with relatively few finds (Figure A-1). Settlement phasing based on pottery typology and manual seriation of band types suggested that individual sequences of up to six houses could be found on each of these plots (Farruggia *et al.* 1973: 166–9; Kuper *et al.* 1977: 307–9); however,

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[58] Directed by the *Institute für Ur- und Frühgeschichte* at Köln University, 1971–81
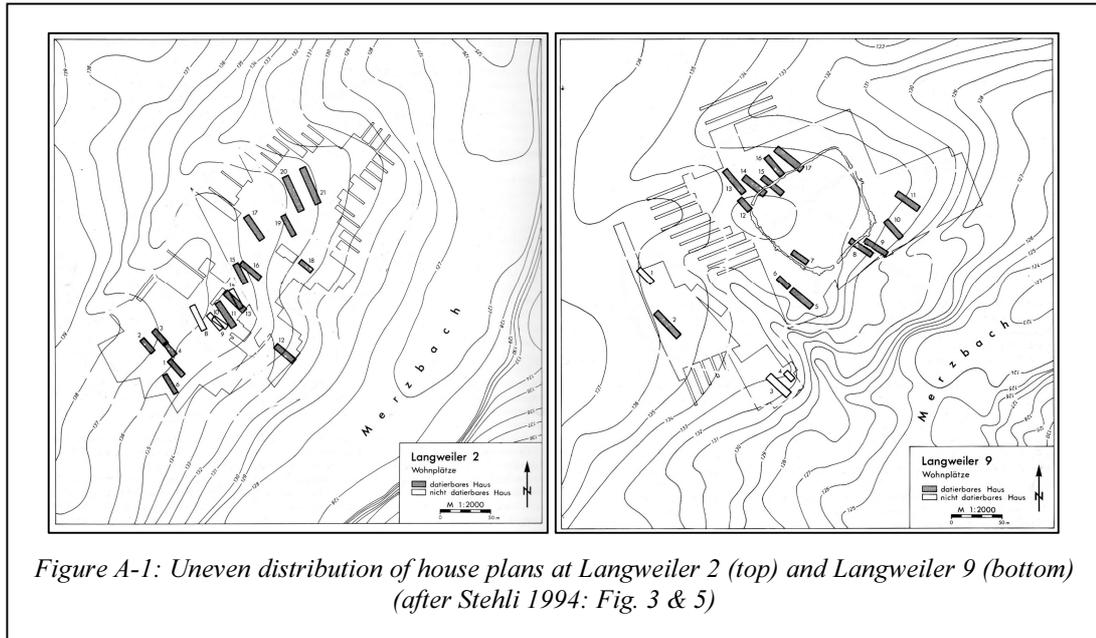
Figure A-1: Uneven distribution of house plans at Langweiler 2 (top) and Langweiler 9 (bottom) (after Stehli 1994: Fig. 3 & 5)

these chronologies were limited to three or four broad temporal phases and lacked any detailed narrative.

Building on his work at Langweiler 9, Stehli developed a new approach to pottery seriation based on correspondence analysis (Kuper *et al.* 1977: 113–21; Stehli 1982). This multivariate technique condensed the complex associations found between pottery traits, such as band type and rim decoration, into numerical indices (called eigenvectors). The first eigenvector was treated as a relative chronological index with which to 'date' individual assemblages (provided the assemblage was sufficiently large and varied enough). Regrettably, few artefacts were found in the longhouses' ground plans, preventing the direct dating of these features. Instead, these structures were 'dated' through the household waste deposited in the pits surrounding the longhouse. The close proximity of different house plans to one another in the Merzbach (and other) sites made it difficult to directly observe the distribution of contemporary pits around individual longhouses. Earlier analysis had established that the elongated clay borrow pits (German: *Längsgruben*) situated immediately adjacent

to the house could be securely linked to the occupation of the house; however, these pits tended to be finds-poor in the Merzbach (Boelicke 1988: 334). There was also a tendency at Langweiler 9 for one or more storage pits to be found in an area 8–16 m from the presumed entrance at the narrow corridor between the central and rear sections of the house (Kuper *et al.* 1977: 308). A more detailed analysis of artefact re-fits at Langweiler 8 further identified the deposition of contemporary materials in multiple pits to the east, west and north of the longhouse (Drew 1988). Based on these observations, Boelicke proposed that the house's domestic activities were concentrated within a 25 m radius of the longhouse, or the *Hofplatz* (which is translated into English as 'farm yard'). This precise definition for the *Hofplatz* was envisioned as a heuristic tool; the extent of domestic pits around individual house plans would vary according to local practices and individual circumstances (Boelicke *et al.* 1988b: 900)[59].
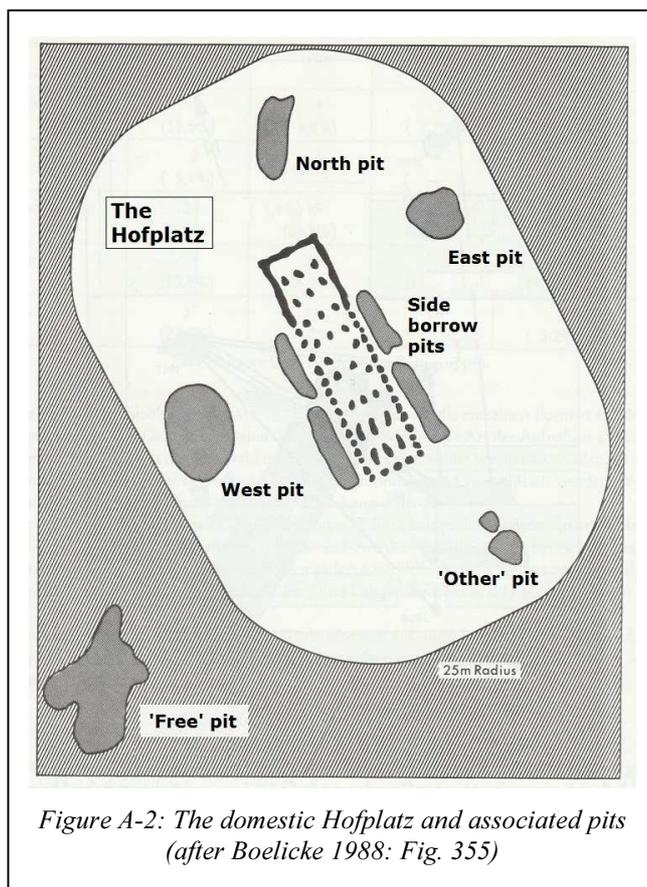
Figure A-2: The domestic Hofplatz and associated pits (after Boelicke 1988: Fig. 355)

The acceptance of a clearly defined *Hofplatz* allowed researchers to associate the contents of pits with nearby house plans, creating a comparable assemblage of

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[59] Not all pits fell within the 'domestic' zone of the *Hofplatz*, and Boelicke defined such features are 'free' pits. Given their distance from nearby longhouses, Boelicke felt that these 'free' pits were associated with more communal activities (Boelicke 1982: 20). Despite this distinction, the contents and form of the pits found within and outside of *Hofplätze* are qualitatively and quantitatively similar (Boelicke 1988: 342–50).

artefacts and other finds for the house as an archaeological feature (Figure A-2). The contents of any contemporary pits falling inside this zone could be associated with the occupation of that house. Thus, house plans could be 'dated' based on the (average) chronological indices (or eigenvectors) of the pottery assemblages found within these household pits. Within this task, the clay borrow pits adjacent to the house were given precedence along with any neighbouring pits from a similar time period. If no date could be established through a clay borrow pit, the house plan could be ceramically dated through the contents of pits found in the area alongside its long western and eastern walls. Dating house plans based solely on pits found in any other location was not justified based on Boelicke's analysis (Boelicke 1982: 18).

The observed sequences of houses proposed at Langweiler 2 and Langweiler 9 were accepted as characteristic of settlement throughout the Merzbach valley (Boelicke *et al.* 1988b; Lüning 1982a). This picture of houses and farmsteads was formalised in the *Wohnplatz* (which is translated into English as 'farmstead'), a discrete area of settlement on which a continuous succession of houses was built one after the other. The wider *Wohnplatz* was interpreted as the economic activity zone of the domestic longhouse and included the house, associated pits, facilities such as ovens and possibly small garden plots (Kuper *et al.* 1977; Lüning 1982a: 25; Stehli 1982: 274). Each settlement consisted of multiple *Wohnplätze*, which were separated by locally determined minimum distances. As a rule, only one longhouse was occupied on the *Wohnplatz* at a time (although exceptions to this 'rule' were accepted if the distance between the houses were large enough). Periodically, this longhouse would be replaced by another building built near to its predecessor, presumably to make use of existing facilities (Boelicke *et al.* 1988b: 900). Although initially defined as the representation of a farmstead at a particular point in time, the term *Hofplatz* tends to

be applied today to both the synchronic (*Hofplatz*) and diachronic (*Wohnplatz*) representation of the longhouse and its environs. This thesis follows this common usage.

These techniques only provided a relative scale for dating; cut-off points along this axis had to be adopted in order to convert this relative scale into discrete occupational phases. This was a reflexive decision as the adopted cut-off points influenced the number of contemporary houses and the size of the average *Hofplatz* (Stehli 1982: 276). The greater the phase's length, the greater the number of contemporary houses and *Hofplätze* and the smaller the distance between contemporary houses. Integrating the individual sequences of houses on each *Hofplatz* through the relative dates established in his correspondence analysis, Stehli constructed a 15-phase chronology for the Merzbach valley based on the generational replacement of longhouses (Boelicke *et al.* 1988b; Stehli 1989b; 1994). The settled *Hofplätze* were occupied by a single longhouse during each phase, or house generation. Given that the Merzbach cluster represented the entire Lower Rhine occupation of circa 450 years (5300–4850 cal. BC), each house generation represented a period of roughly 25–30 years (Stehli 1982: 276; 1989b: 75).

Despite this methodology, over a third of the house plans in the Merzbach could not be 'dated', either because no household pits could be associated with them or because the inventories of these pits were too sparse to establish a reliable chronological index. These houses were allocated to gaps within the house sequences based on the following *a priori* principles (Boelicke *et al.* 1988b: 900; recently reconfirmed in Zimmermann 2012). Firstly, settlement on each *Hofplatz* was treated as continuous and 'closed'—that is to say, each house generation should be represented by an

occupied longhouse throughout the *Hofplatz*'s sequence. Each house constructed between the first and last building in the sequence should have a defined predecessor and successor longhouse. Houses which could not be dated 'ceramically' could be allocated to gaps in the sequence to ensure continuity of settlement. In addition, the presence of now-eroded houses could be assumed in some places through the presence of unassigned dated pits. Secondly, contemporary houses must be separated by a certain minimum distance, representing the domestic activity zone of the household. As a heuristic tool, Boelicke *et al.* (1988b) defined the maximum extension of the house's domestic activity zone as an oval with a 25 m radius encircling the longhouse and, thus, suggested a minimum distance of 50 m between contemporary houses. Thirdly, it was argued that the *Hofplatz* should be a relatively closed group spatially since successive houses were constructed within a certain proximity of their predecessors in order to continue to use local resources and facilities (such as fields, ovens, storage pits, and so on). Ideally, this would result in clearly delimited groups of houses and pits in the archaeological record, although the repeated relocation of successive houses may have also resulted in the gradual shifting of the *Hofplatz*, resulting in cumulative remains of different *Hofplätze* merging together over time. Finally, each house should typically be replaced by a single house only. This generalisation was based on the presumed existence of such sequences at Laurenzberg 7 and Langweiler 9. New *Hofplätze* could be established through filiation where an existing household establishes a new and distinct household. The reasons for such 'budding off' could have varied from the successful establishment of multiple sons in different houses (Petrasch 2012) to the division of the household following a personal conflict (Boelicke *et al.* 1988b).

Relying on these assumptions and methodologies, Stehli (1989b; 1994) allocated all house plans identified within the middle Merzbach valley to specific house generations, creating a local narrative of settlement based on closed sequences of generationally replaced longhouses (Table A-2).

Table A-2: Allocation of longhouses to Stehli's 15-phase chronology for the middle Merzbach (based on Boelicke et al. 1988b: Insert 30; Stehli 1994: Insert 7). Hatched: temporary hiatus.

	Flomborn							Middle LBK			Late LBK				
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV
Langweiler 8															
Farmstead 1		40	64	43	107	54	39	42	55	38	44				
Farmstead 2	91	56	83	68	86	70,74	65,71	69							
Farmstead 3	110	49	67	50	51	46,108	48,58	57	59	80					
Farmstead 4	75	63	53	61	81	76	52	60	62						
Farmstead 5		73	95	79	85	77	82	78							
Farmstead 6		102	98	101	99	100	103								
Farmstead 7			47	31	22	34	94	32	36	37	21	35	33	45	
Farmstead 8							27	23	26	28	25	29	30	24	
Farmstead 9							6	2	3	1	5	88	4		
Farmstead 10										8	10	7	9	87	
Farmstead 11								11	14	12	13	16,66	15		
Farmstead 12											19	18	17	20	
Langweiler 9															
Farmstead 1					1	2									
Farmstead 2					5	3	-	-	-	7	6	8			
Farmstead 3					13	16	-	-	12	17	15	14			
Farmstead 4										10	9	11			
Langweiler 16															
Farmstead 1					1	2	3								
Langweiler 2															
Farmstead 1						21		-	20						
Farmstead 2						19		-	15	12	-	16	17	18	
Farmstead 3						14		-	8	11	9	13	10		
Farmstead 4										3	2	7	4	6	
Laurenzberg 7															
Farmstead 1						9									
Farmstead 2a						1	2	3	4						
Farmstead 2b										5	6	7	8		
Niedermerz 4															
Farmstead 1											1	4	2	3	
Farmstead 2											5	8	6	7	

A.2   Dealing with imperfect data

A.2.1   Relative dating of pit inventories

The dendrochronological dates determined from the timber-lined wells at Erkelenz-*Kückhoven* demonstrate that the relative chronological indices produced by correspondence analysis offer a robust means of dating material assemblages within the LBK (Lehmann 2004a: 245). The use of multivariate modelling to 'date' assemblages of decorated pottery within individual pits (in relation to one another) is becoming a common feature within LBK research (and beyond). For example, it has been used independently of Stehli's house generation approach within the Neckar valley (Strien 2005) and at the Dutch site of Geleen-*Janskamperveld* (van de Velde 2007b), where the resulting chronological indices is segmented into temporal phases of variable length. As such, this approach to dating remains generally accepted—even by the *Hofplatz* model's critics (Petrasch 2012: 56; Zimmermann 2012).

In general, pit inventories are treated as 'closed' assemblages on domestic waste associated with the occupation of adjacent houses. Stäuble's study of pits at Bruchenbrücken demonstrated that several different modes of infilling could be witnessed at the site—some more immediate than others (Stäuble 1997). He consequently argued that no universal pattern of waste deposition could be established *a priori*. Although these features may not represent closed assemblages *per se*, the infilling period was likely less than the expected house life of 25–30 years and, therefore, their treatment as 'closed' assemblages for dating purposes can be seen as appropriate (Hachem 2000: 159; Zimmermann 2012: 12).

As a broad-brush indicator of time, the modelling may not be able to identify socio-cultural trends in the use of particular pottery designs—for example, quick developing

fads or the resurgence of past forms for specific purposes (Rück 2012). In its defence, multivariate analysis is designed to identify the factors which best encapsulate the variation hidden within the data. Significant trends in the use of pottery beyond chronological development would be captured within the secondary eigenvectors proposed by the model itself (for example, the revival of *älteste* pottery styles within the Flomborn period (Kerig 2010: 479)).

The validity of the model is also dependent on researchers' categorisation of meaningful characteristics, such as particular decorative techniques and ornamentation. Rück (2012) questions whether design motifs can be accurately identified on the surviving pool of small pottery fragments. The general shift within LBK pottery studies is towards ever more discriminating categories or types. Variation at this level may better reflect personal preferences or small-scale group membership rather than broad temporal trends. Overall, there is little reason to doubt the general robustness of the relative chronological scales produced by these statistical methods (Bayliss *et al.* 2013).

A.2.2 Associating pits with longhouses

The association of these dated assemblages with the construction and occupation of neighbouring longhouses is more problematic (Frirdich 1994: 261). Whilst it may be appropriate to treat pit inventories as 'closed' assemblages, the relationship between the debris deposited within these pits and the active occupation of these houses remains less secure. Interpreted as clay borrow pits, the elongated pits running along the long sides of the houses offer the best clues as to when these structures were built and thus occupied (Modderman 1988: 92). In contrast, the assumed association between features within a broad 25m radius of the longhouses seems overly

presumptuous given its reliance on limited evidence from one particular site (Langweiler 9) and the common presence of settlement activity beyond the defined *Hofplatz* itself. For example, of the 170 pits that Stehli dated at Langweiler 8, 55 (32%) were defined as 'free' pits lying outside the domestic zones associated with contemporary houses (i.e. the *Hofplatz*) (Stehli 1994: Insert 30).

The problematic allocation of pits to houses is apparent even in small, single farmstead sites such as Langweiler 16. Consisting of three house plans, Langweiler 16 lies on a small protrusion of land on the west bank of the Merzbach River (Figure A-3). Stehli

Table A-3: Dated featured at Langweiler 16 (based on Stehli 1994: Insert 7)

Phase	Dated features
V	House 1 (Pits 8, 21, 43)
VI	House 2 (Pits 183, 236, 241)
VII	House 3 (Pits 215, 224, 225, 266)
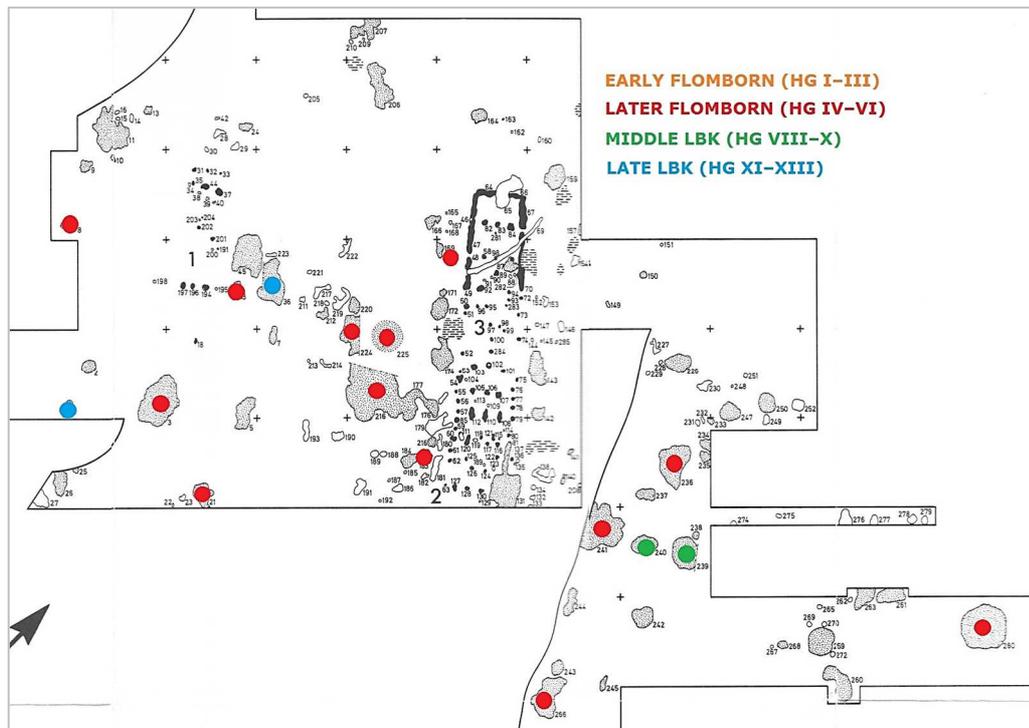
Figure A-3: Ceramically dated pits at Langweiler 16
(based on Boelicke et al. 1994: Insert 1; Stehli 1994: Insert 7)

(1994) was able to date 17 pit inventories through his correspondence analysis, which are equally distributed across the site. Pits dated to the later Flomborn period (HG V & VI) dominate the site, many of which Stehli allocated to the identified house plans (Table A-3). Although lesser in volume, there is also evidence of local settlement activity during the Younger LBK (HG X & XII), which Stehli (1994: 100) interprets as 'free' pits or household pits associated with houses that were either not preserved or lay outside the excavation area. Whilst the relatively poor preservation of House 1 makes its association with the adjacent late LBK pits unlikely, the western Pits 239 and 240 could reflect a middle LBK occupation for House 2 (Stehli 1994: 98–9). Thus, alternative interpretations are possible. This example demonstrates that, even in the smallest of LBK settlements, the association of pit contents to the occupation of individual houses is open to multiple possibilities. As can be imagined, the allocations of pits to houses becomes even more interpretative in the larger and more densely built up sites such as Langweiler 8.

A.2.3 Houses without 'dated' assemblages

As Table A-4 shows, almost one third of the house plans identified in the Merzbach valley could not be dated through neighbouring pits. In the absence of such data, Stehli assigned these houses to gaps within the *Hofplätze* sequences based on the assumption that LBK settlement was characterised universally as the continuous sequence of independent houses, replaced generationally. Recent research, however, has suggested that these assumptions need not always apply or, stating more firmly, may rarely apply.

Table A-4: Measure of dating robustness based on number of type of allocated pits, middle Merzbach valley. Robustness scale: 5 = Based on 2 or more side borrow pits; 4 = Based on 1 side borrow pit plus 1 or more other pits; 3 = Based on 1 side borrow pit only; 2 = Based on 2 or more other pits; 1 = Based on 1 other pit; 0 = No associated pits

	Robustness of allocation						
Site	5	4	3	2	1	0	Total
LW8	2	22	12	11	13	37	97
LW9	-	1	1	4	9	1	16
LW2	3	4	3	3	3	3	19
LB7	3	2	-	3	-	1	9
NM4	1	1	-	2	1	3	8
LB8	-	-	-	-	2	2	4
Total (N)	9	30	16	23	28	47	153
% of Total	5.9%	19.6%	10.5%	15.0%	18.3%	30.7%	100.0%

A.2.3.1 Longhouse use life

Stehli's chronology assumes that each longhouse was only occupied for a single 'house generation' (roughly 25–30 years). This implicit assumption is the consequence of two of the *Hofplatz* model's key tenets—there is a continuous sequence of houses on each farmstead and only one house is occupied at any one time—rather than determined through absolute dating. The lack of what appear to be repairs to these structures supports this idea of a relatively short-lived building (Modderman 1988: 96). Nevertheless, a variety of evidence has been building which suggests that these longhouses could have been occupied for potentially much longer periods. For example, Schmidt *et al.* (2005) reviewed the life expectancy of the wood components of the LBK longhouse based on observed decay rates as well as the preservation of historical buildings and concluded that their oak posts could have stood 100–160 years. Certainly, the examples of reconstructed longhouses (Asparn an der

Zaya, Austria and Oerlinghausen, Germany) have suffered little to no decay on their wooden components (as long as their roofs remained intact) despite being built more than 30 years ago (Rück 2009: 176).

As a counterpoint, it has generally been argued that the use life of these buildings reflected social circumstances rather than physical conditions alone. The repeated construction of houses in the same area has been interpreted as part of the reproduction of the household as a social unit. As noted elsewhere (3.2.1), the dominant view of the LBK household is that of a nuclear family. At first glance, the estimated 25–30 year use life correlates nicely with the average human generation, leading several researchers to suggest that the construction of a new house could be linked to significant events in the lives of its residents—for example, the death of the head of the household or the marriage of the eldest son (Strien 2010a; Petrasch 2012). Shorter durations for individual houses could be linked to extraordinary events, such as illness or fire. On closer inspection, the proposed 25–30 year 'house generation' built into the *Hofplatz* model is unlikely to reflect the experienced social generations within LBK society. Strien (2010a) estimates that males would have married at the relatively young age of 18 years (if permitted to marry at all). Thus, the average span of the LBK generation would typically be shorter than the 'house generation', even when bearing in mind that a younger child may ultimately inherit the right to build a new house. This does not preclude that such events do not correspond to the abandonment or construction of longhouses; rather, it challenges the assertion that all such deaths, births and marriages were met with changes in residence.

Based solely on physical evidence, there is nothing to exclude the possibility that more than one house may have been occupied at one time within each *Hofplatz* or farmstead. The house plans rarely overlap, which allows for, in theory, their mutual inhabitation. Rather than treating this as evidence of co-habitation, this condition has been interpreted as a cultural practice to commemorate past generations, either by abandoning former houses to natural forces (possibly after ritual burning or scavenging the site for reusable construction elements) or culturally marking the area as restricted in some other way (Bradley 1996; Whittle 1996: 166; 2003: 141). Fertilised by the detritus of their past occupants, these abandoned house plots may have been marked by the rapid growth of vegetation and trees, creating undisturbed vegetation zones in the midst of the settlement (Figure A-4; Lüning 2005: 61). Again,
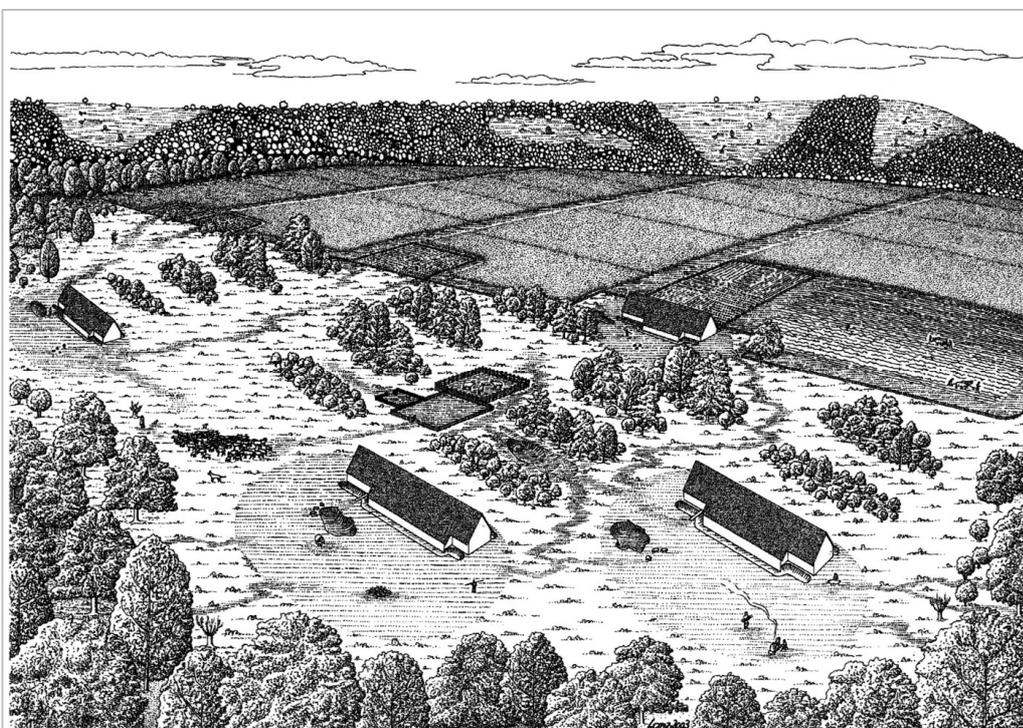
Figure A-4: Artist's reconstruction of LBK site of Schwanfeld, illustrating vegetation growth in abandoned house plots (Lüning 2005: Fig. 2)

these arguments present a dramatic picture of what may have happened to LBK longhouses once abandoned (and its social significance) but do not, in themselves, offer proof of when houses were abandoned.

In addition, there is evidence that more than one longhouse could be occupied at any one time. For example, recent excavation work at the settlement cluster in Targowisko (southern Poland) has identified what appears to be a complex of multiple interlinked structures (Figure A-5), which Czerniak (2013) suggests were shared by a single household. This complex was formed by four closely placed longhouses that all dated to the same settlement phase (IV). The north-western pair (Houses 8 & 9) was connected by a series of fences, creating three or four enclosed areas that may have

Figure A-5: Multi-house "household" at Targowisko (Czerniak 2013: Fig. 8)
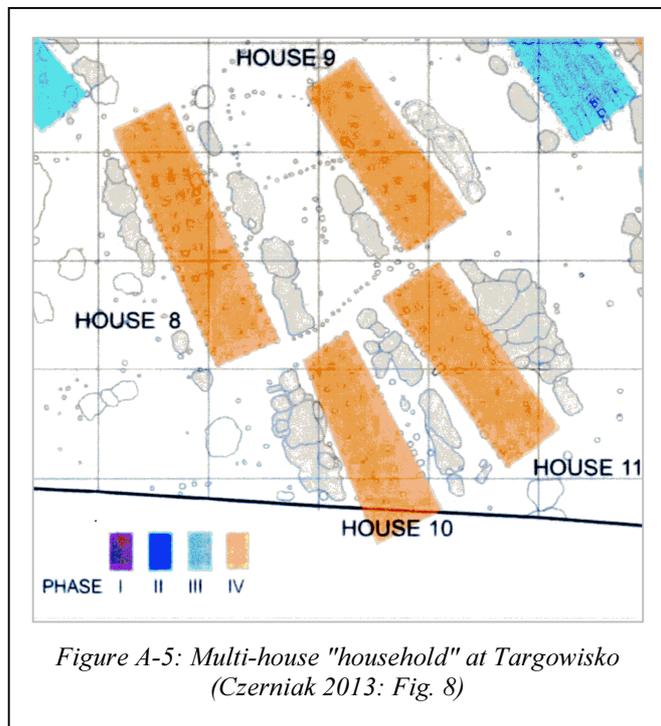
served as shared pens or garden plots. Czerniak interpreted this complex as a single farmstead consisting of multiple mixed-use buildings and a large partitioned area in between them.

Within Stehli's own chronology, multiple houses are allocated to a single house generation on five occasions (see Table A-2 above). Rather than examples of multi-house households, Stehli suggests that the contemporary households were sufficiently

distant from one another to avoid conflict and were built in quick succession of one another (Stehli 1994: 113, 114).

A.2.3.3 Closed house sequences

When formulating his local Merzbach chronology, Stehli (1982; 1989b; 1994) was unable to distinguish between houses from the first five house generations because of the general uniformity of Flomborn pottery; as an alternative, he relied on chronologically sensitive traits in house construction. Further developments in the classification of Flomborn decorative techniques/ornaments by Strien (2005) allowed Münch (2009) to re-assess the Flomborn material and propose a more robust early chronology for various lower Rhineland sites based on pottery seriation (Table A-5). In contrast to Stehli's earlier chronology, Münch's *Hofplatz* sequences are pitted with gaps of up to three generations. Although framing her discussion in terms of family farmsteads and *Hofplätze*, Münch describes the smaller sites in the Merzbach and Schlangengraben valleys as 'single farmsteads' and ignores how the single occupied longhouse appears to move between family farmsteads with each generation.

This evidence is not consistent with the *Hofplatz* model as originally conceived; however, given the uncertainty surrounding the use life of these structures, the presence of house-free gaps within these pigeon-holed chronologies need not be mutually exclusive with continuously settled family plots. Returning to the dated pits themselves, there is clear evidence that these areas were occupied for significant periods of time (Figure A-6). At the same time, large gaps within the preserved data also may indicate breaks in settlement, reminiscent of the temporary hiatuses suggested by Stehli. Informed by other factors such as house construction and the

Table A-5: Flomborn chronologies for the Merzbach valley. Left: Stehli's original chronology (based on Boelicke et al. 1988b: Insert 30; Stehli 1994: Insert 7). Right: Münch's revisions (2009). Hatched: temporary hiatus; Bracketed: proposed houses

	Flomborn							Flomborn						
	I	II	III	IV	V	VI	VII	I	II	III	IV	V	VI	VII
Langweiler 8														
Farmstead 1		40	64	43	107	54	39		40		43	54,107	64	39
Farmstead 2	91	56	83	68	86	70,74	65,71	91	65	71,86	68	74	56	70,83
Farmstead 3	110	49	67	50	51	46,108	48,58	110	67	49	48	46,50	51,58	108
Farmstead 4	75	63	53	61	81	76	52	61	53	75	76	81	52	63
Farmstead 5		73	95	79	85	77	82	73	77	85	79	82	95	
Farmstead 6		102	98	101	99	100	103		102	99	101	103	100	98
Farmstead 7			47	31	22	34	94		47	22	34		94	31
Farmstead 8							27							27
Farmstead 9							6							6
Farmstead 10														
Farmstead 11														
Farmstead 12														
Langweiler 9														
Farmstead 1					1	2			2					1
Farmstead 2					5	3	-			3				5
Farmstead 3					13	16	-			13		16		
Farmstead 4														
Langweiler 16														
Farmstead 1					1	2	3	1	(4)	2	(5)	3		
Langweiler 2														
Farmstead 1							21							
Farmstead 2							19							
Farmstead 3							14		(22)	(23)	19			14
Farmstead 4														
Laurenzberg 7														
Farmstead 1						9			9					
Farmstead 2a					1	2		2		1				
Farmstead 2b														
Niedermerz 4														
Farmstead 1														
Farmstead 2														

broad distribution of dated pits, these allocations may be appropriate. Taken as a whole, these chronological allocations represent no more than informed guesses and should not be used as evidence of small-scale settlement development.
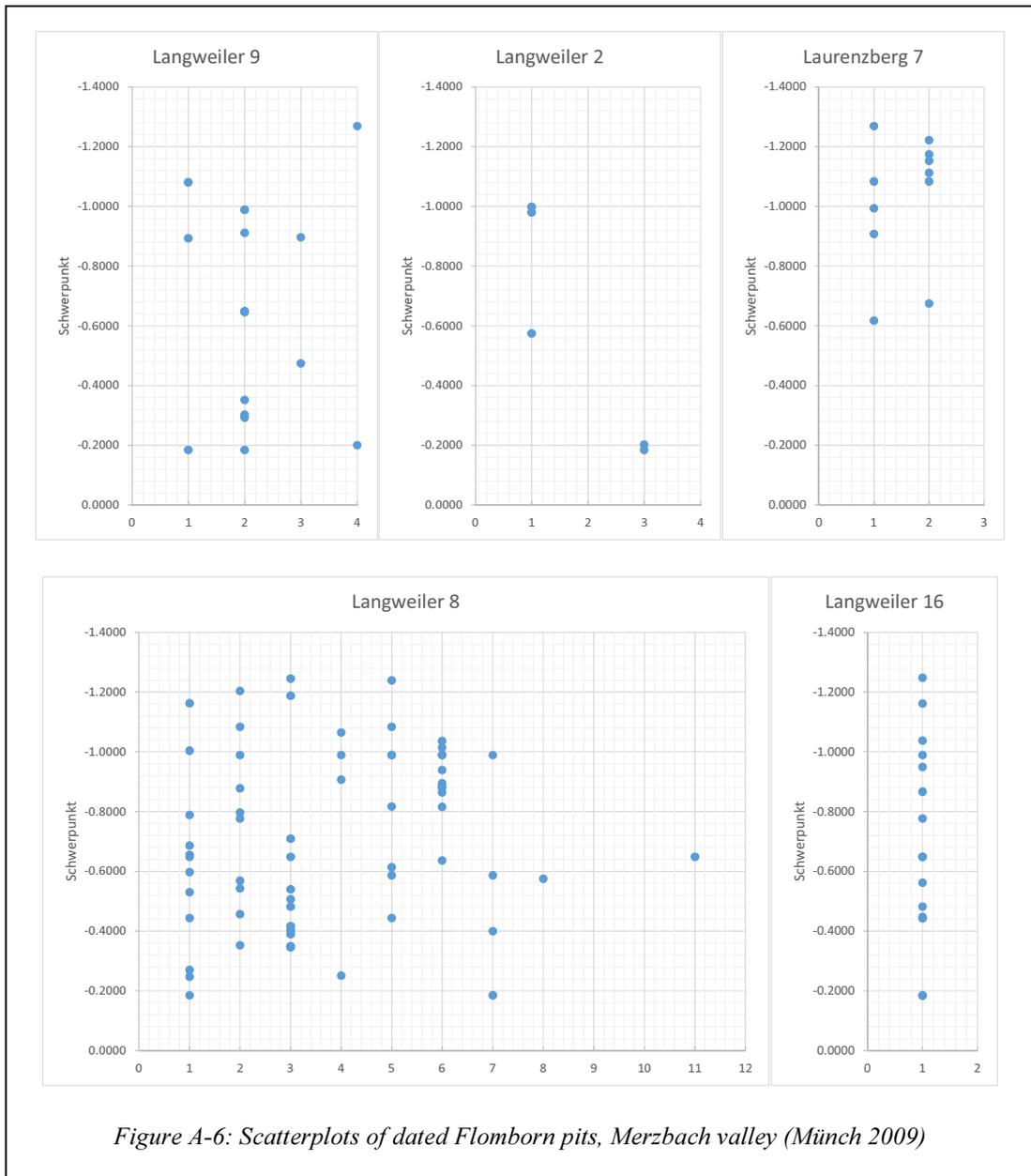
Figure A-6: Scatterplots of dated Flomborn pits, Merzbach valley (Münch 2009)

A.3 Working with house generations: a practical compromise

Rather than reject the local house generation chronologies established in the lower Rhineland, I would argue for their circumspect usage. The chronological scale determined by multivariate modelling offers a robust means of dating features in relative terms, both local and across sites. Moving beyond the simple dichotomy of dated and undated houses, we can think of gauging the general robustness of allocated dates for individual house plans, with the side borrow pits providing a more reliable

indicator of 'date' than the more tenuously linked pits found in the general area of the longhouse or the application of the *Hofplatz* model itself (for undated houses). Returning to the Merzbach valley, this approach suggests that many of the local house sequences proposed for the area are not securely dated. They represent a 'best guess' approach which may reflect historical reality or, equally likely, misrepresent local settlement developments. However, at the larger settlement scale, similarities in the distribution of dated pits and allocated house plans suggest that these house generation models continue to serve as an appropriate proxy for localised growth and occupation.

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