3.3 CATTLE BUTCHERY AT DANEBURY

3.3.1 Incidence of butchery marks

Overall, the incidence of butchery marks is consistently low (table 3.9), but there is a slight increase in incidence in the pits (from 1.3% in the early period to 2.6% in the late phase) and a relative decrease in incidence in the layers (from 3.7 to 2.5%). While this may partly be a bias due to the smaller sample size for layers in the earlier phases, it is probably not the case for the pits, which in the earliest phases make up 23% of the pit material. Although the difference in butchery incidence may appear small, the proportion of bone with butchery marks in the late phase is double that of the early phase, which may be significant.

CERAMIC PHASE	LAYERS				PITS				TOTAL
	Total bone fragments	% of all bone fragments	total no. butchered bone	% of bone butchered	Total bone fragments	% of all bone fragments	total no. butchered bone	% of bone butchered	
1-3	542	10	20	3.7	4621	23	62	1.3	1.6
4-6	1264	23	27	2.1	3460	17	56	1.6	1.8
7-8	3806	68	96	2.5	11826	59	304	2.6	2.6
TOTAL	5612		143	2.5	19907		422	2.1	2.2

Table 3.9: Cattle butchery incidence by phase: teeth and unassigned fragments of skull are excluded, as are bones that are undated or insecurely dated (e.g. to cp 6-8).

The overall pattern suggests that butchery incidence in pits and layers became more similar, as is the case for the pig bones (see part 3.2.1). Table 3.10 shows that pit and layer material shows statistical evidence of a change in the incidence of butchery over time ($\alpha = 0.05$).

	Layer material: all phases	Pit material: all phases	Early phase: layer and pit	Middle phase: layer and pit	Late phase: layer and pit
P=	0.156	0.000	0.000	0.239	0.096
df	2	2	1	1	1

Table 3.10: χ^2 testing of similarity in cattle butchery incidence between phases and features.

Statistical analysis also shows that there was a significant difference in butchery incidence between pits and layers in all phases (table 3.10). The slightly higher incidence of butchery in layers might indicate that the bone deposited in layers suffered more, or less careful, butchery. Poorer preservation of the layer material provides the expectation that marks on bone from layers would suffer from surface erosion, and thus make marks less noticeable.

3.3.2 Types of mark

	EARLY mark type (%)		MIDDLE mark type (%)		LATE mark type (%)	
	Pits	Layers	Pits	Layers	Pits	Layers
Chop	30	17	21	23	24	26
Cut	34	39	60	38	49	56
Skin	4	0	2	8	2	4
Fillet	32	44	17	31	25	14

Table 3.11: Cattle butchery at Danebury: incidence of types of mark.

The numbers of types of marks are too small to perform chi-squared tests to identify differences between pits and layers. However, qualitative observation suggests that in the early period there are proportionately fewer chopmarks and more filleting marks in the layer deposits than in the pits (table 3.11). The middle phase shows fewer cutmarks and more filleting marks in layers. The overall impression is one of difference between feature types in the early periods leading to similarity in the latest phase.

Butchery incidence is variable through phase, but in pits there is slightly less chopping and filleting, and more disarticulation, over time. In the layers there are fewer filleting marks and more chops and disarticulation cuts over time. The pattern is probably indistinct due to small assemblage numbers. Detailed investigation of marks must be completed before any conclusions can be drawn.

3.3.3 Cattle butchery: pits

3.3.3.1 Butchery incidence by bone element

On the forelimbs and cranium, the incidence of butchery seems to replicate the overall pattern, i.e. a higher incidence of butchery in the late phase (table 3.12). This is not the case for most bones of the hind limb or the spine, and these two major parts of the carcass may have been subject to different processes. If, for example, cooking or preserving meat on the femur was more prevalent than filleting, this might explain the relatively lower incidence of cut marks on the upper part of the hind limbs.

Other differences between bone elements may be due mainly to the anatomy of cattle. The commonest cuts are on the tarsals for disarticulating the feet from the body, and on the distal scapula for disarticulating the forelimb from the torso. These may be more frequently observed because these joints are difficult to locate or disarticulate, as well as being places where disarticulation normally or frequently occurs. Cuts to the tarsals are probably also

common because these bones are situated at the point in the limb where the meat mass starts. Below this point there is very little meat, which make the tarsals a suitable target for cuts to remove the relatively unproductive lower parts. The lack of muscle covering also means that blades may impact on the bone more often.

	EARLY			MIDDLE			LATE		
	Total	Butchered	Butchery %	Total	Butchered	Butchery %	Total	Butchered	Butchery %
Cranium	1057	2	**0.2**	590	0	**0.0**	2257	11	**0.5**
Horncore	49	4	**8.2**	55	1	**1.8**	196	11	**5.6**
Mandible	170	3	**1.8**	157	3	**1.9**	633	13	**2.1**
Atlas	33	1	**3.0**	19	3	**15.8**	101	9	**9.2**
Axis	15	0	**0**	8	0	**0**	68	4	**5.9**
Scapula	116	6	**5.2**	144	6	**4.2**	462	38	**8.2**
Humerus	122	5	**4.1**	106	9	**8.5**	394	43	**10.9**
Radius	99	1	**1.0**	99	3	**3.0**	379	25	**6.6**
Ulna	55	1	**1.8**	57	3	**5.3**	222	12	**5.4**
Pelvis	136	7	**5.1**	113	5	**4.4**	451	23	**5.1**
Femur	109	9	**8.3**	81	1	**1.2**	393	14	**3.6**
Tibia	86	0	**0.0**	76	3	**3.9**	342	9	**2.6**
Ast/calc	83	19	**22.9**	80	10	**12.5**	302	41	**13.6**
Metac	72	3	**4.2**	62	2	**3.2**	231	8	**3.5**
Metat	45	0	**0.0**	51	0	**0.0**	225	14	**6.2**
Rib	268	0	**0.0**	218	0	**0.0**	704	1	**0.1**
Thoracic	244	6	**2.5**	157	9	**5.7**	1093	38	**3.5**
Lumbar	130	6	**4.6**	86	9	**10.5**	434	16	**3.7**
Phalanges	210	8	**3.8**	156	2	**1.3**	500	15	**3.0**
Total	3594	92	**2.6**	2837	66	**2.3**	10478	369	**3.5**

Table 3.12: Cattle butchery in pits at Danebury by bone element. Elements with no evidence for butchery in any phase have been excluded.
Deeper shading indicates higher incidence of butchery (shading graded at 2.5% intervals).

There is a relatively high incidence of butchery on middle phased vertebrae. This may again be anomalous, due to smaller samples from this phase, but it is also possible that a different butchery process was undertaken in these phases (for example the longitudinal splitting of the carcass) or, perhaps, of a difference in the performance of persons butchering.

3.3.3.2 Cattle butchery in pits: early phase (figure 3.8)

The position of marks on the head suggests skinning had taken place. Cuts on the side of the mandible below the toothrow may have been caused during filleting of the meat from the cheek. However, their position towards the front of the head, where there is little muscle, suggests they were more likely to have been made during skinning. Marks on the mandibular angle are likely to have been caused during filleting of meat from the side of the head. The horncore appears to have been chopped through at the base but also further up through the midshaft of the horncore, implying that consistency was not of paramount importance. A

chopmark on the ascending ramus may have been made during the separation of the mandible from the skull. A cut on the hyoid probably occurred when the head was removed: its position correlates well with the position of cuts on the occipital condyles and proximal atlas, which were probably made during decapitation.

On the bones from the torso there is evidence of chops on cervical and thoracic vertebrae to separate them from one another. A longitudinal chop on a cervical vertebra may have been made during flesh removal at the neck, or possibly to split the carcass, although it is not centrally placed. A cut on the transverse process of a lumbar vertebra probably occurred during meat stripping from this bone. Only one cut from filleting was found on the scapula, on the lateral part of the blade. Numerous cuts and chops were found on scapulae, across the distal articulation and into the glenoid border, again most likely a result of disarticulation from the humerus.

One chop on the anterior side of a distal scapula may have been made during disarticulation from the humerus, although cuts into the scapula spine are likely to have resulted from meat stripping or perhaps portioning. Pelves in this phase also have many cuts and one chop on the acetabulum, made during disarticulation from the femur. A chop across the dorsal aspect of an ischium may have been made during portioning. One cut on the pubis is positioned too far from the articulation with the femur to represent disarticulation, and it is probable that this mark was made when filleting the bone out.

The forelimbs show evidence of knife disarticulation on the proximal and distal humerus. Only one mark was present on a radius shaft, presumably from filleting. Some cuts on the carpals are likely to have resulted from disarticulation at the metacarpals. One metacarpal had been split with a chop, possibly to enable the removal of marrow, or during bone working. Cuts on the proximal first phalange may have been created during foot removal, and those cuts across the shaft of the first and second phalanges possibly occurred during skinning, as there is no meat on this part and they are too far from the epiphyses to indicate disarticulation.

Cuts from separating the pelvis from the hind limb are recorded on the proximal femur, and those on the distal epiphyses of the femur were probably made while separating the femur from the tibia. A cut on the lateral side of a distal femur was probably the result of filleting activity rather than disarticulation, which one would expect to be targeted closer to the

epiphysis. Cuts on the astragalus were almost certainly produced during disarticulation, while chops into the calcaneum were probably also made during separation of the feet.

3.3.3.3 Cattle butchery in pits: middle phases (figures 3.8 and 3.9)

The only cuts on the head bones are from phase six, where there is one cut on the base of a horncore, probably made while removing the horncase from the skull, and another cut under the orbit, made while removing cheek meat from the head. This mark is not firmly dated and it is possible that the pit it was excavated from was in fact phase 8 in date. Numerous cuts made during disarticulation from the skull are found on the mandible.

There are cuts on bones from the torso in all three of the middle phases. In phase 4 the lumbar vertebrae are chopped apart and the transverse processes chopped off in order to portion the spine. A knife cut on the underside of one of the transverse processes may have resulted from filleting activity. A cut to the atlas probably happened during decapitation. Cuts on the scapula blade and neck are consistent with filleting and disarticulation from the forelimb. One cut on the pelvis was probably also caused during disarticulation. A heavy cut into the ribs midway along the shaft may have been another method of portioning (illustrated in figure 3.8).

In phase 5 there are cuts on the cervical vertebrae which probably resulted from removal of the head or portioning of the neck, and further cuts from disarticulation of thoracic vertebrae. Three transverse processes had been broken from lumbar vertebrae. It is unclear how this happened, but as these particular bones were articulated it may have been accidental breakage caused during or after deposition, rather than as part of a butchery process. It is possible that breaks were made deliberately in order to divide parts manually (see Appendix 3). In this case the breakage could have occurred while removing the spine from the ribcage. There are no cuts recorded on the scapula or pelvis.

In phase 6 there are longitudinal cuts from filleting on the dorsal aspect of an axis, and a chop made during the separation of the third from the fourth cervical vertebra, possibly indicating decapitation. Cuts from filleting or possibly gutting are in evidence on the ventral side of a thoracic vertebra and on the ventral aspect of the transverse process of a lumbar vertebra. A cut on the articular surface of a thoracic vertebra was probably caused during disarticulation of this from the neighbouring bone in order to portion the spine. Marks on the scapula differ to those from the earlier phases, with evidence of two types of chop: one

through the neck, and another to split the blade along its length. Two cuts from disarticulation are found on the distal part, one on the lateral and one the medial side. On the pelvis, cuts from disarticulation of the femur are found on the acetabular ridge, while a chop through the pubis may have resulted from portioning of the pelvis. Cuts midway along the ilium on its dorsal side probably resulted from filleting of this part, as they are not close to the articulation.

Knife disarticulation took place at the distal humerus in all phases, and is noted on the proximal ulna in phase 6. In phases 4 and 5 filleting marks were also noted along the ulna shaft, and in phase 6 a chop was made into its distal articulation. In a phase 5 pit, one cut for disarticulation was recorded on the proximal humerus of an articulated part-limb, which included all elements from the humerus to the first phalange. The latter also showed evidence of deliberate disarticulation.

On the radius, butchery marks included a chop into the proximal articulation in phase 4 and evidence of cuts to both epiphyses for disarticulation in phase 6. Also in phase 6, one radius showed evidence of numerous parallel cuts along its posterior aspect, interpreted as filleting marks. The considerable number of marks on a single bone suggests that the butcher filleting meat from this bone was less experienced or careful than the majority of butchers. Alternatively, this type of marking could have resulted from cleaning the bone surface of fleshy parts. Cuts were recorded on the distal first phalange in phase 4 and the distal metacarpal in phase 6. Since they were found at the epiphyses, both presumably resulted from removal of the hooves, though it is possible they were made during skinning. One cut across the shaft of a first phalange in phase 4 gives firmer evidence for skinning.

There are relatively few cuts on hind limb bones. In phase 4 one cut mark on the distal femur is interpreted as evidence for filleting, although it was possibly made during disarticulation. Another cut on a distal tibia in this phase is likely to have resulted from disarticulation from the lower limb. Cuts on proximal calcanea in phase 6 pit deposits were probably created during separation of the lower from the upper limb. Many bones with cut marks are not firmly dated and may have been from middle or later periods, which makes interpretation difficult. However, the cuts which fall into this category (a cut on the patella and chop into the proximal tibia, probably both for disarticulating the femur from the tibia, and cuts from filleting on the tibial shaft) are all also in evidence from the later phase. Filleting is also in evidence on a tibia from phase 5 pits.

3.3.3.4 Cattle butchery in pits: late phase (figure 3.10)

In the late phase the nature of the butchery marks alters. Chopmarks are far more common than in earlier phases, especially those splitting bones, although chops through articulations were also in evidence.

A variety of cut types was noted on skull bones. Skinning marks were found on the frontal bone and across the pre-maxilla. Marks created during filleting of the cheek meat were recorded around the orbit and on the mandible. Cuts and chops around the mandibular condyle, on the lateral and medial surfaces, and cuts on the medial side of the angle and ramus may have been caused during disarticulation or removal of the tongue. Cuts on the occipital condyles probably resulted from decapitation, and there are cuts consistent with this interpretation on several atlases. Cuts into the base of horn cores were probably made during the removal of the horn case or core from the skull. Cuts on the dorsal aspect of the hyoid may have been made during decapitation, and those on the sides of the hyoid from decapitation or possibly gutting. One chop mark was recorded on the medial aspect of the ramus, made by chopping into the head from its dorsal aspect. This may have occurred during disarticulation, tongue removal or while attempting to split the mandible longitudinally.

The bones of the torso also show evidence for the use of different implement types and activities. Knife cuts from disarticulation are found on the ventral and dorsal surfaces of the atlas, on the thoracic and lumbar vertebrae (presumably made when dividing the spine into smaller portions) and on the sacrum (in order to remove it from lumbar vertebrae, although this could possibly indicate skinning). A cut on the dorsal (sternum) end of one of the ribs may have been made when splitting the ribcage open lengthwise for gutting.

A variety of chop marks was noted on the torso from this phase. Longitudinal chops, presumably caused when splitting the animal in half, were recorded on the atlas and axis, the lumbar vertebrae and the sacrum. The initial separation of the spine from the ribcage was effected by chops into the articulation of the rib with the vertebrae. Other chop marks on the middle of the ribs probably resulted from further portioning of the ribcage. Transverse chops to divide the spine into sections were identified on thoracic, cervical, lumbar and sacral vertebrae. Chops were also found on the spine and transverse processes of thoracic vertebrae, presumably made unintentionally during this process.

Chops splitting the body of the vertebrae from the transverse processes could have been caused during rough filleting from the spinal column, leaving the transverse processes in the meat. Cut marks from filleting the animal's back and sides are found on the sides of the cervical, sacral and lumbar vertebrae and the sides and spines of the thoracic vertebrae. Fine cutmarks from filleting activity are also found on the midshaft of the ribs, caused during meat stripping from the outside of the ribcage.

Knife cuts on the neck and distal articular edge (glenoid border) of some scapulae were made during disarticulation from the humerus, while cutmarks on the lateral side of the blade and the spine probably resulted from the removal of meat. Cuts may be more frequently made on the scapula than other bones during butchery as the scapula is an awkward shape to fillet. One transverse chop into a scapula spine may have been made during portioning, or was possibly intended to chop through the articulation of the humerus and scapula, but missed.

Pelves show numerous knife cuts on the acetabulum for disarticulation from the femur, and one cut on the pubis may also be a result of this activity. Cuts resulting from filleting can be seen on the medial and lateral sides of the ilium and ischium. Chops on the acetabular border, through the pubis and into the ilium, all most probably result from disarticulation of the femur.

Knife cuts on forelimb bones created during filleting include oblique fine parallel cuts on the midshaft of the humerus and the radius. Cuts on the proximal ulna may also have been from filleting, although there is little flesh here and it is more likely that they resulted from disarticulation. The humerus has many cuts and chops around its distal articulation. Other evidence for disarticulation takes the form of knife cuts on the proximal humerus, distal radius, carpals, proximal metacarpals and the proximal and distal first and second phalanges.

Marks from chopping were recorded on the proximal metacarpals, thought to have resulted from separation of the feet from the upper limb. A chop which split the shaft of a second phalange transversely may have resulted from rapid or crude foot removal, while longitudinal chops along the metacarpals and the first and second phalange might have been caused during the splitting of the metapodial for marrow, or possibly bone working. The phalanges and metapodials may still have been articulated when this occurred, with the phalanges chopped incidentally.

Marks interpreted as cuts from filleting are also found on the hind limb on the femur and tibia. Disarticulation marks are found on both epiphyses of femora, tibiae, astragali, calcaneum and metatarsals. Chop marks made during the disarticulation of these bone elements are also found on the distal femur and proximal tibia, and on an astragalus and distal metatarsal. Chops had split a metatarsal and metacarpal longitudinally. Both chops were presumably made for marrow removal or bone working.

3.3.3.5 Cattle bone in pits: summary

Head: As was the case with the pig bones (section 3.2.5.1), there are some evident differences in butchery between the early and later phase deposits. In the early phase there is no evidence of cuts on the cranium, and cuts on the head are only recorded on the horncore and the mandible. There are no cuts on the skull or mandible in periods 4 and 5 except one cut on the occipital condyles. By phase 6 there is possible evidence for butchery on the skull, just underneath the orbit, as well as on the mandible and horncore. However, this skull bone may date to phase 8, so evidence for butchery of the cranium is only definite in the late phase.

In the late phase there are several cuts on or around the pre-maxillae, orbit and frontal bone of the skull. These indicate skinning and filleting. On the mandible, cuts from the removal of cheek meat and disarticulation from the cranium occur throughout the phases. Evidence for decapitation by disarticulation at the occipital condyles and atlas is present in both the early and late phases. Skinning evidence is apparent only on the mandible in the early period though it is also found on the cranium in the late phase. Cuts on the hyoid are present in early and later periods.

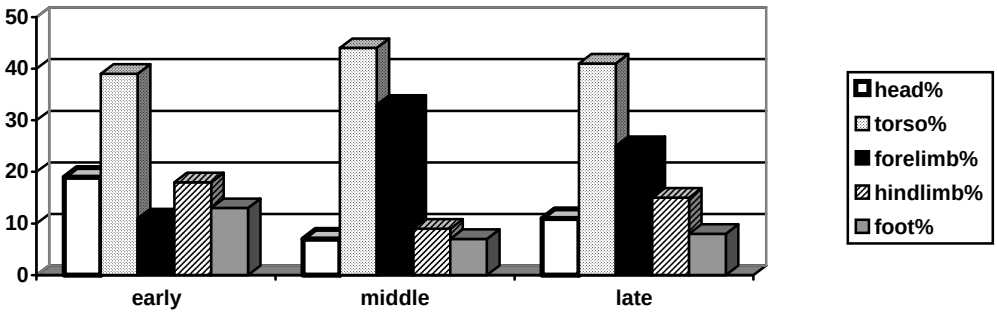

Figure 3.19: Percentage of bodily distribution of butchery marks by phase: cattle. 'Foot' refers to the phalanges and metapodial parts of both fore and hind limbs.

Torso: The incidence of cuts on bones from the torso is broadly similar across phases (see figures 3.8-3.10). However the range of cuts is more restricted in the earlier period, where they consist mainly of chops to separate the spine into chunks, chops and cuts to separate the limbs from the main body and filleting marks on the scapula, pelvis and vertebrae. In the middle phases the sample is smaller so there is less evidence for butchery techniques. However a slight change in the types of marks is evident: a cut through the ribs in phase 4 indicates portioning of the torso was occurring. While there is less evidence overall for disarticulation of the limbs, all the middle phases indicate this was still taking place.

The most pronounced difference is the use of a heavy implement to chop through the scapula in phase 6, where the scapula is chopped longitudinally along the blade and transversely across the neck. These chops replace filleting and knife disarticulation, the commonest types of marks in the other phases. A chop through the pubis is also evident in phase 6 pit deposits. So, a greater degree of bone division could be interpreted for this phase. In the late phase, filleting cuts on the scapula and pelvis are more prevalent than in previous phases. The cuts for disarticulation and chops are, however, much the same as in earlier periods.

In the late phase butchery evidence is more extensive, due probably to the greater numbers of bones from this period (see table 3.9). Cuts from filleting are found on all four sections of the spine, on all parts of the vertebrae (the body, spinous process and transverse processes) and on the ribs. This implies an intensive use of the meat, which appears to have been removed in small chunks. There are many disarticulation marks, from separating the vertebrae from one another and from the head and sacrum/pelvis. Chops are again frequently observed, on the vertebrae from the splitting of the spine, through the transverse processes when removing meat (and maybe ribs) from the sides of the animal, and through the ribs in order to portion the rib cage with bone intact. Chops that appear to have been intended to longitudinally split the vertebrae, and possibly the carcass, are seen only in the late phase, and only occasionally. However the strong butchery tradition of disarticulation at joints and filleting remains relatively unchanged throughout the phases.

Forelimbs: Early phase forelimb bones show a relatively small proportion of marks (11%), while in the later phases the proportion rises to 25%. In the middle phase 33% of forelimb bones are butchered. This is likely to be a product of the differently sized samples, as 15% and 13% of the bone comes from early and middle phases respectively, and 72% from the late phase. However it could possibly be suggestive of a change in butchery practice during the middle phases.

In the early period there are no recorded marks from filleting on the forelimb bones. This contrasts with the middle and late periods where filleting marks are found on the humerus (phases 4/5) and on the radius (phase 6), with numerous examples in the late phase on humerus, radius and ulna. It could be inferred that in the early phase, meat was more frequently cooked on the bone rather than filleted. However, it is more likely that filleting did not cut the bone on the fewer numbers of forelimb bones in the early phases. Chops or cuts on the epiphyses of the humerus, radius and metacarpals in the early period suggest that these were all disarticulated. Disarticulation was also practised in the middle and late phases, although in phases 4 and 5 there is no evidence of separation of bone elements between the humerus and second phalange. It is however possible that this is due to small sample size.

Chops and cuts created during disarticulation of the humerus and radius are the most common type of butchery mark, and in the latest phase marks for this purpose are not consistently placed, displaying variation in position and depth. One chop on cattle bone in the late period suggests that the humerus was split longitudinally from the distal epiphysis. Presumably this occurred after the removal of the radius, and would have enabled marrow extraction. Skinning marks on the shafts of the first and second phalanges are found from all phases, but skinning marks possibly increased in diversity in the late phase, where they are also seen on the metapodials.

Hindlimbs: Disarticulation resulted in marks on both epiphyses of femora and tibiae in the early and late phases. In the middle phases, however, there are considerably fewer marks on the upper hind limb. This may be attributable to small sample size in this phase. Circumstantial evidence for disarticulation of the femur and tibia is found in the form of cuts on the pelvis (phase 4), patella (inconclusively dated to phase 5), proximal and distal tibia (inconclusively dated to phase 6) and pelvis and calcaneum (phase 6). It is therefore likely that femur and tibia were disarticulated, although the evidence is inferred, not absolute.

Filleting marks on the tibia, radius and ulna became more numerous in the later phases. Filleting of the tibia is only in evidence from phase 5 onwards, while filleting cuts on the femur are present throughout (with the exception of phases 5-6). This could imply more intensive use of the meat after the early phase, with flesh stripped from those parts which bear smaller quantities of meat. Additionally, by the latest phase there is evidence that metatarsals were split, probably during the extraction of marrow. The implication is that there was indeed an increase in intensification of carcass utilisation in the latest phases. The

production of smaller parts of meat may indicate that less meat was being eaten, or more frequently eaten but in smaller quantities.

3.3.3.5 Cattle carcass divisions from pits (figures 3.11, 3.12 and 3.13)

The major carcass divisions were interpreted from the points on the skeleton where disarticulation was evidenced. Qualitative assessment of the divisions suggests, not surprisingly, that cattle were divided into more parts than pig: the larger size of cattle probably accounts for the greater number of divisions. However, the recorded incidence of butchery is similar between the species. Some additional divisions were found for cattle carcasses. These are not limited to certain phases, and they include splitting early phase metapodials, removing the feet at the proximal and distal metapodials and possibly disarticulation at the second phalange. Chops through the pelvis are also evident and the vertebrae (including cervical vertebrae) were split into chunks.

Butchery techniques for carcass division were similar in the early phase and phase 4 pits. The smaller sample size provided a more limited range of marks in phase 4. However, differences include division of the spine and chops through the ribs to divide the ribcage into sections in phase 4. Phase 5 again has only a few marks, but they are similar to those of phase 4. Phase 6 shows evidence of the first incidence of chopping through the scapula, transversely and longitudinally, in addition to the portioning activity on the spine and ribs mentioned above.

In the late phase there is a greater variety of butchery marks resulting from carcass division. In addition to the greater incidence of chops splitting the bone, cuts were also noted running longitudinally down the spine. The pelvis had been split into numerous parts and the ribs chopped and disarticulated from the spine, in a manner similar to that of the previous phases.

The greater diversity of cuts in the later phase may be due to larger sample size, but it is also possible that this indicates a significant change in butchery technique: a less rigid butchery technique may have been adopted. Maybe more meat parts were demanded from each carcass due increasing pressure on food resources. Perhaps (meat) eating had become family, rather than community, based.

3.3.4 Cattle butchery: layers

The small numbers of butchery recorded on each bone element almost certainly introduce bias into the analysis, especially in the early period. However, certain elements show a consistently high incidence of butchery in all three periods, for instance the astragalus and calcaneum (table 3.13). Other elements show a high incidence in some periods only. The humerus for example has a high incidence of butchery in the middle and late phases but none in the early phase. Other bones which bear a large quantity of meat, such as the femur, show a different pattern: the femur has no recorded butchery marks in the middle period and little in the late phase; the incidence of butchery marks on the pelvis is relatively consistent through each period.

The largest sample, from the late period, indicates a high concentration of cuts on the atlas and tarsals, interpreted as evidence for decapitation and the removal of feet from the carcass. There is a lower but relatively consistent incidence of butchery marks on the meat-bearing bones. The lack of any apparent patterning in the early and middle phases suggests that here the sample size is too small for detailed investigation, and indeed, several of the bone elements are represented by only a few fragments.

	EARLY			MIDDLE			LATE		
	Total	Butchered	Butchery %	Total	Butchered	Butchery %	Total	Butchered	Butchery %
Cranium	51	0	**0**	147	2	**1.4**	383	2	**0.5**
Horncore	7	1	**14.3**	29	1	**3.4**	52	0	**0**
Mandible	40	3	**7.5**	44	0	**0**	200	2	**1.0**
Atlas	7	0	**0**	14	1	**7.1**	36	5	**13.9**
Axis	1	0	**0**	8	1	**12.5**	35	1	**2.9**
Scapula	26	2	**7.7**	49	2	**4.1**	219	8	**3.7**
Humerus	26	0	**0**	67	9	**13.4**	214	14	**6.5**
Radius	19	2	**10.5**	51	3	**5.9**	165	6	**3.6**
Ulna	11	0	**0**	25	1	**4**	78	4	**5.1**
Pelvis	21	1	**4.7**	65	3	**4.6**	196	12	**6.1**
Femur	16	1	**6.3**	37	0	**0**	164	4	**2.4**
Tibia	22	1	**4.5**	46	2	**4.4**	152	1	**0.7**
Ast/calc	12	1	**8.3**	50	6	**12**	154	24	**15.6**
Metac	13	1	**7.7**	29	1	**3.4**	124	1	**0.8**
Metat	20	0	**0**	33	0	**0**	93	3	**3.2**
Rib	13	0	**0**	19	1	**5.3**	5	0	**0**
Thoracic	25	0	**0**	84	1	**1.2**	236	2	**0.8**
Lumbar	10	0	**0**	28	3	**10.7**	65	5	**7.7**
Phalanges	55	9	**16.4**	81	3	**3.7**	186	2	**1.1**
Total	395	22	**5.6**	906	40	**4.4**	2757	96	**3.5**

Table 3.13: Cattle butchery in layers at Danebury by bone element. Elements with no evidence for butchery have been excluded. Multiple mark types on a single bone are recorded separately.
Deeper shading indicates higher incidence of butchery (shading graded at 2.5 % intervals).

3.3.4.1 Cattle butchery in layers: early phase (figure 3.8)

There are relatively few types of mark on the layer material, possibly due to their slightly poorer preservation (Grant 1991: 447), but more likely to be due to the smaller numbers from layer deposits. Cuts are found from the disarticulation of the mandible from the cranium, and from the separation of the limbs from the feet and torso (on the distal scapula, proximal femur, distal metacarpals and distal tibia). Marks made during filleting are found only on the mandible, while skinning activity probably marked the first phalange. A cut on the base of the horncore was probably made during removal of the horn core or casing from the skull.

3.3.4.2 Cattle butchery in layers: middle phases (figures 3.8 and 3.9)

In phase 4 there is evidence for filleting on the humerus and the tibia. Evidence for filleting is also found on bone from phase 6 layers on the scapula, radius and skull. In the middle phases there is evidence for disarticulation on the distal humerus. This joint shows evidence of disarticulation activity in all phases, and while its robusticity may have contributed to the high numbers of butchery marks found on this part, it is likely that this joint was habitually disarticulated. Phase 6 layer deposits have the most examples of disarticulation of the middle phases, with cuts on the mandible, distal scapula, pelvis and tibia. There is no evidence of cuts made while separating the femur from the tibia.

Skinning activity marked the frontal part of the skull and the shaft of the first phalanges of phase 4 material. Chop marks in the middle phase are found only on bone from phase 6 where there was evidence that the horncore had been cut into. Other chop marks are found on the cervical and lumbar vertebrae, probably from portioning the spine, and on the pelvis, probably made when separating it from the spine.

3.3.4.3 Cattle butchery in layers: late phase (figure 3.10)

In the late phase there are slightly more chops, both to portion the bones and to replace disarticulation at joints. Chops for the latter purpose are found on the mandible, distal humerus, distal radius, distal first phalange, distal femur and calcaneum. Chops for portioning the carcass are found on the cervical vertebrae, scapulae, metatarsals (possibly to remove the feet), pelves (across the pubis and ilium), and transversely across the thoracic, lumbar and sacral vertebrae.

Evidence for filleting is less frequent than in the early phase, but cuts are found below the orbit, on the cervical, thoracic, lumbar and sacral vertebrae, and on the radius, pelvis and tibia. This suggests that meat was being filleted from the bone in tandem with chopping activities to portion elements. Marks interpreted as evidence of skinning are found on the frontal part of the cranium and across metatarsal or tarsal shafts. Cuts on the caudal vertebrae may have disarticulated the tail, or were possibly caused during skinning or even filleting (though the latter would have been intensive work for a small amount of meat). Marks made during disarticulation were recognised on many bones, including the mandible, occipital condyles, distal scapula, humerus, metacarpals, femur, pelvis, lumbar vertebrae, patella and tarsals.

3.3.4.4 Cattle butchery in layers: summary

The smaller number of bone from the early phase makes comparisons of butchery techniques difficult. Some marks are extremely common, such as the cuts for disarticulation of the humerus from the scapula, the pelvis from the femur and the mandible from the skull. The incidence of, and techniques for, removal of the feet appear to be fairly consistent. However, chopping was introduced in the late phase, to disarticulate and to portion the bones rather than fillet them. Evidence for filleting drops considerably in the late phase. Marks are found on the cranium throughout, either from skinning or meat stripping.

Significant changes in butchery technique appear in the late period. The use of chopping, the presence of cuts on bones (e.g. caudal vertebrae) that were not previously marked, and cuts to separate the tibia from the femur, suggest a more intensive use of the carcass than in the earlier phases. A greater variety of cuts recorded on vertebral bodies and transverse processes in the late phases may also reflect increasing intensity as well as a larger number of bones. The introduction of chops to divide joints, which were earlier disarticulated by knife, suggests that the use of cleavers or choppers in butchery had become more common. Evidence for longitudinal division of the carcass is also present in the form of longitudinally split vertebrae.

3.3.4.5 Cattle carcass divisions from layers (figures 3.11, 3.12 and 3.13)

There is relatively little evidence for butchery in the earlier phases of layer material. Phases 3-5 contained bone that showed evidence for disarticulation at some but certainly not all

joints. This is probably due to the smaller numbers of cattle bone in these phases (see table 3.9).

Phase 6 bones, however, show evidence of the longitudinal splitting of the vertebral spine, and chops to divide the pelvis into pieces. Chop marks are not present in the earlier phases and their presence in the late phase may indicate the introduction of a new technique or a relaxation of the existing one.

In the late phase there is evidence for more chops through bone in order to portion the pelvis, scapula, spine and tibia. It is possible that these were chopped in order to extract marrow, although they are not split longitudinally, which would facilitate marrow removal, and there is no evidence for longitudinal splitting of the metapodials. Chops into scapulae, which do not contain much marrow, appear to have been intended for portioning the shoulder prior to or instead of deboning. Table 3.11 shows that in the late phase, layer material shows a proportional decrease in filleting, and it may be that the meat was being cooked on the bone in smaller parts.

Overall, it seems that butchery noted on the cattle bones in late phase layers was designed to produce smaller meat units than in earlier phases.

3.3.5 Sequence of dismemberment: pits and layers

Determining the order of dismemberment is a subjective matter, and is hypothetical to a certain extent.

3.3.5.1 Sequence of dismemberment: early phase

Slaughter may have taken the form of an incision to the throat, causing the marks on the hyoid. However, it is possible that these cuts were made during decapitation. There is no evidence at Danebury for other archaeologically visible means of slaughter, for example pole-axing. Removal of the horncase is suggested from cuts around the base of the horncore. Cuts across the first phalange and the anterior part of the mandible suggest skinning. The head and hooves may have been removed around the same time, interpreted from cuts on the occipital condyles and proximal or distal metapodials. The internal organs were probably also removed at this time. As there are no marks indicating the opening up of the ribcage, it is likely that the internal organs were taken from the stomach cavity.

A chop into a cervical vertebra suggests that the carcass may have been split longitudinally, presumably after skinning and evisceration had taken place. There are however relatively few such chops recorded, and it may be that these resulted from chopping up individual sections of vertebrae, not splitting the whole animal. Other chops and knife marks suggest that the vertebral spine was split into sections and the limbs disarticulated. The pelvis and scapula also appear to have been chopped into sections, probably prior to or instead of meat stripping.

Meat removal from the mandible, scapula, lumbar vertebrae, pelvis and femur generally followed. The humerus, radius and tibia do not show such marks and although there is comparatively little meat on the radius and tibia, the humerus is a principal meat bearing bone. The forelimb therefore could have been cooked in large joints, although the smaller number of bones dated to the early phase may have led to an under-representation of filleting activity.

3.3.5.2 Sequence of dismemberment: middle phase

The middle phases do not have enough evidence of butchery to allow interpretation of the order of butchery although such evidence as exists suggests a similar method to the early phase. There is some suggestion of filleting of the forelimb being more common in the middle phase.

3.3.5.3 Sequence of dismemberment: late phase

The cuts on the hyoid suggest that the method of slaughter for cattle may have been slitting the throat. The horncase was probably removed by cutting around the base of the horncore, or cutting it off. If the latter occurred before removing the hide, the skinning process would be made easier. To obtain the largest area of hide, skinning probably took place before decapitation, followed by removal of the head and hooves. There is no evidence that the feet and head bones remained on the hide while it was processed. The cuts on the vertebrae suggest that the carcass was then split longitudinally, probably after removal of the internal organs.

The carcass was then further divided. The limbs were removed at the pelvis and scapula, the mandible from the cranium and the tail taken off at the sacrum or caudal vertebrae. After

removal of the ribs, either whole or in sections, the spine was divided up. It is not known to what extent, and while it is possible that in most cases the vertebrae were individually separated from each other, there were also some deposits of articulated chunks of vertebrae. The limbs were further divided at the joints, and the metapodials separated from the phalanges and/ or upper limbs. In a small number of cases the metapodials were split, presumably for marrow extraction, or bone tool manufacture (see section 2.4.4).

Additional processing involved filleting meat from the bone. The skull was filleted, as were the scapula, vertebrae and ribs. Filleted bones may have been used in soups to utilise the marrow and remaining meat pieces. Also some meat bearing bones, for example the pelvis, were chopped into smaller pieces, in order either to cook the bulk of the meat on the bone, or maybe to utilise the meat which still adhered after filleting. These processes may have followed the initial dissemination of main meat parts.

The chronology of butchery processes is difficult to ascertain, and it is hoped that the investigation of the distribution of parts can suggest the extent of redistribution of the carcass, and possibly also indicate the stage/s in butchery that redistribution took place.

3.3.6 Differences between features: pit and layer butchery comparisons

Certain aspects of butchery technique are constant between feature types, such as the cuts for disarticulation on the distal humerus and mandibular condyle. However there are certain differences between features.

There is no evidence of cuts to the skull in the early phase pits and layers, which are present on the skull bone from middle and late phase layer, but not pit, deposits.

Cuts on the torso bones are least frequently observed in the early phased layers (figure 3.8). However the small numbers of bone from these contexts probably account for this. As all the butchery marks noted from the early phase layer material are also in evidence in the early phase pits, it appears that any differences are not evident from the recorded marks. In phase 4, cuts are again similar in both pits and layers, with the exception of one cut on a skull in a layer deposit, from skinning. Evidence for filleting is slightly more frequent in the layer deposits but again there are very few examples for comparison.

In phase 6 layer deposits there are no chops for portioning meat on the bone, as are often found on material from the pit deposits. Instead filleting marks are more often found, suggesting that if a new convention of chopping had been adopted, it was not practised on the animals deposited in layers.

In the late phase chop marks on bone are found from both layers and pits. Skull bones from both feature types bear cut marks from skinning and filleting. The greater number of filleting marks found on the bones from pit deposits suggest a greater intensity of meat use from these carcasses. This suggestion may be verified by additional evidence from pits, including the splitting of metapodials (possibly for marrow) and chops through ribs and larger bones such as the pelvis. These suggest that pits contained bone remains from smaller units of meat.

3.3.7 Differences between features: pit and layer carcass divisions

In the early phase, there is a consistency in butchery marks from layers and pits, so although there is little evidence for carcass division, it cannot be said that there is a difference between feature types. Phases 4 and 5 also show similar butchery in layers and pits.

In phase 6 the feature types show similar butchery, with chops through bone and disarticulation of most elements, although in layer deposits there appears to be less division of the hind limb.

In the late phase there are again many chops to divide up the spine and scapula, and to split the carcass longitudinally, resulting in greater division of the skeleton than in previous phases. The layer material does not appear to have as much evidence of bone splitting as the pits, and it may be that the layers contained remains of cattle carcasses that had been less intensively exploited for food or industrial activities.

Overall there are few differences between the pit and layer material in terms of carcass division. However the change over time may be important and is paralleled by the pig bone (see chapter 3.2.6).

3.4 COMPARISON OF CATTLE AND PIG BUTCHERY

A slightly higher proportion of cattle than pig humeri had cut marks on the distal articulation, indicating that this joint had been open during butchery, and therefore that the animal had been freshly killed (Luff 1994). For both species, there is evidence that cuts for disarticulation occurred all around the distal humerus, with pig bones showing 2 of 16 cuts on the articulation, and cattle bones with 7 of 36 cuts on the articular surface. Luff also suggests that cuts on the lateral, medial and posterior surfaces of the humerus may have resulted from inexperienced or incompetent butchers, but the consistency in technique shown by the majority of butchery marks suggest this is not the case. In some instances, though not all, cattle and to a greater extent pigs may have been stiff when butchered.

It was anticipated that the incidence of butchery on the cattle bones would be higher than that on the pig bones, due to their larger size and the greater quantity of meat recoverable from them. That this is not the case, and that butchery actually appears to be less frequent on cattle bones, is interesting and possible explanations are suggested below.

The selective breeding of animals in the recent past has altered the size and conformation of animals. In the Iron Age, the relative sizes and conformation of cattle and pig were closer (Grant 1984a: 463; Knight 2001) since pigs were probably more active and contained a lower proportion of fat. Thus the two species would not have required such differing techniques of butchery as they have done since the ‘improvements’ in animal breeding in the seventeenth century.

Alternatively, it is possible that there was only one legitimate butchery method at Danebury, which disregarded species differences. A very brief examination of butchery from dog and horse bone showed they were butchered in a similar manner to pigs, with disarticulation cuts frequently found on the distal scapula and tarsals, for example. Further investigation of this observation is beyond the scope of this thesis, but it is quite possible that the same butchery procedure was followed for each species, either for ease or through habit.

There are significant correlations between the butchery techniques used on the two species. Both show a well-organised, consistent technique of disarticulation in the early period, with some differences between feature types. In the later phase there is an increasing similarity between deposits for both species, and a greater intensity of division and carcass use. The pig bones show less evidence of butchery marks to chop through the larger meat bearing

parts such as the scapula and pelvis, and it is possible that this may be a result of their smaller size. Cattle bones often show evidence of chops through joints, for example at the humerus-radius articulation, but this is less common on pig bone. The overall incidence of butchery on pig and cattle bone varies by phase, and in fact the overall incidence is higher in pigs (tables 3.2 and 3.9), so it should not be taken for granted that the smaller animals will necessarily be subject to less intensive butchery.

More effort is required to divide cattle joints, demonstrated, for example, by deep chops into the pelvic acetabulum. Symbolic/ sociological reasons may also have played a part: the pig and the cow may have served different purposes, and so different techniques or tools could have been used for them. It is also possible that different species were butchered by different people and for consumption at different occasions.

3.5 BUTCHERY FROM THE DANEBURY ENVIRONS SITES

3.5.1 Recording methods

The sites chosen for this analysis are described in the literature review (chapter 1.3.1.3). Julie Hamilton recorded butchery marks in detailed sketches and a coded database. I interpreted the marks she had sketched onto card files and transferred them onto the same skeleton diagrams as had been used for the Danebury butchery analysis. The lack of butchery marks shown on ribs and vertebrae (see figures 3.20 and 3.21) derives from the recording method. Most of these bones were not assigned to species.

Here, all deposits that were not pits have been labelled ‘layers’ to provide sufficient comparative data. These deposits include quarry and ditch fills.

3.5.2 Nettlebank Copse

3.5.2.1 Incidence of butchery:

In phase 1 (early Iron Age settlement), butchery marks were only found on bones from pits. In phase 2 (the late Iron Age banjo enclosure) they were only from ditches. This pattern reflects the dominant feature type at the settlement during each phase of occupation. Thus there was no opportunity to investigate differences between feature types in individual phases. The transfer from pit to ditch deposits upon reoccupation in the late Iron Age

suggests that any differences in butchery techniques are part of an overall change in depositional practice, and could reflect that change. Julie Hamilton recorded the incidence of butchery by bone element. The small numbers involved mean that these interpretations can only be tentative, and in the main, statistical testing cannot be carried out.

	Period	Total bone no.	Butchered bone no.	% of bones butchered	P
PIG	Early Iron Age	431	15	**3.5**	0.729
	Late Iron Age	538	21	**3.9**	
CATTLE	Early Iron Age	270	36	**13.3**	0.001
	Late Iron Age	1101	78	**7.1**	

Table 3.14: Incidence of butchered pig bone at Nettlebank Copse (values from Julie Hamilton) and probability of the difference in incidence between phases being significant using Chi-Squared tests.

Pigs show a consistent incidence of butchery across phases (table 3.14: 1df, α=0.05), similar to the pits and layers at Danebury. Statistical analysis suggests that the incidence of butchery in the early phase shows no difference between Nettlebank Copse and Danebury (P=0.835, df2), but a significant difference in the late phase (P=0.067, df2). The cattle show a statistically significant decrease in butchery incidence (P=0.001, df1).

As Hamilton (2000c: 110) states that bone in the late phase was in worse condition, preservational differences were investigated in order to ascertain whether these had contributed to the higher incidence of cattle butchery recognition in the early phase. The early phase bone was almost as poorly preserved at that from the late phase, especially in the uppermost parts of pits where up to 85% of bone had been eroded by rootlets. These bones showed fewer butchery and gnawing marks than those in the lower pit deposits, and Hamilton concludes that some information had been lost due to bone surface modification (Hamilton 2000c: 103). However the overall incidence of gnawing was in fact higher in the late phase. If surface erosion had obscured marks from gnawing and butchery activity, the opposite pattern would be expected. This suggests that preservational bias was not necessarily an issue at this site, although it could be suggested then that gnawing had obscured some butchery marks.

The apparent decrease in butchery over time could instead have resulted from various other influences. Dogs may have had greater access to butchered bone in layers than in pits (Hamilton 2000c: 110) thus providing more evidence of gnawing in the layer-dominated late phase, Alternatively butchery techniques may have been refined so the joint could be more carefully located and disarticulated in the late phase, requiring fewer butchery marks, or there may have been a genuine decrease in the numbers of bone which were butchered, for

the production of larger joints, or by butchering smaller animals. However, the majority of individuals were mature in both periods, so size was probably not a factor.

3.5.2.2 Pig butchery at Nettlebank Copse

From Hamilton's figures, the humerus, femur and pelvis appear to have been most frequently butchered in the later phase, and the vertebrae, tibia, astragalus and metapodials in the earlier phase (table 3.15). The skull shows a similar incidence of butchery in both phases. Hamilton also showed that the percentage of whole bones was considerably lower in the later phase (with the exception of metapodials and phalanges). These two pieces of evidence combined suggest some fundamental change had occurred. It seems that meat-bearing bones were more intensively butchered in the late phase, and could suggest a more intensive exploitation of pig carcasses. The lower numbers of whole bone in the late phase could imply marrow extraction was taking place, and this also suggests more intensive use of the carcass.

	Early phase			Late phase		
	NISP	Butchered	% Butchered	NISP	Butchered	% Butchered
Skull frag.	41	1	2.4	64	1	1.6
Mandible	26	3	11.5	65	4	6.2
Scapula	15	3	20.0	36	2	5.6
Humerus	11		0.0	44	7	15.9
Radius	14	2	14.3	13	1	7.7
Ulna	8		0.0	20	1	5.0
Pelvis	7		0.0	11	2	18.2
Femur	5		0.0	24	2	8.3
Tibia	9	1	11.1	12		0.0
Astragalus	3	1	33.3	2		0.0
Metatarsal	7	1	14.3	3		0.0
Metapodial	6		0.0	3		0.0
Vertebra	56	3	5.4	44		0.0
Rib	72		0.0	49		0.0
Total	280	15	5.4	390	20	5.1

Table 3.15: Butchery incidence on pig bone from Nettlebank Copse. Elements that do not show evidence of butchery in either phase have been omitted. Source: Hamilton, pers comm.

Phase 1 (early)

Disarticulation of limb bones seems to have been practised, with the separation of the scapula from the humerus, the femur from the pelvis and the feet at the tarsals (see figure 3.21). The phalanges seem to have been separated from the distal metapodials by chopping. Filleting was common on the torso, limbs and head. Possible skinning marks on the metapodials were also noted.

Phase 2 (late)

Disarticulation is interpreted from marks on the mandible, scapula, humerus and pelvis, and there are also chops to separate the humerus from the radius (see figure 3.21). Filleting marks are found on the pelvis, femur, humerus and skull. There are no skinning marks evident.

Comparison of pig butchery between phases

In both phases the humerus was removed from the scapula and radius/ulna, and the mandible separated from the jaw by a chop in the early phase and knife cut in the late. The parts produced were apparently very similar, but the types of marks do differ slightly. In the late phase there are more chopmarks around meaty parts, particularly the humeral-radial joint. However in the early phase chopmarks are found only on extremities (the mandible and trotters). This is probably due to small sample size, although there are other possible explanations. Cleavers may have been used for primary butchery in the early phase, but in the late phase used for a wider range of different tasks, such as division of meat parts.

Marks representative of filleting activity coincide only on the head, where the cheek meat appears to have been removed. Marks on the inside of the mandible suggest the removal of the tongue, as does a cut on a tooth in the late phase. Other filleting marks are found on the meat bearing bones. In the early phase these are found on the scapula, radius, vertebrae, pelvis and tibia. The lack of filleting marks on the meat-rich femur and humerus in the early phase might indicate the roasting or salting/smoking of these joints. Corroborating this suggestion, 2.1% of the pig bones are burnt in the early phase, but only 0.4% in the late Iron Age. The filleting evidence on late phase meat bearing bone perhaps resulted from a demand for smaller units of meat. Meat could have been left on the smaller bones (radii, tibiae, vertebrae etc.), but removed from the humerus and femur as, complete, these would carry too much meat for a single portion.

There is no taphonomic reason why cuts to the humeri or femora would not be preserved in the early phase pits but would be present in the layer material. There are four times as many humeri and femora in the late phase layer material. It is possible that pits contained only certain parts of the carcasses and that the main meat bearing parts were disposed of elsewhere.

Skinning marks are found only on the early phase bones. This could be an artificial taphonomic difference, as bone where skinning marks are likely to be found are the cranium and phalanges, small or fragile bones which may have been damaged or overlooked in the more abraded ditch deposits.

3.5.2.3 Cattle butchery at Nettlebank Copse

Again Julie Hamilton had recorded the incidence of butchery for each bone element (table 3.16). Despite the small sample, there are distinct similarities to the pig data. Again in the late phase marks were less common on the trotters and more common on the vertebrae and humerus.

	Early phase			Late phase		
	NISP	Butchered	% Butchered	NISP	Butchered	% Butchered
Horn core	3		0.0	5	1	20.0
Skull frag.	46	5	10.9	161	9	5.6
Mandible	47	9	19.1	193	23	11.9
Scapula	15	2	13.3	48	7	14.6
Humerus	6		0.0	57	15	26.3
Radius	9	2	22.2	41	5	12.2
Ulna	5	1	20.0	31	3	9.7
Pelvis	17	4	23.5	60	3	5.0
Femur	4	2	50.0	24	1	4.2
Tibia	3		0.0	40	5	12.5
Astragalus	2	1	50.0	19	3	15.8
Calcaneum	7	3	42.9	15	2	13.3
Metatarsal	10	1	10.0	34		0.0
Phal1	2	1	50.0	11	2	18.2
Vertebra	9	2	22.2	20	2	10.0
Total	185	33	17.8	759	81	10.7

Table 3.16: Butchery incidence on cattle bone from Nettlebank Copse. Elements that do not show evidence of butchery in either phase have been omitted. Source: Hamilton, pers comm.

Phase 1 (early)

Light cuts across the frontal part of the skull and on the phalanges suggest skinning activity. Marks on the mandible, scapula, radius, tibia and tarsals suggest a technique based on disarticulation, although chop marks on the pelvis, mandible and metapodials also resulted from separating bone using heavier implements (figure 3.21). Differential recording might cause this effect. Definitions of chops and cuts are subjective and analysts' classifications may differ. In this instance Hamilton was 'conservative' about defining heavy cuts as chops (Hamilton pers. comm.), and Grant usually recorded heavy cuts as 'cut' in the database,

although a note was added to the sketch to illustrate the force of the cut. Thus it is likely that the two records are not too divergent.

Filleting marks are found on meat bearing parts such as the scapula, pelvis and femur, and also on the radius and skull.

Phase 2 (late)

Evidence for skinning was found on the phalanges and the frontal part of the skull (figure 3.21). Disarticulation of the mandible from the skull is in evidence, and marks from disarticulation activity are also recorded on the scapula, humerus, radius, pelvis, tibia and tarsals. Chop marks are found in similar locations to the knife cuts made during disarticulation, for example on the distal humerus and proximal radius. Chops through the bone made during portioning are also found on the horn core, the cervical vertebrae and meat bearing bones such as the scapula and pelvis. Filleting had marked the main meat-bearing bones and the head, though not the pelvis and scapula which had been portioned by chopping.

Comparison of cattle butchery between phases

Chop marks on late phase bones are found on the horncore, cervical vertebrae and limbs (the scapula, pelvis and humeral-radial joint have been chopped through). This pattern bears some similarity to that noted for pig bone, where chop marks on the limbs and pelvis are evident only in the late phase. One chop on a scapula spine could inadvertently have been made whilst removing flesh quickly or been intended to portion the meat on the bone.

Primary butchery methods appear to be similar, including the removal of the hooves at the tarsals and carpals by knife. The disarticulation pattern also corresponds between the phases, with separation of the limb bones at both the humerus-scapula and humerus-radius joints and the proximal and distal femur. However there is an absence of cuts on the humerus itself in the early phase, which is also the case for the pig humeri. While this may be an effect of the small sample size, it could also suggest that the humerus and its attached meat were used as a whole joint, larger than that generally produced in the later period.

Another difference is the absence of filleting marks on the scapula and pelvis in the later phase. Possibly the meat from these parts was cooked on the bone, especially since there is

evidence for chop marks *through* the scapula and pelvis, which would have divided them into manageable parts without filleting. Some chops on the pelvis in the earlier period could have resulted from portioning of large meaty sections, but were probably intended to divide the limb from the trunk, as the chops were made close to the acetabulum. Other filleting marks coincide between phases, except for those on the tibia. On this bone there are no filleting cuts in the early phase, but this may be due to the smaller sample in the early phase (N=3) compared to the later phase (N=40).

Skinning appears to have occurred in both phases, with evidence of knife cuts across the frontal part of the skull and on the phalanges/ metacarpals.

3.5.3 Suddern Farm

Throughout the phases at Suddern Farm the bulk of the material originated from pits, but in the late Iron Age and Roman periods animal bone was also recovered from the ditch and working hollows, respectively.

3.5.3.1 Incidence of butchery

	Total bone no.	Butchered bone	Unbutchered bone	% bones butchered
EIA pit	498	1	497	**0.2**
MIA pit	142	4	138	**2.8**
LIA pit	48	4	44	**8.3**
LIA layer	45	3	42	**6.7**

Table 3.17: Incidence of butchered pig bone at Suddern Farm.

The incidence of butchery on pig bones varies substantially between phases, possibly due to relatively small numbers (see table 3.17). Gnawing incidence suggests that preservation was poorer in the later periods, with 8.3% gnawed bone in the late Iron Age, with only 1% in the early phase (Hamilton 2000b). However, the incidence of unidentified fragments *decreases* over time, from 57.1% in the early phase to 30.9 in the late phase pits (Hamilton 2000b: 176), indicating that bone was less fragmented and/ or better preserved in the late phase. The incidence of butchery on ox bone rises in the late phase, which could also be taken as evidence for better surface preservation. It may be, of course, that the greater incidence of gnawing in the late phase has obscured further butchery marks which are hence unrecorded. However, the incidence of butchery on pig bone decreases, suggesting that gnawing was not consistent across species, and suggesting that it did not unduly influence the recognition of butchery marks.

The consistency between features and periods, which is present at Danebury and Nettlebank Copse, is not apparent here. Instead the incidence of butchery seems to rise throughout the Iron Age in pits. In the layer deposits there is a similar incidence of butchery as in pits. Small sample size may account for the variation, with only a few butchered examples from each type and date of deposit. Otherwise it is possible that the pattern suggests division of the carcass into smaller parts in the later Iron Age (see part 3.5.5).

	Total bone no.	Butch bone no.	Unbutchered bone no.	% bones butchered	P
EIA pit	355	48	307	**13.5**	0.031
MIA pit	1101	104	997	**9.4**	
LIA pit	418	34	384	**8.1**	
LIA layer	271	46	225	**17.0**	0.000

Table 3.18: Incidence of butchered cattle bone at Suddern Farm (values from Julie Hamilton) and probability of the difference in incidence between phases being significant using Chi-Squared tests.

Conversely the cattle show a statistically significant decrease in the frequency of butchery marks over time in both pits (P=0.031, 2df, $\alpha = 0.05$) and layers (ditches) (P=0.000, 1df, $\alpha = 0.05$), indicating real change (table 3.18). The incidence is still very much higher than that at Danebury where the average is just 2.1% in pits and 2.2% in layers. The incidence is also higher in layers than in pits, although again it decreases over time. The difference in butchery marks may be due to canine gnawing of the bone surface (although this is not likely to be the main cause, see above), or have been caused by a change in cooking methods, for example the introduction or increased incidence of either roasting large joints or preserving substantial meaty parts on the bone. The types and positions of marks are elucidated below to further investigate the butchery practice.

3.5.3.2 Pig butchery at Suddern Farm

The numbers of butchered pig bone from Suddern Farm are extremely small. The early phase does not provide much evidence for butchery practice, but what exists corresponds to that from the middle Iron Age (figure 3.20). There is a slight difference between middle and late phase butchery methods at Nettlebank Copse. Middle Iron Age butchery appears similar to that from Danebury: the disarticulation of trotters from limbs, limbs from the torso and further subdivision of the limbs was practised at both. However in the late Iron Age pits at Nettlebank Copse the only recorded filleting marks are on the upper forelimb. In late Iron Age layers there is more evidence of butchery including disarticulation of the distal humerus and filleting of the pelvis, scapula and mandible. The sample is too small to substantiate any

alleged change, but of possible significance is the scarcity of evidence for disarticulation in the later pits, in preference for filleting, suggesting smaller meat parts were produced.

3.5.3.3 Cattle butchery at Suddern Farm

	Total	Butchered	Butchery %
Cranium	521	34	**6.5**
Mandible	213	46	**21.6**
Scapula	92	38	**41.3**
Humerus	91	45	**49.5**
Radius	91	20	**22.0**
Ulna	55	4	**7.3**
Pelvis	85	24	**28.2**
Femur	70	27	**38.6**
Tibia	69	16	**23.2**
Ast/calc	128	53	**41.4**
Metac	50	17	**34.0**
Metat	71	18	**25.4**
Thoracic	93	14	**15.1**
Lumbar	67	2	**3.0**
Phalanges	131	37	**26.6**
Total	1827	395	**21.6**

Table 3.19: Incidence of cuts to cattle bone at Suddern Farm from all Iron Age phases. Source: Hamilton, pers. comm. Shading graded at 10% intervals.

Hamilton's analysis indicates a far greater incidence of marks on cattle bone than pig (compare tables 3.17 and 3.18). She calculated butchery incidence by bone element for the whole Iron Age (table 3.19). The humerus has the highest percentage of marks, followed by the scapula, femur and astragalus. Frequent cuts on the tarsals are to be expected, since they are often disarticulated during foot removal, and are covered by a very thin layer of flesh, which is easily cut through. However, the large number of marks on the meat bearing bones indicates either that cuts for disarticulation are more forceful then needed, or that these parts are being fairly heavily processed, with meat routinely filleted, resulting in more cuts along the shaft of the upper limb bones. A more detailed investigation of the positions of marks by phase is presented below and illustrated in figure 3.20.

Early Iron Age pits

Skinning is interpreted from cuts across the upper first phalange shaft and across the frontal part of the skull. This differs to the early Danebury pit deposits where there are cuts on the mandible but not on the skull. Cuts from disarticulation are found on the epiphyses of all meat bearing bones and also on the metapodials and phalanges. Filleting marks are found on the scapula, humerus, femur and tibia, as well as on the head.

Middle Iron Age pits

Cuts across the shaft of phalanges and metapodials, and on the frontal and premaxilla of the skull, suggest skinning. There is a proliferation of cuts at the epiphyses of long bones, and also on the cervical vertebrae and tarsals, for disarticulation. Chopmarks are also found. They appear to have been used to chop through joints, on the cervical vertebrae, proximal radius, pelvis and tarsals. Other chopmarks include those through the scapula for portioning, some into the underside of the jaw, possibly to expose the tongue, and on the skull to remove the horncore. Filleting marks are found in similar places to the early material, but are more common and found on more bone elements, including the pelvis, vertebrae and radius, though not the skull.

Late Iron Age pits

Skinning marks are found on the metapodials and the frontal part of the skull. Marks for disarticulation are found on the mandible, atlas, cervical vertebrae, scapula, distal humerus, proximal radius, femur, tarsals and possibly on the phalanges (if these are not skinning marks). They are not found on the femoral/tibial joint or the pelvis. Filleting marks are present on the shafts of the main meat-bearing bones including the maxilla, pelvis, femur, tibia, scapula, humerus and radius. Chopmarks are infrequently recorded but are present on the mandible, proximal metatarsals and occipital condyles of the skull for disarticulation, and on the neck of the scapula, where the chops orientation might be indicative of meat removal or rough portioning. One chop that removed a horncore impacted on the skull.

The parts produced were very similar to those in the early and middle phases, with the exception of the hind limbs (there is no evidence in this phase for separation of the tibia and femur) and the neck (marks suggest it may have been a separate cut in this phase). The numbers of bone are fewer than in the middle period and similar to the early period, but the percentage of bone butchered is much lower.

Late Iron Age layers

The butchery evidence from layers is noticeably different to that from pits. Chop marks are more frequently observed, with chops across the proximal femur, pubis, atlas and mandible, all probably from disarticulation. There are also chopmarks in places where it is unlikely disarticulation was intended, such as through the radius and into the base of the angle of the

mandible. Portioning most easily explains the former. The latter may have resulted from chopping through to remove the tongue, or may have been a miss-hit made when attempting to remove the head. It could also have occurred from breakage of the mandible to remove marrow.

Disarticulation marks are found in similar positions to chopmarks on the atlas, mandible and pelvis. They are also found on the tarsals, carpals, humeral/radial joint, scapula and possibly also on the distal metapodials.

Filleting is very common with numerous marks on the long bones, scapula and mandible (interior and exterior). Marks that may have resulted from skinning are also found on the pelvis and maxilla, as well as some on the metapodials. One metapodial has heavy transverse cuts along its length. It is hard to imagine what these were intended for. Skinning would not require such force or repetition, and they are in the wrong position for disarticulation. There is very little meat available here so it is not likely that the marks where made when filleting. Possibly the bone was stripped, maybe in preparation for bone working.

Skinning can be suggested from the cuts across the frontal part of the skull and the shaft of the first phalange, and possibly also from the numerous cuts on the metapodials, although these may be disarticulation marks.

The parts produced are very similar to those seen in the pit material, although the means of production (implements) were different. The high frequency of cuts on mandibles in the layers is the most striking difference to pit deposits, from which none was recorded.

Comparison between phases

Skinning: The evidence for skinning is consistent throughout all phases and context types.

Disarticulation: Disarticulation marks are similar throughout, in their placement if not frequency. The separation of the humerus from the scapula, for example, occurs on the scapula throughout, but on the proximal humerus in only early and middle phases. Also the cuts on the proximal tibia to separate it from the femur are only present in the early phase. These may well be simply a consequence of small sample size. However the lower incidence of cuts to these meat-bearing bones in the late Iron Age might suggest that larger parts were being produced. The much higher incidence of filleting marks in the layer material suggests

that in layer material, the meat parts had been smaller. Evidence for disarticulation of the mandible with a knife also increases over time, though a chop noted from a middle phase pit was probably from the same activity.

Filleting: Filleting marks are relatively similar in incidence and position throughout the Iron Age phases and features.

Chop marks: The incidence of chop marks increases through time, with none in the early period and 11% in the late period. They are even more common in the middle period. In the late period, layer deposits from ditches are found as well as pits at Suddern Farm. Chop marks are common in both of these, and are found in similar positions. The late phase layers, which built up in ditches, provide evidence of very many chops. These are the most common type of mark in this phase, where for the first time they are frequently used both in order to portion the animal prior to filleting and to remove marrow after meat stripping.

Some chops in middle and late phase pits and layers seem to have been intended to fillet meat from the animal, as well as to separate at articulations. This indicates a more rapid method of meat removal, and contrasts with the evidence from Danebury.

The decreasing incidence of butchery in the pits over time is difficult to explain. It may be the result of variation in sample sizes, but could otherwise indicate that fewer cuts were being made by knives due to a more efficient or new method, or that larger parts were being produced. The very high incidence of butchery in the late layers may be due to the large proportion of filleting marks present in this phase, which indicates that small meat pieces or clean bones were required.

3.6 BUTCHERY FROM BALKSBURY CAMP

In order to compare the butchery pattern at Danebury to that from another hilltop site in Hampshire, to provide an indication of how these sites might have related to each other, Balksbury Camp was chosen since it is superficially similar in size and morphology to Danebury and has an accessible butchery record for the animal bone. It is slightly larger than Danebury (Wainwright & Davies 1995: 1), located approximately 8km NNE and was defended by a single earthwork, which may have fallen into disuse by the Iron Age (Wainwright & Davies 1995: 107). The other sites used as comparative datasets are both undefended settlements, and Nettlebank Copse was much smaller than Danebury

(Nettlebank Copse is 0.25 ha, and Suddern Farm 2.2 ha). Both Danebury and Balksbury were large-scale excavations; surface stripping removed 2ha of topsoil from Balksbury, compared to the 3ha of a total 5.3 ha at Danebury. The greatest concentration of features, including pits and circular structures, at Balksbury lies in the centre of the site, as is the case for early periods at Danebury. Some other features are present in more peripheral areas, but the eastern part of the site had been built on, so was unexcavated.

Balksbury has evidence of occupation throughout the Iron Age, in the centre of the settlement at least. Pottery dates the early period to 900-400, and the middle- late period to 400 BC-AD50. By the later phase the settlement showed no evidence of housing and use was concentrated in the central area where pits were filled (Wainwright & Davies 1995: 19). Its use may have differed considerably from Danebury in the later part of the Iron Age. Pits are of a similar nature to those at Danebury, filled with occupation debris, some containing carbonised grain and daub (Wainwright & Davies 1995: 16). Numerous stratigraphic layers filled pits, ranging from four to 15 per pit. 27 pits from the early phase were excavated, and 90 from the middle-late phase. Butchery marks were only recorded from bone found in pits, so no comparisons could be made between feature types.

3.6.1 Archives and recording code

The bone was recorded and written up by Mark Maltby (Maltby 1995), and detailed records of the butchery marks placed in the archive at the Faunal Remains Unit in Southampton. These records were coded according to specifications laid out in an unpublished Ancient Monuments Laboratory Report (Jones *et al* n.d.). The author decoded these records and transcribed the marks onto diagrams of pig and cattle skeletons, adding an interpretative element, the assumed function of the cut.

3.6.2 Butchery marks in the early phase

3.6.2.1 Pig

The only cut marks recorded from the early phase were filleting marks from knives on the proximal-middle femur (N=1) and the midshaft of the humerus (N=1). The incidence of cut marks is 4% (2/45).

3.6.2.2 Cattle

Butchery marks were found on 30.8% of cattle bones in this period. Cuts were found on most parts of the carcass (table 3.20; figure 3.21). Marks from skinning were recorded on the mandible (and possibly on the lower limbs, though these were more likely to have resulted from filleting or disarticulation). Disarticulation marks were found on the distal scapula, distal humerus and distal radius (and possibly proximal metacarpal), and on the pelvis, distal femur, and tarsals. Filleting marks were relatively uncommon and found only on the scapula, pelvis and radius.

EIA Ox	Total	Butchered	**Butchered%**	Chop	**Chopped%**	Disarticulated	**Disarticulated%**	Filleted	**Filleted%**	Skin	**Skin%**
Skull	27	0	**0**								
Jaw	24	1	**4**							1	**100**
Scapula	44	6		1	**17**	3	**50**	2	**33**		
Humerus		6		5	**83**	1	**17**				
Radius		6	**50**	3	**50**	2	**33**	1	**17**		
Ulna		4				4	**100**				
Pelvis	32	7				5	**71**	2	**29**		
Femur		1	**25**			1	**100**				
Tibia		0									
Ast/calc	2	1	**50**			1	**100**				
Metac	15	2		1	**50**	1	**50**				
Metat		2	**27**	1	**50**	1	**50**				
Rib	5	0	**0**								
Total, inc vert/phals	177	36	**20**	11	**31**	19	**53**	5	**14**	1	**3**

Table 3.20: Cattle butchery from early Iron Age Balksbury: cut type and frequency from bone in pits.

Chopmarks to remove the lower limbs, to separate the humerus from the radius and to portion the scapula were found. Those on the metapodials probably occurred during removal of the feet. Overall, chop marks are less common than knife marks for disarticulation, however they occur on some bones (humeri and feet). Filleting marks are relatively rare.

3.6.3 Butchery marks in the middle-late phase

3.6.3.1 Pig

There were more bones from this phase, with a similar butchery incidence to Danbury at 3%. It appears that joints were disarticulated using knives at the pelvis, distal scapula and distal humerus (figure 3.21). Filleting marks were found on the scapula, humerus, radius, pelvis and tibia. One chop across a mandible was possibly intended to split the bone for marrow.

In this period pig bones show more evidence of filleting and chopping (table 3.21), although this is probably simply a more accurate reflection of the butchery techniques, provided by a larger sample size. The disarticulation and filleting marks are similar between the phases.

MIA Pig	Total	Butchered	**Butchered%**	Chop	**Chopped%**	Disartic	**Disartic%**	Filleted	**Filleted%**
Skull	66	1	**2**					1	**100**
Jaw	54	1	**1**	1	**100**				
Scapula	126	8				6	**75**	2	**25**
Humerus		6				3	**50**	3	**50**
Radius		1	**13**			1	**100**		
Ulna		1				1	**100**		
Pelvis	101	3				1	**33**	2	**66**
Femur		0	**4**						
Tibia		1						1	**100**
Ast/calc	34	0	**0**						
Metac	88	0							
Metat		0	**0**						
Rib	91	0	**0**						
Total (inc vert/phals)	810	22	**3**	1	**5**	12	**55**	9	**40**

Table 3.21: Pig butchery from middle-late Iron Age Balksbury: cut type and frequency from bone in pits.

3.6.3.2 Cattle

13.4% of cattle bones were recorded with butchery marks in this phase. Cattle bones showed more evidence of filleting in this phase, with examples on all meat bearing bones. Also more bone elements showed evidence of chopping, even though the butchery incidence overall was lower. All joints disarticulated by knives also showed chops for the same purpose, while other chops removed the horncore, portioned the ilium and split the mandible and a metatarsal. This pattern of processing is like that in the middle phase layers and the later features at Danebury (compare figures 3.9, 3.10 and 3.21).

The types of cuts are largely similar in this period to the early Iron Age deposits at Balksbury (table 3.22). A lower percentage of chops is found overall, although again they are concentrated on certain bones (in this case the feet and skull). Poor preservation may have led to the prevalence of butchery marks on certain parts: the skull, foot and upper hind limb bones have less evidence of butchery, and these are more fragile parts, or small bones which may have been overlooked in excavation. However the mandible is a dense bone and with relatively few marks (17 in total), so it is unlikely that preservational bias affected the recognition of butchery marks.

MIA Ox	Total	Butchered	**Butchered%**	Chop	**Chopped%**	Disarticulated	**Disarticulated %**	Filleted	**Filleted%**	Skin	**Skin%**
Skull	190	5	**2.6**	4	**80**					1	**20**
Jaw	205	15	**7**	3	**20**	7	**47**	3	**20**	2	**13**
Scapula	353	21		2	**10**	15	**71**	4	**19**		
Humerus		44		5	**11**	29	**66**	10	**23**		
Radius		18	**27**	3	**17**	13	**72**	2	**11**		
Ulna		12		1	**8**	10	**78**	1	**8**		
Pelvis	257	25		2	**8**	19	**76**	4	**16**		
Femur		14	**20**			11	**79**	3	**21**		
Tibia		13		1	**8**	9	**69**	3	**23**		
Ast/calc	38	8	**21**			8	**100**				
Metac	146	6		3	**50**	3	**50**				
Metat		18	**16**	7	**39**	11	**61**				
Rib	6	2	**33**					2	**100**		
Total (inc vert/phals)	1499	201	**13**	31	**15**	135	**67**	32	**16**	3	**2**

Table 3.22: Cattle butchery from middle-late Iron Age Balksbury: types and frequency of cut from bone in pits.

3.7 BUTCHERY COMPARISONS BETWEEN DANEBURY, BALKSBURY AND THE DANEBURY ENVIRONS SITES.

Some difficulty in directly comparing phases between sites was encountered, due to the different chronological frameworks followed by different researchers. Figure 3.23 shows the correlation between site phases, using Cunliffe's (1995) chronology as a basis.

	Danebury (Cunliffe's categories)		Danebury (this analysis)		Balksbury		Suddern Farm		Nettlebank Copse	
	cp	dates	cp	dates	cp	dates	cp	dates	cp	dates
EARLY	3-4	470-310	1-3	470-360	1-3/4	900-400	3-4	470-310	3-4	470-310
MIDDLE	5-6	310-270	4-6	360-270	3/4-7	400-50	5-6	310-270		
LATE	7	270-50	7-8	270BC-AD50						
LATEST	8-9	50BC-AD50					8-9	50BC-AD50	8-9	50BC-AD50

Table 3.23: Comparative chronologies for selected sites. All dates are BC unless otherwise specified. Empty cells indicate absence of butchery and/or occupation evidence.

As explained in section 2.2, the phasing used to divide the animal bone into chronological periods in this project differed to that used by Cunliffe (1995: 24) for Danebury, and to that used by Cunliffe and Poole (2000a: 201) for Suddern Farm and Nettlebank Copse. A different scheme again was in use at Balksbury (Wainwright & Davies 1995: 108), with the result that often phases are not directly comparable. For instance, the late phase I defined for the butchery analysis covers a very long timespan due to the significant proportion of bones that could be dated only to ceramic phase (cp) 7/8. This means that my late phase overlaps with both the late and latest phase at Danebury and the later part of the middle-late phase at Balkbsury, but only the very latest phase at Suddern Farm and Nettlebank Copse. Therefore only broad comparisons can be made between sites in the later Iron Age. However, the

middle-late phase at Balksbury (equivalent to cp 4-7 at Danebury) provides useful information for a period which otherwise has relatively little evidence of occupation on relatively small farmsteads. Butchery data for this period are entirely absent at Nettlebank Copse, for example, and there is also an absence of occupation evidence for cp 7 at Suddern Farm. The early phases are more easily comparable, although the end dates are slightly divergent: 400BC at Balksbury, 360BC for my analysis and 310 at Danebury and the Danebury Environs sites.

Another difficulty presented by this analysis is estimating the effect of inter-analyst difference when identifying butchery marks. Time did not allow for a detailed comparison of the actual butchery marks on bones from the sites investigated here; such an analysis is a complete topic in itself, and one which would be worthy of further study elsewhere.

3.7.1 Comparison of Nettlebank Copse and Suddern Farm

3.7.1.1 Pigs

The incidence of butchery at Nettlebank Copse is much more comparable to Danebury than is Suddern Farm. It has a similar incidence of butchery throughout the early and late Iron Age, in both pits and ditches, as does Danebury. However, Danebury shows a slightly lower incidence overall in layers, which is not noted at Nettlebank Copse.

The incidence of butchery at Suddern Farm is very irregular, increasing from 0.2% in the early Iron Age to 8.3% in the late Iron Age pits. Small sample size may be producing a bias, as the late Iron Age pits have only 4 examples of butchery of 48 pig bone fragments in total.

There is a conspicuously low butchery incidence in the early Iron Age pits, which may be interpreted as evidence for a more careful cutting technique in this period, and/or leaving more or all of the meat on the bone. This is backed up by the above interpretations, which suggest that disarticulation was the main method of butchery practised in the early period, and filleting in the late period, with both activities taking place in the middle phase. This appears to denote a gradual change in butchery, if it is not merely an artefact of the small sample size. Corroborative work with other species will aid interpretation.

It is possible that, as carcasses became more intensively divided up and boning out became more common, more marks were left on the shafts (from filleting) as well as on epiphyses (from disarticulation). Table 3.24 illustrates the apparent replacement of disarticulation cuts

in the early phase, with chops (in layers) and filleting marks (in pits and layers) in the late phase, at Suddern Farm. It is possible that filleting marks may be underrepresented in the layers due to poor preservation in these features, as filleting marks are often fairly light. Thus filleting *could* have been common in both layers and pits in the late phase.

		Early pit Total no.	**Early pit % marks**	Middle pit. Total no.	**Middle pit % marks**	Late pit Total no.	**Late pit % marks**	Late layer Total no.	**Late layer % marks**
NC	Chop	2	**9**					2	**8**
	Cut	3	**13**					11	**46**
	Skin	2	**9**					0	**0**
	Fillet	16	**70**					11	**46**
SF	Chop	0	**0**	0	**0**	0	**0**	2	**40**
	Cut	1	**100**	4	**80**	0	**0**	1	**20**
	Skin	0	**0**	0	**0**	0	**0**	0	**0**
	Fillet	0	**0**	1	**20**	5	**100**	2	**40**

Table 3.24: Pig butchery from Nettlebank Copse (NC) and Suddern Farm (SF): types of marks.

3.7.1.2 Cattle

The greater numbers of cattle bones generated a larger sample of butchery, and this may have contributed to the more consistent pattern which is seen between the two sites for this species. However, both species show a similar rate of decrease in butchery incidence between the early and late Iron Age, 13.5% to 8.1% at Suddern Farm and 13.3% to 7.1% at Nettlebank Copse. This trend continued into the Roman period at Suddern Farm, where the incidence fell from 8% to 5.5% in pits and 17% to 6.9% in layers from the late Iron Age to the Roman period. As stated previously, this might be suggestive of a change in butchery technique, possibly also indicated by an increased use of chops in the Roman period.

The parts produced do not differ significantly by period, though the types of marks do. It can be suggested that, although similar techniques were being used, butchery was becoming less intense or more skilled. Additionally, the higher incidence of chops on the later phase bone may have decreased the number of recognised cuts of meat. There is normally no need to chop more than once through an articulation, resulting in fewer marks and increasing the possibility that the mark could be missed: if it severs the bone it may be mistaken for a break.

The absence of cuts to separate the tibia from the femur on the later examples may imply that larger parts were required, resulting in fewer cuts. There are very few cuts on the hind limbs of the cattle in the later phase. The numbers of individual cut types are too small for statistical analysis. However, it is clear that there is a correlation between the two sites in the

early and late Iron Age. The only difference is that Suddern Farm does not have chops recorded for the early phase.

		Early pit Total no	**Early pit % marks**	Middle pit Total no	**Middle pit % marks**	Late pit Total no	**Late pit % marks**	Late layer Total no	**Late layer % marks**
NC	Chop	6	**14**					7	**13**
	Cut	9	**20**					16	**30**
	Skin	7	**16**					6	**14**
	Fillet	22	**50**					25	**46**
SF	Chop	0	**0**	12	**17**	5	**11**	7	**11**
	Cut	19	**37**	30	**43**	18	**40**	18	**30**
	Skin	8	**16**	4	**6**	6	**13**	5	**8**
	Fillet	24	**47**	24	**34**	16	**36**	31	**51**

Table 3.25: Cattle butchery at Nettlebank Copse (NC) and Suddern Farm (SF): types of marks.

At Suddern Farm, low numbers made it impossible to determine statistically how similar the cut types were between phases. However, table 3.25 indicates that the values are all generally similar. The pig bone material also demonstrates a change in the late Iron Age from disarticulation to filleting (in pits) and chopping (in layers). Apparently, then, there was a difference in butchery between features, but consistency between phases, with the layer material distinct from the pit material regardless of period.

The Nettlebank Copse deposits, which have only one feature type per phase, cannot be investigated in this manner. In the late Iron Age the cut types from Nettlebank Copse ditches are more similar to those from Suddern Farm pits (both dominant feature types, from which the majority of the bone was recovered). The types of cuts occur in very similar proportions in the early and late Iron Age at Nettlebank Copse ($P = 0.730$ at 3 degrees of freedom, $\alpha = 0.05$). Portioning chops from the late phase at Nettlebank Copse are probably part of the same process of creating more meat from one carcass as is in evidence at Suddern Farm, where the carcass divisions become more numerous over time.

The proportions of mark types in the late phase at Nettlebank Copse and the late phase pits at Sudden Farm are statistically similar ($P = 0.654$, 3df, $\alpha = 0.05$). However, as different parts of the animal were subject to butchery at the two sites, different modes of consumption may have been operating. At Nettlebank Copse pelves and scapulae were chopped through rather than filleted out; the same activity is indicated in only one late Iron Age pit at Suddern Farm. The butchery evidence from both feature types at Nettlebank Copse resembles that from pits at Suddern Farm, and it seems that there was no system of differential deposition at Nettlebank Copse.

3.7.2 Comparison of the Environs sites to Danebury

3.7.2.1 Pigs

As stated in section 3.5.2.1, the incidence of butchery at Nettlebank Copse is comparable to that at Danebury, fairly constant throughout phases and not significantly different between features. However, at Suddern Farm the incidence of butchery rises significantly over time. It has been suggested that this resulted from more filleting to produce smaller parts, a possibility also suggested, at a smaller scale, for Danebury.

At Suddern Farm and Danebury, the types of mark corresponded best in the early and middle periods (figures 3.8, 3.9 and 3.20), where disarticulation was most common, followed by filleting marks. By the later period at Suddern Farm, filleting predominated in the pits, and chops and filleting in the layers. This differs to the late period at Danebury, where the types of marks did not alter greatly through the phases. The proposition by Cunliffe, that different processes were taking place at the two settlements by the late Iron Age, appears to be supported by this interpretation (Cunliffe 2000: 188).

In the early period at Nettlebank Copse, a large number of the butchery marks was from meat filleting, while by the later period cut marks for disarticulation had become equally dominant. At Danebury relatively few filleting marks were recorded in the early or late phase. At Nettlebank Copse, then, the relative proportions of different types of butchery mark became more similar to the Danebury material in the late phase, though filleting was always more common at Nettlebank Copse.

At Nettlebank Copse the positions and types of cut marks are similar in many ways to both pit and layer deposits at Danebury. Disarticulation and filleting marks are recorded in similar places on the same bones. However, at Nettlebank Copse, particularly in the early period, there are proportionately more cuts for filleting on the less meaty parts such as the radius and tibia. In the later phase filleting marks do not occur on these smaller bone elements and are instead found on the pelvis, femur and humerus, which carry more meat. This could suggest that in the early phase the more meaty parts were preserved, or roasted on the bone for large-scale consumption, and bones without much meat on them were filleted. In the late phase, maybe smaller pieces were required overall, necessitating the filleting of bones bearing substantial quantities of meat.

The higher incidence of disarticulation using cuts and chops on the bones in the later phase at Nettlebank Copse relates to more intensive carcass division at the expense of meat filleting. The disarticulated parts may have been cooked with the meat on the bone, especially those parts carrying smaller volumes of meat (the lower limbs for example). This could mean that the early phase carcasses were more often cooked in larger parts, implying that consumption activity involved more people, or that filleting occurred after cooking, when the meat could be more easily removed from the bone without marking it. Only 2% of bone was burnt at Nettlebank Copse, so evidence for roasting on the bone is negligible (Hamilton 2000c: 104), but parts may have been boiled.

Butchery marks indicate that at Nettlebank Copse the mandible was disarticulated from the skull, and the head was filleted in both early and late phases. Conversely, in the early phase pits at Danebury, decapitated heads may have been deposited while fleshed, often with the mandible left on. There is a variety of possible explanations for this difference, including that the heads were cooked whole at Danebury before deposited (where mandibles are not present in articulation), or that they were deposited with flesh intact. At Nettlebank Copse, it seems that the meat from the head was utilised, and probably cooked off the bone.

Suddern Farm butchery patterns more closely resemble the Danebury material. In the early phase at Suddern Farm the only mark found is on the neck of the scapula, one of the commonest marks in the pits at Danebury at this time. In the middle phase marks again coincide with those from bone in Danebury pits, with filleting marks on the humerus and evidence for disarticulation of the femur, tarsals, scapula and humerus from adjoining bones. At Suddern Farm there are proportionately more filleting marks in the late phase, in positions paralleled by Danebury material: on the scapula and humerus. The similarity in terms of marks and incidence at Danebury and Suddern Farm suggests that the same butchery processes were occurring at both of these sites.

3.7.2.2 Cattle

At Nettlebank Copse, butchery practice was fairly consistent between phases. Here, fewer chops and cuts, and more filleting marks were recorded than at Danebury. This ties in to the explanation offered above (section 3.7.2.2), suggesting that the meat was filleted more often (or more obviously) than at Danebury, possibly indicating that meat parts were divided into more parts for more people, and therefore smaller quantities were eaten by individuals. There are also more skinning marks at Nettlebank Copse, maybe indicating less competent

butchers. The relative lack of cuts on skulls at Danebury suggests that the meat from the head was less often utilised.

At Suddern Farm the types of mark on bone from early pits appear to correspond better to those from the early layers at Danebury. In the late phase Suddern Farm does not resemble the pattern in pits or layers at Danebury, which shows consistency between features, with less evidence of filleting and more chop marks. Could it be that in the early period the pits at Suddern Farm served as repositories for similar material to that deposited in the layers at Danebury? The change evident in the later period at Suddern Farm may reflect the impact of greater contact with Roman influences. This may have affected Suddern Farm, which continued to be occupied into the Roman period, but not Danebury.

Early phase

The Nettlebank Copse cattle seem to have been subject to similar butchery as those from Danebury. The exception is the cranium, where evidence of butchery is absent at Danebury but common at Nettlebank Copse. Otherwise, there is a correlation between marks, including disarticulation of limb and head bones, chops through the pelvis and into the mandible, and filleting of the scapula, pelvis, femur and mandible.

The pattern from Suddern Farm is different, and although it again involves cuts for skinning and filleting on the cranium, there are no chop marks, and a relatively higher incidence of filleting on the main meat bearing bones (except the pelvis). There is no evidence for separation of the mandible from the cranium, unlike that from the Danebury. It appears that at Suddern Farm there was more filleting and less division of the carcass. This could suggest larger parts were cooked, followed by filleting in order to feed large groups of people. Alternatively it could be that more bones were deposited fleshed, as special deposits, and of the remainder, the meat was taken from the bone and eaten in small pieces.

Middle phase

The Danebury middle phase material (cp 4-6) was amalgamated to make this phase more comparable to Suddern Farm. The butchery techniques at these two sites seem to coincide better in the middle Iron Age. The most obvious difference is that, as with the early phase, the pit material from Danebury lacks the cuts to the cranium that are common at Suddern Farm. Chop and disarticulation marks generally coincide in placement, although the incidence of chopmarks at Danebury is twice as frequent as at Suddern Farm. The exception is again the cranium, on which no chop marks are recorded from Danebury. The proliferation

of marks at Suddern Farm could suggest a less organised butchery practice, illustrated by the greater variety of chop marks on the head. The presence of filleting marks on the majority of the bones might suggest more intensive defleshing at Suddern Farm, although the placement of most marks did not differ.

Late phase

Again the disarticulation marks at all sites generally coincide, with the exception of the femur-tibia joint at Suddern Farm, where both pits and layers show no evidence of disarticulation. The hind limb may have formed a whole roasted joint, but it is perhaps more likely that the fragile nature of this part reduced the number of butchery marks recorded here. The relative lack of distinction between late phase pits and layers at Danebury is mirrored at Suddern Farm, where the positions and types of cut are very similar.

Nettlebank Copse butchery from ditch deposits appears to be similar to that from pits at Danebury, with filleting marks on the mandible and femur. However, like the Danebury layer deposits, filleting on the pelvis and scapula is limited or absent at Nettlebank Copse. However differences are very limited and it is likely that the overall similarity of the majority of cuts reflects the more homogenous butchery technique of the late Iron Age.

3.7.2.3 Summary

The butchery investigation revealed Nettlebank Copse to be similar to Danebury throughout, except for a higher incidence of cuts to the skull at the former site in both species in the early phase, suggesting that Nettlebank Copse (and Suddern Farm) did not respect the distinction between pit and layer material seen at Danebury. Cattle bones had a much higher incidence of butchery than at Danebury, possibly indicating that the cattle from Nettlebank Copse were more intensively butchered, especially in the earlier phase. The greater occurrence of butchery is probably not related to the size of the animals, which were of a similar age profile. At both sites a minority of animals was killed before the age of 18 months, with 40% living to at least 4 years (Hamilton 2000c 107; Grant 1984a: 463).

Slightly more filleting marks on the cattle bones from Nettlebank Copse may indicate greater intensity of carcass use, and maybe related to eating meat in smaller quantities, possibly in smaller groups or lower status groups. The pig bones showed an increasing similarity in cut types over time, and meat parts became smaller. If the site had been used for festivals/ feasting as Cunliffe suggests, the meat parts consumed were not demonstrably different in

size or conformation (Cunliffe 2000: 188). It is possible that they were eaten in larger numbers, but there is no evidence for different butchery techniques. Hamilton's suggestion that the site changed use over time, based on age profiles (Hamilton 2000c: 112), is also not reflected in the butchery evidence.

The position of butchery marks on pig bone was similar at Suddern Farm and Danebury throughout all Iron Age periods. However there was a much greater incidence of filleting marks over time at Suddern Farm, resulting in more, smaller parts. This could be used as evidence for Cunliffe's theory that Suddern Farm was relatively high status in the early Iron Age, as the meat parts were bigger and therefore more ostentatious. It could also suggest that modes of eating were different, with larger amounts being consumed at a time, possibly by the entire community. The pattern is very similar to Danebury in the early period, perhaps reflecting similar characteristics of these two sites at this time.

The cattle butchery suggests a similar pattern to that seen on the Danebury layer material. The layers at Suddern Farm provided much more evidence of filleting, implying that smaller meat cuts were produced, to distribute to more people. In the early period more filleting marks and fewer chopmarks at Suddern Farm than at Danebury indicate different processes, linked to the more intense processing of carcasses at Suddern Farm, and possibly to its lower status. However, there was a higher proportion of older cattle at Suddern Farm (60% over 3 years old at death, compared to 40% at Danebury, Hamilton 2000b: 184; Grant 1984a: 187). In the middle period there was a greater variety of cut marks at Suddern Farm, and this could relate to the site's 'abandonment', when a change in population, and so potentially of butchery techniques, may have taken place.

In the late period there appeared to be little difference between the cuts from pits and layers at Suddern Farm, but they coincided well with the pit deposits from Danebury. This may indicate a correspondence or close link between the two sites, as suggested by Cunliffe who proposed a shift in population from the hillfort to the settlement. No specific evidence of feasting is suggested, which might argue against the interpretation of Suddern Farm as a high status site.

3.7.3 Comparison of Balksbury to the Danebury Environs sites

In the middle-late phase at Balksbury, a period for which there is little evidence at Suddern Farm and none at Nettlebank Copse, the butchery pattern roughly follows that for the early

phase at Balksbury, with disarticulation marks the most common, and a relatively small proportion of chop and filleting marks. A very slightly higher proportion of chops and much higher proportion of filleting marks are recorded for cattle at Suddern Farm (tables 3.22 and 3.25), suggesting that the meat pieces at Balksbury were larger than at Suddern Farm; perhaps more akin to those at Danebury. However, the positions of cut marks on middle Iron Age bone at Balksbury do not differ markedly to those at Suddern Farm, and the higher incidence of chops *through* bone at Balksbury may be a product of the larger time-span covered (including a later phase: cp 7). From this evidence it would appear that meat consumption practice at Balksbury in the middle Iron Age was less like that of farmsteads and more similar to the pattern of consumption at Danebury, although the techniques employed were similar.

3.7.4 Comparison of Balksbury and Danebury

The pig bones provide very little evidence to use in comparisons for the early phase. The lack of butchery marks suggests that the carcass was less divided, but is in fact probably a result of small sample size (N=45). In the middle period a high proportion of cuts to indicate filleting is recorded, possibly indicating a greater degree of meat division and the production of smaller parts.

The incidence of cattle butchery marks is much higher at Balksbury than Danebury, while there is little difference in the proportion of butchered pig bone between the two sites. The higher incidence of butchery marks on cattle at Balksbury than at Danebury can be explained in a variety of ways: the butcher was less experienced or more rushed; the demand for meat was greater and the cattle had to feed more people; the cattle were larger at Balksbury; the butchery implement left more distinctive marks; the faunal analyst spent more time analysing these bones; there were more ‘special deposits’, so less butchery would have been performed on these articulated parts; the bones were thoroughly ‘cleaned’ before deposition or the bone surface exposed in order to break the bone for marrow. We can discount some of these explanations: the butchery was recorded at the same time as the rest of the faunal information, by feature, and so there is no reason why more time would have been spent on a particular species; the cattle were more commonly chopped at Danebury, and it has been argued in chapter 2 that chop marks may be more likely to be missed if they cut right through the bone; if the butcher was rushed or inexperienced this is not reflected in the pig bone; Maltby mentions special deposits, but says there is not enough evidence for them so it is therefore unlikely that they were more common than at Danebury (Maltby 1995: 109).

Thus we are left with several possible reasons for the difference, including an increased demand for meat, cleaning of the bone (possibly related to breakage and therefore an increased demand for marrow as well as flesh) and the size of the cattle. Maltby states that cattle in Iron Age contexts at Balksbury were usually killed when mature, unlike Danebury (Grant 1984a: 511), so their larger size may have contributed to the greater incidence of butchery (Maltby 1995: 85). The difference in butchery incidence is so great though, that it is reasonable to suggest that cattle were less carefully or more intensively butchered.

A small proportion of butchery marks were from chopping in the middle-late period at Balksbury. Chops were concentrated on the skull and feet, maybe for rapid removal of the less meaty parts from the carcass. At Danebury a higher proportion of bone elements in the middle-late period were chopped and filleted, and thus it could be suggested that meat was split into smaller portions than at Balksbury. The Balksbury middle-late Iron Age cattle butchery is more reminiscent of the early-middle phased material at Danebury, where a relatively low incidence of chops and filleting marks suggested that meat was not divided up into very small pieces. The intensified butchery process that is seen in the late phases at Danebury is not evident in the middle-late phases at Balksbury, perhaps suggesting that Balksbury fulfilled a different role. However, the lack of evidence for very late phases at Balksbury may have influenced this pattern; the intensification of butchery at Danebury may have occurred mainly in cp 8 deposits, which are not represented at Balksbury.

There is very little evidence of cuts to cattle crania in the early phase at Balksbury, as at Danebury, and such as are found were probably made during skinning, not meat removal. From the middle-late period at Balksbury there were many cuts to the skull, including disarticulation, chop and filleting marks. Although the sample size for this period is much larger than for the early phase, there is a substantially higher incidence of chops to the cranium in pit features at middle-late Iron Age Balksbury than at Danebury in this period. The only such chops found in pits at Danebury are those to remove the horn. It is possible that the higher incidence of chopping skulls at Balksbury resulted from a different butchery tradition, where the same parts were targeted for disarticulation or filleting, but different techniques or heavier tools were used. This could suggest that each settlement, hillfort or area had a dedicated butcher in residence.

At Balksbury there were findings of articulated animals, explained by Maltby as early deaths representative of on-site breeding (Maltby 1995: 109) but which could be called special

deposits. Balksbury deposits may have held some special significance as it is proposed Danebury did; cattle crania only begin to show food-related butchery marks (rather than those from skinning) in the middle-late phase, suggesting that, after the early phase, animal heads at Balksbury did not hold any particular significance. Cuts indicative of meat utilisation on the skull were also not recorded from Danebury until after the early phase (cp 6), but it is of course impossible to clearly define the phase at which cuts on skulls started to appear since the middle-late periods at Balksbury overlap with the middle phases at Danebury (both contain cp 6).

There is no evidence that the Bronze Age defensive earthworks at Balksbury were maintained in the Iron Age, contrasting with Danebury, although in the early Iron Age the defences were probably still imposing. Maltby suggests that there is very little difference between the faunal remains at Balksbury and smaller settlements, for example Old Down Farm, Lain's Farm and Winnall Down (Maltby 1995: 109). This conclusion fits well with the interpretations given here, which suggests Balksbury and Danebury had different butchers, but similar consumption and deposition practices.

3.8 CONCLUSIONS OF BUTCHERY ANALYSIS

In this chapter the records of butchery marks on the animal bone from Danebury have been interpreted in detail, by phase and by feature type. There have been no significant differences in butchery technique identified between contexts, although some subtle differences may be present. Without investigation of the sheep butchery, which is more numerous than the cattle and pig, it is difficult to say whether apparent differences, for example in butchery on the cranium, are due to smaller sample sizes in the earlier periods, or that further differences have been obscured by the very large numbers of bone from the late phase (longer than any of the other phases at 230 years).

However, it is necessary to work with what information we have, albeit with provisos, such as the degree of influence which variable sample sizes may have on the assemblage. It is likely in this case that merging the early and middle phases would simply create a more homogenous assemblage. While this may in fact better reflect the nature of the butchery and carcass divisions, it would be simplistic at this stage to combine the phases further before investigation of the spatial distribution has taken place. After spatial investigation has been performed, it may then be possible to examine whether there is any real difference between the phases or feature types.

On a complete carcass, the small proportion of bone cut when a skilled butcher is performing the butchery suggest that those recorded may represent only a tiny proportion of the actual incisions made. We cannot know for certain whether or not the recorded cuts are representative. However, the marks do appear to be relatively consistent, even by species, so we must for this investigation assume that they are representative.

In the late phase, smaller cuts of meat and more intensive filleting could suggest greater intensity of use of the carcass. The incidence of cuts to the articular parts of the distal humerus is similar between species and phase, suggesting that cattle and pigs were regularly disarticulated when recently slaughtered, although perhaps a higher proportion of carcasses may have been stiff when butchered in the later phases.

The carcass divisions identified from the butchery marks are relatively consistent over time at Danebury. This means that much of the spatial analysis can be undertaken using the same divisions. Cattle may require more divisions when considering the spatial patterning of the smaller parts, for instance where individual bones are chopped through. In this case different parts of the bone may be found in different locations, but the coarse divisions (e.g. upper hind limb bone etc.) will be the same.

The butchery evidence from the Danebury Environs sites and Balksbury provides a comparative set of data with which the processes interpreted to be taking place at Danebury may be compared. Differences between the sites may be indicative of different social activities. The production of smaller meat parts in the later periods at Danebury may suggest that meat was more scarce, and the population larger. It could also suggest that the community ate more plant-based food. If meat eating equated wealth, it could be surmised that the community became less wealthy. That other sites, such as Nettlebank Copse, were producing smaller parts earlier on suggests that they may have been under more pressure for resources, or of lower status.

The absence of cut marks on the skulls in pits in early phases at Danebury is not followed by the other sites, except possibly Balksbury. Although slight evidence, this pattern holds true for both pig and cattle bones, and could indicate that early Iron Age Danebury and Balksbury were special places, or at least places where different activities took place, the remains of which were deposited in pits. The practitioners of the activities, though, may have been different people.