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Lamys Hachem, Caroline Hamon

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Linear Pottery Culture Household Organisation

An Economic Model

LAMYS HACHEM AND CAROLINE HAMON

General aim of the study

HUSBANDRY, HUNTING AND AGRICULTURE are keys to understanding the economic and ideological aspects of the first Neolithic societies. The colonisation process of the first farmers of continental Europe relies heavily on the diffusion of a new model of production and a new structure of society, implying a real balance between farmers, their plant production and their animals. Through faunal remains and grinding tools, it is then possible to examine the organisation of Linear Pottery culture (LBK) societies.

In the Aisne valley (Picardy, France), such an approach is made possible by the quality of the archaeological data. The faunal assemblage is currently the largest in Europe for the LBK, and it is the first time that grinding tools have been studied at the scale of an entire region. Moreover, these artefacts come from clearly defined contexts, dating approximately to the late LBK, around 5100–4900 cal BC. The low density of structures and the short duration of occupation in comparison to other European sites limit the risk of chronological mixtures. The close relationship between the houses and the refuse pits which constitutes the basic household, together with the importance of the corpus of pottery, provide a fine chronological framework. All these are assets when attempting a comprehensive analysis of the organisational processes of the villages and locating them in the regional network.

A combined analysis of animal remains and macrolithic tools, reflecting meat and plant food consumption, was conducted on six multi-phase settlements dating to the late LBK of Paris basin (*Rubané récent du Bassin parisien* or *RRBP* in French: Constantin 1985, Constantin and Ilett 1997). This study enables us to propose a new socio-economic model for LBK settlement organisation, which sheds light on the definition of the household (Coudart 1998, Moddermann 1988, Soudský and Pavlů 1972), the significance of domestic space and its function (Boelicke 1982,

Coudart 2009, Bickle 2013, Pavlů 2013, Hamon *et al.* 2013, Allard *et al.* 2013), and village organisation (Boelicke *et al.* 1988, Whittle 1996, Lenneis 2010, Pavlů 2010, Wolfram *et al.* 2012).

Presentation of the sites in their regional context

The Aisne valley offers the highest density of LBK settlements in the Paris basin. In the context of a pioneer rescue excavation programme developed since the mid-1970s, 80 km of the valley have been studied by a team composed of members of the Paris 1 University and the former ERA 12 of the CNRS, now known as the UMR 8215 *Trajectoires*. Our study was carried out as part of two collective research projects (an *ACR*: Ilett *et al.* 2006; and a *PCR*: Allard and Hamon 2010). The long-term project in the river Aisne valley – 40 years of archaeological fieldwork – has produced very large quantities of data; 20 sites, 90 houses and 80 graves have been discovered and excavated. Such exceptional archaeological documentation has permitted reflection on the relative chronology of these different occupations, the organisation of the territory and the economy of the LBK people in question (Dubouloz *et al.* 2012, Ilett in press).

Most of the LBK sites are located at the bottom of the alluvial valleys, and are less than 1 km from the nearest water source (Figure 9.1). The domestic units are composed of a long partitioned house oriented east–west, together with their lateral pits used as refuse pits. They respond to specific technical, social and identity rules (Coudart 1998, 2009).

Despite the lack of a cemetery in the Aisne valley, a complex system of burial practices has been highlighted in close relation to the house and village organisation (Thevenet 2009). The smallest occupations are composed of two to three contemporary houses, whereas most important sites show several stages of occupation. The best known and most important of these sites is Cuiry-lès-Chaudardes, with more than 33 houses (Figure 9.2; Ilett 2012).

Adopting different scales of analysis, the pattern of the occupations and their changes through time and space can be approached in relation to their immediate environment, raw material procurement strategies and the configuration of local soils. The pattern indicates the existence of a network of main and secondary sites, distributed along the Aisne valley (Ilett and Plateaux 1995, Dubouloz *et al.* 2012). The distance between theoretical areas of influence is between 4–5 km for secondary sites and between 18–20 km for the main sites.

The radiocarbon dates of the LBK/RRBP occupations of the Aisne valley fall between 5100–4900 cal BC (Dubouloz 2003). Three ceramic stages have been defined by Michael Ilett after a seriation of the ceramic assemblages (Ilett 2012, Blouet *et al.* 2013, 316). These stages are not all represented on each site, except at Cuiry-lès-Chaudardes which shows the longest duration of occupation.

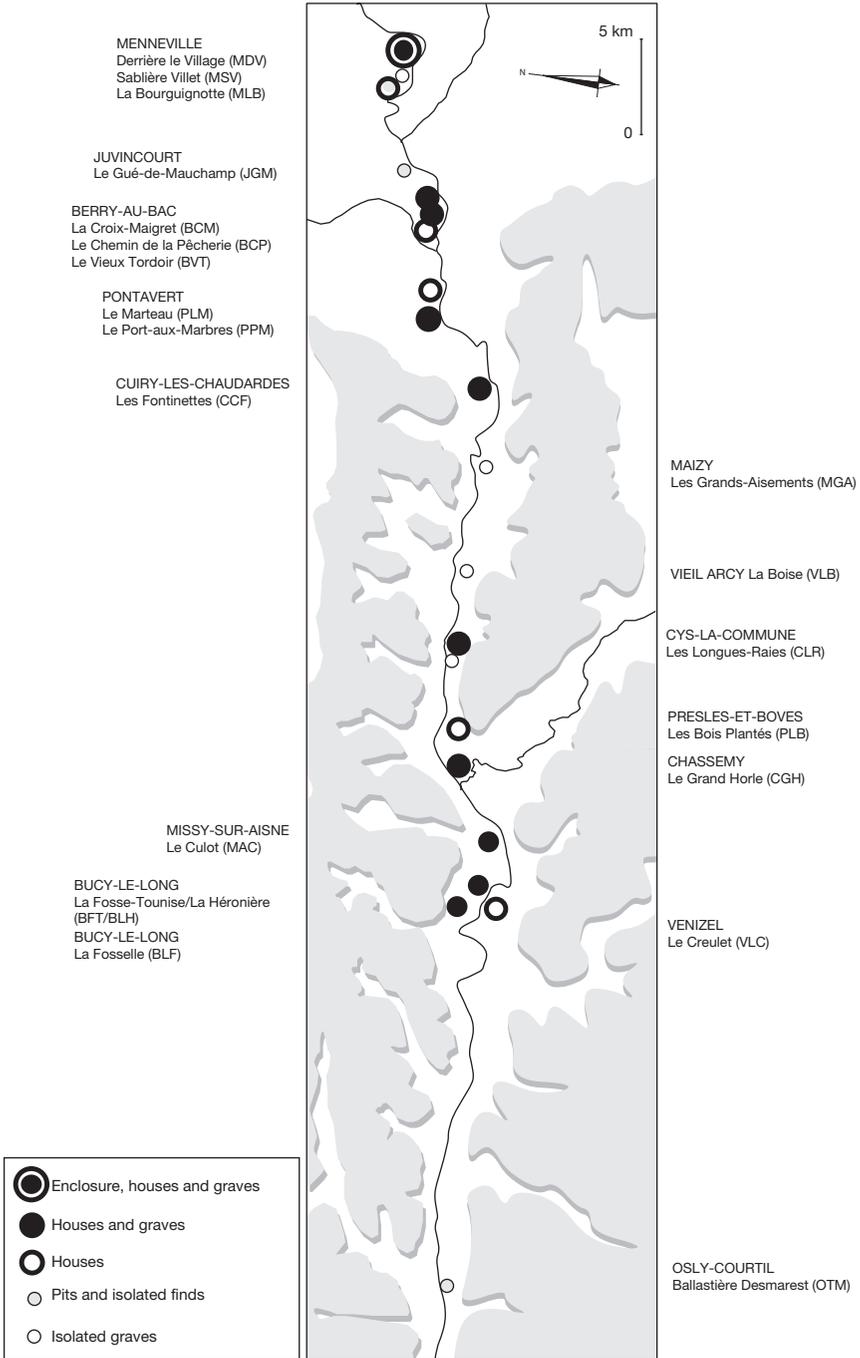


Figure 9.1 Map of the main LBK sites excavated in the Aisne Valley (France). Document ASAVA-UMR 8215 *Trajectoires*.

Figure 9.2 The LBK site of Cuiry-lès-Chaudardes (Aisne). Document ASAVA-UMR 8215 *Trajectoires*. CAD: C. Monchablon.



In the Aisne valley, we have a good knowledge of the subsistence economy and technical system of the LBK populations. The economy of Linear Pottery farmers depended on the cultivation of cereals (einkorn, wheat and common barley), legumes (peas and lentils), and a few other rarer plant species such as the poppy and flax (Bakels 1995, 1999, 2008). Cattle, sheep, goat, and pig constitute the majority of the faunal remains, and cattle breeding is geared towards the production of meat (Hachem 2011, Hachem and Bedault 2008). Although domestic animals are abundant, the hunting rate remains relatively high, especially in terms of the weight of meat from red deer and wild boar. Roe deer and aurochs are the two other large game, while wolf, bear and horse are rare. Small game is essentially represented by beaver, but there are many other fur species. Various bird, fish and amphibious species complete the list of animals found in the pits.

The lithic industry is based on different regional flint sources, among which Senonian and Tertiary sources dominate (Allard 2005). Their relative proportions vary from the western to the eastern part of the valley, in relation to different cultural influences. If blade debitage by indirect percussion characterises the assemblages, the proportion of long blades and flake debitage increases at the end of the sequence. The tools mainly consist of scrapers, arrowheads, sickle blades, burins, retouched blades and splintered forms. The macrolithic tools are made from local sandstones of different qualities (Hamon 2006). They include two sizes of grinding tools, used for cereal- and colouring-processing, polishing tools for the production of ornaments, bone industry and polished adzes, and percussion tools used for lithic production. Despite having little chronological significance, they are a good indicator of technological behaviour and give indications of the localisation of food processing in the domestic space.

For the bone industry, the debitage by abrasion during the RRBP is used for the shaping of perforating tools made mainly on the metapodials of sheep/goats and cattle, but also of deer (Sidéra 2000). Ornaments consist of beads in shell, limestone and bone, and rings in shell and stone (Bonnardin 2009).

Methodological approach

In this context, our study of the food practices in LBK households relies on the comparison of data concerning the size and typology of the houses, the characteristics of the faunal assemblage and the main activities involving macrolithic tools.

These criteria have been compared on six sites of the Aisne valley:

- Bucy-le-Long (the precise location is called *La Fosselle*) (Hachem *et al.* 1998a; seven houses selected from ten)
- Missy-sur-Aisne (*Le Culot*) (Farruggia and Constantin 1984; Charier 1986; two houses selected from five)

- Berry-au-Bac (*Le Vieux Tordoir*) (Allard *et al.* 1996)
- Berry-au-Bac (*Le Chemin de la Pêcherie*) (Ilett and Plateaux 1995; all three houses selected)
- Menneville (*Derrière-le-Village*) (Farruggia *et al.* 1996; Hachem *et al.* 1998b; three houses selected from nine)
- Cuiry-lès-Chaudardes (*Les Fontinettes*) (Ilett and Hachem 2001; nine houses selected from 33).

The inclusion of a house in the present study was determined by the visibility of the houseplan. Erosion or destruction of post-holes should not be a barrier to the understanding of the whole house plan, especially as regards the number of units to the west of the rear corridor. Only well preserved houses with rich find assemblages were included in this study. There is no standard amount of discarded animal bone per house; bone quantity varies widely from one house to another. The minimum for a normally preserved house is about 1000 fragments or 10 kg of bone (numbers below this threshold indicate major erosion of features) and the maximum is just under 7000 fragments or 65.5 kg of bone. This heterogeneity is not the result of taphonomy, and is simply reflecting domestic activities. So all houses with fewer than 1000 bone remains (or 100 identified bones) were eliminated from the analysis, with one exception (Missy-sur-Aisne, structure 75).

The same observations can be made of macrolithic tools. As we are not dealing with daily consumption refuse, the number of tools appears much lower in quantity than faunal remains. The houses with less than three tools, and fragments that could not be classed as tools, have been eliminated from the analysis. Importantly, the presence of only two or three grinding tools in the refuse pits must be considered with great care, as the duration of their use can span tens of years. Their deposition is a far from meaningless act in this context.

A thorough analysis was conducted to assess variation between households first on the numerous and well dated data from Cuiry-lès-Chaudardes (Table 9.1), and then on the other selected sites of the Aisne valley. In the end, 26 selected houses presented the most reliable contexts (complete plans, good preservation of the lateral pits and significant assemblages), and when possible, precise chronological attribution. They were chosen in order to compare house features with the different indicators of the subsistence economy.

A study of the house plans in terms of number of back units and chronological stages was conducted to establish clear distinctions between houses (Hachem 2009, 2011).

First, the number of bays (units) to the west of the rear corridor was used as a basis for dividing the houses into three categories (see Figure 9.5 later):

- small houses with one rear unit (house length: 9.5–15 m)
- medium-long houses with two rear units (house length: 15–21 m)
- long houses with three rear units (house length: 21–39 m).

Table 9.1 Number of faunal remains and macrolithic tools by main categories for the 33 households of Cuiry-lès-Chaudardes

<i>Household no</i>	<i>Number back units</i>	<i>Ceramic stage</i>	<i>Hunting</i>	<i>Herding</i>	<i>Bovines</i>	<i>Caprines</i>	<i>Wild boar</i>	<i>Grinding tool fragments</i>	<i>Hammering tool fragments</i>	<i>Abrading tool fragments</i>
112	?	1	179	494	291	105	71	6	2	1
500	3	3	8	201	126	39		7	1	
580	1	2	62	304	192	59	23	14	1	2
640	?	1	71	320	215	51	12	11		3
80	1	?	6	87	59	9	1		1	
85	1	?	5	97	74	14	1	1		
89	1	2	79	350	196	95	38	2	1	
90	1	1	153	488	328	114	33		1	1
126	1	1	263	577	295	146	108	1	2	
320	1	?	39	125	64	39	2			
330	1	2	37	196	122	36	4		4	1
390	1	1	38	214	148	28	12	6	3	3
400	1	2	103	420	334	41	44	2	1	5
410	1	2	14	87	65	7		2		
425	1	2	308	441	281	50	80	27	2	2
440	1	2	109	454	331	50	46	13	6	16
530	1	3	89	450	305	72	18	35	6	15
560	1	?	4	27	18	4				2
570	1	2	73	427	245	99	19	30	1	11
635	1	?	32	98	57	8	21	17	2	5
690	1	3	101	353	197	77	12	1	2	7
280	2	3	38	548	275	211	3	13		3
360	2	3	184	995	644	258	58	23	7	6
420	2	3	355	552	352	68	93	7	2	3
450	2	?	7	132	98	25		1	1	
520	2	3	6	70	47	8				2
11	3	2	14	145	98	27		1		
45	3	1	37	194	137	27	9	12		3
225	3	3	98	1804	710	761	12	31	2	1
245	3	3	30	530	221	247	8	14	1	1
380	3	2	281	1926	1411	285	72	30	22	8
TOTAL			2823	13106	7936	3060	800	307	71	101

A recurrent pattern characterises every LBK hamlet in the Aisne valley. Each group of contemporary houses making up a settlement phase is composed of several small houses associated with one (or two) long houses. Secondly, chronological stage was determined from study of the pottery (Ilett 2012; Blouet *et al.* 2013, 316). M. Ilett identified three main chronological stages for the settlement of the whole valley: Aisne 1, Aisne 2 and Aisne 3 (corresponding to early, middle and late RRBP). The first stage, which reflects the first occupation by migrants, involves fewer houses, while the last stage includes a larger number of houses.

Chi-squared tests were carried out to determine whether the domestic or wild fauna and the type of houses were linked or independent, and to ask the same question for the macrolithic tools. A correlation test was also conducted to ask if there was a link between grinding tools and domestic fauna, and also between wild fauna and abraders. The χ^2 test on the variables table of data for domestic animals and querns per household gives the result of a probability of no link between the two variables as almost near zero ($n = 25$, $\chi = 3.7 \cdot 10^{-28}$), so there is a link. The χ^2 test on the variables table data for wild animals/abraders per household gives the result of a probability of no link between the two variables as almost near zero ($n = 25$, $\chi = 0$), so there is a link. However, these results should be affected by a very strong statistical weight of the fauna variable, which has very high data numbers. This leads to high chi-squared values on quern and abraded variables. If the linear correlation coefficient is calculated between wild fauna and abraders, it is weakly positive ($r = 0.297$), and between querns and domestic animals it is almost zero ($r = 0.02$). This weak correlation is probably a consequence of data weight differences.

Faunal analysis

There is indeed significant variation in the distribution of species per house. One highly discriminating factor is the amount of domesticated and hunted fauna assigned to each house (Figure 9.3). Correspondence analysis on Cuiry-lès-Chaudardes data has revealed three clusters of houses grouped around dominant species (Hachem 2011, 114). Three species offer particularly rich distributional variability for patterning: wild boar, domestic cattle and caprines. Two other species, pigs and to a lesser extent red deer, contribute marginally to the overall pattern. Pigs are particularly linked to hunted animals, especially wild boar. Red deer are always strongly linked with roe deer and show an overall opposition to cattle. One also notes that red deer and wild boar are quite well opposed, as the two species are never abundant in the same house. It seems that the houses with a lower hunting presence have more red deer than boar, while conversely the houses with a high rate of hunting have more wild boar than red deer. The aurochs is associated with livestock, particularly domesticated cattle. All these trends are also identified in the other villages of the Aisne valley.

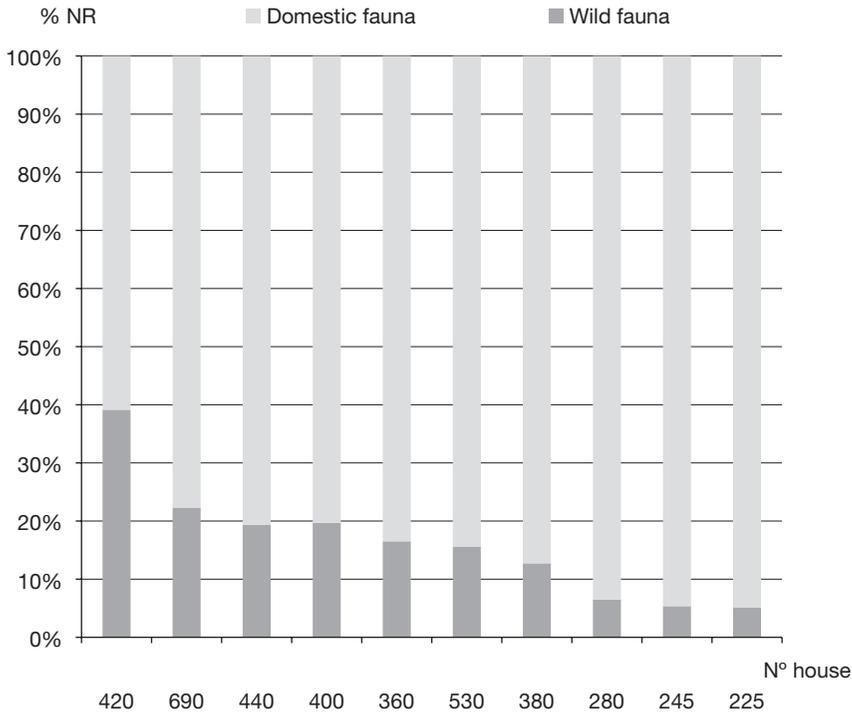


Figure 9.3 Relative proportions of domestic and wild fauna in the best-preserved houses of Cuiry-lès-Chaudardes.

When all the chronological and ‘functional’ results are combined, a coherent pattern emerges. Thus, three categories of houses are found in each settlement phase:

- houses where hunting is abundant (with more than 23–24% wild animals)
- houses where husbandry is massively predominant (with 91–96% domestic animals)
- houses where neither of these trends are apparent (domestic animals 60–76%).

For houses where the hunting rate is high, wild boar is the predominant large game animal. For houses where the husbandry rate is higher than average, sheep or cattle predominate. With the exception of beaver, the frequency of small game is not correlated with frequency of large game.

Analysis of grinding and abrading tools

Among macrolithic artefacts, the three main categories of tools were taken into account as evidence of the activities of grinding (querns and grinders), percussion

(anvils and hammerstones) and abrading (polishers, abraders and so on) (Hamon 2006, 2008a). Grinding tools reveal the existence of food preparation, especially cereal processing. Abrading activities are more directly related to recurrent craft activities, such as the shaping of ornaments and bone tools. Finally, percussion activities were linked to flint debitage and the maintenance of querns.

Only assemblages presenting an acceptable number of complete tools were chosen, in order to avoid distortions caused by excessive fragmentation processes (Figure 9.4). This number of archaeologically complete tools, generally proportional to the total number of tool fragments, is a good indicator of the importance of each activity in the households. Each activity is represented by 1–17 tools, and even 27 abraders in one house at Missy-sur-Aisne. The apparently low number of tools in most of the households hides a more complex interpretation, as not all these tools show the same duration of use and do not have the same economic significance.

Three types of domestic assemblages can be clearly distinguished:

- those with a predominance of abrading tools. These show that specific episodes of craft activities such as bone tool shaping have been realised in the household.

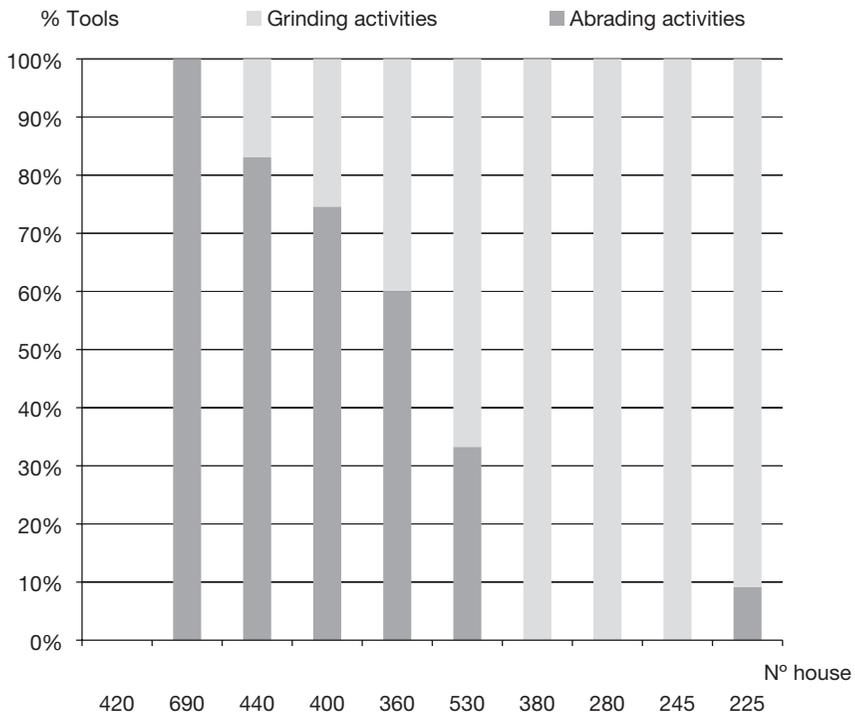


Figure 9.4 Relative proportions of grinding tools and abrading tools in the best-preserved houses of Cuiiry-lès-Chaudardes.

- assemblages dominated by grinding tools. These reflect the importance of cereal processing and food preparation in these households.
- mixed assemblages. These show a quite complete range of domestic activities.

The concentration of several abrading tools in a household shows that this activity was practised quite intensively. For grinding tools, considering their long duration of use, sometimes up to tens of years, one must consider that when more than three tools were deposited, cereal processing had a really important place in the economy of the household. This could be linked either to a special organisation of the family unit for meal preparation (e.g. several wives in one house) or to the production of a great quantity of flour, beyond the domestic need. The presence of percussion tools together with abrading and grinding tools corresponds to a quite complete range of activities in the household.

Results

When all the results are combined, a coherent pattern emerges and a typology of the households can be proposed (Tables 9.2 and 9.3). Three groups can be defined, on the basis of the size of the houses, the activities represented by the macrolithic tools and the importance of the domestic fauna in the assemblage:

- In houses with one rear unit, hunting is abundant (with wild boar often predominant) together with abrading tools (Group 1).
- In houses with one or two rear units, where neither of these trends are apparent, husbandry is around 80% and macrolithic tools mix the three main categories (grinding, hammering, abrading) in average proportions (Group 2).
- In houses with three rear units, husbandry is massively predominant (90% sheep or cattle) and grinding tools are over-represented (Group 3).

Comparison of the distribution of faunal remains and macrolithic tools, as well as other artefacts, suggests that the household was an 'autonomous' entity in terms of consumption, with commonly shared rules and economic basis (Sahlins 1974). At one level, a general rule is that, despite the range of species potentially available, the domestic animals trio (cattle, caprines, pigs), red deer and aurochs were systematically eaten by each household. Similarly, it was observed that grinding tool and abrading tool fragments were present, even in very low numbers, in each house. As a result, one can assume that each house was basically autonomous in terms of consumption. However, differential access to agriculture and hunting-collecting products beyond the necessary minimum cannot be ruled out. This phenomenon is apparent in the rather high proportions of some species and tool types, by the recurrence of one of these activities in one area of a site, and by the correspondence of both activities with the different types of house plan. We are thus dealing with a cultural context within which variations are possible. Different

Table 9.2 Correlation between the characteristics of the houses, fauna (% of NR) and functional categories of macrolithic tools (only archaeologically preserved tools, fragments excepted) in Cuiry-lès-Chaudardes

<i>Household no.</i>	<i>Number back units</i>	<i>Ceramic stage</i>	<i>Herding</i>	<i>Hunting</i>	<i>Caprines</i>	<i>Bovines</i>	<i>Wild boar</i>	<i>Grinding tool</i>	<i>Hammering tool</i>	<i>Abrading tool</i>	
420	2	3	60.9	39.1	7.5	38.8	10.3		3		GROUP 1
690	1	3	77.3	22.2	17.0	43.3	2.6	1	5		
400	1	2	80.3	19.7	7.8	63.9	8.4	1	1	3	GROUP 2
440	1	2	80.6	19.4	8.9	58.8	8.2	1		5	
530	1	3	83.5	16.5	13.4	56.6	3.3	2	5	1	
360	2	3	84.4	15.6	21.9	54.6	4.9	2	3	3	GROUP 3
380	3	2	87.3	12.7	12.9	63.9	3.3	2	3		
280	2	3	93.5	6.5	36.0	46.9	0.5	4			GROUP 3
245	3	3	94.6	5.4	44.1	39.5	1.4	3	1		
225	3	3	94.8	5.2	40.0	37.3	0.6	10	1	1	

parameters introduce variations in the pattern of finds: chronology, type and function of the households, individual choices and finally position of the houses in the settlement. One has to analyse the data at each scale, to evaluate the significance and meaning of each parameter.

While no real chronological evolution of the macrolithic assemblages can be identified, chronological trends in the fauna are apparent between the beginning and the end of the occupation of the settlements. The first (Aisne 1) and third (Aisne 3) stages mark the two extremes, the former having the highest average rate for hunting, and the latter the lowest. Correspondingly, the proportion of caprines increased sharply, especially during the last settlement stage. Proportions of roe deer increased correspondingly.

Rates of husbandry-cereal processing and hunting-abrading vary according to each type of house within a specific pattern (Figure 9.5). The over-representation of an animal or type of tools, and its absence or rarity, indicate some specificity per household related to the type of house plan. Thus the over-representation of sheep, goat and cattle together with grinding tools is linked to the houses with three rear units. The presence of a high amount of grinding tools (more than five tools) in the refuse pits has important economic consequences, as a grinding set is generally enough to feed a small domestic unit for 20–40 years. On the other hand, the over-representation of wild boar and abrading tools is linked to the houses with one rear unit (and pig is more numerous in these smaller houses).

Table 9.3 Correlation between the characteristics of the houses, fauna (% of NR) and functional categories of macrolithic tools (only archaeologically preserved tools, fragments excepted) on a sample of households from six sites of the Aisne Valley (Cuiry-lès-Chaudardes, Bucy-le-Long, Missy-sur-Aisne, Berry-au-Bac le *Vieux Tordoir* (BVT), Berry-au-Bac le *Chemin de la Pêcherie* (BCP), and Menneville)

Site	Household no.	Ceramic stage	Number of back units	Grinding tools	Hammering tools	Abrasing tools	Macrolithic activities	Herding	Hunting	Number of identified remains	Fauna type	GROUP
Cuiry-lès-Chaudardes	420	3	2		3		hammering	60.9	39.1	1535	hunting	GROUP 1
Menneville	140	2	1			10	abrading	76.9	23.1	443	hunting	
Cuiry-lès-Chaudardes	440	2	1	1		5	mixed/abrading	80.6	19.4	568	mixed	
Cuiry-lès-Chaudardes	400	2	1	1	1	3	mixed/abrading	80.3	19.7	528	mixed	
Bucy-le-Long	45	2	3	1	1	3	mixed/abrading	84.2	15.8	164	hunting	
Missy-sur-Aisne	75	3	1	1		3	mixed/abrading	87.9	12.1	33	mixed	
Bucy-le-Long	40	3	3	1	3	3	mixed/abrading	95.4	4.6	112	breeding	
Bucy-le-Long	90	2	1	1	6	5	mixed/abrading	93.7	6.3	198	mixed	
Bucy-le-Long	30	2	3	1	6	11	mixed/abrading	91	9	950	mixed	
Bucy-le-Long	116	?	?	2	5	17	mixed/abrading	92.4	8.2	254	mixed	
Missy-sur-Aisne	60	3	1	1	8	27	mixed/abrading	88.2	11.8	922	mixed	
Bucy-le-Long	10	2	3	6	8	17	mixed assemblage	95.5	4.5	318	breeding	GROUP 2
Cuiry-lès-Chaudardes	380	2	3	2	3	1	mixed assemblage	87.3	12.7	2236	mixed	
Menneville	200	3	2	2	3	1	mixed assemblage	96.1	3.9	951	breeding	
Cuiry-lès-Chaudardes	530	3	1	2	5	1	mixed assemblage	83.5	16.5	544	mixed	
Cuiry-lès-Chaudardes	360	3	2	2	3	3	mixed assemblage	84.4	15.6	1207	mixed	
Bucy-le-Long	20	3	3	9	7	9	mixed assemblage	96.9	3.1	1315	breeding	GROUP 3
Cuiry-lès-Chaudardes	225	3	3	10	1	1	mixed/grinding	94.8	5.2	1923	breeding	
Berry-au-Bac (BCP)	300	1	3	10	7	1	mixed/grinding	94.8	5.2	427	breeding	
Berry-au-Bac (BCP)	195	1	3	13	3	1	mixed/grinding	97.2	2.8	564	breeding	
Berry-au-Bac (BCP)	200	1	3	14	3	7	mixed/grinding	96.8	3.2	877	breeding	
Cuiry-lès-Chaudardes	245	3	3	3	1		grinding	94.6	5.4	562	breeding	
Berry-au-Bac (BVT)	630	3	3	4	1		grinding	78.1	21.9	406	hunting	
Cuiry-lès-Chaudardes	280	3	2	4			grinding	93.5	6.5	589	breeding	
Menneville	10	2	3	6			grinding	86.9	13.1	356	mixed	
Berry-au-Bac (BVT)	590	3	3	9	1		grinding	71.2	28.8	250	hunting	

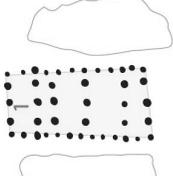
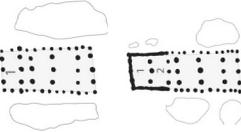
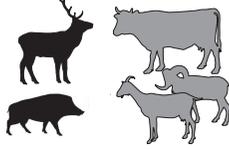
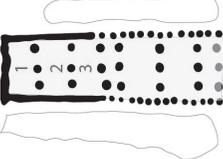
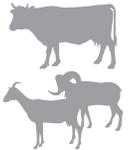
"Small" 1 back unit	"Medium" 1 or 2 back units	"Long" 3 back units
 <p data-bbox="294 493 370 520">Wild Boar</p>  <p data-bbox="288 687 358 714">Abraders</p> 	 <p data-bbox="558 493 652 520">Mixed fauna</p>  <p data-bbox="476 687 735 714">Querns / hammerstones / abraders</p> 	 <p data-bbox="823 493 970 520">Bovines or caprines</p>  <p data-bbox="834 687 970 714">Querns & grinders</p> 

Figure 9.5 Schematic representation of the correlation between the size of the houses, the fauna and the macrolithic tools on the LBK sites of the Aisne valley.

Finally, a level corresponding to 'individual' variability (a term that applies to the household) is involved in the choice of small game, in the presence of birds and possibly fish. The presence of other types of macrolithic tools, such as handstones or burnishers involved in occasional craft activities, corresponds to the same level of individual contribution to the assemblage.

Another important parameter which introduces variation to the finds pattern is the position of the household within the village itself. A specific organisation has been highlighted by the analysis of the domestic fauna through the five stages of occupation of the site which lasted more than 100 years (Hachem 1997, 2000, 2011). This model was tested with the macrolithic tools (Hamon 2006) and has led to positive results. In the north-west of the village there are houses with a high frequency of wild fauna and abrading equipment. In the opposite area, to the south-west, other houses show high sheep frequencies and grinding equipment (Figure 9.6). It thus seems that we are seeing a specific village organisation, with economic, social and symbolic trends linked to household subsistence and craft activities.

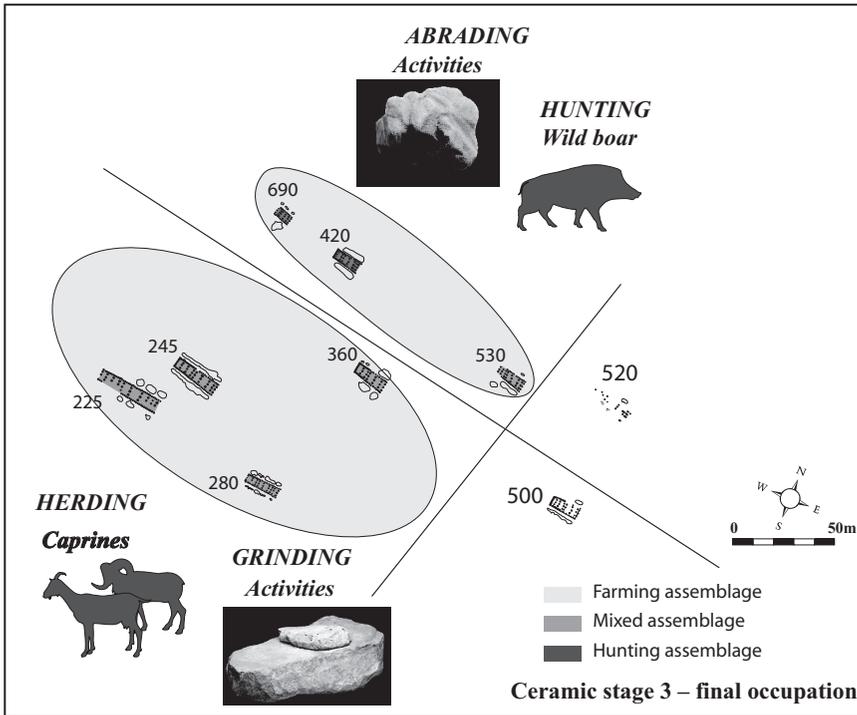


Figure 9.6 Cuiry-lès-Chaudardes, ceramic stage 3, final occupation: main characteristics of the households combining fauna and macrolithic tools.

Discussion

Several questions are raised by these results, and one can suggest different kinds of interpretation. The first is at the core of this study: How can one interpret the links between, on the one hand, querns and domestic fauna, and on the other hand, abraders and wild animals? It seems easy to link animal breeding to the processing of cereals, in a global economic system based on husbandry and agriculture. The link between an over-consumption of wild animals, a high proportion of furred game, and an important level of bone tool shaping in small houses is harder to understand. However, one could interpret such association in terms of the over-exploitation of secondary products from animal exploitation, including fur, bones and skins.

The second question is about the variation of house plans: How can one interpret the links between the type of the house and such associations of subsistence indicators in the domestic refuse? Small houses occur in large numbers within each village. An interpretation would be that each small house could represent a family cell unit. Some of them could be occupied by young families with a small herd

and limited land, and could complement their initial farming production with hunting and the exploitation of secondary animal products, for their own consumption or for exchange with other households in the village. Large houses are less numerous. Some of them have considerable quantities of pottery, especially for storage, faunal remains and complete querns. An interpretation would be that each large house could represent an enlarged family unit, or several ones together, with important needs for daily subsistence. A second interpretation could be that such large houses would be used as more collective or meeting houses, for more or less special events in the village, and would reflect the needs of the broader community for cereals. One can even imagine an intermediate interpretation, where large houses with a higher number of inhabitants would receive frequent collective meetings of a large part of the village community, requiring important food production events.

Such hypotheses of the subsistence economy of small and large houses allow us to propose a new model of the social structuring of LBK settlement and the functioning of the Neolithic house (for an overview, see Bickle 2013, Coudart 1998, Allard and Hamon 2010). This also fits with the demographic model proposed for the LBK by Dubouloz (2008). According to this, the population overall was in constant growth; in a period of a century in the Aisne valley, the number of sites and houses multiplied threefold, and the average size of households multiplied by 1.5. This study has suggested the link between the rear portion of houses, the number of spaces in the house and the number of inhabitants. Following this proposal, the minimum number of people in the small houses (one back unit) would be of five to seven persons, and this family cell would grow quite quickly in two to three generations. A minimum of 12–16 persons could live in medium-long houses (with two back-units) and 36–48 persons in long houses (three back units). Such a model of demographic distribution would be in accordance with our proposal of village structure.

The last question is how, knowing the links between the type of house and the nature of refuse, to grasp the economic, social and ideological factors of the house. If ‘the house is both a whole entity, (social and cultural), and a separate entity, (the individuals and the household who live therein), so it wears and produces individual and collective sense’ (Coudart 2009, 217), we wanted to see if we could identify these different components in our sample. Throughout this chapter, we have been able to determine what was the cultural standard in terms of basic diet, and what was more related to the identity of the house.

A general principle, governing the main aspects of subsistence strategy, is visible. It is reflecting a piece of the LBK economic system. This principle determines the dominance of cultivation over foraging, of breeding over hunting, and in some cases of food preparation over other activities. One can assume that this general principle is the cultural one. A second principle involves variability; the basics of the general principle are respected with a certain margin. One interpretation could be that the LBK community was segmented into symbolic ‘farmers’

and 'hunters'. One can interpret this as a social factor. Around these poles, some assemblages might reflect more individual choices. A third principle is expressed by the relationship between the subsistence economy and the two main types of house; large houses are related to husbandry and cereal consumption, while small houses are linked to hunting and secondary animal exploitation. The accentuation of these activities could be motivated by a system of complementarity or exchange between households, rather than a strict specialisation of the houses. One can interpret this as a social factor.

Conclusion

How can the answers to the three questions stated above be interpreted in terms of a social anthropological model? The combination of cultural, social, individual and ideological trends leads to a general interpretation. It is based on subsistence economy refuse and on cross-reference to the ritual domain and anthropological examples. Fauna, querns and abraders are clearly part of the symbolic and ritual LBK system, as they are frequently involved in hoards. Bovine bucrania, numerous young domestic animals, and partial remains of female and male aurochs are unusual finds in the lateral pits of the longhouses of the Aisne valley (Hachem 2011). Querns are also found in different types of ritual or foundation deposits (Hamon 2008b, Graefe *et al.* 2009), and fauna and macrolithic tools are also involved in funerary practices. Two out of the three animals which determine Neolithic household diet have considerable symbolic importance for this agropastoral society: the cattle and the sheep. They were found in the funerary context of the Menneville enclosure ditch or in graves with child burials (Thevenet 2009, forthcoming; Farruggia *et al.* 1996). There is a strong link between the deposition of sheep and children. In the Hinkelstein graves of the Trebur cemetery, Germany (Spatz 1999, Spatz and von den Driesch 2001), the association of animals and grinding tools with the sex of the individuals also stressed a gendered dimension to their symbolism. When the tables are analysed, pigs or wild boar parts are deposited in the male graves, for example (with one exception), and querns are associated in the majority of cases with women or children. Anthropologically, hunting is known to be a male activity, and socially valued, while grinding is a female one (Godelier 1982).

Taking into account all these elements, the small houses that stood apart in the western part of a village like Cuiry-lès-Chaudardes could be interpreted in the following way. Apart from being a small family unit, they would also shelter young men who could face a dangerous activity like hunting wild boar, as an initiation rite for example. The large houses in the southern part would have gathered women and small children, more directly involved in food preparation for special occasions.

In summary, our model is based on a combined economic and social interpretation. Some small houses could represent a family cell unit more involved in hunting and the exploitation of secondary animal products, while the members of larger family cell units and/or a meeting house would concentrate their subsistence on farming activities. Such organisation could be based on lineage, and this could have involved a clan system. Through the distribution of agricultural and hunting-foraging products, one could assume that after having fulfilled basic dietary needs, some over-production was used as an exchange between households, or clans – such as furs for cereals.

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