5 SPATIAL PATTERNING: THREE DIMENSIONAL

Two-dimensional analysis of the distribution of bones produced no evidence to suggest functional distinctions between spatially separate areas. By looking at the three dimensional distribution of bone parts, temporal differences can be included. Where deposits are well stratified (as is the case for the majority of pit deposits) and rapidly formed (as is the case for many but certainly not all pit deposits), they can be used to investigate the variations in bone accumulations over short periods of time. This may reveal patterns of behaviour that were too localised for recognition two dimensionally. In large pits in particular, amalgamating all deposits is likely to mask different activities.

This sort of approach is important in large sites, where patterns may be masked by the quantity of bones and length of identifiable phases. It is especially so at sites such as Danebury, where the majority of the material has to be dated using pottery typologies. In these cases, it is impossible to determine how many pits were open at any one time, and where these were located. Estimates based on the length of occupation and number of pits are insufficient for this type of analysis.

Grant (2002) has shown that distribution of animal bones in layers within pits may show distinct patterns of seasonality and distinctive deposition episodes. Here the focus is to identify any assemblages that reflect butchery or consumption activity, such as the predominance of bones from one part of the skeleton, waste bones or bones which carry a lot of meat, or whole disarticulated animals.

This analysis is limited by time constraints, and therefore cannot provide a comprehensive analysis. The aim is instead to ascertain any differences in a number of chosen pits and occupation layers so that some deposits can be better understood at a small scale, and to indicate the potential of this kind of analysis.

Three strands of analysis were followed. In the first, selected pits were examined layer by layer. A particular pit, pit 23, was used as a case study, in order to assess the suitability of different types of qualitative and quantitative analysis. This pit contained significant numbers of pig and cattle bone in a full and varied range of deposit types (deliberate deposit, silting, special deposits). The analyses are described below (section 5.1).

Then, layers were examined using similar techniques to the pits. Layers are not always clearly defined and possibly formed over longer periods of time than pits, and so provide a good comparison. Layers are assumed to have built up gradually throughout occupation, while pit deposits are frequently demonstrated to consist of layers of rapidly formed material, presumably intentionally placed. Layers found in the same grid square were compared. These grids were often the only way of locating layers from the original records, and are large (10x10m), so include a substantial amount of bone, unlike individual structures. However layers can spread over several grids, so the precise location of many of these contexts is difficult to determine, and large layers may be present in several grid squares.

For each phase, occupation deposits were identified and where possible were compared to pits found within the confines of associated structures. If no pits were located nearby, the occupation deposits were simply compared to the pits already investigated. This method allows comparison of the surviving occupation deposits with entire deposits from pits.

Finally, some Danebury Environs pits were investigated using the same approach, in order to identify any definite distinctions between bone deposits from different layers. Pits from early, middle and late phases at Suddern Farm were used in this analysis. There were no layer deposits associated with the pits and indeed the layered deposits (from hollows) in the Iron Age contained very little bone. A smaller proportion of Suddern Farm was excavated than Danebury, resulting in fewer bones from non-pit contexts.

5.1 METHODOLOGY

The layers within pits were characterised using the following three methods, in order to compare them to each other. Only pits that had been 100% excavated were investigated, initially using the case study pit (pit 23) and then looking at other pits in conjunction with layer deposits.

The quantities and types of bone elements present in each layer are presented in diagrammatic form (figures 5.1 to 5.4 for pit 23). Drawings were made of cattle, sheep and pig skeletons, and the bone elements shaded in different densities according to their frequency. ‘1-2’ represents one individual, ‘3-4’ two individuals, ‘5-6’ three individuals and ‘7+’ four or more individuals, since there are normally two of each bone element in the body. Where there are fewer than or more than two per skeleton, for example the vertebrae,

the numbers have been adjusted accordingly. For example three distal humeri would represent at least two animals so one distal humerus would be shaded using the '3-4' shade, while three lumbar vertebrae would represent one animal, so three vertebrae would be shaded as '1-2' in the diagram. Only the section of the bone that was recorded was shaded. The bone fusion stages were taken into account where possible to provide a minimum number of individuals. This analysis uses Silver's (1969) data for bone fusion sequence.

This method was used in order to enable the observer to determine rapidly whether the layer consisted of whole animals or animal parts, or whether the bone elements were scattered.

The second method involved the generation of tables, showing which layers contained meaty parts of the skeleton, which layers contained 'waste' bones, and which showed intermediate bones or a mixture of meat and waste bone. The assignation to these categories was informed by observation of butchery on cattle, pigs and sheep (chapter 3), experimental butchery (Appendix 3), and categorisation by Binford's (1978) and Metcalfe and Jones' (1988) categories. They are summarised in table 5.1, and differ slightly according to species. They do not take marrow content into account, since routine marrow extraction has not been inferred for Danebury. The cranium has been assigned to the low meat category since the brain was not necessarily eaten (there is relatively little evidence for splitting the skull).

High 'Meat Value'	Intermediate 'Meat Value'	Low 'Meat Value'
Scapula	Mandible (pigs)	Cranium
Pelvis	Cervical vertebrae	Mandible (sheep and cattle)
Humerus	Thoracic vertebrae	Caudal vertebrae (sheep and pigs)
Femur	Lumbar vertebrae	
Tibia (proximal)	Caudal vertebrae (cattle)	Metapodials
Radius (proximal)	Ribs	Phalanges

Table 5.1: Categories of bone element determined from meat covering of bones.

This is a simplified categorisation intended to indicate whether certain layers contained bone that may have resulted from different consumption activities. A layer consisting predominantly of bones from the 'high' category would be interpreted differently to one that mostly contained bones producing low quantities of meat. In the tables, a layer that contained bones from every part of the skeleton would be recorded in the medium column, since it contains bones of high, intermediate and low value. Thus a layer that contains very many bones may be recorded as medium despite representing a large quantity of meat. This system is intended to highlight differences between deposits independent of the number of animal bones they contained (which is also recorded in the table). Thus a pit layer containing a large number of low meat value bones, a few of high meat value and a few of intermediate

meat value would be recorded as a predominantly low meat value layer. This avoids obscuring the overall nature of the bone assemblage, especially in those layers with large numbers of bone, which would occur if the presence of bones from all categories were recorded. This method is intended to provide a general impression of the character of the pit deposit.

Thirdly, integration of excavation evidence, such as type of deposit (clean, mixed, quickly deposited etc), associated finds, etc. was also effected. The nature of the soil and unusual or special finds were combined with an in-depth description of the bones and species represented, in order to highlight any associations between fill type, small finds and animal bone.

It is vital that these three analyses are used together to provide a complete picture of the nature of the deposit. For example, an unmixed pit layer that had been densely filled with large quantities of meaty bone, which may have come from one large animal, might then be interpreted as possible feasting evidence. A fill that contained a mixture of bones from a mixture of animals, together with pottery from a range of vessel types, might indicate general undifferentiated refuse disposal.

5.2 LATE PHASE

5.2.1 Analysis of individual pits

5.2.1.1 Case study: pit 23

Pit 23 dates from the last phase and falls within the sample area, in the area of four and six post structures. The bone element representation is illustrated in figures 5.1 to 5.4, and is discussed below. A higher proportion of meat bearing bones was found in the middle and lower layers 4-7 (table 5.2).

The basal layer, PL8, contains only ‘waste’ bone, while the top three layers (PL1-3) contain bone of a low or intermediate meat value. Layers 4, 5 and 6 contain bone of mixed meat values, although in pit layers 4 and 6, sheep and cattle bones (respectively) were only of high meat value and in pit layer 6, pig bones were of a low meat value. The two top and two base layers have small numbers of bone, and accidental inclusion cannot be ruled out here, especially as these layers may have been formed through erosion (table 5.3).

Context	pig high meat	sheep high meat	cattle high meat	pig medium meat	sheep medium meat	cattle medium meat	pig low meat	sheep low meat	cattle low meat	sample size: number of fragments
PL1					x				x	14
PL2						x	x	x		9
PL3					x	x	x			110
PL4		x		x		x				120
PL6			x		x		x			48
PL5				x	x	x				178
PL7				x	x	x				38
PL8								x		3

Table 5.2: High, medium and low meat categorisation of bone from individual layers in pit 23. PL = Pit Layer.

Table 5.3 shows the recorded excavation data for pit 23, located in the archive in Winchester. Layer 5 was found in five stratigraphic layers, so is recorded in the archive as 5a-5e. Some special deposits were given separate layer numbers (3a; 4a; 5d; 7a). However, in the animal bone database, bone locations were recorded by pit, then pit layer, in numeric form, and it is not possible to ascertain which part of, for example, layer 5 any one bone was from. In the analysis carried out here, layers suffixed with 'a' are included in the layer their number corresponds to, and bone from layer 3a would therefore be merged with that from layer 3, while bone from layers 5a, 5b, 5c, 5d and 5e were amalgamated to form layer 5. Later 3a consists of pig foot bones in articulation, and this has been recorded as a special deposit in the archive. It could however simply be waste from butchery, but is not included in the bone element distribution diagrams. The human bone recorded as '4-5' was found in the interface of two layers (4 and 5), and could not be assigned to one or the other. In this pit, layer 6 was stratigraphically later than layer 5, and its relationship to layer 4 is unclear but potentially earlier, so it has been placed between layers 5 and 4 in the table.

As can be seen from table 5.3, immediately after a special deposit, there is often a layer of clean chalk, and this has been described in the archive as make-up material, deliberately placed in the pit to cover the deposit, and could explain the good state of bone preservation. Natural erosion consists of shattered chalk, assumed to have eroded from the sides of the pits. Some silting layers may have been formed from erosion, while others were full of artefacts and were interpreted as deliberately dumped 'occupation deposits' (Cunliffe 1984a: Fiche 4: B4). The initial deposits in pit 23 may have been formed from silting of occupation layers and erosion of the pit sides, and the top two deposits were probably formed after the main use of the pit, when the fills had slumped. The presence of snails and silt in the top deposit consolidates this interpretation. The other deposits, however, appear to have been

formed fairly quickly, sometimes with deliberate layers of make up covering them. There was no recorded erosion on bone from this pit, and only 6 had been gnawed (0.5%)

Layer	Flint	Burnt Flint	Daub	Briquetage	Stone	Worked Bone	Iron	Other	Snails	Silt	Chalk	Occupation Deposits	Make-up	Natural Erosion
1	1			1	1				1	3	1	**X**		**X?**
2	1	1							1		2		**X?**	**X**
3a								Pig foot						
3	1		2	1	1		1	Human bone			3		**X**	
4a								Horse head						
4	2	2	2	1	1					3	2	**X**		
6		2	2			1				3	1	**X**		
4~5								Human Bone						
5e	1		1					} Querns		3		**X**		
5d								} Pot 538						
5c								} Clay Slingshot			3		**X**	
5b								} Coprolite		3	1	**X**		
5a		3						}				**X**		
7a								Pot						
7			1		Quern			Chalk Weight		1	3		**X**	**X?**
8	3	3				1		Slag		3		**X**		

Table 5.3: Summary of (non-bone) finds and excavation information from pit 23 (data from excavation archive records, held by the Hampshire County Museums Service). Shaded areas represent special deposits. Entries are coded: 1= low proportion, 3= high proportion.

The uppermost layer (1) and layer 2 contain scattered parts of sheep and cattle carcasses, with few meaty bones (figure 5.1). These two layers are nearest the top of the pit and may have been formed after the pit was initially filled: the archive records label layer 1 as a deliberate tip, possibly made to consolidate the ground surface after the pit contents consolidated and natural accumulation had formed layer 2.

Layer 3 is illustrated in figure 5.2, and contains an articulated pig foot, together with most of the elements of at least one sheep and parts of the scapula, distal humerus/proximal radius and mandible from another. When bone fusion is taken into account, it is apparent that the sheep bones originate from at least three differently aged animals (table 5.4). The cattle parts present in this layer include the lower limbs (but not phalanges), pelvis and scapula, several vertebrae and upper skull fragments. This shows a mixture of meaty bones and head/ feet bones, but the upper limb bones are absent. Ageing data suggests that the cattle bones were from at least two individuals (table 5.4). Thus, the bones in this layer are from a range of individuals of different species and ages, and a range of body areas. This is not described as an occupation layer but as ‘chalk shatter’ (Cunliffe 1984a: Fiche 4: B4). The bones must have become incorporated into the chalk fill as it accumulated if erosion formed the deposit as suggested in the fiche, or could have become incorporated elsewhere prior to or during

make-up, as suggested by the archive. Perhaps the act of deliberate filling or capping of the pit demanded consumption activity or the integration of bone deposits.

Layer 4 is recorded as a deliberate tip in the archive notes, and contains oven daub and burnt flints as well as horse and dog bone. Grant has noted the recurring coincidence of horse and dog bone (Grant 1984c), which may be an indication of a specific type of deposit. This layer has similar proportions of the three main domestic species to layer 3, although the bone elements are slightly different. There are more meat-bearing cattle bones including the humerus, femur and vertebrae, and there are fewer fragments from the skull. The pig bones are also from more meaty areas, including skull parts in the region of the masseter muscle and a scapula. The sheep bone assemblage is similar to that of layer 3. Skull fragments are slightly more numerous and there are fewer hind feet, but again the majority of the carcass is represented. Better represented parts include the scapula, mandible, pelvis and distal humerus, and the bones came from at least three sheep.

Many of the better-represented bone elements are dense bones that survive well (see Brain 1981). However, more fragile parts such as the scapula blade are also present, and although they have been fragmented, the minimum number of elements (MNE) for the scapula blade is higher than that for the distal articulation (figure 5.2). This, and the good preservation of bone from pits, suggests that taphonomy is not the primary cause of the differences in bone element representation. It seems that animal bones deposited in this layer result from a range of butchery and consumption activities practised on a minimum of five animals (table 5.4).

In layer 6 cattle are represented by only a few bone fragments, mainly meaty parts and teeth, with no other cranial bones or foot bones (figure 5.3). Sheep bones again include elements from most parts of the skeleton including feet, skull, limb and torso parts. However the upper hind limb bones and some of the lower front limbs are infrequent, despite both being common in the previous layer. Pig bones include mandible and maxilla, mainly bones of low meat value, although the mandible does provide some meat. This layer contained a wide range of sheep bones, suggesting that low and high status cuts were not separated for sheep. The cattle bones however were mainly meat yielding, and the pig mainly ‘waste’ bone.

Layer 5 contained relatively fewer cattle bones, and the elements represented mainly differed to those from the previous deposit, and at least two individuals were represented (figure 5.3). There were more phalanges and metapodials but fewer bones of high meat value. Sheep bones included a significant number of ‘meaty’ bones from a minimum of three animals,

including fore and hind limbs and scapula/ pelvis and vertebrae. Foot and head bones were not as common in this layer, maybe suggesting that consumption activity principally produced this deposit. Pig bones also show evidence of a greater proportion of meat bearing elements, including the fore and hind limbs and vertebrae. However, bones from the feet and head were also present, with bone from both meaty and 'waste' parts deposited together. This may indicate that these parts of the body were consumed at the same time; since there is a minimum number of one pig from this deposits, the bones may all be from the same individual.

Layer 7 contains a mixture of high and low meat-bearing cattle bones (figure 5.4). Pig bones are the mandible and vertebra, of intermediate meat value; there was a mixture of sheep bones. Again a mixture of bones is present, and again they are different elements to those in previous layers. The archive records this as a make-up layer, or possibly eroded pit sides; it contains little bone in comparison to the layers described above.

Layer 8 contains only parts of sheep metapodials, low meat bearing bones (figure 5.4). There may be a symbolic significance in the first deposits in pits (Cunliffe 1992), but if this were the case, the symbolism of these low meat-bearing parts is obscure.

Species / Pit layer	Sheep	Ox	Pig
1	One under 36	One over 24	
2			Birth
3	One neonate One under 28 One over 30	One between birth and 36 One over 36	One over 12
4	One under 10 One between 10 and 36 One over 36	One between birth and 42	One over 12
5	One under 8 One between 10 and 36 One over 42	One under 8 One over 13	One between birth and 42
6	One under 10 One over 13	One under 8 One over 18	One over 24
7	One neonate One over 6	One between birth and 48	

Table 5.4: Ages, in months, of the minimum numbers of individuals in pit 23, by layer.

Table 5.4 shows the distribution of animal remains by age. There is no consistency in ages represented, such as a predominance of yearlings in a layer, which might indicate deliberate culling of animals at a particular age. In fact the ages of animals are wide ranging, with both young and mature examples in most of the layers. This could substantiate the evidence discussed above, which appears to show random distributions of bone parts in most cases, rather than any deliberate selection.

5.2.1.2 Conclusions of case study analysis

Although similar proportions of cow, sheep and pig bones are found in each layer, differential treatment of species is evident. Pigs and cattle are often represented by small quantities of different bones scattered throughout layers, while the majority of sheep bone elements, possibly the remains of whole animals, is found within individual layers. This could reflect the consumption of whole or large parts of sheep, and suggests that pig and cattle meat was being eaten in smaller quantities. Grant (2002) also shows this pattern, and suggests different scales of consumption in different layers. However, she states that 'sheep were represented by much higher averages of bone per individual than cattle and pig (Grant 2002: 83). In pit 23 this is the case in the majority of the deposits, but not for pit layer 4, where there are more bones per individual for cattle than sheep (table 5.5).

Species	Sheep			Ox			Pig		
Pit layer	MNI	No. of bones	No. of bones /individual	MNI	No. of bones	No. of bones /individual	MNI	No. of bones	No. of bones /individual
1	1	4	**4**	1	6	**6**			
2	1	2	**2**	1	5	**5**	1	1	**1**
3	3	78	**26**	2	28	**14**	1	4	**4**
4	3	81	**27**	1	35	**35**	1	4	**4**
5	3	133	**44**	2	25	**13**	1	20	**20**
6	2	34	**17**	2	11	**6**	1	3	**3**
7	2	31	**16**	1	5	**5**	1	2	**2**
8	1	2	**2**						
Average per layer	2	46	**23**	1.4	16.4	**12**	1	5.7	**5.7**
All layers	4	365	**91**	3	115	**38**	2	34	**17**

Table 5.5: Numbers of bones per individual by pit layer.

Perhaps some meat from cattle and pigs was preserved on the bone and consumed at later dates, then deposited in the same area. While some whole sheep may be represented, there are also many parts that were absent from the pit, for example the neonatal bones that were present in layers 2 and 7 included only a few skeletal parts. The missing bones may be in other pits or other feature types. Other taphonomic factors may have had a particular influence on the preservation, either pre- or post-deposition, of these fragile bones.

Feasting could be interpreted from the bone in layer 4, where large quantities of meat-bearing bone from at least five individuals were found, and this layer does not contain any sub-divisions, but appears to have been deposited in one action (Cunliffe 1984a: Fiche 4: B4). However bones are not found in large quantities from one animal, so any feasting

activity may either have involved the consumption of large amounts of food, not large proportions of individual animals, or the remains were deposited in more than one pit.

There appears to be no division into deposits of high and low meat value. This could be taken as an indication of lack of different status rubbish disposal (even if the parts were being consumed by different sectors of the population), or the absence of differentiation in value of meat parts.

From the bone evidence, it is possible that the cattle bones deposited in layers 3-6 could have originated from just two individuals, one under 8 months and one mature animal. Could it be possible that each pit was filled in stages from the remains of two pigs, two cows and three sheep? This would explain the incoherent groups of bones present in each individual deposit. It could also imply settled behaviour, of a group of people periodically disposing of remains into pits. If this were the case, the bones would have had to have been kept out of reach of scavengers and protected from the weather. This could have been effected by storage above ground (perhaps in the four post structures so common at Danebury), or even if semi-filled pits had been securely covered (by wooden lids, or perhaps in some cases make-up layers, e.g. pit layer 5c). The time scale for deposition in pit layers may be relatively short; Grant's case study of pit 2269 suggests this pit was filled in approximately 18 months, with five of the ten pit layers formed quickly as 'coherent' deposits, rather than over a period of months (Grant 2002: 85).

The integration of large quantities of bone in a fairly clean chalk deposit in layer 3 is interesting. There are numerous artefactual inclusions in this layer including pottery and human bone, but no silt or evidence of burning, suggesting that this deposit was not from an occupation layer. The objects that were disposed of in this layer were mingled with chalk and flint nodules. The other clean make-up layer is 7, which does not contain a large quantity of bone. The bones in layer 3 were of mixed meat value, and maybe deposition in a pit was a solution that dealt with both waste disposal and consolidation of the pit. The bone assemblage does not look like one produced from a single consumption episode, as the bones are from a wide range of parts of the skeleton. So it is unlikely that this fill was produced as a direct result of a single slaughter and consumption event. Of course it is possible that another pit may have been receiving the missing bones around the same time.

5.2.2 Comparison of late phase layers within one grid (100m²)

Grid D12 was chosen for the comparison of late phase layers, since this showed the densest concentration of bones for pig and cattle. The layers are well documented in the archive and publications (Cunliffe 1984a) and are extensive. Layers from the late phase in this grid square that contained bone are 5, 7, 9, 35 and 65. A mixture of context types is represented in this sample, including burnt chalk and flint erosion from the rampart (5), occupation layers from a hut with charcoal, daub and burning (7), light brown silt with charcoal under a hut floor (9), erosion of layer 9 (35) and a layer of silt by the hut door (65). The matrix for these is as follows:

5	
7	
9	**65**
35	

Layer 5 provides evidence for the possible presence of joints (figure 5.5). Sheep bones include all bone elements from midshaft on the humerus to the foot, and from midshaft on the tibia to the foot. There is a pig distal humerus and proximal radius, and bones from a hind foot. The cattle bones include parts of the humeral-radial and femoral-pelvic joints. This deposit suggests that carcasses were less widely distributed in layers than pits. However, there are also isolated parts: for sheep, the shaft of a femur, distal scapula and pelvis; for cattle, mandibular, vertebral and foot bones; and for pig, vertebrae and radius/ulna.

Animals from a range of ages were present. In layer 5 there were foot bones from at least one pig under 2 years, and scapulae and a radius from a pig or pigs over 2 years. The sheep bones indicate that one individual aged over 20-28 months and one under 10 months were represented.

Layer 7 contains a similar mixture of bones from different parts of the animals. Here there is an abundance of sheep foot and head bones, but also proximal femur fragments from more than one animal. Pigs and cattle are represented by bones from all parts of the carcass, but very few adjoining bones are shown (see figure 5.7).

Layer 9 contained a few bones that could represent coherent cuts of meat (figure 5.6). These include cattle distal humerus/proximal radius and distal tibia/tarsals, and sheep upper forelimbs and neck/head bones. However, in general, the parts are relatively scattered.

In layer 35 (figure 5.6) there is also a similar scattered pattern apart from a sheep lower forelimb which appears to be complete from the radius to the hoof. However if layers 9 and 35 are combined, a logical step as 35 is the erosion of 9, the picture changes. More of the cattle hindlimb is present (from at least one mature individual), and a greater proportion of the pig head and forelimb (from a minimum of one aged around 12 months) and there are even more sheep forelimbs and cervical vertebrae. However, these bones still appear to have originated from at least two sheep (one over 36 months, one between 10 and 36 months).

Layer 65 contained far fewer bones, and once more they originate from a variety of locations in the skeleton (figure 5.7).

Context	pig high meat	sheep high meat	cattle high meat	pig medium meat	sheep medium meat	cattle medium meat	pig low meat	sheep low meat	cattle low meat	sample size: number of fragments
L5				**x**	**x**	**x**				296
L7				**x**	**x**	**x**				105
L9	**x**				**x**	**x**				172
L35	**x**				**x**	**x**				20
L65	**x**				**x**					13

Table 5.6: High, medium and low meat categorisation for late phase layers in grid D12

Table 5.6 shows that layers 9 and 35 are similar in composition when meat values are compared. This is perhaps to be expected, considering that one was eroded from the other. These two contexts are also similar to layer 65 (a silt layer from the circular structure). Layers 5 and 7 contain bone with a mixture of high and low meat values, so an overall medium deposit, and these later, large layers could represent a different activity. Overall, though, the consistency suggests that the bone material deposited in occupation layers, unlike pit layers, had a similar composition. It is, however, possible that they represent a longer time span (bone from layers is more eroded than that from pits (Grant 1984a), implying that layer assemblages may have been formed more gradually), glossing over the true differences.

The absence of deposits dominated by bones of a low meat value implies that this area was not reserved for butchery waste, but either contained the meat bearing bones, or a range of bones from the animal.

5.2.3 Comparison of deposit types: pit 507 and Circular Structure 20

These two features were chosen for investigation as they were spatially close (the pit is inside the building), and there were sufficient numbers of in-situ occupation layers to warrant investigation. The pit (figure 5.8) was open 'during the life of the structure [and] not completely filled until the building had been removed or destroyed' (Cunliffe 1984a: 79). This means that the deposits of floor layers, occupation deposits in the house, and pit deposits could be compared.

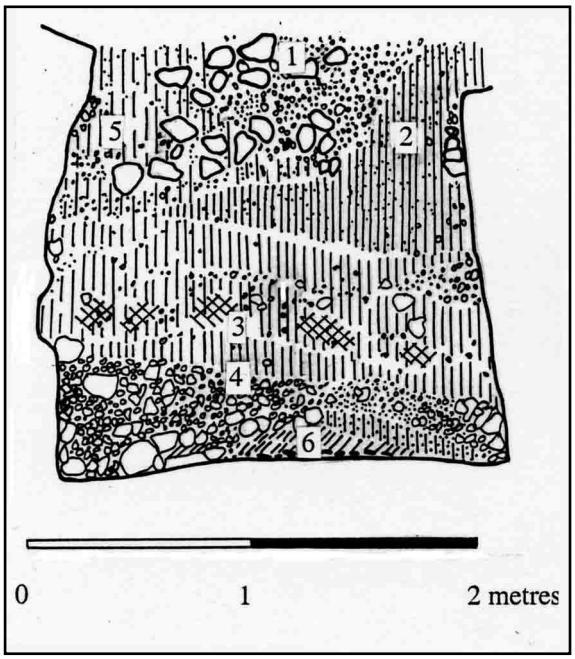

Figure 5.8: Pit 507 in section. After: Cunliffe 1984a, fiche 5.

The layer contexts consist only of cp7 deposits, two of which (layers 7 and 13) were present inside the structure, sealed by a phase 8 deposit, and one (layer 65) was from a sealed layer between the first and second consolidation of the threshold. Some of the occupation deposits could therefore be contemporary with the pit deposits.

The deposits appear to fall into three groups (table 5.7); those with high proportions of meat bearing bones, usually pig (PL1, PL5, L13 and L65), those with predominantly low value meat bones (PL2, PL4 and PL6), and those with a mixture (PL3 and L7).

Context	pig high meat	sheep high meat	cattle high meat	pig medium meat	sheep medium meat	cattle medium meat	pig low meat	sheep low meat	cattle low meat	sample size: number of fragments
PL1	x				x	x				33
PL5	x				x	x				4
PL2								x		1
PL3				x	x	x				143
PL4					x				x	9
PL6								x		1
L7				x	x	x				105
L13		x				x				14
L65	x				x					13

Table 5.7: High, medium and low meat categorisation for layers in pit 507 (prefixed by PL; in stratigraphic order) and layers in building 20 (prefixed by L).

It is noticeable that pig bones often comprise high proportions of meat-bearing bones; the low meat value parts must have been deposited elsewhere. Sheep bones, conversely, are more frequently those with low meat values, although all parts of the sheep carcass are represented. Most cattle bone fell in the medium/low categories. As the pit was completely excavated, the assemblages recovered should accurately reflect those deposited. The occupation deposits appear to be complete and undisturbed, although their edges are not as easily defined as the pit layers.

5.2.3.1 Contexts with high proportions of meat bearing bones: PL1, PL5, L65 and L13

These contexts contain a predominance of pig bones, except in layer 13 where the high meat value bones are from sheep, with medium meat value cuts from cattle and pig. Perhaps this reflects a difference in species composition between the internal (13) and threshold (65) occupation layers.

Pit deposits 1 and 5 are both positioned at the top of the pit, and their similarity in terms of meat value composition (table 5.7; figure 5.11) suggests that they could have resulted from similar activities. They are also similar to the layer material, and it is possible that the occupation layers were formed at the same time as the pit layers were deposited. Pit layer 5 is described as a deliberate tip, while the presence of snails and weathered chalk in pit layer 1 may indicate natural erosion following a special deposit of a horse mandible. The final layers in the pit may have been made up of some of the material left inside an abandoned building. A large proportion of sheep bone in the occupation layers and in pit layer 1 was from young animals, that would not have provided very large quantities of meat.

5.2.3.2 Contexts with a mixture of high, intermediate and low meat-bearing bones: pit layer 3 and layer 7

The occupation debris in layer 7 and pit layer 3 (PL3) were both densely packed with finds. They both contain a mixture of bone types. Initially it seemed that the cattle and pig bones could have originated from just one animal of each species, as the bones from the layer are not replicated in the pit context (figures 5.7 and 5.12), and it seemed possible that the two deposits may have been contemporary. However the pig represented in layer 7 is older than 12 months, so cannot be the same individual as represented in pit layer 3, which is younger than 12 months. There is also a mixture of old and young sheep in the two contexts.

These two contexts provide the largest sample of all the contexts analysed, and this may account for the mixture of all parts of the skeleton, by providing a more representative sample. One would expect to find that larger assemblages contained a more mixed deposit, which would consist of a range of high, intermediate and low meat value bones, if there had been no segregation of areas at Danebury.

5.2.3.3 Contexts with high proportions of low meat-bearing bones: PL2, PL6 and PL4

Pit layers 2 and 6 contain only one bone each, from a sheep skull in each case (figures 5.12 and 5.13). Pit layer 4 also contains a fragment of sheep skull, but also sheep metatarsal and vertebrae/ femur fragments, and cattle mandible, tail and tibial fragments. Pit layer 4 mainly contains bones of intermediate and low meat value (figure 5.13), and a human leg bone was also present in this layer. Pit layers 2 and 6 are both from lower pit layers (figures 5.12 and 5.13), and the bone in them could be from the same animal.

5.2.3.4 Conclusions

Comparing the layers from the pit and the occupation layers of building 20 shows an interesting trend: some of the bones in the pit are absent from the layers, and vice versa (compare figures 5.9 and 5.10). For example, the pig bones in the occupation layers comprise the proximal tibia, part of a humerus shaft and mandible/ skull parts. Those in the pit consist of the distal tibia, distal humerus and in the main, different skull and mandible parts, as well as vertebrae, ulna/radius, scapula and phalange. The cattle bones in occupation deposits include parts which are not represented in the pit, such as phalanges and pelvis, while both provide evidence for the mandible, vertebrae, scapula and carpals. It is more likely that these effects are due to larger sample size, since the animals are often of different ages.

Sheep bones from all parts of the animal are represented in both pits and layers, but mostly at a relatively low level. The sheep bones in the pit included a concentration of distal femora, metatarsals, horncores and maxilla/ mandibles. With the exception of mandibles and horncores, these bones were absent from the layer material (figure 5.10).

This suggests that parts of animals that were not being deposited in the pit may instead have been incorporated into the layers. Further investigation of age profiles from bone fusion showed that bones from all investigated contexts could have originated from two pigs and one ox. The sheep may also have been shared between the two types of deposit, but their bones are more numerous and it is more difficult to calculate accurate MNIs. The 'missing' bones may have been incorporated into different features or discarded elsewhere, within or outside the hillfort.

5.2.4 Conclusions

The bones in layers 9 and 35 are often from conjoining parts of the skeleton. They originated from beneath a hut floor, and may represent earlier consumption activity. The bones are not particularly eroded or gnawed (2 examples from 192 bones) which suggests quick deposition and subsequent sealing. These bones could reflect butchery and consumption activity more directly and in a more restricted area than those from pit layers, with bones being butchered, consumed and deposited without as much distribution.

5.3 EARLY PHASE

5.3.1 Analysis of individual pit layers

Pit 44 was chosen for this analysis, to provide a suitable comparison with the late pit 23. It contained a large number of bones, 89 per square metre or 387 in total, and was located centrally, in the densest area of pits. All deposits were recorded as deliberate in the database, with a special deposit of human bone in layer 3.

Layer 6, the initial deposit, consisted of a tip of chalk rubble on the base of the pit. It included some pot, one pig tibia fragment and remains of sheep head and limb bones (figure 5.16). There does not appear to be any coherent pattern to this deposit, with sheep bones from various parts of one neonate and one individual of 18-24 months of age.

In layer 5, some coherence is seen in the cattle bone, as only meat bearing bones, the scapula, femur and pelvis, are found (figure 5.16). Pig bones are more mixed, consisting of vertebrae and phalanges, and sheep bones include most forelimb parts, pelvis, vertebral and head bone. The sheep forelimb bones originate from at least two animals, one under 8 months and the other over 18 months at death. There were five divisions in this layer: mainly

silty occupation deposits with some lenses of burnt material. Pig and sheep remains from this layer are mixed, although cattle remains are of high meat value.

Layer 4, the third deposit, again includes pig and cattle bone from a variety of carcass parts (figure 5.15). The sheep bone elements include a distal scapula and proximal humerus that may have been from the same animal, and a femur and metatarsal which were from an older individual.

The fourth deposit, layer 3, contains the skull of a human under 16 years of age, with some charcoal. The animal bone remains include hind foot bones and a humerus from an immature sheep, and a femur and humerus from a mature one (figure 5.15). This context also contained charcoal.

Layer 2 is the penultimate deposit and the last from this pit that was dated to the early phase. It contained a pig vertebra, immature sheep pelvis and mature sheep tibia, with fragments of skull and phalange (figure 5.14). An iron point was also found.

Context	pig high meat	sheep high meat	cattle high meat	pig medium meat	sheep medium meat	cattle medium meat	pig low meat	sheep low meat	cattle low meat	sample size: number of fragments
PL2				**x**	**x**					10
PL3				**x**	**x**					15
PL4			**x**	**x**	**x**					17
PL5			**x**	**x**	**x**					28
PL6				**x**	**x**					19

Table 5.8: High, medium and low meat categorisation for layers in pit 44.

Pit 44 then does not indicate any greater integrity of deposits than the late phase pit 23, although in two layers (4 and 5) the small quantity of cattle bones was all high meat yielding. A sheep distal scapula and proximal humerus in layer 4 may also have come from a single joint of meat. Like pit 23, the middle layers contained the most high meat bearing parts (table 5.8), although pit 507 has a different depositional pattern. However, in general the deposits in pit 44 do not appear to have any specific character, with bones from individuals of different ages, and different parts of the body.

5.3.2 Comparison of early phase layers within one grid (100m²): D12, layers 41 and 45

These layers are occupation layers from a circular structure; only two out of the three from this phase contained any animal bone.

context	pig high meat	sheep high meat	cattle high meat	pig medium meat	sheep medium meat	cattle medium meat	pig low meat	sheep low meat	cattle low meat	sample size: number of fragments
L41	**x**				**x**	**x**				22
L45					**x**	**x**				25

Table 5.9: High, medium and low meat categorisation for early layers 41 and 45.

Although the two layers do not contain similar bones, they both contain mainly sheep and cattle bones of medium values (table 5.9). Different cattle bone elements are found in the two layers, and could all have been from a single individual (figure 5.17). There are bones from adjacent areas in the skeleton (for instance both an atlas and axis, and radius and metacarpal). The sheep bones came from more than one individual: both fused and unfused metatarsals were found in layer 41. However a sheep humerus, radius and part of a proximal metacarpal could all have come from a single individual.

There is a possible coherence of cattle deposit, but the sheep remains again suggest scattering of animal parts, with the possible exception of a forelimb from the humerus to metacarpal.

5.3.3 Conclusions

There are no early phase houses with accompanying pits in the sample area, and indeed there were very few pits in the periphery of the area, where circular structures were located. Those that were present (98, 857, 858, 860) either did not contain any animal bone or were unexcavated, so pit and layer comparisons in the early phase were not carried out.

The analysis of pit 44 and layers in grid square D12 provides no evidence for segregation of deposits between pit or occupation layers, with the possible exception that there were more meaty deposits of cattle bone in pits than in layers in the early phase.

5.4 THREE DIMENSIONAL ANALYSIS OF BONE AT DANEBURY: CONCLUSIONS

From the small sample of pits and layers investigated here, there is no patterning of bone elements as would be expected from a site where butchery or consumption activities were segregated and waste may then have been disposed of directly into pits. There is some coherence to the pit layer compositions, to the extent that deposits do not tend to contain bones from large parts of single animals.

Bone waste may have been deposited into pits when it had accumulated to a sufficient level in protected middens. In this case it is possible that activity areas were segregated, but deposition was carried out without regard to these areas. Another possibility is that bones were deposited into pits ad hoc shortly after butchery or consumption, but that a number of pits was open at any one time, leading to dissociation of bone elements. Small-scale consumption could have led to this type of pattern, if different 'households' deposited bones into different pits after obtaining meat on the bone from one source. However, large-scale consumption could potentially produce the same patterning, whereby large animals were cooked and consumed together, but bones deposited separately.

5.5 DANEBURY ENVIRONS THREE DIMENSIONAL SPATIAL ANALYSIS

Two pits from Suddern Farm were chosen: one from the early phase (pit 87) and another from the middle phase (pit 92) (cp 3-4 and cp 5-7 respectively). In the Suddern Farm publication ceramic phases 3-6 are equated to 750-300BC and cp 7 to 270-50BC (Cunliffe & Poole 2000a: 201), the equivalent of the early and late phases at Danebury. The chosen pits each contained four or more layers and a bone count of over 100 in at least one layer.

5.5.1 Pit 87

This pit contained four layers, of which three (1, 2 and 4) contained bone from a range of skeletal elements (figures 5.18 and 5.19). Layer 3 contained deposits that appeared to be fairly coherent, including pig fore limb bones (humerus and radius) and the fragmentary remains of most bone elements in the sheep skeleton, although there is no indication that they came from a single individual. Complete fore and hind limb bones were present from at least two cattle. There was a humerus and radius from a third individual, but no ribs or vertebrae were recorded, because those that were found were not assigned to species.

Pit layer	pig high meat	sheep high meat	cattle high meat	pig medium meat	sheep medium meat	cattle medium meat	pig low meat	sheep low meat	cattle low meat
1							x		x
2			x		x		x		
3				x	x	x			
4						x		x	

Table 5.10: High, medium and low meat categorisation for layers in pit 87, Suddern Farm.

The bones in layer 3 could be the remains of either large-scale butchery or consumption activity, or the deposition of uneaten whole limbs or animals. However, the cattle bones were not articulated, and this suggests that these were butchered and eaten, not 'sacrificial' or diseased deposits of large parts of animals. The presence of the humerus-radius of at least two individuals of different species suggests that it is most likely that joints of meat had been deposited.

A mixture of meat values is represented in layer 3 (table 5.10), and figure 5.19 shows that a range of bone elements was present. It is the large quantity of bones, and the presence of elements from whole limbs that lead to the description of this layer as one containing bones from a large episode of consumption. The amalgamation of the different types of analysis is crucial to the interpretation.

5.5.2 Pit 92

Pit 92 contained eight layers, only two of which (layers 3 and 6) contained any coherent deposits (figures 5.21 and 5.22). Layer 3 did not contain much material but the cattle bones consisted of a complete scapula and humerus, possibly from one animal. Fragments of one cattle and one pig tibia were also represented. Layer 6 contained more fragments, including some parts of a pig and sheep forelimb and skull, and many cattle bones. These included a pelvis and proximal femur, tibia, tarsals and proximal metacarpal, skull, jaw and cervical vertebra, and parts of a scapula and humerus, radius, ulna and metacarpal. These could represent the remains of large-scale consumption, as the quantity of meat on these bones is considerable. A radius and metatarsal are present from another individual, suggesting that, while one animal may have been deposited in this pit almost entirely, only a small part of another was deposited in this pit.

pit layer	pig high meat	sheep high meat	cattle high meat	pig medium meat	sheep medium meat	cattle medium meat	pig low meat	sheep low meat	cattle low meat
1					x		x		x
2	x	x							x
3			x		x				
4	x					x	x		
5					x		x		
6				x	x	x			
7						x			
8					x	x	x		

Table 5.11: High, medium and low meat categorisation for layers in pit 92, Suddern Farm.

Other layers comprise very scattered parts of carcasses (figures 5.20 and 5.23), where even when two conjoining bones are present, the bones are broken and the articulating section is absent (for example layer 7 cattle bones).

There is a mixture of meat values by species in these pit layers (table 5.11). No patterns are obvious, except that the layer containing the largest number of bones (N=6) includes mainly those of medium meat value for all species. No layers have bones of exclusively high or low values.

5.5.3 Conclusions of Suddern Farm analysis

At Suddern Farm it appears that at least one deposit in each of the pits includes large quantities of bone, possibly the remains of whole animals, and that these deposits could represent the remains of butchery or feasting activity. However these pit layers usually also include bones from other individuals, and most layers contain bone from a variety of animals and skeletal areas, which suggests that the bone remains are representative of a range of activities.

5.6 CONCLUSIONS OF THREE DIMENSIONAL SPATIAL ANALYSIS

A comprehensive review of many individual pits and layers is required in order to ascertain whether the pattern presented here is representative of the site overall. This would be extremely time consuming using the method described above, and the most obvious solution would be to create a computer program which could assign bones relative values according to their meat coverage and fragmentation. Other characteristics could be brought in, such as the minimum numbers of individuals (for instance) and the deposits could then be compared. This is beyond the scope of this thesis, but the principles used here could be applied more

widely. It remains essential that the full range of methods employed here are used, in order to avoid narrow interpretations.

From the limited analysis presented above, there is little evidence of firm patterning in the individual pit or layer deposits from Danebury. In certain layers more bone is found, and in some no bone was recovered, but apart from the differences in actual numbers of fragments, there does not appear to be any coherent deposition of meaty or waste bone, or any evidence of deposits where very large parts of individual animals are found in one rapidly formed layer, that might represent one episode of butchery or consumption activity. Some deposits contained a large number of meat bearing bones, and these could represent feasting activity, although as the bone came from different individuals, deposition must have been into several pits, concurring with Cunliffe's estimate of 8 pits open at any one time (Cunliffe 1992). It is also possible that these bones were a selection of those accumulated elsewhere before deposition, and that some deposits happened to contain more meat bearing elements than others. In either case, the pit or midden must have been protected from weathering and scavenger activity during accumulation.

Some pits include many parts of sheep, and often the whole carcass is represented, but the bones often originate from different animals, of different ages. Often pig bone in one deposit is from more than one individual, even where there are very few fragments recovered. This suggests that the larger pits, although they may include all bone elements of one species, do so because they contain larger numbers of bone so are more likely to contain all elements of the carcass. In some cases all cattle bone elements were found in one pit, but spread throughout the layers. This was at first thought to suggest temporal differentiation in the disposal of one animal carcass, the meat of which had been preserved on the bone where possible and eaten over the course of a year, such as recorded in 18th century England and is traditional practice in Fageça, Valencia, Spain (Malcolmson & Mastoris 1998; Wiseman 1986; Joan Segui, pers. comm.). The estimate of 18 months for a pit to be filled (Grant 2002) would fit approximately within this time scale, but analysis showed the bone to be from animals of different ages.

This pattern holds true for the pits examined from all phases and it is suggested that the pit contents are not from immediate deposition after butchery, but instead represent the remains of meat portions, which have been widely dispersed in small pieces on the bone. Small-scale consumption activity would have this effect; after butchery, cooking of these parts, perhaps the remains of individual meals, would delay deposition and disperse bones. However, the

same pattern could be produced from a totally different system of consumption. Gilbert and Singer contrast ceremonial feasts in Zahau Chan (Burma) with markets in Hili-ba (eastern Chad); at the former, pigs are divided into proscribed cuts and are allocated to recipients, while in the latter, a butcher will purchase an animal, kill it and sell the parts to customers passing by. In both, the meat is distributed on the bone within a large area and the bone elements deposited at some distance from the place of slaughter and butchery (Gilbert & Singer 1982: 26). The processes and activities are very different, but the depositional pattern is the same.

Analysis of occupation layers and associated pits suggested that the bones recovered were not single joints or butchery units, but from a variety of skeletal areas. There was no evidence of specific deposits of mainly meat bearing or mainly waste bone. In one circular structure, however, occupation deposits contained possible joints from sheep (although their butchery was not assessed in this study), or at least contained bones found adjacently in the skeleton, for example the humerus and radius. This suggests that while no evidence for immediate or rapid re-deposition into pit layers exists, the assemblages from occupation layers may more closely be linked to activities such as consumption.

At Suddern Farm, deposits differ from those at Danebury. Particular layers in pits appear to contain quite coherent butchery units, such as one early pit where the fore and hind limb bones of at least three cattle were recovered from one pit layer. A similar pattern was found for early and late phase animals. Certain deposits therefore contained very high proportions of meat bearing bone, and possibly provide evidence of feasting, maybe supporting Cunliffe's idea that Suddern Farm was of high status and in fact took over power from Danebury in the late Iron Age (Cunliffe 2000).

It is possible that at Suddern Farm some deposits at least were deposited quickly and so reflect activities not seen at Danebury. However the very small numbers of pits investigated, and the limited numbers of sites upon which this investigation was based, make further testing imperative.

The apparent absence of structured patterning at Danebury is important. There was, it seems, no rapid deposition into pits directly following butchery/ consumption. It seems that, although butchery appears to have been a specialised task, the bones resulting from butchery were not deposited in a specified area. There may have been no definable butchery 'waste', if all parts of the carcass were cooked and consumed, or butchery may have occurred in

several places, as required, by specialised persons. Alternatively, butchery may have been practised in a specific area, but the bones stored elsewhere prior to deposition in available pit(s), and final deposition may not have been subject to the same controlled practice as carcass division. It may be that the strictly followed butchery techniques had been formulated in response to the physiology of the animal, or the limitations of tools, rather than to social practice.

The large sizes of some cattle bone deposits in some early phase pits, observed in chapter 4, do not appear to be from individual layers in pits. Early phase pits do not contain deposits that might be regarded as the remains of feasting, at least not of whole individuals or limbs. It is however possible that they may have been deposited in several pits, and a selection of pits from the southern and central parts of the sample area could be investigated for clarification.

There is no evidence of whole cattle or pig carcasses that could suggest the consumption and deposition of entire animals in one event. Since filleting marks on the bones suggest that a large proportion of meat was removed from the bone, most deposits are more likely to reflect the activity of butchery waste deposition than consumption. In this case one would expect to find deposits of bones from adjacent parts of the skeleton together, which does not occur (at least for the cattle and pig). If the animal was slaughtered elsewhere and parts divided among the inhabitants one might expect such a diversity of bones.

Another explanation is that the meat had been preserved on the bone. The joints could then have been distributed, consumed (creating the filleting marks), and deposited when finished in the appropriate pit. This description fits the late phase at Danebury well, although it does not hold so true for Suddern Farm pits. In the early phase at Danebury different activities may have taken place, and there is a possibility that cattle were eaten in larger portions then disposed of directly following consumption.