

The ancient origins of warfare and violence

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Recent DNA analysis suggests that some 500,000 years ago our *Homo erectus* ancestors were reduced in number to perhaps only a thousand individuals. David Woodruff, senior biologist on the team, believes that genocide was the most likely cause: 'In our success came a need to remove the competitors. It's my personal favourite' (Brookes 1999: 35). Why is violence the first explanation to come to mind when considering our distant ancestors?

Warfare, and more generally conflict, is clearly a hot topic in both archaeology and anthropology, as the number of recent overviews and volumes of case studies amply demonstrates (e.g. Keegan 1993; Redmond 1994; Reyna and Downs 1994; Keeley 1996; Martin and Frayer 1997; Carman and Harding 1999; Raaflaub and Rosenstein 1999; Osgood *et al.* 2000; Lambert 2002; Gilchrist 2003). Not only is it a subject of great importance in its own right, but it also has a bearing on several other major issues, such as the attempt by evolutionary psychology to co-opt archaeological evidence, the history and biases of archaeology as a discipline and the nature of archaeological evidence.

Origins are always interesting subjects and the origin of war is no exception, having been considered recently from the varied perspectives of archaeology (e.g. Keeley 1996), military history (e.g. Keegan 1993; O'Connell 1995), cultural evolution (e.g. Dawson 2001), biological anthropology (e.g. Van der Dennen 1995; Wrangham 1999) and social anthropology (e.g. Otterbein 1997; Kelly 2000).

Of these fields, the most interest in early war and conflict has been shown by anthropologists of varying kinds, as it is generally considered to be central to that elusive quality, 'human nature'. Archaeology has been largely an onlooker in this argument (with Ferguson 1997a being a significant exception) that has been almost entirely fought out using evidence from contemporary societies, which have conveniently been assumed to correspond in some way to ancient pre-agricultural societies.

Recent interest in the ancient evidence for warfare has been stimulated by Keeley's polemical *War Before Civilization: the myth of the peaceful savage* (1996). As the title states, he seeks to demolish the 'myth' which he believes has been peddled by archaeologists and anthropologists who have attempted to pacify the past. Keeley's broadside has prompted widely different reactions, with responses varying from whole-hearted approval, with Kristiansen (1999: 188) describing it as 'inspirational' and Le Blanc (1999: 3) as 'an excellent critique of archeologists' prior attitudes towards warfare', to the highly critical (e.g. Ferguson 1997b; Otterbein

1997). From an American perspective, with the relatively recent and dramatic change in view of the Maya from peace-loving astronomer-priests (Thompson 1954) to warring rulers of city-states continually at war (Culbert 1988; Webster 2000) Keeley's critique makes sense. But for a European audience, which has always seen the Bronze Age and Iron Age as times of warriors, his overall case is far less persuasive.

Certainly, Keeley's starting point in his claims of systematic attempts to downplay the role of warfare in prehistory, the 'interpretative "pacification"' of the causewayed enclosures of Britain, is far less clear-cut than he implies (1996: 18; Thorpe in press). Keeley criticises Whittle (Whittle 1985: 219-20) for discussing the boundary earthworks of enclosures in terms of the symbolism of exclusion. He then contrasts Whittle with 'the archaeologists who have conducted extensive excavations of some of these enclosures', who have uncovered traces of palisades and at several camps 'thousands of flint arrowheads, concentrated along the palisade and especially at the gates' (Keeley 1996: 18). Ironically, Whittle has actually carried out a major excavation at the most famous of all British causewayed enclosures – Windmill Hill (Whittle *et al.* 1999). The ditches at Windmill Hill contain not only deliberately dumped mounds of feasting debris and items which arrived there through long-distance exchange, but also burials. In the case of Windmill Hill, a wide range of activities was carried out at this major site, but these did not include either settlement or defence. There are also sites in eastern England which have been intensively investigated but present no evidence for defence or attack and little of possible settlement – Briar Hill (Bamford 1985), Etton (Pryor 1998) and Haddenham (Evans 1988; Hodder 1992), together with a number of examples in Sussex (Drewett 1994).

Moreover, Saville (2002) notes that, in terms of numbers of arrowheads, only Carn Brea (Mercer 1981), Crickley Hill (Dixon 1988) and Hembury (Liddell 1930; 1931; 1932; 1935; Todd 1984) stand out, with other enclosures having a consistently minor presence of the type. Even these sites, however, possess several hundred rather than thousands of arrowheads. Indeed, Crickley Hill is the only British causewayed enclosure with a concentration of arrowheads at the palisade and entrance area. Keeley's characterization of these sites may therefore be described as a case of interpretative 'warrification' rather than pacification.

Vandkilde (2003) notes that some significant publications on warfare in European prehistory had appeared just before Keeley's book was published (e.g. Randsborg

1995; Treherne 1995). She attributes this revival in the popularity of 'the warrior tale' (2003: 136) to the ethnic wars in the Balkans. From the narrowly archaeological perspective one could also point to the impact of individual discoveries such as the Linearbandkeramik site of Talheim in Germany (Wahl and König 1987), dating to c. 5000 BC, where a mass grave contained 34 men, women and children, killed by axe and adze blows to the head.

The relative lack of attention given to conflict and war in the literature on early prehistory also needs to be set in historical perspective. Certainly some of the wariness concerning war in the Palaeolithic comes from a sense of necessary correction to the excesses of past interpretations, such as Dart's view of the Australopithecines of southern Africa. Based on his studies of australopithecine skeletal material, Dart argued (1953: 209) that ancestral humans were:

'... confirmed killers: carnivorous creatures that seized living quarry by violence, battered them to death, tore apart their broken bodies, dismembered them limb from limb, slaking their ravenous thirst with the hot blood of victims and greedily devouring livid writhing flesh.'

Dart went on to conclude that the course of human history had been set unalterably by the bloodthirsty Australopithecines (Dart and Craig 1959: 201):

'The loathsome cruelty of mankind to man is the inescapable by-product of his blood lust; this differentiative human characteristic is explicable only in terms of man's carnivorous and cannibalistic origin.'

'The blood-bespattered, slaughter-gutted archives of human history from the earliest Egyptian and Sumerian records to the most recent atrocities of the Second World War accord with early universal cannibalism, with animal and human sacrificial practices or their substitutes in formalized religions and with the world-wide scalping, head-hunting, body-mutilating and necrophiliac practices of mankind in proclaiming this common bloodlust differentiator, this predaceous habit, this mark of Cain that separates man dietetically from his anthropoidal relatives and allies him rather with the deadliest of the Carnivora.'

The influence of Dart's views grew significantly after the appearance of the dramatist Robert Ardrey's popularizing books of the 1960s (*e.g.* Ardrey 1961; 1967). For Ardrey (1961: 316) 'man is a predator whose natural instinct is to kill with a weapon'. However, a later reanalysis of the skeletal material by Brain (1981) demonstrated quite clearly that the Australopithecines, far from being

slaughtered by their own kind, were the victims of leopard predation.

This is not simply a case of newer scientific techniques correcting the errors produced by earlier methods. For, as Cartmill notes (1993: 20), the original connection made by Dart (1925) between the baboon skull and the Taung australopithecine infant was not one forced by the evidence at all. The instant interpretation, that the find of a baboon skull with a hole must represent the remains of a kill and subsequent consumption of the brain by Australopithecines, appears to owe more to preconceptions than anything else. Dart, who served as a member of the medical corps in England during World War I, might well have been influenced by memories of the injuries he witnessed in service.

A more accurate characterization of the history of the study of war within archaeology may therefore be one of swings between the warrior tale and the peasant tale, as Vandkilde argues (2003). Even if one were to follow Keeley (1996) in believing that the importance of warfare has been underestimated in social anthropology (despite Ferguson 1997b; Otterbein 1997), as others had argued earlier (*e.g.* Carneiro 1994), a crucial difficulty with Keeley's argument remains. Although he rightly points to the high incidence of ethnographically recorded conflict and of more formal inter-group warfare - making a good case that this is not 'ritual' but real war, with a high level of casualties - this does not in itself tell us anything significant about ancient warfare. For there are ethnographic examples of relatively peaceful societies (as Keeley accepts - 1996: 27-32) so we cannot assume the existence of warfare, as Keeley himself appears to do for the Neolithic. Here we are in the realm of interpretation, unaided by participant accounts or direct outside observation.

Before considering the major schools of interpretation of the origins of conflict I should provide a definition of warfare, for this has been a point of discussion in the past - it is defined here rather simply as organized aggression between autonomous political units, and thus of wider significance than individual acts of violence. This is certainly a far less complex definition than many others (*e.g.* the seven point scheme proposed in Kelly 2000), but it is one which may be usable when considering early prehistory. One might distinguish warfare proper from feuding, with feuds being conflicts between small and specific elements of autonomous political units, normally households (Otterbein 2000). I see no great value in drawing too definite a distinction, however, since feuds frequently escalate into war. As Koch puts it (1974: 52-3): 'linguistic distinctions between raids, feuds, and war tend to obscure rather than elucidate the problem of explaining why people resort to violent methods of confrontation in pursuit of their interests'. The majority of conflicts recorded in the ethnographic record occur between closely related groups, with the warring parties frequently acting as exchange or marriage partners before

and after. As Clastres (1994: 162) notes, this runs counter to the notion first developed by Thomas Hobbes in *Leviathan* (1651) that war prevents exchange.

It is certainly the case that some past societies have distinguished between feuding and warfare. Thus Redmond focuses on long-distance raiding in her important study of South American warfare (1994), as the Jívaro make a distinction between local feuding and true warfare, even though the former includes the assassination of individuals (Harner 1972). Jívaro true warfare consists of head-hunting raids carried out against distant groups (Descola 1993) – a far more prestigious activity, as it involves expeditions into lands ‘filled ... with evil spirits’ (Cotlow 1953: 144). So we are perhaps dealing here with high (long-distance) and low (local) status warfare. The role of head-hunting appears to have undergone a dramatic transformation in the late nineteenth century (Steel 1999). The original motive lay in the Jívaro belief that power could be extracted from the spirit trapped in the victim’s shrunken head, but a trade developed at that time of heads for guns. We seem to have here an example of cultural reasons for warring being overtaken by economic ones. A similar division between types of fighting is made by the Yukpa of Venezuela (Halbmayer 2001): external war involves ritual preparation, attacks on inhabitants of other valleys and the glorification of the warriors; vendettas have no rituals, are carried out against known individuals and are kept secret.

Definitions of the opposing theorists have also long been a source of debate, with lines of thought which can be traced back to Hobbes’ *Leviathan* (1651) and his ‘State of Warre’, and Jean-Jacques Rousseau’s *The Social Contract* (1762) and his vision of a golden age of peace before the state. Of course, neither Hobbes nor Rousseau would recognize many of the arguments stated by opponents to be following their lead. An equally clear dichotomy is maintained by Otterbein (1997; 1999) in his discussion of the study of warfare within anthropology, dividing authors into ‘doves’ or ‘hawks’ with obvious reference to the similar popular divide in contemporary American politics. The fundamental danger for the student of ancient warfare is that such a divide will take over the archaeological debate, thereby forcing out consideration of variability in the evidence.

Some theories of war

Much of the current public interest in conflict and warfare in Britain and North America stems from the dominance of neo-Darwinian thought in society at large. From the sociobiology of the 1960s to the evolutionary psychology of the 1990s there has been a considerable growth in the popular acceptance of a significant role for biology in human culture, especially in terms of the ‘nature vs. nurture’ debate, now taking a slightly less confrontational turn (e.g. Ridley 2003). The strand of evolutionary psychology most clearly relevant to the study of early

warfare is that which sees humans as shaped by a long-past ancestral environment, the environment of evolutionary adaptation (EEA). Thus Leda Cosmides and John Tooby propose (in their on-line ‘Primer of Evolutionary Psychology’ – available at <http://www.psych.ucsb.edu/research/cep/primer.html>) as their Principal 5 that ‘Our modern skulls house a stone age mind’. The EEA is generally identified as the Palaeolithic and Mesolithic (e.g. Cosmides *et al.* 1992; Pinker 1998: 42), with the development of agriculture making a crucial break. Unfortunately, within this model the assumption soon developed that human evolution took place on the savannah of Africa, so that specific adaptations needed to be traced back to their value in this context. Tooby and Cosmides (1990: 386-7) have rejected the savannah interpretation, which they believe to be a misunderstanding of their views, instead arguing that the EEA:

‘... is a statistical composite of the adaptation relevant properties of the ancestral environments encountered by members of ancestral populations, weighted by their frequency and their fitness consequences.’

As yet there has been no attempt to begin compiling this ‘statistical composite’, which suggests that it was more of a rhetorical device to keep the theory alive than an attempt to provide a better theoretical basis of understanding human behaviour.

Whatever the problems with the concept of an environment of evolutionary adaptation, the three main competing theories of warfare situated within evolutionary psychology – territorial, reproductive and status competition – should all be susceptible to analysis from the archaeological evidence of early prehistory.

The territorial model as it exists currently was developed by E.O. Wilson, who argued from the sociobiological strand of evolutionary psychology that ethnocentricity was a product of natural selection (1978: 119):

‘Our brains do appear to be programmed to the following extent: we are inclined to partition other people into friends and aliens, in the same sense that birds are inclined to learn territorial songs and to navigate by the polar constellations. We tend to fear deeply the actions of strangers and to solve conflicts by aggression. These learning rules are most likely to have evolved during the past hundreds or thousands of years of human evolution and, thus, to have conferred a biological advantage on those who conformed to them with the greatest fidelity.’

The difficulties with this supposed rule are two-fold. It would also be adaptive to create good relations with neighbouring groups, perhaps especially so when

ancestral hominids were the hunted rather than the hunters, as with the Australopithecines. Second, Cashdan's wide-ranging survey (2001) found no correlation between ethnocentrism and xenophobia, undermining Wilson's claims for universality.

More specifically, Wrangham (1999) has argued for continuity of a territorial instinct from the common ancestor of common chimpanzees and humans. He argues that a territorial instinct exists in modern common chimpanzees, with the patrolling by young male chimpanzee of territorial borders leading to conflicts of extermination with neighbouring groups, improving the victors' access to resources. He argues (Wrangham and Peterson 1996: 63) that:

'modern chimpanzees are ... surprisingly excellent models of our direct ancestors. It suggests that chimpanzee-like violence preceded and paved the way for human war, making modern humans the dazed survivors of a continuous, 5-million-year habit of lethal aggression.'

These chimpanzee behaviours are then compared with the territorial nature of modern American gang culture, with the link provided by comparisons with the Yanomamö of the Amazon as an example of primitive culture.

There are several difficulties with this theory of a universal territorial instinct. The model is in essence derived from observations of chimpanzee behaviour in which it is assumed that chimpanzee behaviour is best interpreted in human terms; to complete the circular argument chimpanzee behaviour is assumed to be a guide to human societies. Too little consideration has been given to the question of whether a close relationship between common chimpanzee and ancestral human behaviour can reasonably be assumed.

Alternatively, it can be argued that choosing common chimpanzees over pygmy chimpanzees or bonobos (de Waal 1989) is a result of pre-determining the appropriate comparison. Bonobos show little sign of violence (infanticide, cannibalism or inter-group conflict), do not hunt much and are not dominated by males. Attempts to downplay the significance of bonobos suggest that they are atypical (*e.g.* Wrangham and Peterson 1996), the differences to common chimpanzees being explained by ecological factors, with bonobos occupying large, undisturbed, rainforests. However, as de Waal (2001) notes, if ecology is the key variable then one should expect bonobos to have a more gorilla-like social organization of a leading male and a following group of females. In addition, it is important to note that a recent survey of common chimpanzee field studies revealed 'significant cultural variation ... far more extensive than ... previously documented for any animal species except humans' (Whiten *et al.* 1999: 682). Thus the standardized picture of common chimpanzee violence

may be a significant over-simplification. Research is now also revealing significant variations in the prevalence of aggressive behaviour between groups among gorilla populations, with western gorillas having far lower levels of violence than mountain gorillas (Bradley *et al.* 2004).

Considering Wrangham's main ethnographic study, the comparison between common chimpanzee behaviour and the Yanomamö is particularly implausible. The Yanomamö do not patrol the bounds of a territory, most of the fighting is done by older men, and those they kill are often relatives in closely related villages with whom they have close trade relations during times of peace (Chagnon 1996a; Ferguson 2001).

A more general difficulty with the territorial theory is proposed by Harrison (1993: 14-21). He suggests that, in Melanesia at least, the view that groups make war is the wrong way round, and that it is actually the process of war which enables groups to form. This could relate to the suggestion that humans have created a layer of social organization - the regional community - which is not known among chimpanzees (Layton and Barton 2001). This regional community frequently takes a territorial form in areas where resources are dense and predictable or, among horticulturalists, producing boundary defences. (However, this interpretation runs counter to Ember and Ember's [1992] ethnographic survey, which concluded that resource unpredictability is a predictor of warfare.) As Layton and Barton note, this would mean that warfare could not be an ancestral trait. Indeed, returning to the EEA theory, warfare would appear at the very end of this time, long after the appearance of modern humans.

The reproductive theory of warfare is based on analogies with common chimpanzee behaviour in which male-centred competition, over access to females, results in violence (*e.g.* Wrangham and Peterson 1996). However, several detailed studies of warring human societies suggest that violence is no guarantee of reproductive success (*e.g.* Moore 1990 on Cheyenne war chiefs, and Knauff 1987 and Kelly 2000: 20-35 on the !Kung, Mbuti, Central Eskimo, Semai, Hadza and Gebusi). The most famous claim for a link between warfare and reproductive success is Chagnon on the Yanomamö (1988), but his single set of figures cannot demonstrate that killers are more successful in reproducing over the lifetime (see Thorpe 2003 for further discussion). Moreover, the Yanomamö provide evidence against the general theory. Chagnon notes (1988: 985) that in a Yanomamö revenge attack the aggressors 'always hope to dispatch the original killer', while other ethnographers have recorded the deaths of a number of those who are multiple killers while they were still fertile (Albert 1990). If this is a more general pattern then killers could indeed be less successful over the lifetime. It is also worth noting that ethnographers working among other Yanomamö groups (Good and Chanoff 1991) have noted far lower levels of

violence, so we should not assume a uniform pattern applies.

A related but rather more sophisticated approach sees warfare as the inevitable outcome of violent competition between young males striving for status and prestige (Maschner and Reedy-Maschner 1998), channelling their natural aggression outside the group. Again the Yanomamö are used as an example, but provide a poor one. As Ferguson notes (2001: 109), the vast majority of killers were over 40, and possibly none were below 25. Although some archaeological case studies quoted (Maschner and Reedy-Maschner 1998; Reedy-Maschner and Maschner 1999) do support the theory (*e.g.* Lambert 1997 on southern California), others such as Jebel Sahaba in the Sudan (Wendorf 1968) are far less clear-cut: here only slightly more males than females show traces of violence (see below). Other archaeological case studies could be used to argue a quite different case. For the Arikara of the Great Plains of North America (Holliman 2000), for example, of 19 identifiable cases of traumatic injury among males where the age at death could be established, only one was below 30, and the two individuals with projectile points embedded in bone were both over 35.

Although status and prestige are clearly major factors in the creation of warriors (Clastres 1994: 169-200), just as with the reproductive theory, however, dubbing violence the business of men (*e.g.* Daly and Wilson 1994; Gilbert 1994; Van der Dennen 1995) is an unacceptable generalization (Goldstein 2001). It ignores the considerable ethnographic and historical evidence, from Africa (Alpern 1998), Asia (Rolle 1989; Guliaev 2003) and the Americas (Koehler 1997; Hollimon 2001), of female warriors and even female war chiefs. To comment that 'women's participation in warfare is rare' (Maschner and Reedy-Maschner 1998: 23) simply sidesteps the issue of variation, while Van der Dennen's assumption that 'it is universally the males who are the warriors' (1995: 593) is fundamentally in error.

A more general problem for all three theories considered under the sociobiology/evolutionary anthropology umbrella is copious evidence of the need to produce an altered mental state before taking part in warfare. Specific preparations that have been recorded ethnographically include fasting, possession by spirits, dances, special costumes, vows, rehearsals and drug-taking (Kennedy 1971; Ehrenreich 1997). The dangers of the altered mental state thus created are noted by Harrison (1993: 27) for the Avatip of New Guinea. Avatip men were head-hunters in the recent past and used head-hunting as a form of status competition, but they do not believe themselves to be born violent:

'Although [Avatip] men attach a positive value to aggression, they do not conceive of human nature as inherently violent, or assume that homicidal aggression is in some sense natural or

innate. Headhunting raids required special magic, which placed the fighters in a trance-like state of dissociation and relieved them of accountability for their actions; it was supposed to make them capable of killing even their own wives and children. That is to say, the ability to kill had to be imparted by magic and ritual, and deliberately removed at the end of raids. But for so long as the magic was in effect, the capacity to kill was quite indiscriminate and turned the fighters into a dangerous menace to all other people, including their own families.'

As a strategy for increasing reproductive success this is implausible, and suggests that any biological urging to kill had to be heavily reinforced by cultural methods. In the Americas, even the famously aggressive Yanomamö use drugs to work themselves up into a suitable state to fight chest-pounding duels against members of neighbouring villages (Chagnon 1990). These duels sometimes result in fatalities, which then precipitate a cycle of village raiding.

The Avatip, among other New Guinea societies, socialize strongly for warfare (Harrison 1993: 23-6), as do many groups in North and South America (Carneiro 1994; Clastres 1994: 172-3). The Sambia of New Guinea practice a rather severe form of such training (Herdt 1987): warriors are removed from their families in boyhood to be raised in an all-male setting. Although details differ between societies, the groups concerned clearly believed that warriors had to be created by human intervention. It is this kind of evidence Malinowski had in mind when he argued (1941: 23) 'human beings fight not because they are biologically impelled but because they are culturally induced'.

The other fundamental problem for the sociobiology/evolutionary anthropology school comes from the archaeological record. As many critics have pointed out (*e.g.* Knauff 1991; Foley 1996) few archaeologists accept the assumption of an unchanging environment of evolutionary adaptation over millions of years until the advent of agriculture. Given this, there is no reason to believe that the pattern of conflict and warfare will not have varied both geographically and chronologically. This possibility is examined below for the Palaeolithic and Mesolithic. In particular there is no room in this model for the dramatic changes believed by many (*e.g.* Klein and Edgar 2002) to characterize the Upper Palaeolithic 'revolution'.

The other main camp within anthropology is materialism. Materialists start from the standpoint that warfare has to be understood in terms of material advantages which may accrue from successful warring: one would only risk one's life in combat when there was a real need for land or, more immediately, food (*e.g.* Ferguson 1990). Ferguson (1990) argues that motivations as stated by the participants hide the real motives of achieving basic

material goals. Even in the classic ethnographic area of New Guinean warfare, however, recent analyses suggest that there is no simple relationship between land shortage and warfare, with some of the most warlike societies having fairly low population densities (Knauff 1990). In the case of the Waorani of Ecuador (Robarchek and Robarchek 1998), with very high levels of violence recorded, there are no apparent shortages of resources, but a historical context of war against Inca and later Spanish expansion during which violence can be said to have become institutionalized and in which all deaths are interpreted as the result of the evil actions of others, whether these be war or witchcraft.

For Ferguson (1995) the Yanomamö fight for material resources, specifically the steel axes with which more land could be cleared. However, ethnographers of the Yanomamö do not recognize this picture (*e.g.* Peters 1998: 216), while the notion of Yanomamö groups controlling trade routes seems particularly far-fetched (Chagnon 1996b). In general, there seems to be no good reason except a belief that warfare must be a rational undertaking to ignore the reasons given by groups themselves as to why they fight (Thorpe 2003). Of course, this is not to deny that in some cases the reasons given are materialistic, *e.g.* over salmon runs on the Pacific coast of North America. The point is that material considerations are not convincing as a total or sole explanation.

Perhaps best located here as another rationalizing theory, although clothed in evolutionary terms, is Gat's (1999) first strike theory. He argues that technology allowed the development in humans of a capacity to strike first if a cost/benefit analysis suggests this is sensible. Not only is it difficult to see this in the light of natural selection operating on the individual, neither does it take account of long-distance raids such as those engaged in by the Jívaro of the Amazon (Descola 1993) and many other groups. Nor does it account for the tendency of headmen, such as those of the Yanomamö (Chagnon 1997: 198), to be cajoled into leading raids by virtue of their position, lest their authority be undermined.

A recent reappearance in warfare studies is cultural evolution (Dawson 1996; 1999; 2001), which harks back to 1960s notions of a simple division of prehistoric societies into bands, tribes, chiefdoms and states. For Dawson a key development was agriculture, although he does propose that in prehistory the pattern of warfare might have been cyclical rather than linear. Certainly no clear line of development can be traced in Britain, where the best evidence for warfare occurs in the Early Neolithic with the attacks on defended enclosures and the deaths by arrowshot of their defenders (Mercer 1999). The Early Bronze Age, which traditionally sees the emergence of warrior aristocrats ruling over chiefdoms, fails to provide examples of defended settlements and only a handful of cases of skeletal trauma (Thorpe in press). So did warrior aristocracies maintain their

authority without fighting, or was there actually a decline in conflict through time?

Finally, an approach based on historical contingency would reject any of the unifying theories presented above in favour of the examination of the particular circumstances of each conflict, and indeed, of each example of lack of conflict (*e.g.* Keeley 1996; Otterbein 1997; Robarchek and Robarchek 1998; Guilaine and Zammit 2001). In other models, certainly, a lack of warfare is difficult to explain. In a general sense, the greater the degree of variability observed, both within a single society and between different societies, the more difficult it is to fit all warfare into any overarching structure, an issue which clearly troubles Dawson (1999: 97-8). The approach taken here will therefore be similar to the regionalized and comparative anthropology of war advocated by Brandt (2002: 19-31).

Archaeology and the origins of conflict and warfare

Turning to the Palaeolithic and Mesolithic, there are three main areas of possible evidence for conflict – the existence of weapons, depictions of warfare and skeletal remains demonstrating traumatic injuries.

Weapons have often been presented as the most straightforward category, but here we run up against the fraught issue of symbolism. Although past generations of archaeologists have blithely dubbed various types of prehistoric artefacts as weapons – battle-axes, daggers *etc.* – this provides no guarantee that they were actually used as such. On the other hand, axes (usually seen as everyday tools of forest clearance if small, or prestige objects if large) were certainly used as weapons. Chapman's (1999) coinage of the term tool-weapons seems very appropriate here. The presence of possible weapons in itself says little until we reach the Bronze Age and the production of weapons proper such as swords.

Levantine Spanish rock art (Beltrán 1982) is often presented as the clearest body of evidence for conflict in the Mesolithic (*e.g.* O'Connell 1995; Nash 2000). It is now widely argued, however, that the commonly suggested date of the Mesolithic is mistaken and that Levantine art is actually Neolithic (Fairén 2004). Upper Palaeolithic representations of possible violence are considered below.

For the Lower and Middle Palaeolithic, skeletal evidence is our only source. In the Lower Palaeolithic individual cases of healed injuries have been proposed, such as Swanscombe in Britain (Brothwell 1964) with three apparent healed depressions on the skull, Ehringsdorf in Germany (Keith 1931: 319) with a major wound penetrating the forehead and Fontéchevade in France with a hole in the skullcap (Vallois 1961). Outside Europe there is Broken Hill, Zambia, with a partially healed perforation that could be from a weapon (Keith 1928:

418) or more likely a carnivore bite (Tappen 1987). The earliest consistent skeletal evidence of conflict comes perhaps from Sima de los Huesos, Atapuerca, Spain, the enigmatic cave containing at least 27 human skeletons dating to c. 350,000 BC (Carbonell *et al.* 2003). Several skulls have signs of healed impact fractures, with Cranium 5 possessing 13. Whether the excavators interpret these all as evidence of conflict is not yet clear, as only preliminary information is available at present, although this is thought likely in the case of an adolescent with a deep but partially healed blow (Arsuaga *et al.* 2003).

Similar examples of healed depressed fractures have been claimed for five of the 11 skulls, four of them female, from Ngandong in Java (the dating of which is intensely debated – Swisher *et al.* 1995), along with the removal of part of the skull (Coon 1962: 391). The recently rediscovered Sambungmacan 3 cranium from Indonesia also has a possible healed depression (Márquez *et al.* 2001). At Choukoutien in China four of the 14 *Homo erectus* specimens, both females and males, have been reported as having depressed fractures of the cranium (Weidenrich 1943; Courville 1950). However, as Roper (1969) notes, Weidenrich states (1943: 190) that the human bones had been washed into their present location together with boulders and pebbles, so the injuries could be accidental. Unfortunately the material has now disappeared, so re-examination is impossible.

Atapuerca also provides the oldest possible case of cannibalism: the Gran Dolina cave has produced the remains of six individuals (Fernández-Jalvo *et al.* 1999) identified as the victims of cannibalism on the following grounds: the use of analogous butchering techniques in humans and animals; similar breakage patterns to extract the marrow; and identical patterns of discard for human and animal bone. However, the Gran Dolina case is argued to represent gastronomic cannibalism – the consumption of members of the group after their death – rather than conflict. Certainly at Gran Dolina the vertical spread of human bones suggests occasional consumption over a long period rather than a massacre. The *Homo erectus* cranium from Bodo in Ethiopia has ancient cut-marks on it that seem to be evidence of defleshing, so the Gran Dolina case is not entirely alone (White 1986).

Even earlier cut-marks have been found on the Sterkfontein early hominid from South Africa (Pickering *et al.* 2000), which may be c. two million years old, relating to the removal of the mandible from the cranium. Removal of parts of the skull from Arago in France may relate to consumption of the brain (de Lumley and de Lumley 1974). Other claims of cannibalism, such as have been made for the finds from Choukoutien, have been reconsidered and found unconvincing. At Choukoutien, the fragmentary nature of the human skeletons and the missing parts of skulls are probably the result of destruction by hyenas (Binford and Ho 1985).

Overall the Lower Palaeolithic evidence is strongly suggestive of conflict during this period, along with cannibalism. However, many of the older claims are unsatisfactory and re-examination taking into account the possibility of damage occurring to skulls in a cave environment is clearly required (Brothwell 1999), and if the cannibalism at sites such as Gran Dolina is gastronomic in nature, then there is no reason to assume that it results from the consumption of the enemy.

Turning to the Neanderthal skeletal record, the same caveats broadly apply. Brothwell (1999) concludes from the frequency of traumatic injury that there might have been Neanderthal conflict, and argues that these cannot simply be accidents. Examples of traumatic injuries include the fractured vertebrae from Kebara (Palestine), the healed rib from La Chapelle-aux-Saints (France), a scar on the skull, and a broken arm and collarbone from Krapina (Croatia), a broken and healed leg from La Ferrassie (France), a broken arm from the Neander Thal site, and a damaged leg at Tabun (Palestine) (Klein 1999: 475). At Shanidar in Iraq (Trinkaus 1983: 401-23) Burial 1 had numerous signs of trauma, especially a heavy blow to the left side of the face and a withered right arm; Burial 3 had a partially healed rib injury; Burial 4 had a healed rib fracture; and Burial 5 had a large scar on the head.

There thus appears to be a good case supporting Brothwell for a high level of conflict, if not warfare, among the Neanderthals. But other analysts have concluded that Neanderthals suffered a higher level of trauma than other hominids – comparable in intensity and location to modern rodeo riders – because of their practice of short-range hunting with spears (Berger and Trinkaus 1995). This could also be the cause of the spear-like injury which perforated the lung of Shanidar 3 (Trinkaus 1983: 414-15). Again there have been dubious claims of violence, such as the Grotta Guattari (Monte Circeo) skull from Italy, with supposed lethal wounds (Blanc 1961) that have been reidentified as hyena damage (Stiner 1991; White and Toth 1991). The most recent claim of Neanderthal violence comes from reanalysis of the young adult, possibly male, from St. Césaire, France (Zollikofer *et al.* 2002). A healed skull fracture is argued to be the result of an attack.

Cannibalism has also been suggested quite frequently for Neanderthals, not always on a sound basis. Cut-marks on the skull of the Engis child from Belgium are now believed to be marks made by earlier researchers preparing and measuring it (White and Toth 1989). Hundreds of fragmentary bones of Neanderthals come from the Krapina rock shelter, some of them cut-marked, have been considered in terms of cannibalism (Trinkaus 1985). The specific pattern of cut-marks has, however, been argued to be a better fit with an interpretation of defleshing as part of mortuary ritual (Russell 1987). The best case seems to be Moula-Guercy in France (Defleur *et*

al. 1999), but this is believed to represent gastronomic cannibalism, so not related to war.

It is not, however, so clear that a strong distinction can be made between the Neanderthal pattern of traumatic injuries and that of early anatomically modern humans, if we distinguish them from the people of the Upper Palaeolithic, after *c.* 40,000 BC. Similar evidence for a skull injury from Klasies river, South Africa, dates to 90,000 years ago (Deacon and Deacon 1999: 103). From Palestine the Skhul IX adult (McCown and Keith 1939: 373) has a spear-like injury in the left hip and the child from the cave has a fractured skull (McCown and Keith 1939: 309); the Qafzeh 11 adolescent (Tillier 1995) has a scar at the front of the skull. These injuries could certainly be explained in the same terms as those found on the Neanderthal skeletons.

Considering the Upper Palaeolithic, and thus only anatomically modern humans from now on, the first crucial points to note are the significantly larger number of skeletal remains surviving for analysis and the development of burial outside caves, with a consequently less complex variety of possible posthumous fates for the skeletal material.

There are also additional lines of evidence that may be pursued for the Upper Palaeolithic: the development of weaponry and possible depictions of violence in cave paintings and engravings. The earliest bows probably appeared in the Late Upper Palaeolithic, after *c.* 20,000 BC, but definitive evidence in the form of arrows or bows is missing. (Projectile injuries are considered below.) There are some seven depictions of anthropomorphs apparently pierced by projectiles (perhaps spears) recorded in European cave art (Guilaine and Zammit 2001: 85-9): whether they depict actual killings, wished-for killings or magical killings cannot easily be determined. Indeed, Lewis-Williams (2002: 277-81) recently argued that the spears represent the pricking sensation felt by a shaman when entering a trance.

In terms of skeletal evidence, there are two final Upper Palaeolithic bodies with flint points lodged in them, both from Italy (Bachechi *et al.* 1997). One, from San Teodoro cave in Sicily, is that of a woman with a flint point in her pelvis. The other is a child with a flint point in its backbone, found in the Grotta dei Fanciulli, Grimaldi, on the Italian mainland (Henry-Gambier 2001). Whether the fatal points were spear-tips or arrowheads is unclear, but the excavators in both cases thought they were probably arrows. In the less definitive case of Wadi Kubbaniya, Egypt (Wendorf and Schild 1986), two bladelets found between the ribs and backbone might have been attached to a projectile and the cause of death. The poorly dated cave site of Montfort Saint-Lizier, where a quartzite blade was embedded in a human vertebra (Bégouën *et al.* 1922), may also belong here, although it is equally likely to date to the Early Mesolithic. Although they are few in number, these cases

do suggest a move towards the use of projectiles as weapons (Crosby 2002).

Klein argues that, in comparison to the Middle Palaeolithic, 'skeletal evidence for deliberate injury is ... rare' (1999: 555). He notes healed fractures from male skulls at Chancelade in France (itself doubted by Sollas [1927] after his examination of the skull, preferring an interpretation of an accidental fall) and Dolní Věstonice in Moravia and the discredited cases of skull injuries from Cro-Magnon in France and Choukoutien in China. (A number of old accounts of skull trauma collected by Courville [1950] may be similarly suspect.) This is something of an understatement, however, as examination of the isolated human remains (*i.e.* not from formal burials) from Dolní Věstonice Site II has produced two partial skulls with healed depressions (Trinkaus *et al.* 2000) in addition to two complete skeletons with similar evidence of trauma (Vlček 1995). This does, however, seem to make Dolní Věstonice rather an exception, pointing to the pattern of variability seen much more clearly in the Mesolithic (see below).

The most dramatic revelations concerning conflict at the end of the Palaeolithic come from Jebel Sahaba in the Sudan (Wendorf 1968), a cemetery overlooking the Nile with a radiocarbon date from one of the burials of *c.* 13,500 BC (Wendorf and Schild in press). Of 59 burials, 24 had chert projectile points either embedded in the bones or found within the grave fill. The 110 chert points excavated were 'almost all in positions which indicate they had penetrated the body either as points or barbs on projectiles or spears' (Wendorf 1968: 959). Slightly more males than females show traces of violence, and several children were also killed by projectiles, not on the face of it an argument for war being the business of men. Environmental pressure is suggested by Wendorf (1968: 993; Wendorf and Schild in press) as the cause of the violence, but this could be a special purpose burial place for those suffering a 'bad death' (Thorpe 2003). Certainly the extremely high level of violent death suggests that Jebel Sahaba is an exceptional site which stands out against a generally low level of traumatic injury for the Upper Palaeolithic.

Considering the Mesolithic, the volume of the evidence requires a regional approach to be taken. A considerable body of literature exists on conflict and war among the gatherer-hunter groups of North America, many of whom fought against the expanding settler states from the sixteenth century onwards. Some of the earliest skeletons to be recovered from North America (dating to *c.* 10,000-8000 BC) have produced clear evidence of violent lives and death. Kennewick Man from Washington State (Chatters 2001) had a dent in the forehead, a healing injury on the temple, several fractured ribs, a chipped shoulder socket and a stone projectile point embedded in the pelvis. The teenage male from Grimes Point in Nevada had two stab wounds in the ribs; Spirit Cave Man from Nevada had a skull fracture, two ruptured discs in

his spine and hand injuries; 'Stick Man' from Washington State had a minor dent on his skull, as did Marmes III Man from Washington State; Horn Shelter Man from Texas had foot and collarbone injuries (*ibid.*: 208). Altogether six of the 12 known early males (although the Grimes Point skeleton may be that of a female) from North America produced evidence of conflict. Although evidence from a scatter of contexts is easy to over-interpret, the level of violence certainly suggests conflict.

From a slightly later date (*c.* 6000 BC) the Windover Pond cemetery in Florida (Doran 2002) contained a man with a shattered eye orbit and a 'parry' fracture of the arm (Dickel *et al.* 1989), another man with a sharpened antler point embedded in the pelvis, whose hand had been removed, and five individuals (both adults and children) with depressed fractures of the skull. A level of traumatic injury is present in eastern North America from the oldest skeletal finds, but a significant increase in the evidence for conflict occurs in skeletal remains dating to Middle to Late Archaic period, the time of the development of shell middens (Milner 1999). Projectile injuries become common, with graves cut into midden deposits sometimes containing more than one body killed by arrowshot. Archaic period (6000-500 BC) skeletal remains from western Tennessee, mostly of men, show lethal projectile point injuries, cut-marks and missing bones (possible forearm-trophy taking; Smith 1997). By contrast, on the Great Plains of Canada and the United States, there is almost no evidence for conflict before AD 950 and the formation of villages (Owsley 1994).

In British Columbia, Canada, there is a high level of trauma in the period 3500-1500 BC, with six of 57 skeletons showing signs of violence, mostly in the form of healed injuries, but also one projectile wound and possible examples of beheading (Cybulski 1994). Studies of skeletal material from the northern Channel Islands of California (Lambert 1997), especially from shell middens, show that small healed fractures of the skull are present in all time periods, even before evidence for lethal injuries caused by projectile points appear around 4000 BC. So perhaps a level of social tension existed throughout (either within or between communities) which slipped into actual warfare at times. Lower levels of traumatic injury (but still high when compared to other collections), mostly cranial, and some lethal projectile injuries are also reported from central California (Jurmain 2001). In the far North, analysis of the skeletal material from the Saunaktuk site in the Canadian Arctic suggests a mass killing of at least 35 Inuit by Amerindians around AD 1400 (Melbye and Fairgreave 1994), matching oral traditions of a massacre of children, women and the elderly by raiders. There are clearly areas where raiding and warfare are distinct possibilities, but across the area as a whole there are also significant differences.

Less study has been carried out on the gatherer-hunters of South America, but once again there is convincing

evidence of high rates of skeletal trauma among maritime societies. Burials from a cemetery of the Chinchorro culture of Chile, dating to *c.* 2000 BC, demonstrate high levels of male skull fractures (probably from thrown cobbles), amounting to one in three males, together with some female examples, and almost no trace of violence directed at sub-adults (Standen and Arriaza 2000). Traumatic injuries resulting from conflict, however, have not been reported from other early skeletons in South America (Lessa and Guidon 2002), so the historical background is rather different.

In Australia both rock art and skeletal remains have been used to consider the prevalence of conflict. Taçon and Chippindale (1994) have argued that the rock art of Arnhem Land in the Northern Territory demonstrates the emergence of conflict as a theme around 8000 BC, with depictions of two opposed armed figures. Then about 4000 BC large groups of warriors (up to 110 altogether) are painted throughout western Arnhem Land showing two groups in conflict, with spears flying in volleys, speared figures and warriors waving hooked sticks and stone axes. Taçon and Chippindale conclude that the change in the depiction of conflict reflects the appearance of a more complex social organization and wars over resources.

In terms of skeletal material, there are examples of traumatic injury from the late Pleistocene, including the Burke's Bridge skull with a spear injury to the skull (Webb 1995: 74-5), and the Roonka and Willandra Lakes sites with skeletons exhibiting 'parry' fractures and depressed fractures of the skull (Pretty and Kricun 1989; Webb 1995: 54-6). Later skeletal finds from South Australia, of uncertain date, show a large number of 'parry' fractures and common cranial trauma in the form of circular depressions, some very deep (Webb 1995: 188-216). In general females have a higher proportion of skull injuries than males, although there are clear regional differences. In the tropics the percentage of males with traumatic skull injuries is lowest, and the proportion of these which are injuries to the back of the head is highest – perhaps indicating that these result from domestic disputes and that the level of conflict between groups was very low. Again here, as in the Americas, the pattern is of a fairly consistent low level of violence with specific areas showing much higher levels of conflict and probably warfare.

The absence of direct evidence of conflict is especially striking for the Natufian of Palestine (Roper 1975; Peterson 2002: 137), where there is a large skeletal sample (over 400 inhumations, most from large cemeteries), yet very low levels of identifiable violence. Only a handful of traumatic injuries have been reported: a depressed fracture of the skull at Nahel Oren (Ferembach 1959) and a mandible with new bone growth and a possible healed leg fracture at Hayonim cave (Peterson 2002: 83). The depression in the skull of a probable male from El Wad appears to have been

identified to be both the result of traumatic injury (Belfer-Cohen 1995) and a product of artificial deformation of the head (Belfer-Cohen *et al.* 1991). Population pressure has often been suggested as a factor in the Natufian development of an agricultural economy (see Thorpe 1996: 12-13 for a discussion) and yet there is no trace in the archaeological record that this led to conflict.

Turning to Europe, and beginning with the Mediterranean, remarkably little trace of violence can be detected from the Mesolithic skeletal evidence (Cordier 1990; Vencl 1991; Grünberg 2000). For the central and eastern Mediterranean the relatively small sample size (Grünberg 2000) is certainly a limiting factor, with just a single example of violent death from Franchthi cave, Greece (Cullen 1995). It may be significant that relatively high levels of healed cranial trauma do appear at Neolithic sites in Greece, such as Alepotrypa cave (Papathanasiou *et al.* 2000).

The limitation of a small sample size cannot be said to be a factor in the western Mediterranean round to the Atlantic coast, where at least 400 burials have been found in Portuguese shell middens, at sites such as Moita do Sebastião (Lubell *et al.* 1989; Cunha *et al.* 2003). A projectile wound in the foot at Moita do Sebastião and a broken arm and a skull wound at Cabeço da Arruda are the only clear traces of violence here. There appears to be little evidence of traumatic injury from elsewhere in Iberia (Cabel and Garralda 1995). Parry fractures have been reported in some numbers from Portuguese sites (Grünberg 2000: 190) – these fractures of the forearm are usually interpreted as the result of an attempt to fend off a blow directed at the head or upper body. However, recent examinations of prehistoric Californian skeletal material (see above) show there to be no link at the level of the individual site between the frequencies of head injuries thought to result from attacks and of parry fractures (Larsen 1997: 112). There are, in fact, a large number of accidents that can result in ‘parry’ fractures (Lovell 1997). Along the Mediterranean and up into the Atlantic, therefore, there appears to be a quite consistent pattern of low levels of identifiable violence.

Moving away from the Mediterranean, projectile injuries that were probably the cause of death are known from Schela Cladovei and Vlasac Period II in the Iron Gates area on the Danube (Radovanovic 1996; Chapman 1999). At Schela Cladovei the level of violence appears to be very high among the 56 skeletons excavated, with six cases of projectile injuries (four male, one female, one unsexed, mostly from bone points) along with half a dozen examples of cranial injuries (generally not healed before death), so that some one-third of all adults from the site suffered fatal traumatic injuries. Within the region’s Mesolithic cemeteries as a whole, however, Schela Cladovei and Vlasac appear to be exceptional (Chapman 1999), with Lepenski Vir, for example, providing no cases of trauma from 85 skeletons – the latest overall figures are eight projectile injuries out of

400 skeletons, and roughly ten individuals with fractures. These two sites thus provide the vast bulk of cases from just one-fifth of the total burial population that has been examined, suggesting that dramatic cultural variability existed in the level of conflict within this small part of Europe. Even at Vlasac the phases before and after Period II lack evidence of violence (*ibid.*).

To the east, projectile injuries apparently bringing about the death of the victims (Cordier 1990; Vencl 1991; 1999; Alekšin 1994; Lillie 2001) are reported from Volos’ke (two cases, one also with a fractured skull) and Vasylivka I in the Ukraine; also in the Ukraine the Vasylivka III cemetery produced two burials with arrow injuries, another with a bone point wedged between vertebrae and several with apparently crushed skulls. Lillie (2001: 56) suggests that these ‘Ukrainian cemeteries functioned as territorial markers, establishing a group’s rights to regional hunting grounds’. These hunting grounds could, therefore, also have become the focus of conflicts over such claimed rights.

In central Europe we have the oldest definite evidence for arrows and thus bows, at Stellmoor in Germany, *c.* 8500 BC (Guilaine and Zammit 2001: 97-103). Skeletal material from Germany also points to the existence of conflicts occurring on a much larger scale. At Ofnet cave in Bavaria two pits held the skulls and vertebrae of 38 individuals, all stained with red ochre, dating to around 6500 BC (Frayer 1997; Orschiedt 1998; 1999). Most of the dead were children; two-thirds of the adults were females. Finds of deer teeth and shells, presumed to be decoration, were associated only with adult females and children. Half the individuals were wounded before death by blunt mace-like weapons, with males and females and children (even infants) all injured, but males having the most wounds (Frayer 1997). There were cut-marks on the vertebrae of one in three of all individuals, relating to the removal of the head.

The scale of the apparent massacre suggests an attempt to wipe out a whole community, followed by the ceremonial burial of ‘trophy skulls’ (Keeley 1996: 102). Certainly, there are many accounts in the ethnographic record which demonstrate that skulls taken in warfare could be very carefully curated (*e.g.* Sterpin 1993). It should be noted, however, that Orschiedt (1998; 1999) has lower injury counts than Frayer, although this may well relate to a smaller sample being available to him. Orschiedt suggests that not all the skulls were deposited at the same time, indeed possibly over a long time, although the skulls he does accept as definitely injured are found together. The chronological question can only be resolved by further radiocarbon dating.

In addition to the Ofnet site, the nearby cave site of Hohlenstein-Stadel (Orschiedt 1998; 1999) produced the skulls of a man, a woman and a young child (18 months to two years old) in a pit, resting on a layer of stones. Fish teeth found around the female skull may represent a

necklace. All three skulls had wounds from a blunt instrument and cut-marks demonstrated that these individuals had also been decapitated. The diagnosis of hydrocephaly (Orschiedt 1998) for the infant has suggested an interpretation of the killing of socially unacceptable members of the group (Gronenbourn 1999). Despite these apparently intense episodes of violence, we should also note that none of the conditions of sedentism, territoriality and status competition attributed to the Mesolithic elsewhere in Europe have been claimed for the German situation (Jochim 1998).

At the Tévéc and Hoëdic shell midden sites on the coast of Brittany (Péquart *et al.* 1937; Péquart and Péquart 1954), men, women and children were interred in stone-lined cists. Twenty-three burials were found at Tévéc and 14 at Hoëdic. Several skeletons had healed fractures of the forearm and collarbone and at Tévéc a young adult male burial had two flint points embedded in his spine (Péquart 1931), and a healed fracture of the jaw, while another young adult (possibly male) had traces of facial injuries and a partially healed hole in the skull (Newell *et al.* 1979: 132-7).

Finally reaching southern Scandinavia, the overwhelming impression is of a significantly higher level of conflict visible in the archaeological record than in the areas considered before. In Sweden several sites have produced evidence of fatal weapon injuries (Strassburg 2000: 162-5). Bone points were found in the chests of burials at Bäckaskog (an adult female) and Stora Bjärs (an adult male) (Albrethsen and Brinch Petersen 1976). The Stora Bjärs man also had a partially healed head injury and a fresh wound to the jaw (Lindqvist and Possnert 1999). At the Skateholm I 'cemetery' in southern Sweden an arrowhead was lodged in the pelvic bone of an adult male who had also suffered blows to the legs and arms (Larsson 1989), and a bone point found with another male (Vencl 1991) may be the cause of death; three further individuals had healed skull injuries and another a broken and healed jaw (Persson and Persson 1984; 1988). The Skateholm II 'cemetery' contained the burial of a woman with the tip of an arrowhead in the chest cavity (Persson and Persson 1988) and one individual with a healed cranial depression (Persson and Persson 1984). At Tågerup (Karsten and Knarrström 2003: 204) an arrowhead with a broken tip was found at the hip of a ten-year-old child.

In Denmark, at the Vedbæk 'cemetery' on Zealand one of the individuals (an adult, probably male [Bennicke 1985: 102] although Meiklejohn *et al.* 2000 argue for a female attribution) in a grave containing three bodies had a bone point through the throat (Albrethsen and Brinch Petersen 1976). The apparently simultaneous burial of the man, woman and child has led to the suggestion that all three died suddenly and violently (*ibid.*).

Bennicke's examination of trauma (1985: 98-101) shows that there were a high number of cranial injuries in the

form of fractures and impressions, but a very low level of fractures to other parts of the body, again suggesting the lack of a linkage between parry fractures and other injuries. Most of the individuals with injuries were male, with Fischer (2002: 372) concluding that 'nearly half of the male skulls exhibit lesions that seem to have been caused by blows with an axe or some similar weapon', but with some examples of female head wounds (see Thorpe 2003 for specific examples for both sexes). This pattern may be the result of fighting duels with heavy wooden clubs.

At Dyrolmen in Jutland a large number of bones from at least nine individuals were discovered (Degerbøhl 1942). There are traces of cut-marks and fractures of long bones and mandibles apparently to reach the marrow, with cut-marks on the skull of a ten-year-old child suggesting scalping (Anger and Dieck 1978: 166-7). Claims of cannibalism may be exaggerated but the deliberate treatment of human bones as if they came from animals seems to be the pattern here. Cannibalism is also sometimes used in South American societies as a way of disrespecting the enemy, eating their flesh 'like animal meat' (Conklin 1995).

The overall conclusion of this review should be clear: the variation revealed between regions, areas and sites is significant in assessing the value of general theories, and a generalized approach masks crucial cultural variability. Despite the limitations of sample size in many areas, and the lack of collections of data beyond the anecdotal, there seem to be changes through space and time and specific areas and periods (and even single episodes) of greatly elevated levels of violence.

It should be clear therefore that the Palaeolithic and Mesolithic evidence cannot be fitted neatly into any one of the over-arching explanations considered at the beginning of this paper. The biological theories (unless they admit a considerable degree of cultural influence) imply a constant level of violence not supported by the archaeological evidence, which demonstrates significant variations in evidence for conflict from virtually none to apparent massacres. The materialist theory would be far more convincing if there were a significant increase in conflict with the adoption of agriculture. We need, therefore, to turn to historical factors and considerations of the specific societies concerned. Mesolithic conflict need not have been over economic resources (as Haas [2001: 338] notes), but a strong degree of internal territoriality would certainly be consistent with other indications (Layton and Barton 2001), and seems to fit well with the evidence of elevated levels of conflict in coastal areas where areas of shellbeds were an important resource and shell middens in some way related to attempts to control such resources.

However, many other causes of wars among gatherer-hunters have been noted in the ethnographic record. Warfare in early prehistory might well often have arisen

from matters of personal honour – such as slights, insults, marriages going wrong, or theft. In a small community, everyone is related to each other. An attack on one group member may well therefore be treated as an attack on the whole family. A personal feud may quickly involve the whole community. From there it is a small step to war.

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