

TRANSITIONS, CHANGE AND PREHISTORY: AN ECOSYSTEMIC APPROACH TO CHANGE IN THE ARCHAEOLOGICAL RECORD.

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Abstract

Current thinking in the Palaeolithic divides the archaeological record into a succession of discrete 'cultures' defined in terms of lithic industries, thus creating 'points' of 'transition' such as the infamous 'Middle-Upper Palaeolithic transition', where differences in the archaeological record have been explained away as being the result of 'evolution', applied in a simplistic post hoc, accommodative way.

Such a 'top-down' perspective assumes qualitative differences between Neanderthals and 'modern' humans, particularly in terms of their mental abilities regarding abstract thought. Such assumptions are dangerous in the limitations that they place on the interpretation of the record - hominids, sites, industries, etc., can only ever be 'modern' or 'non-modern', with both categories pre-defined and pre-'explained'. A 'bottom-up' approach can be developed from the conceptualisation of both hominid and human populations as inevitably immersed within a four-dimensional world as a fundamental fact of their existence. Crucially, these ecosystems are not individual and discrete but are inescapably shared with other 'persons', whether these are hominid, human or animal, with whom interactions occurred on a daily basis. Thus the archaeological record - and particularly the faunal record - can be seen as demonstrating the signatures of certain kinds of interaction, providing clues to the 'place' and 'time' at which they occurred and therefore to the kinds of movement and interaction that constituted the identities and personhoods of the people who deposited material there.

This paper presents a methodology for addressing the four-dimensional structure described by the potential paths of movement and activity that were centred on some of the Palaeolithic sites from Vasco-Cantabrian Spain, along with something of the quality of the interactions that occurred between the people who lived there and other persons and types of person in that ecosystem. The results demonstrate the way in which fragments of the narratives of the lives of persons in prehistory can be represented, and highlight the potential of this methodology for reconsidering the lives of past populations and the similarities and differences of Neanderthals and 'modern' humans.

Introduction

This paper critiques sterile typological approaches to the study of change in prehistory, arguing that the identification of discrete, typologically defined 'cultures' in the archaeological record hampers consideration of patterns of process and change. This is particularly true of the Palaeolithic, where such chronological and technological divisions are reified and 'explained' *a priori* by misused 'evolutionary' theory, rather than as analytical categories requiring continual re-evaluation. Using as a case study the faunal record from the Mousterian levels of the Spanish site of Amalda, I demonstrate how an ecosystemic approach can allow us, even in the Palaeolithic, to move away from such sterile classificatory systems. Although in this paper I focus on only one level of Amalda, I aim to outline the ecosystemic approach and its potential for yielding a fuller and more dynamic understanding of the past by considering change in terms of personhood and identity, established, negotiated and maintained through a web of daily movement, interaction and activity within a four-dimensional ecosystem.

Palaeolithic 'cultures' and change

Change in the archaeological record of the Palaeolithic is still mainly 'explained' either by traditional culture-history approaches, in terms of sequential social or ethnic groups or 'cultures', or by evolutionary and Processual theories which focus on the continuing adaptation of hominids to changing environments. The consideration of change in these overly narrow terms divides the Palaeolithic into a succession of discrete 'cultures' defined in terms of the typology of lithic industries.

Such change is tautologically 'explained' away as simply the result of 'evolution' - but evolution reduced to typology and a succession of discrete logocentric, essentialist typological units. Adaptational and evolutionary rhetoric is applied in a simplistic *post hoc* accommodative way that becomes little more than a justification for 'just-so' stories about the course of human history (O'Brien and Holland 1992, 36-7). The past becomes a series of self-explanatory adaptive and evolutionary 'transitions' between static 'cultural' states, and there is nothing more to say about the past than to assign parts of the record to the relevant box; the concepts of adaptation and evolution become "an ex-post-

facto argument aiding ‘explanation’ of change among prehistoric groups” (*Ibid.* 35).

In this way great chunks of prehistory are reduced into discrete blocks of time and space, distracting archaeologists from questions about variation, discontinuities and process. Interpretation becomes a question of “how we – much less *they* – get from one pattern or ‘system’ to another” (Conkey 1987, 69 emphasis in original). Such chronological and technological divisions become reified rather than being seen as analytical categories requiring continual re-evaluation, ‘fossilized expectations’ instead of “gross abstractions and temporary expedients” (Wobst 1983, 224; see also Robebroeks and Corbey 2001, 67; Schumann 1997, 254, 261).

It is now largely recognised that a direct equation between archaeological ‘cultures’ and “identity-conscious social units analogous to the tribes, peoples and nations of history” (Clark 2001a, 43), is overly naïve. Nevertheless, change in lithic typologies, as in other aspects of the archaeological record, *is* apparent, and material culture *does* demonstrate patterning in space and time. As Straus argues, whatever their ‘meaning’ *per se*, “some of the larger formal typological groupings of the Upper Palaeolithic do seem to have consistency and practical analytical utility ... [and] ... serve as useful shorthands for talking about broad patterns” (Straus 1991, 77; see also Schumann 1997, 254; Field 2002). The interpretation of the factors underlying this patterning, however, remains sadly under-theorised. As Straus concludes,

Assemblage typologies are indeed sterile, when they are the ‘be-all and end-all’ of archaeological research (usually of a normative, phylogenetic nature). But *as tools*, they are useful, descriptive instruments – just as are artefact typologies. What is important is the questions asked, the reasons for classification (1991, 77-8).

Such classifications and periodisations are merely tools for us to use; the danger lies not in their definition or use, but in Palaeolithic archaeologists’ epistemological naivety (Clark 1997) – as Clark cautions, we should resist their “tendency to become ‘fossilized’” (Clark 2001b, 141).

This paradigm provides a normative typological framework in which the past is reduced to a succession of little ‘boxes’ of near-static variation which become reified in our understandings of the past: as Conkey has pointed out, “we do not refer to Magdalenians, but to ‘the Magdalenian’” (1987, 69).

Meanwhile, change in the past becomes a series of distinct ‘transitions’ between succeeding, static ‘cultures’,

‘events’ requiring special explanation. Change is compressed into the lines separating cultural units, representing a clear boundary or origin point between archaeological stages – as exemplified by the infamous Middle-Upper Palaeolithic transition, where the problem is exacerbated because of the conflation of biological and apparently cultural change in a ‘transition’ which is central to our own identity as a species.

Interest in the question of the origins of modern humans dates back centuries, and although the terms of the debate have certainly changed, the questions – and some of the answers – have not fundamentally altered (Alexandri 1995, 57), and long-term continuities are apparent in the kinds of narratives that are told about human origins, whether these are religious origin myths, classical philosophy, folktales or scientific accounts of human origin (Conkey and Williams 1991, 104; see also Landau 1992; Alexandri 1995; Moore 1995; van Reybrouck 2001, 77-8 and *passim*). Hominid research, like all archaeology, is unavoidably a discourse about our own human identity situated in the present, and the debates surrounding the ‘Middle-Upper Palaeolithic transition’ draw strongly from debates about the definition of ‘humans’ from the animal ‘other’ (Pellegrin 1986; Chazan 1995, 235; Serjeantson 2000, 179; van Reybrouck 2001).

The issue is of more than just semantic concern: archaeological and palaeoanthropological interpretations of hominid prehistory have been strongly affected by social and cultural factors (Graves 1991; Chazan 1995; Roebroeks 1995; Marks 1997; Drell 2000; Cartmill 2001; Roebroeks and Corbey 2001; Proctor 2003), and the perception and treatment of the archaeological record can be hugely affected by the side of the ‘boundary’ from which it derives. As Roebroeks and Corbey comment about a workshop on the Palaeolithic occupation of Europe:

In dealing with the Lower and Middle Palaeolithic, a highly critical attitude prevailed in which, for instance, hearths and dwelling structures were concepts to be applied only after a careful scrutiny of the archaeological data. Similarly, there was also a double standard with regard to the association of faunal remains and stone artefacts: at earlier sites, the actual degree and type of interaction between humans and animals had to be convincingly demonstrated time and time again, whereas in the context of modern humans, such critical examinations seemed less important and interpretations of stones and bone flowed more freely in terms of hunters and their prey (Roebroeks and Corbey 2001, 68).

The dominance of this model of prehistory and change in Palaeolithic research has produced a straightforward ‘top-down’ model which, applied to the Middle/Upper Palaeolithic ‘transition’, assumes qualitative differences between Neanderthals and so-called ‘modern’ humans: the *a priori* assumption, simply stated, is that modern humans and their associated Upper Palaeolithic assemblages are more ‘advanced’ than Neanderthals and the Middle Palaeolithic record (see e.g. Simek 2001, 199 for discussion), a prophecy which has all too easily become self-fulfilling for many Palaeolithic researchers (see e.g. Clark 2001b, especially 141; Roebroeks and Corbey 2001, 69 and *passim* for examples). In summary, “the ‘Moderns’ are capable until proven incapable, whereas the ‘Ancients’ can be summarized as incapable, until proven capable” (Roebroeks and Corbey 2001, 72). In such ‘top-down’ models it can often seem that the Middle Palaeolithic and Neanderthals are used only to emphasise the sophistication of modern humans (Clark 2001b).

But these models are often little more than collections of preconceived biases and assumptions, and as such are dangerous in the severe limitations they place on any interpretation of the record – hominids, sites, industries, etc., can only ever be ‘modern’ or ‘non-modern’, with both categories pre-defined and pre-‘explained’ by misused ‘evolutionary’ theory. Such a ‘just-so’ approach to the Middle and Upper Palaeolithic of Europe is teleological in the extreme, erroneously assuming directionality in the record and allowing archaeologists to assume rather than demonstrate the abilities and behaviours of the populations represented in the archaeological record, their conclusions justified by a lazy, post-hoc accommodative use of evolutionary rhetoric.

However, the neat coincidence between biological and cultural change at the time of the ‘Human Revolution’ has now been thoroughly discredited, with the identification of the Châtelperronian – essentially an ‘Upper Palaeolithic’ technology – as produced by Neanderthals (see e.g. d’Errico *et al.* 1998 for discussion), and McBrearty and Brooks’ thorough demonstration that the evidence in fact suggests that so-called ‘modern’ behaviours “do not appear suddenly together, but rather are found at points separated by sometimes great geographical and temporal distances. It seems inappropriate to label changes accumulating over a period of 200,000 years either a revolution or a punctuated event” (McBrearty and Brooks, 2000, 259; figure 13).

Rather than assuming such differences, ‘bottom-up’ approaches need to be developed to reconsider the bases for change in the archaeological record at this time, “observing and documenting what Palaeolithic hominids actually did and how their behaviour changed over time, not just whether or not they could do what modern

humans did” (Roebroeks and Corbey 2001, 75). Nor would such an approach be limited to the Palaeolithic; it could rewardingly be applied to the coincidence of forms of change in various ‘transitions’ throughout prehistory (e.g. the Neolithic ‘revolution’ – see papers in Price 2000).

However, there is currently no well-developed explanatory framework justifying our expectation that different forms of change (whether ‘cultural’ or ‘biological’) should coalesce at various points in prehistory. Certainly, as discussed above, there has been a move away – at least, in later prehistory – from the idea that all archaeological periods have any straightforward ‘cultural’ or ‘ethnic’ associations in the sense that they were created by consciously self-identifying groups:

the space-time distributions of prehistorian-defined analytical units (e.g. the Aurignacian), exceed by orders of magnitude the space-time distributions of any real or imaginable social entity that might have produced them ... whatever the Aurignacian is, it is manifestly not a ‘culture’ (Clark, 2001a: 43-4).

Evolutionary and social archaeologies and the four-dimensional ecosystem

In fact, as Clark and many others have pointed out, ‘cultural’ stability is in fact more difficult to account for than change (e.g. Allen 1989). Despite this, the dangerous attraction of post-hoc, tautological ‘evolutionary’ explanation has exerted considerable influence over interpretations of change in prehistory and particularly, as discussed in the introduction to this section, in the Palaeolithic. Criticisms of evolutionary theory have crystallised around the charge that it consigns the individual to an essentially passive role, driven by processes beyond his or her control, with social actors irrelevant and “mere components of the system” (Shanks and Tilley 1987, 139).

But the fault lies with the application in archaeology of evolutionary theory, rather than with evolutionary theory itself, and in fact neo-evolutionary theory conceptualises “adaptation as an active process of becoming, rather than a static state of being” (Mithen 1989, 486).

Evolutionary theory is in fact a genuine theory of agency: individuals, as the units of selection, are the driving force of adaptation, selection and speciation (e.g. *Ibid.*, 488 and *passim*; Quinney 2000, 12). As Graves-Brown argues, far from being deterministic and imposed upon hapless hominids and humans, “[e]volution is by its very nature entirely contextual and contingent; organisms do not and cannot plan for the future but must act in the present context to ensure their survival” (1993, 76). Speciation is regarded as epiphenomenal, effect rather than cause, and

hominids and humans are seen as essentially active and creative in their behaviour, learning and making decisions in adapting to their dynamic environments (Allen 1989, 277; Mithen 1989, 487).

And it is this link between people and their environments that provides us with the foundations for establishing a 'bottom-up' perspective, because populations cannot be separated out from their environment. While as Lewontin states, "there is no organism without an environment", it is equally true that there is "no environment without an organism" (1982, 160).

The concept of 'the environment' has been badly maligned by post-processual and social theory, as deterministic or as imposing a set of rules and constraints on those who live in it. But in ecological theory the relationship between the individual and its environment is by no means one-way; instead we can visualise the much-maligned 'environment' in a more holistic fashion, as an 'ecosystem' (Tansley 1935; see also Preucel and Hodder 1996, 23-35) – "a continuum of physical features, other species and conspecifics" (Foley 1984, 5). Although the concept of the ecosystem was first studied in a systemic paradigm, in terms of energy flow, nutrient cycling and information feedback (Preucel and Hodder 1996, 35), and its use in archaeology has thus been criticised (see e.g. Ingold 1992, 41), I argue that the concept can be used to emphasise the embeddedness of humans and hominids within their environments.

Here the emphasis is on 'synecology', communities of plants and animals interacting in four-dimensional space and exercising considerable influence on one another, rather than individual species acting in isolation (van Valen 1973; Jochim 1998). Individuals and groups can thus be considered as *part of* an ecosystem in its fullest sense, adapting through the formation and adjustment of 'niches', the sum total of the adaptation of an organism and how it 'fits' into its particular environment. Thus the concepts of the 'ecosystem' and of the 'niche' should be considered essentially creative and reflexive, rather than something imposed upon its members; ecological theory thus takes a far more complex view of human/environment interaction than the simplistic 'environmental determinism' set up as a straw person by some of the more polemical relativist critics (e.g. Hodder 1985; Shanks and Tilley 1987a).

The view of a continuum of interacting biotic and abiotic aspects of the 'ecosystem' allows for a very different conceptualisation of hominid and human behaviour. In ecological terms, an organism constructs its niche by perceiving and acting on the affordances of the abiotic, biotic and conspecific environment (Gibson 1979, 129; see also Ingold 1989, 504), and in this way we can avoid a simplistic human/environment, subject/object dichotomy. Rather than prioritising either the physical or

social environments, we need to accept that we cannot separate the two as part of an encompassing ecosystem.

Persons and the four-dimensional ecosystem

Such an ecosystem is also not simply an abstract, characterless 'container' for human activity (Tilley 1994, 9; Relph 2000 [1985]; see also Gamble 2001), a two-dimensional backdrop for objectively measuring human movement and activity that can be considered primarily in Euclidean, geometric terms. New approaches to geographic space in archaeology such as phenomenology (Heidegger 1962 [1927]; Bourdieu's practice theory (Bourdieu 1977), Gibsonian direct perception (Gibson 1979; Merleau-Ponty 1962), time geography (Carlstein 1982), naïve geography (Mark and Egenhofer 1996; Mark *et al.* 1997) etc., have opened up a variety of new perspectives from which to consider this evolutionary interaction between humans and hominids and the worlds in which they live. Although, clearly, each of these theoretical approaches is very distinct, what they do have in common is an emphasis on the immersion of the individual within a four-dimensional world as a fundamental fact of their existence, and an emphasis on embodied experience as inseparable from understanding and action. In this way, lives become a form of skilled performance, rather than a system of abstractly designed strategies; as Ingold has pointed out, many other societies do not separate humans out from their environments. Rather, a person is seen as "a being immersed from the start, like other creatures, in an active, practical and perceptual engagement with constituents of the dwelt-in world" (1996, 120-1).

While Processualism tended to 'envisage the environment as a vast container filled with objects, living and non-living, mobile and stationary, like a room or stage-set cluttered with furniture and decorations' (Ingold 1992, 41), an ecosystemic approach considers particular, specific landscapes and the activities occurring within them as part of an experiential whole. As Gosden argues,

The space of human action is not a geometrical entity to be represented easily on a piece of paper, but rather room-for-manoeuvre, a space in which skills can be deployed. Our skills are created to fit the spaces in which they are used and the spaces of human life are the result of past skilled action (1994, 344).

This last comment also highlights another significant aspect of ecosystems: they are *four-dimensional*. If experience occurs at *locales*, it also occurs at *tempos* (Barrett 1991, 8) that arise out of *practice* (Bourdieu 1977) and are composed of activities and behaviours regardless of the calendar or clock that may be imposed on them (Parkes and Thrift 1980, 37 cited Bailey 1983;

Ingold 1993a; 1993b; 2000b; Gosden 1994; Mackie 2001).

The organism-person, then, is immersed from the start in its ecosystem: the basis of the ‘dwelling perspective’ championed by Ingold (2000, 153). “Organism plus environment” denotes “not a compound of two things, but one indivisible totality” (Ingold 2000, 19), and the ecosystem is thus comprised of and experienced by the individual’s activities and interactions, both structuring and being structured by them.

And the concept of the ecosystem has another very important corollary: it is not individual and discrete but inescapably shared with other beings with whom we interact on a daily basis - not just humans but other animal species, with whom we also enter into interactions, as hunters, as prey, as husbanders. While in western thought there is a fundamental split between ‘human’ and ‘non-human’, with ‘person’ a subcategory of human, other societies start from an overarching category of person within which human person, animal person and even wind person, for example, are valid subcategories (Ingold 1996, 130; Hallowell, e.g. 1960). And as Ingold has pointed out, such a re-conceptualisation of human-animal relations obviously has significant ramifications when considering hunter-gatherer subsistence practices (*Ibid.*). Far from being an encounter between culture and nature, the wild and the tame (e.g. Cartmill 1993), or a form of technical manipulation of the natural world, hunting is seen as a kind of ongoing dialogue between persons, integral to the total process of social life: hunting becomes personal (Ingold 1996, 128-9; 2000 *passim*)

Our practical day-to-day experience, then, is composed of constellations of habitual interaction with co-denizens of our ecosystem, including other humans and hominids, but also other kinds of entities. These other persons also describe their own matrices of movement in space and time, and these are inevitably familiar to their co-denizens, who in turn constantly alter and shift their own movements in an ongoing co-evolutionary negotiation of behaviour and identity. Thus the pathways of movement in space and time created by humans and hominids inevitably interlink and intersect with those created by these other entities, and each of these intersections provides an arena for various kinds of potential interaction.

In addition, our ecosystemic interactions also extend past the obviously ‘animate’ species to plant species and to geological and physical features of the particular ecosystem in which we live, as well as material objects created by ourselves or by the people we live with. Such an idea is hinted at by the southern Asian concept of the *dividual*, described by Strathern as “a person constituted of relationships” (Strathern 1988, 68), an emergent identity arising from the sum total of the relationships

that he or she engages in (see also Marriott 1976; Thomas 2002, 34).

In this paradigm, people are not seen as concrete, separate entities *per se*, but as discrete but not bounded persons, composed of relations and connections. Identity, in this view, arises out of the everyday practices and interactions which comprise the ecosystem (see e.g. Gamble 2001, 206).

But these *dividuals* (e.g. Strathern 1988, 68) and their distributed personhoods (e.g. Gosden and Marshall 1999, 173) do not exist in a vacuum: these ongoing relationships, encounters and interactions occur *in the world*, at specific times and in specific places.

And these places also have histories or biographies acquired by the virtue of the interactions that have occurred there before. Such places do not exist in isolation but are connected by paths and tracks of movement that link places and activities and interactions into a narrative, enacting movement between persons as well as between places, such that for Australian Aboriginals, for example,

the life of a person is the sum of his tracks, the total inscription of his movements, something that can be traced out along the ground ... who one is becomes a kind of record of where one has come from and where one has been (Wagner 1986, 21).

Palaeolithic identities

An ecosystemic perspective goes some way towards re-informing our understandings of change in prehistory. Rather than visualising aspects of the archaeological record (‘subsistence’; ‘lithic technology’; ‘symbolic behaviour’) as separate and discrete, all become implicated in the everyday movement and activity that constitutes life in a real, four-dimensional world.

The solution to these problems with Palaeolithic archaeology, therefore, is not to throw the baby out with the bathwater and reject the evolutionary framework outright, contra Shanks and Tilley (1987, 175). In fact, the evolutionary framework, with its emphasis on ecosystemic (rather than ‘environmental’) context, can actually help us approach the Palaeolithic in ways which admit the active individual.

Rather than being seen as a series of arbitrarily divided ‘cultures’, the archaeological record can be viewed as having been formed through the construction and continual negotiation of identity through movement, activity and interaction within the four-dimensional ecosystem. The material objects of the record – in the Palaeolithic, largely stones and bones – are metaphors for

patterns of interaction between persons of different kinds, and also act to materialise and immemorate occasions of interaction with other denizens of the world, mnemonic of real, physical encounters with real, physical animals at particular times and places in the world.

From an analytical perspective, then, the faunal record contains within it the signatures of the interactions of which it is comprised, providing clues to the ‘places’ and the ‘times’ at which they occurred as well as to something of the quality of those interactions. The detail of the reconstruction of the environment is beyond the scope of this paper (see <http://www.fcoward.co.uk>) but in brief, the likely location of animal species and thus the potential arenas for hominid interactions with them is deduced from the consideration of ecosystemic and topographical factors such as steepness of gradient and changing sea and snowlines which affect the ease of access of various animal species to different parts of the landscape (see Sturdy and Webley 1988; Sturdy *et al.* 1997). The landscape offers, for example, ibex and horses very different kinds of affordances in terms of elevation and slope. Topography also has a significant effect on vegetation, which again has ramifications for where animals prefer to feed. By considering seasonal variation, we can also consider the ways that animal behaviours change over time, in terms of aggregation and dispersal, migrations and movements, and reproductive cycles and variations in condition and behaviour over the course of the year. From these forms of data we can begin to consider real places, connected by paths and tracks of embodied experience through a real landscape with its own distinct character that impacts on perception and movement and affords particular kinds of interaction with other persons – human, hominid and ‘other’.

In this way we can work backward from the fauna to start to access something of the process of the structuring of movement, activity and interaction via the reconstruction of some of the potential pathways that form a composite, holistic matrix of movement out across the landscape, centred on the site from which the material traces of it were recovered. Each of these pathways, besides representing potential set of movements between persons and places through the ecosystem, had a distinct flavour or texture that drew from the *quality* of the interactions and activities from which it arose. And crucially, as the following section demonstrates, because the goal is not to access the direct, subjective experience of persons in the past but rather the kinds of ways in which their experiences structured and were structured by personhood and identity, such an approach can be applied to pre-sapiens populations as well as ‘modern’ human groups.

Middle Palaeolithic identities at Amalda, Vasco-Cantabrian Spain

Level VII of the site of Amalda in the Urola valley of the Spanish Basque country in northern Spain is dated to the Middle Palaeolithic of OIS5a or c, both warm phases of the end of the last glaciation around 80,000-100,000 years ago. The lithic industry has been identified as Mousterian, associated with pre-sapiens Neanderthals (Altuna *et al.* 1990).

Although level VII of Amalda is virtually polinically sterile itself (Dupré 1990), a reconstruction of the environment of substages a and c of OIS 5 suggests that the steeper areas of the valley were probably largely open, with alpine meadow and bare rock the dominant ecotype in the immediate vicinity of the cave but open pine and birch parkland with some deciduous trees on the higher, more gentle slopes above the valley and possibly oak, hazel and alder in the wider, more sheltered areas of the valley itself, lining the stream (see also Eastham 1990) and the Urola river (Figure 3.1: all figures referred to in this section, as well as maps and more detailed versions of those presented here, are available at <http://www.fcoward.co.uk>)

Chamois and ibex

Clearly, the most significant animal species with which hunters interacted at the time – in terms of individual animals represented – was chamois. At least 16 are represented in the faunal assemblage from the level (Table 3.1). This is an emphasis that persists throughout the levels at this cave site, from the Mousterian through to the Upper Solutrean. Pathways leading to and from hunting grounds associated with this species, then, were clearly well-known and formed a major part of the complex of pathways of movement and activity centred on the cave. At least three of the 16 individuals represented at the cave were infant animals (Table 3.2) killed during summer (May – June).

During these summer months, the mixed herds of adult females and young associated with these areas of the landscape, although generally small, were probably more easily located in their *c.* 75 hectare ranges than the scattered, lone adult males. Chamois could have been taken individually by single hunters by stalking or coursing, a time-consuming, solitary activity: stalking has been likened to three-dimensional chess (Cooke, 2004). However, chamois are notably wary animals said to post ‘sentinels’ to warn of danger (Freeman 1973, 10). The most efficient method (prior to the invention of the rifle) was probably to drive animals towards concealed hunters or natural traps (*Ibid.*) – such a technique would obviously involve a number of hunters working closely together.

During the winter months following the rut, chamois probably descended to lower altitudes in search of more sheltered, wooded areas in which to forage, being displaced from higher, barer slopes by the descent of ibex

	Amalda Level VII			
	NISP	NISP%	MNI	MNI%
Red deer/ <i>Cervus elaphus</i>	150	15.5	5	10.2
Roe deer/ <i>Capreolus capreolus</i>	3	0.3	3	6.1
Chamois/ <i>Rupicapra rupicapra</i>	536	55.4	16	32.7
Ibex/ <i>Capra pyrenaica</i>	61	6.3	5	10.2
Bovids/Bovini	58	6	3	6.1
Horse/ <i>Equus caballus</i>	48	5	4	8.2
Ungulates	856	(88.5)	36	(73.5)
Cave bear/ <i>Ursus spelaeus</i>	58	6	5	10.2
Brown bear/ <i>Ursus arctos</i>	0	0	0	0
Hyaena/ <i>Crocuta crocuta</i>	3	0.3	2	4.1
Wolf/ <i>Canis lupus</i>	17	1.8	3	6.1
Cuon/ <i>Cuon alpinus</i>	1	0.1	1	2
Fox/ <i>Vulpes vulpes</i>	29	3	2	4.1
Leopard/ <i>Panthera pardus</i>	3	0.3	1	2
Carnivores	111	(11.5)	13	(26.5)
Total identified	967	(11.6)	49	
Total unidentified	7340	(88.4)		
Total	8307			

Table 3.1. Animal species represented in Amalda Level VII (after Altuna 1990, table 8.8.).

	<i>Cervus elaphus</i>	<i>Capreolus capreolus</i>	Bovini	<i>Rupicapra rupicapra</i>	<i>Capra pyrenaica</i>	<i>Equus sp.</i>
Infant	1	1	1	3	1	2
Juvenile	1	1	1	2	2	1
Adult	3	1	1	11	2	1
Total	5	3	3	16	5	4

Table 3.2. Ageing data for ungulate species from Amalda level VII (after Altuna 1990, table 8.8., see Table 3.1 above for common names of species).

driven down from snow and ice bound summits (Figure 3.2). From these hunting grounds, virtually whole carcasses of chamois (as indicated by the pattern of anatomical representation; Figures 3.1, 3.2 and 3.3)ⁱ, weighing somewhere in the region of 20 – 50kg apiece (Boyle 1990, 92); males 30 – 60kg, females 25 - 45kg (MacDonald and Barrett 1993)ⁱⁱ were carried downstream to Amalda by paths which followed the Alzolaras stream downriver northwest from the head of the valley

Clearly at least some ibex were also targeted in summer and thus around the highest peaks of the area (of the minimum of five represented, one was an infant killed during its first summer [June]; Table 3.2.; Figures 3.1, 3.2 and 3.3). Patterns of movement associated with their hunting (Figures 3.1, 3.2 and 3.3) are clearly rather similar to those of chamois; the two species share rather similar yearly cycles of behaviour (e.g. West 1997, fig. 4.2.) and were probably thus hunted in similar ways. Ibex kills, however, were more thoroughly butchered than those of chamois and the meatier elements of the hindlimb as well as some of the more marrow-rich extremities, were carried back to Amalda – many

phalanges show evidence of impact and fracture marks typical of those produced by marrow extraction (Altuna 1990).

Bovids and horse

However, while chamois may be the dominant species in terms of number of individuals transported to the cave, the relatively small size of the species means that the rarer but larger bovids and horse whose remains were recovered from the site were probably more significant in terms of the overall meat that kills representedⁱⁱⁱ. The bovid material identified from this level may in fact have only derived from three individual animals. One of these was an infant killed during its first summer (Table 3.2.; May-June), one a juvenile and one an adult; the small mixed groups in which these bovids lived were largely restricted to the coastal plain (Figure 3.3), easily reached within a day by hunters from Amalda, although, still within a day's walk, there are also other potential hunting grounds further south, especially around the relatively flat inland valley of the confluence of the Urola and Ibañeta rivers to the southwest of the cave. The open-ground

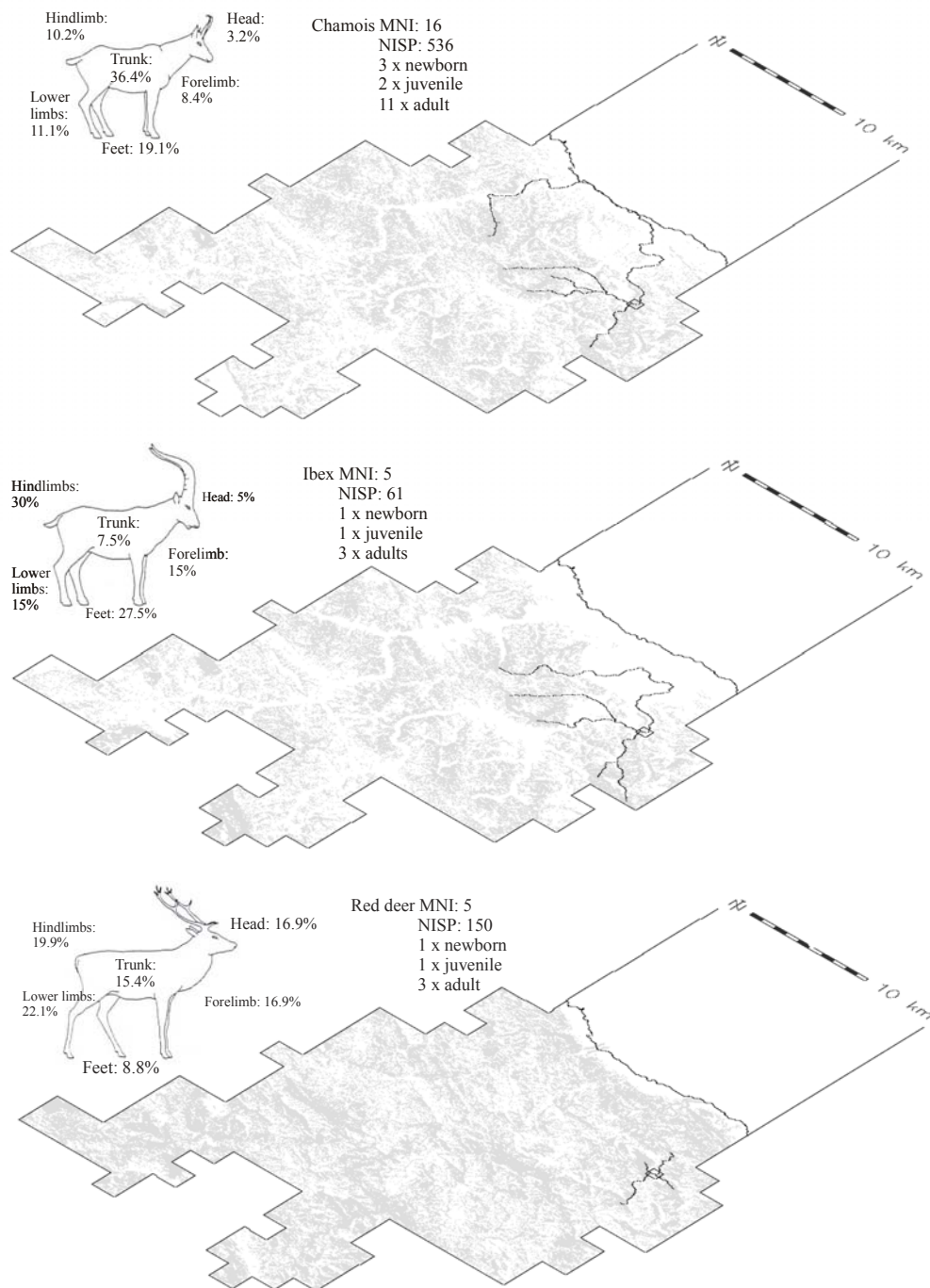


Figure 3.1. Parts of the landscape (shaded grey) and paths potentially associated with summer hunting of chamois (top), ibex (middle) and red deer (bottom) from Amalda during OIS 5a/c

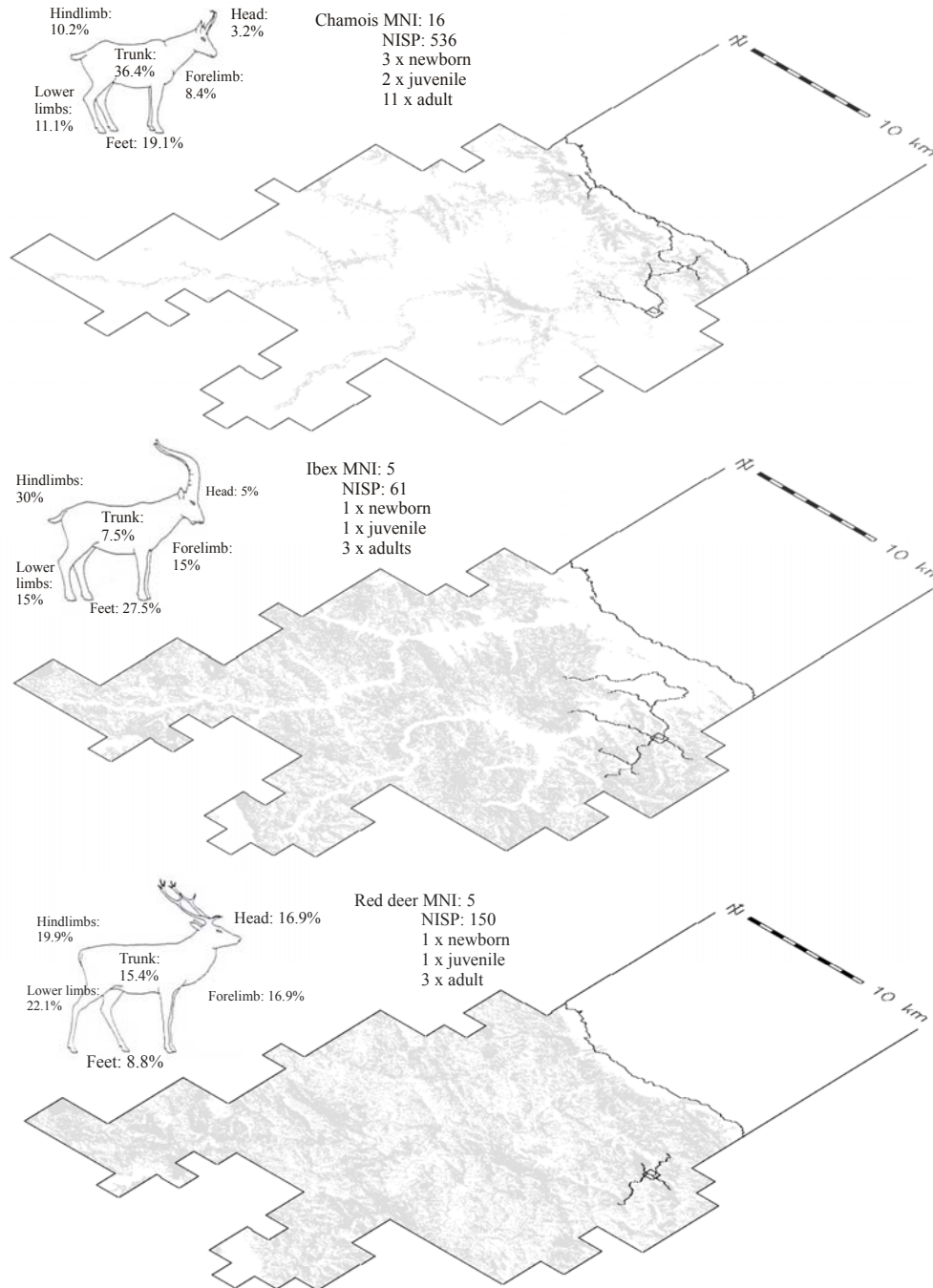


Figure 3.2. Parts of the landscape (shaded grey) and paths potentially associated with winter hunting of chamois (top), ibex (middle) and red deer (bottom) from Amalda during OIS 5a/c

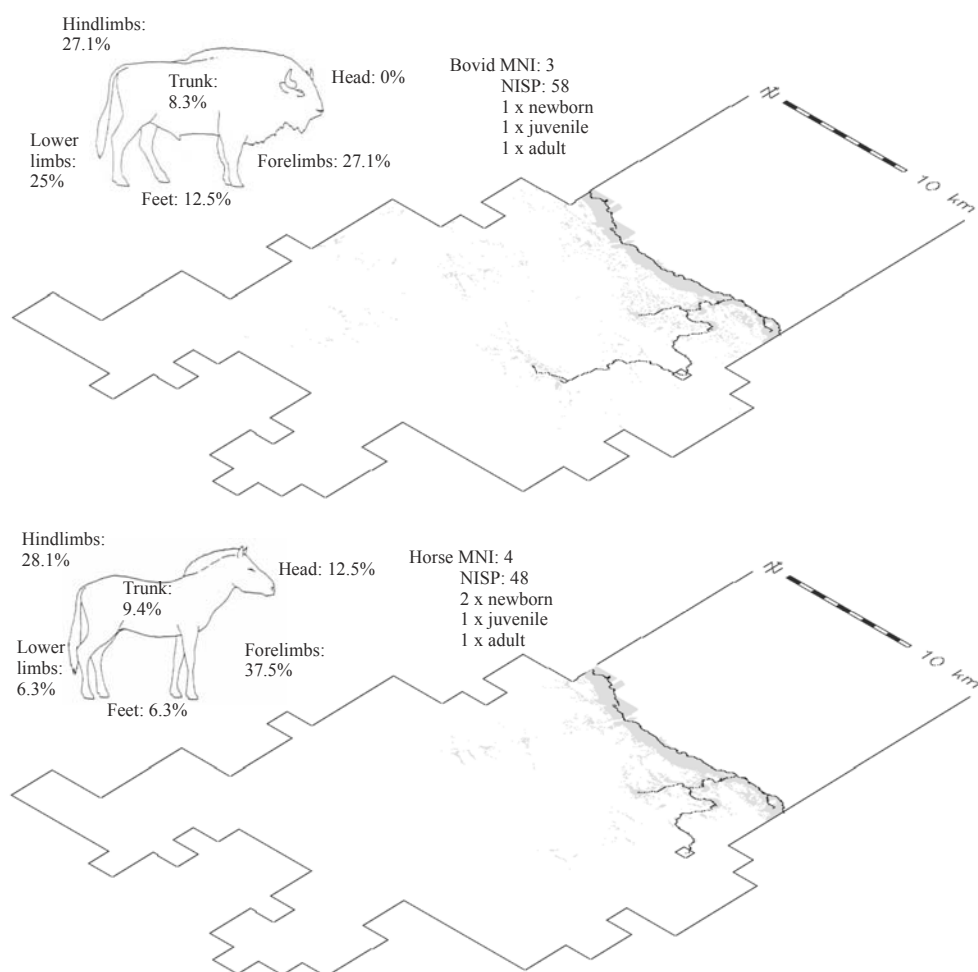


Figure 3.3. Parts of the landscape (shaded grey) and paths potentially associated with year-round hunting of bovids (top) and horse (bottom) from Amalda during OIS 5a/c

parts of the landscape preferred by bovids probably did not change significantly between the summer and winter months – although the shorter days are likely to have placed the more southerly potential hunting grounds beyond a day’s return walk from Amalda.

Individual, systematic hunting by coursing or stalking is a possible strategy for bovids. But communal or co-operative hunting is also a good strategy, usually aiming to surround animals in the open and drive them into an ambush. Bovid herds are easily frightened and once stampeded have little control over the mass movement of the herd; they may be stampeded at speeds of up to 32mph over short distances (Boyle 1990, 86) over cliff faces, or in winter driven into deep snow drifts (although a moderate covering of snow presents bovids with few difficulties). Where there is a fairly large hunting party

and a relatively small herd, the herd can be surrounded and driven in circles until exhausted and relatively easily dispatched (Freeman 1973; Boyle 1990), probably by hand-delivered thrusting spear (Churchill 1993)^{iv}. These kills were clearly extensively butchered in the field and only selected anatomical parts (both meatier elements such as the femur and other elements more suggestive of marrow exploitation (Binford 1978)^v returned to the cave: a relatively high NISP/MNI possibly relates to a greater degree of fragmentation of the bones, although Altuna makes no explicit comment about taphonomic findings regarding marrow extraction in this level. There is considerable overlap between the bovid and horse hunting grounds illustrated in Figure 3.3, although with horses also concentrated on the coastal plain as well as along the flatter parts of the northern reaches of the Alzolaras and Urola valleys rather than in the flat

meadows of the Urola/Urestilla confluence preferred by bovids. At least four individual animals are represented, two of which were infants killed in their first summer (mid April – mid June; Figure 3.3; Table 3.2).

Horses probably grazed in small family ‘harem’ units of 5-6 mares, foals and yearlings and a stallion, which show considerable loyalty to their ranges year after year – thus these are likely to be well-known to hunters in the area. As with bovids, the size of the herd, speed of the animals and tendency to stampede makes co-operative driving a good bet, although of course systematic hunting techniques such as coursing and stalking may also be practised – particularly in suitable terrain with plenty of cover (Freeman 1973; Boyle 1990) – modern Hadza, however, are known to kill zebra on foot (O’Connell *et al.* 1990; 1992; cited West 1997, 48).

West suggests that harem groups are more likely to have been targeted by hunters because of their relatively more predictable behaviour, shorter movements and smaller home ranges (*Ibid.*). Bachelor groups are significantly less predictable in their behaviour, only occasionally returning to territories year on year. Without young they are also better able to outrun predators and are likely to flee danger rather than fight – if cornered, they are generally stronger and more vicious than most individuals in harem groups.

The trails created and followed by horses are often well-defined through frequent use. With young at their heels, harem groups do not move far during the day and while the foals are young groups will re-use sleeping areas which are easily recognisable from the accumulations of dung. They will also return every day, or every other day, to predictable water sources, and both harem and bachelor groups can be ambushed at waterholes where they regularly drink – historically, Siberian groups are known to have captured wild horses by digging pits close to their waterholes (*Ibid.*).

West envisions a possible hunting strategy thus:

rut, of course, animals are easily found; the males’ fights create a considerable amount of noise, and mud ‘wallows’ used at this time of the year are common and smell strongly (*Ibid.*). Such signs would have been distinctive to experienced hunters, and if they were operating year after year in the area, they may well have been able to locate preferred targets in terms of age and sex to very particular areas.

In ambush fashion, hunters could locate horse trails and wait for the dominant mare to approach followed by other members. The lead mare and her foal would be the first two animals wounded. Alarmed by screams at the front of the herd, the stallion would rush to the defense and would be dispatched. Milling mares and foals could be wounded at this point (West 1997, 48).

Red deer

At least five individual red deer are also represented in Amalda Level VII; red deer are a notably catholic species and fairly ubiquitous in the ecosystems of the Deba and Urola valleys in both summer and winter (Figures 3.1 and 3.2). Large-scale migrations were probably not a feature of red deer ecology in northern Spain at this time (Bailey 1983; Boyle 1990), and in winter they are likely to have congregated in sheltered valleys with relatively dense tree cover and thus little snow. Stags and hinds usually prefer separate winter ranges although they may overlap, and particular areas of winter habitats may become associated with groups of particular sex year after year.

The areas frequented by deer throughout the year were probably quite apparent to hunters; their feeding practices leave rather striking and characteristic feeding signs, including broken and ‘torn off’ shoots and twigs and damage to trees that may result in very recognisable patterns of tree growth, particularly where young trees are targeted repeatedly (Bang and Dahlstrom 1974, 88). Larger trees along the edges of favoured wooded areas may also be cut off at a certain height, and signs of ‘barking’ resulting from cervid feeding activity (which differ significantly according to the season they are inflicted; *Ibid.*) are often obvious. Strips of antler velvet or signs of tree ‘fraying’ produced by stags rubbing growing antlers against trees may also provide clues to the locations of animals and their sex and age. During the

This is of course significant because stags and hinds have rather different temporal cycles of behaviour and condition, with body-weights fluctuating as much as 20-30% over the course of the year (Boyle 1990). Males are best hunted for meat in late summer and early autumn before the rut – at this time, they may have a layer of subcutaneous fat of up to 2cm thick, and as much as 30kg of subcutaneous and internal fat can be obtained from a single adult male. Nearly a third of a stag’s bodyweight is lost over the course of the rut from the end of August to October; however, if antler is the prime goal of hunting, males may be targeted between early November and late February (antlers are cast in March/April). In contrast, females retain good quality meat reserves throughout the winter until the birth of young in May or June. However, without knowing whether the antler fragments from this

level were shed or otherwise, and with no indication of the sex of the animals killed, it is difficult to evaluate the extent to which such targeting was the case among hunters operating out of Amalda during OIS 5.

This potential for the precision-targeting of individual animals is particularly relevant given the probable hunting techniques used to pursue red deer. Like other small-group or solitary woodland species (e.g. roe deer, three of which are also represented in level VII), red deer are best hunted systematically by stalking or coursing. Deer stalking is of course still practised today; it is of necessity an activity undertaken by individuals or at the most small groups. Deer are mainly active in the mornings and evening although they may feed all day (Boyle 1990; MacDonald and Barrett 1993, 201), often leaving forage for saltlicks around sunset, and modern-day deer stalking generally involves early morning ‘harbouring’ or reconnaissance to locate suitable prey.

Having located the prey, the hunter must approach stealthily downwind prior to dispatching his target. Stalking is a time-consuming activity during which concealment may be necessary. Thus the positioning of the hunter is of importance if the expedition is to be a success (Boyle 1990, 100).

Deer-hunting was thus probably a close-quarters, one-on-one process, involving the close identification and selection of the individually targeted animals. Following the kills represented in Amalda level VII, meat-bearing elements were carried back to the cave, with considerable numbers of mandibulae combined with few skull fragments suggesting that the rich, fatty tongue was also targeted, as were metapodials, particularly metatarsals.

Carnivore species

In addition to the ungulate species, a number of carnivore species are represented in Amalda level VII - particularly cave bear (see Straus 1992, 54 and Altuna 1990, 162-166 for discussion of the role of Amalda as a cave bear denning site), and it is clear that Mousterian hunters operating out of Amalda shared the landscape and overlapped in their hunting practices with a number of large carnivore species, including (in addition to cave bear) wolf, hyaena and leopard (Table 3.1).

With the exception of the cave bear and the two foxes, most carnivore species were represented by low NISP’s^{vi} and high frequencies of teeth/skull fragments and extremities (phalanges, carpals, tarsals etc.). Few of these species are likely to have presented much of a direct threat to hominids or humans unless provoked (e.g. Binford 1978; 1981), or even to have been in direct competition with them (e.g. Kurtén 1968; Altuna, *et al.* 1990, 156, see also Freeman 1973, 4), and most are

unlikely to choose as a den a cave subject to any significant disruption or activity (Stiner 1994, 331). Nevertheless, the findings of carnivore toothmarks on much of the faunal material suggest a certain amount of carnivore activity – probably, the accumulations of bones provided a good scavenging resource for unfussy carnivore species, and in any case hominid and human inhabitants of Amalda would certainly have been aware of its use by other species: caves undoubtedly represented a potential node of interaction in the intertwining patterns of movement of carnivore and hominid species, and such interaction would have occurred within and been structured by a wider sphere of understanding of relations between the species – many traditional societies regard carnivore species with particular respect (see e.g. Binford, n.d., 8 for a discussion of how bears are viewed among the Nunamiut and in many boreal traditional societies generally).

Living in the OIS 5 a/c ecosystem of the Deba and Urola valleys

From the materials recovered from Amalda level VII, then, we can begin to identify some of the interactions of the hominid creators of the archaeological record with co-denizens of their ecosystem, and from this begin to reconstruct the habitual paths of movement and activity within those ecosystems. In addition to this, the faunal record adds to these something of the quality of the interactions represented in the level; the seasons in which kills were made, some educated guesses about the experience of locating and tracking other animal species – tracks and signs such as wallows, caught hair, grazed or browsed vegetation and so on - and about likely strategies of pursuit and killing as well as the butchery and transportation decisions made in each situation.

The aim is not to provide whole ‘stories’ attempting to present the subjective experiences of the persons who created the deposits of Amalda level VII – the focus is not so much the ‘meaning’ of the archaeological record as the ways in which meaning is constructed and structured through practical, habitual activity within a real world. In this way, I argue, we can begin to access the four-dimensional matrices of movement, activity and interaction that constituted the daily lives of hominid and human populations without having to first assume a pre-existing, overarching cognitive structure to their lives; comparison between ‘archaic’ and ‘modern’ populations is not then simply a matter of *post hoc* explanation by ‘just-so’ stories that misuse evolutionary concepts.

Instead, by reconsidering the sites and their material finds in terms of the clues they provide to movement and interaction in the ecosystem of which the cave and its inhabitants were a part, we can start to see fragments of the narratives created by the hominid and/or human persons who created the archaeological record: individual

animals killed at particular ‘intersections’ in their paths of movements, at particular ‘points’ in space and time – at particular times of the year, and in particular places in the landscape.

Each of these aspects of activity adds another thread to the overall understanding of the faunal record and the archaeological record more generally – a full representation of hominid ecosystemic behaviour involves the consideration of the sum total of these interactions and activities as well as the paths and tracks created by patterns of movement associated with other activities such as those related to lithic raw material sources. No one such aspect can be separated out: every activity, every interaction, is enmeshed within a web of further such interactions and patterns of movement. Thus subsistence practices both structure and are structured by considerations such as the technical expertise and weaponry of hunters, involving them in ongoing interactions regarding access to lithic raw materials and manufacturing skills, as well as a working understanding of wider technological ‘delivery systems’ (Churchill, 1993), including hunting techniques and behaviours: undoubtedly prehistoric hunters would have been aware of particularly ‘good’ nodes in the matrix of interaction and movement that comprised their lifeways – places and times that afforded advantageous intersections between themselves and particular animal species. Tied in to this awareness, of course, were other factors such as the technical expertise and weaponry of hunters, and their perceptions of the affordances of the landscape; how to use topography, vegetation, wind direction and weather, for example, to its best advantage in stalking, ambushing, driving, disadvantaging.

In addition, every particular intersection has its own quality, some aspects of which are further preserved in the archaeological record. For example, a successful kill also necessarily involves further kinds of interaction during the process of butchery and transport – between hominids and animal species (who should butcher the carcass, *how* it should be done with respect for the spirit of the dead animal, etc.) and between hominids (how portions of the meat are divided, who gets the hide, antler, bone, teeth, how the carcass is transported, etc.), which again draw from a pre-conscious understanding of such factors as the time of year or season, the need for food, questions about the status and social links of the hunter and his or her family, friends, co-hunters, the ‘right’ and habitual ways of doing things in particular circumstances, and the potential danger presented by other carnivore species in the landscape, perhaps in competition for the meat or for caves or shelter.

Such decisions arise out of of understandings derived from previous such interactions and also, for hunters with a deep comprehension of the behaviour and movements of other animal species vis-à-vis their own, from a complex of pre-conscious understandings of the

ecosystem of which they are a part (see e.g. Brody 1981, 37) that is part and parcel of the *habitus* of living in their world. All of these factors feed more or less consciously into the decision-making process at every stage, and every such intersection, every such event is necessarily unique, creating its own ‘node’ in the four-dimensional architecture of movement and interaction within an ecosystem. Every task and activity therefore ties further into a dense web of understandings derived from habitual interactions, and it is these wider understandings that constitute ‘group’ identities, into which individual persons are always and inescapably linked.

In entitling this section ‘living’ in the OIS 5a/c ecosystem, I aim to bypass a sterile opposition between approaches prioritising ‘dwelling’, experiential and phenomenological readings of activity in the landscape, and those emphasising ‘adaptation’ and ‘evolutionary’ readings: humans necessarily both ‘dwell’ and ‘adapt’, and as argued above, a separation of the two would be artificial. Rather, the one inevitably entails the other. ‘Adaptations’ are not necessarily discrete genotypic characters (although of course they may be). Rather, here, they are seen as arising out of the practices of dwelling. As Ingold argues,

It is not by assigning the position where I currently stand to spatial coordinates that an answer to the ‘where’ question is arrived at, but rather by situating that position within the matrix of movement constitutive of a region (2000, 237).

Conclusion: An ecosystemic perspective on prehistoric change

From an ecosystemic perspective, then, sites can be considered not so much as discrete, bounded assemblages but as ‘places’, nodes inevitably and inextricably linked in to their encompassing four-dimensional ecosystem through a matrix of embodied movement that both arises out of and acts to comprise the movements and activities of individual people, their links and their groups between places and times.

This four-dimensional ecosystem is a shared one, occupied not just by individuals and groups of hominids but also by individuals and groups of other animal and plant species as well as other-than-animate aspects of the landscape such as geological or topographical features, each of which may be known and understood as having its own distinct character within peoples’ overall comprehension of the ecosystem.

These other ‘entities’ also describe their own matrices of movement in space and time, and these are inevitably familiar to their co-denizens, who in turn constantly alter and shift their own movements over various timescales in

an ongoing co-evolutionary negotiation of behaviour and identity. Thus the pathways of movement in space and time created by humans and hominids inevitably interlink and intersect with those created by these other entities, and each of these intersections provides an arena for various kinds of potential interaction.

Archaeology, and particularly Palaeolithic archaeology, has struggled to address the question of identity and its continual transformation in prehistory, relying instead on proxy measures such as lithic industries which, perhaps inevitably, all too often become reified and conflated with identity, and come to be seen *as* those identities. However, as I have demonstrated in this paper, rather than seeing archaeological assemblages, industries and 'cultures' as reified 'identities', material finds recovered from archaeological sites can be viewed as having formed part of the construction and continual negotiation of movement through the four-dimensional ecosystem. And it is this movement, the intersections with those of others, and the interactions that these afford, that constitutes the architecture of identity. The creation of the archaeological record acts to materialise and immemorate occasions of interaction with other denizens of the world and, from an analytical point of view, provide clues to their reconstruction or re-imagining: it is the sum total of these movements and interactions that can be considered constitutive of identities and personhood, in prehistory as today.

It has only been possible in this paper to consider one level of the site of Amalda. However, I have aimed to demonstrate here the ways in which an ecosystemic perspective undermines a simplistic equation of populations and their typologically defined lithic assemblages. Comparison of the patterns of ecosystemic interaction attested to by level VII with those from other levels at this site as well as from others elsewhere in the region reveals more subtle differences and similarities between populations of Neanderthals and 'modern' humans than those hypothesised as part of a post-hoc, accommodative 'just-so' story about prehistory, however well-couched in 'evolutionary' theory (Coward 2004). Rather than a series of discrete 'cultures' separated by points of 'transition', bounded events of change, an ecosystemic approach highlights the need for an analysis that reflects the potentialities of hominid and human lives. An ecosystemic approach thus emphasises a continuum of constantly altering matrices of movement, activity and interaction instead of compressing 'lumps' of time and experience into virtually meaningless (except in purely analytical terms) categories such as 'modern' and 'non-modern', which are really only secondary, proxy and purely descriptive terms for more subtle differences, effect rather than cause of changing identities and personhoods.

In this paper I have focused on subsistence issues in order to emphasise their underestimated potential for yielding

much more than purely economic data. However, the real potential of an ecosystemic approach, and the methodology tentatively outlined here, lies in its ability to link apparently disparate parts of the archaeological record ('subsistence', 'lithics', 'symbolism' etc.) into an overarching whole, the habitual daily movements, activities and interactions of people in prehistory, thus providing a new basis for addressing the negotiation and enactment of identities and personhoods underlying change as seen in the archaeological record.

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ⁱ Pattern of anatomical representation is presented in the figures combined into anatomical 'regions' following Altuna's scheme (1990), with only two modifications: antler/horn is counted only on a presence/absence basis, and teeth are counted on the basis of MNI (e.g. if teeth NISP \leq the number of teeth belonging to a single animal of that species, MNI = 1), as both of these elements commonly demonstrate anomalously high raw counts that would bias the ratio of head counts relative to postcrania (e.g. Stiner 1994). It is therefore possible that head counts for the Amalda data may be slightly underrepresented. For the same reason, sesamoids are not included in 'feet' counts.

ⁱⁱ As a comparison, 'normal' US army rucksacks ('approach march load') weigh somewhere in the region of 31Kg, with 'emergency' march loads weighing anything up to around 68kg (http://www.rdecom.army.mil/rdemagazine/200403/itl_nsc_combat.html)

ⁱⁱⁱ It is estimated that bovids comprised *c.*40% of the total meat weight represented by the assemblage in level VII of Amalda - other species: red deer 17.9%; horse 17.2%; chamois 16.1%; ibex 7.8%; roe deer 1.1% (Altuna 1990).

^{iv} Bearing in mind that adult male bovids weight between 800-900kg and females between 500-600kg, and stand about 180-195cm tall at the shoulder (Boyle 1990; MacDonald and Barrett 1993), this was probably considerably easier written than performed.

^v Binford's meat, marrow, grease and 'general utility' indices, although widely used, are based on two sheep (one juvenile, one senile) and a single caribou (Reitz and Wing 2000). The indices are used here only for very general comparative purposes.

^{vi} See e.g. Altuna (1990) and Straus (1992) for debate regarding the calculation of carnivore indices from NISP or MNI figures.