

Sharing the world with mammoths, cave lions and other beings: linking animal-human interactions and the Aurignacian "belief world"

Als Menschen sich die Welt mit Mammuts, Höhlenlöwen und anderen Wesen teilten – Zur Verkettung von Tier-Mensch-Interaktionen und der "Glaubenswelt" des Aurignacien

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ABSTRACT - This paper outlines a "symbolic ecology" for the Aurignacian of Central and Southwestern Germany. Drawing upon data derived from cultural anthropology, psychology and zoobiology, we compare the sociocultural modalities of "managing" the recurrent theme of the mammoth and the cave lion with the encounter and interaction conditions underlying these two specific animal-human relations in the glacial landscapes of the European Early Upper Palaeolithic. We propose that being-in-the-world as highly mobile hunter-gatherers living in open and densely populated "animal-landscapes" strongly promotes non-Cartesian understandings of the animal-human interface, ultimately favouring notions of co-habitation, proximity and social intimacy. By reviewing key aspects of mammoth and cave lion ethology and socioecology, we point out the natural significance and relevance of these animals for human forager groups operating in the same environments. Moreover, we argue that this "natural significance" is directly reflected in the archaeological signature of the Central and Southwestern German Aurignacian that assigns these creatures a pre-eminent place in its material culture repertoire – for instance in craftsmanship, subsistence and settlement organisation and thus in areas deeply anchored in every-day practice. Although there is a clear convergence between the natural prominence of these animals and their sociocultural salience, different eco-behavioural profiles of mammoth and cave lion seem to have motivated varying modalities to engage with them materially. This, in turn, suggests different trajectories of constructing the animal-human interface and therefore a different "status" of both animals in the wider "Glaubenswelt" (belief world) of Aurignacian regional communities. The deep entrenchment of both animals in the sociocultural world as well as the rather unique interaction conditions they offer to human co-dwellers point to the social importance of mammoths and cave lions and thus to animistic and essentially relational ontologies. This, finally, demonstrates the blurring of the Cartesian boundary between animal and human domains and introduces the possibility of pondering aspects of "animal-personhood" in this part of the Aurignacian world. We conclude our survey by discussing some critical implications that arise when reading the Middle to Upper Palaeolithic transition from the perspective of animal-human interactions and the entanglement of ontologies and material signatures.

ZUSAMMENFASSUNG - Dieser Beitrag unternimmt den Versuch die symbolische Ökologie aurignacienzeitlicher Gruppen in Südwest- und Zentraldeutschland nachzuzeichnen. Ausgehend von der Kritik einer Cartesianischen Konstruktion der Mensch-Tier-Schnittstelle in menschlichen Wildbeutergesellschaften und der Einsicht, dass letztere sich einem unmittelbaren und alltäglichen Interaktionsverhältnis zu Tieren überhaupt nicht entziehen können, werden zunächst die Bedingungen eiszeitlicher Mensch-Tier-Beziehungen am Beispiel von Mammut und Höhlenlöwe diskutiert und anschließend den Materialisierungsformen dieser Tiere im Aurignacien gegenübergestellt. Dabei ist die Idee leitend, dass sich über das Verhältnis von Verhalten und Ökologie dieser Tiere einerseits und dem Umgang mit ihnen im soziokulturellen Milieu des Aurignacien andererseits Aspekte der Wahrnehmung und Bedeutung von Mammut und Höhlenlöwe erschließen lassen. Es ist nämlich davon auszugehen, dass Interaktionsbedingungen nicht zuletzt auch Wahrnehmungsbedingungen sind und materielle Kultur zu einem gewissen Grad immer auch die Bewältigung von Wahrnehmungshorizonten ist. Der materielle Umgang mit Tieren verweist so auf eine symbolische Ökologie, welche Einblicke in die einzigartige Ontologie dieser Zeit gewährt. Sowohl das Mammut als auch der Höhlenlöwe sind für mobile Jäger- und Sammlergruppen der Mammutsteppe hochgradig relevante und verhaltenssignifikante Tiere. Ihre zentrale Stellung in der Kunst des Aurignacien deutet deshalb auch auf ihre inhärent soziale Bedeutung hin. Unterschiedliche Formen des materiellen Umgangs mit Mammut und Höhlenlöwe, die mit unterschiedlichen natürlichen Interaktionsbedingungen einhergehen, lassen gleichzeitig aber erkennen, dass beide wohl unterschiedliche "Plätze" in der Glaubenswelt aurignacienzeitlicher Menschen eingenommen haben.

Das Verhältnis von Mensch und Mammut ist durch die Verschneidung der Aktivitätsräume beider Akteure gekennzeichnet, aus der sich für menschliche Wildbeuter nützliche Affordanzen der Landschaftsnutzung ergeben. Da Mammute überproportionalen

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Einfluss auf ihre Umwelt üben und dabei den Zugang zu Ressourcen erleichtern und durch ihr Verhalten gleichzeitig allgegenwärtig sind, kann von "mammutgefärbten" Landschaften gesprochen werden. Die visuelle Prominenz dieser Tiere und ihr soziales Verhalten müssen außerdem als Wahrnehmungs- und Interaktionsbedingungen verstanden werden, die den Raum für die Anerkennung von Eigenschaften wie Subjektivität, Emotionalität, Individualität und Intentionalität bereitet. Diese Eigenschaften begünstigen erheblich die Zuschreibung des Personen-Status und erhöhen die soziale Intimität von Mensch und Mammut. Der monumentale Status der Tiere und die Tatsache, dass Mammutgruppen vermutlich mobilitäts- und ortstreu waren und dabei die Lebensspannen aurignacienzeitlicher Menschen deutlich übertroffen haben dürften, macht das Mammut zu einem geeigneten mnemotechnischen Fixpunkt, der dabei helfen kann Identität zu stiften und zu reproduzieren. Wir schlagen vor das Zusammenkommen dieser Faktoren und einer archäologischen Signatur, die die Allgegenwärtigkeit der Mammut-Landschaft re-produziert sowie das Mammut als wichtigstes materielles Tierthema inszeniert als Anhaltspunkt dafür zu interpretieren, dass die Mensch-Mammut-Beziehung symmetrisch und sozial bedeutsam gewesen sein muss. Unsere Überlegungen zum Elfenbeinschmuck, zur figürlichen Kunst und zum Siedlungs- und Jagdverhalten aurignacienzeitlicher Menschen unterstützen diese These.

Im Gegensatz dazu kann die Beziehung zum Höhlenlöwen als ambivalent gelten. Diese Tiere erscheinen als zentrale Prädatoren in der Mammutsteppe und damit als natürliche Antagonisten für menschliche Jäger, sind aber gleichzeitig weniger stark an menschliche Aktivitätsräume gebunden als das Mammut. Damit ist der Höhlenlöwe als Jäger einerseits mit dem Menschen vergleichbar, bleibt diesem aber andererseits immer entzogen. Dieses Doppelverhältnis könnte einer der Gründe dafür sein, warum neben naturalistischen Löwendarstellungen auch Mensch-Löwe-Mischwesen in der Kunst des Schwäbischen Aurignacien so prominent vertreten sind. Zugleich verweist die Vermischung von tierischen und menschlichen Attributen auf die Transformierbarkeit der körperlichen Zuordnung, was in ethnographischen Kontexten häufig mit der Vorstellung einer (vorkörperlichen) spirituellen Verwandtschaft von Mensch und Tier verbunden ist.

Die materielle Kultur der diskutierten Aurignacienfundstellen verweist damit auf eine tief in den soziokulturellen Vorstellungswelten dieser Menschen verwurzelte Signifikanz beider Tiere, die einen erheblichen Einfluss auf die Gestaltung des Aurignacien-Alltags gehabt haben muss. Wenn die "tierischen" Aspekte archäologischer Archive aus dem Paläolithikum uns Auskunft über das Verhältnis von Mensch und Tier und damit über die Kosmologie und Ontologie dieser Zeithorizonte geben kann, stellt sich nicht zuletzt die Frage ob die Proliferation "organischer" Kulturelemente am Übergang vom Mittel- zum Jungpaläolithikum unter diesem Gesichtspunkt neu überdacht werden muss. Wir schließen unsere Überlegungen dementsprechend mit der kurzen Erörterung einiger vielversprechender Interpretationsmöglichkeiten, die sich aus einer solchen tierontologischen Perspektive ergeben.

**KEYWORDS - Early Upper Palaeolithic, Animal-Human Studies, symbolic ecology, ontology, figurative art, personal ornaments, Middle to Upper Palaeolithic transition
Frühes Jungpaläolithikum, Animal-Human Studies, symbolische Ökologie, Ontologie, figürliche Kunst, Schmuckobjekte, Übergang vom Mittel- zum Jungpaläolithikum**

McCoy to Spock: "Really? You think this is a way of saying 'hi' to the people of the earth?"
Spock to McCoy: "There are other forms of intelligence on earth Doctor, only human arrogance would assume the message must be meant for man"
Kirk to Spock: "You are suggesting the message was meant for a life-form other than human?"
Spock to Kirk: "It is a possibility Admiral"

– Star Trek IV, The Voyage Home (1986)

Introduction

In the now classic article *What is it like to be a bat?* Thomas Nagel (1974) famously questioned our ability to fully embrace and understand how other animals that have a completely different physiological and cognitive make-up would see and experience the world. His critique – although largely sound and stimulating – can be seen as a quintessential reflection of modern Western thought and its underlying ontological and epistemological fabric. Non-human animals are conceived as fundamentally different from humanity and are for us, by implication, effectively inaccessible in their subjectivity. Western ontology, spearheaded by modern scientific epistemology – in a way still in the wake of its great "father" figure René Descartes – has ever since *objectified* other-than-human entities, with animals being no exception. This has led to a constant re-negotiation of the animal-human boundary (e.g. Corbey 2005; Corbey & Lanjouw 2013; Ogden et al. 2013). The very notion, however, that animals constitute some sort of "natural

kind" and are thus ontologically different from the human stereotype remains deeply entrenched in modern Western worldviews. The objectification of other-than-human entities like animals undoubtedly has many analytical and comparative advantages, but it also obstructs insights into systems of knowing and accessing the world that operate in other ways – the latter being the main reason why the widespread attitude of taking the Cartesian human-animal divide for granted has frequently been criticised in recent years (Ingold 1988; Descola 1992; 2011; Bird-David 1999; Hill 2011a; DeMello 2012; Porr & Bell 2012; Russell 2012). The recognition that the *configuration* of the human-animal interface is far from given and rather encapsulates highly specific and socioculturally mediated modes of "being-in-the-world" (Mullin 1999; Bird-David 2006; Ogden et al. 2013), modes that are critically contingent on the "non-empirical domain" (*sensu* Burch 1971) of human social organisation, opens up some interesting avenues for paleo-archaeological inquiry (Hill 2012). Even more so since the intimate link between "man" and "beast" is

probably as old as humanity itself (Mithen 1999; Shipman 2010; Reperant et al. 2012; Gittins 2013). Recently, Pat Shipman (2011) has even argued that the "human-animal connection" has crucially modulated early human evolution, being closely interlaced with key thresholds in hominisation such as the emergence of formal stone tools. It is not our purpose here to comment on these claims, but characterising specific human-animal interactions in particular settings of the deep past certainly promises new and potentially surprising insights into early human lifestyles.

The notion of "human exceptionality" (*menschliche Sonderstellung*) has clouded our view of past animal-human interfaces, radically different from those of the current day, in which human-centred power relations were not paragon or at least were very differently shaped. Human-animal relationships were essentially co-constituted and were therefore much more symmetrical in nature – often disallowing steep hierarchies between the human and the non-human realm (e.g. Whatmore 2006; Hill 2013). In particular the archaeology of hunter-gatherers must face the simple but important fact that forager groups literally *co-inhabit* the landscape with other animals which they encounter and experience on a daily basis. This is all the more true for Late Pleistocene hunting and gathering people who spent their lives in the "mammoth steppe", a huge steppe-tundra environment with extremely high biomass productivity, crowded with large mammals such as the iconic woolly mammoth, that has no modern ecological analogue (Von Königswald 2004; Zimov et al. 2012; Yaekel et al. 2013). The density of large non-human animals that occupy the visual and physical space of this unique biome is unparalleled today (Zimov et al. 2012). These landscapes are not human-dominated, but are essentially *hybrid* animal-human "taskscape" (*sensu* Ingold 2000). It is therefore likely that the eco-space of the mammoth steppe offered rather peculiar conditions for the development of notable animal-human relationships emerging from the unique experience of "mammoth-steppe dwelling".

We know that the *Glaubenswelt* ("belief world") of foragers is intimately bound to their lifeworld, their *Lebenswelt*. In other words: the biophysical characteristics of a particular landscape and the socio-cultural modalities of relating to it mutually constrain each other in critical ways – elsewhere, one of us has suggested that this "coming together" can even be framed as a form of *convergence* (Hussain, in press). Hence, it is compelling to expect a pronounced link between behavioural characteristics of specific animals, their wider socioecology, and patterns of relating to these animals, since the observable and inferable behavioural repertoires of animals obviously condition the very nature of encountering and experiencing them. Although this link remains poorly explored in the wider anthropological discourse, its broader validity is sufficiently supported by some

preliminary observations demonstrating the relationship between animal behavioural properties and the "cultural processing" of those properties, evident for example in some historic and recent hunter-gatherers from the circumpolar regions of Alaska and eastern Siberia (Hill 2011a; 2011b) and Amerindia (e.g. Viveiros de Castro 1998; 2004); as Erica Hill (2014) puts it: some non-human animals are particularly "good to think with". It has also been shown that the specifics of these animal-human interactions directly affect the archaeological record, regularly taking material form (Hill 2013). They therefore offer a rare opportunity for archaeologists to grasp some aspects of past ways of knowing and accessing the world – a domain that is generally rather difficult to approach.

A broad survey of the ethnographic literature concerning historic and recent hunter-gatherer populations from different parts of the earth demonstrates both the significant quality and role of relationships with non-human animals in many cases (Forth 2004; Bird-David 2006; Fausto 2007; Willerslev 2007; Helander-Renvall 2010; Descola 2011; DeMello 2012: 33-36; Ogden et al. 2013). It also indicates the high degree of immediacy and intimacy that is often attributed to specific relationships with animals (Bird-David & Naveh 2008). This attitude toward animals – *contra* the Cartesian passive, instrumental and objectified view of other-than-human entities – is rooted in ontologies that do not craft the animal-human boundary in our terms. Non-human animals are rather seen as active entities with agency, intentionality and subjectivity. They are seen as coevals, not substantially different from humans in many ways, that *share* the landscape with them and are equitable co-habitants. In these frameworks, usually animistic in nature, some animals are conceptualised as "persons" (for a conceptual discussion of personhood beyond humanity, see DeGrazia 2006) and are thus essentially encountered like humans (Viveiros de Castro 1998; Bird-David 1999; Willerslev 2007; Descola 2011). Accordingly, these ways of "accessing the world" are not so much concerned with physiognomic essentials, or forms, but rather emphasise the process of interaction itself (e.g. Ingold 2000; Bird-David 2006). They are relational worldviews and their constitutive relationality pervades the sociocultural realm, including the way social relationships are established, negotiated and constantly reproduced.

In this contribution, we argue that many characteristics of the Early Upper Palaeolithic (EUP) Aurignacian material record (*ca.* 42-30 ka calBP) can be better understood within this framework and, at the same time, can *attest* to an inherently relational and animated worldview of Aurignacian hunter-gatherers. We further argue that specific physical and behavioural characteristics of certain non-human animals inhabiting the mammoth steppe superbiome might explain their salience in the Aurignacian "visual

art" repertoire. The intricacies of particular animal-human interactions in the EUP, in other words, provide a conceptual baseline for introducing a slightly different perspective on some of the most outstanding features of the Aurignacian material record than usually offered. We use the example of the woolly mammoth (*Mammuthus primigenius*) and the cave lion (*Panthera spelaeae*) to show in what ways the socio-ecological and ethological profiles of these two animals are reflected in their "sociocultural treatment" by Aurignacian people that dwelled in the Pleistocene landscapes of Southern and Central Germany. In this way, we believe it is possible to outline some important aspects of the animal-human interface in the Aurignacian pertaining to the wider lifeworld of these people and ultimately reflecting aspects of their *Glaubenswelt*. We conclude by contextualising these findings within the wider sociocultural architecture of the EUP Aurignacian and discussing possible implications for reading the proliferation of material complexity across the Middle-to-Upper Palaeolithic transition – which, for us, marks an important threshold in human evolution (e.g. Floss & Hussain 2015). Ultimately we hope to show, first, how insights from *Human-Animal Studies* and *Multispecies Ethnographies* can stimulate palaeolithic research and, second, how profoundly well situated – *contra* traditional views – the latter actually is to "unlocking" critical dimensions of ancient ontologies and worldviews.

Man and Mammoth

Socioecology and ethology of the mammoth

There have been several different mammoth species making an appearance at different times in the earth's history (Lister & Sher 2001; Sukumar 2003, 24-27; Rohland et al. 2007; Rivals et al. 2012), all of which are extinct today (Stuart 2005; Barnes et al. 2007). They all belong to the genus *Mammuthus* and are essentially elephants, closely related to the last two remaining elephant genera living in Africa and Asia (Hofreiter & Lister 1999; Rogaev et al. 2006; Rohland et al. 2010). The species that inhabited the gigantic Pleistocene mammoth steppe, spanning from Western Europe across Northern Eurasia and the Bering Strait to Alaska, is known as the iconic woolly mammoth (*Mammuthus primigenius*) – a long-haired elephant adapted to arctic and subarctic environments (Hofreiter & Lister 1999; Von Königswald 2004; Hofreiter & Stewart 2009; Bocherens et al. 2014). The woolly mammoth is one of the "megaherbivores" that inhabited the unique mammoth steppe biome. Like extant elephants, mammoths were long-living mammals that likely lived in small groups of about 5 individuals (Sukumar 2003: 170-184; Vidya & Sukumar 2005; Wittemyer et al. 2005; De Silva & Wittemyer 2012). Although mammoth material has been preserved in the North American and Siberian permafrost, it is still unclear how they actually looked in

detail. Additionally, they seem to embody some variability in terms of morphology and pigmentation. Their hair colour, for example, can range from orange to black, but we do not know exactly whether this is truly related to natural colour variation or merely a function of post-depositional pigment alteration (Hofreiter & Lister 1999). As a cold-adapted glacial species, woolly mammoths had shorter tails and much smaller ears than modern-day elephants – probably to accommodate thermoregulatory necessities in Pleistocene climates. On the other hand, mammoths in the mammoth steppe were generally comparable in size with living Asian elephants today (Augusti & Antón 2002: 264-265), rendering the "giant-mammoth myth" untenable. Woolly mammoth diet was largely grass-based – as testified, for example, by gut contents of frozen permafrost individuals and a general profile of high-crowned teeth packed with enamel ridges (e.g. Haynes 1991: 6; Hofreiter & Lister 1999; Foronova 2007) – but circumstantial evidence also points to a more flexible and thus far not completely understood dietary component (Bocherens 2003; Kuitens et al. 2012; Schwartz-Norbonne et al. 2015).

Although the woolly mammoth is, of course, the largest representative of the herbivore guild in Late Pleistocene tundra-steppe environments, its quantity in the landscape would still be rather impressive. Based on faunal material from Siberian *yedoma* permafrost soils, Zimov and colleagues (2012) calculated a mean mammoth steppe carrying capacity of 1 mammoth, 5 bison, 7 ½ horses, 15 reindeers, ¼ lion and 1 wolf in addition to smaller amounts of other animals *per km²* (Fig. 1). This translates into a total herbivore biomass of at least 10 tons per *km²* – enough to feed 2 adult wolves for example – meaning *ca.* 150'000 contemporaneous woolly mammoths would have lived in the area of Germany alone (landmass reduction by Fennoscandian and Alpine ice shields accounted for).

The important point to make here is simply that mammoths were not a rarity or somehow exotic features of Late Pleistocene environments, but rather abundantly present and, because of their sheer physical size, highly visible across the landscape – at virtually "all times". This visibility would have been amplified given that, because mammoth steppe landscapes are glacier-flattened, they are structured more along horizontal than along vertical gradients, and exhibit an almost maximally reduced tree-cover. As we argue in detail elsewhere (Hussain & Floss, in press), under such "spatial conditions" *visual salience* and *ecological focality* are important forces that focus people's attention and significantly frame their way of seeing and experiencing the world around them. In other words: mammoth groups were likely extremely prominent and easily recognisable features of the wider landscape, even when greater distances were involved, and thereby occupied a considerable portion of the visual space of Pleistocene foragers

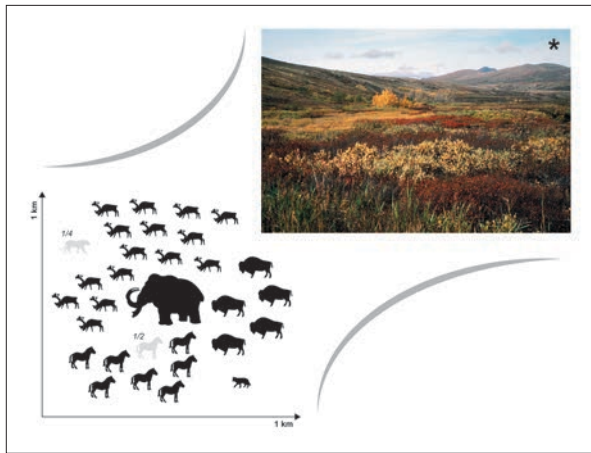


Fig. 1. Mammalian biomass density in the mammoth steppe superbiome. Estimated frequencies per km² (after Zimov et al. 2012) for mammoth, cave lion, wolf, reindeer, horse and bison are indicated. *: The picture shows the tundra landscape around the Yukon delta (Yukon Delta National Wildlife Refuge), Alaska, in autumn; it gives a rough idea how glacial mammoth steppe environments might have looked like in the Late Pleistocene. Photograph reproduced with kind permission of the U.S. Fish & Wildlife service.

Abb. 1. Dichte der Säugetier-Biomasse in der Mammutsteppe. Angegeben sind die geschätzten Häufigkeiten (nach Zimov et al. 2012) für Mammut, Höhlenlöwe, Wolf, Rentier, Pferd und Bison pro km². *: Das Foto zeigt die herbstliche Tundrenlandschaft um das heutige Yukon-Delta (Yukon Delta National Wildlife Refuge) in Alaska; es vermittelt eine grobe Vorstellung wie die Umwelt der Mammutsteppe im Spätpleistozän ausgesehen haben könnte. Foto reproduziert mit freundlicher Genehmigung U.S. Fish & Wildlife Service.

who also inhabited those landscapes (compare Fig. 2). Their spirally twisted large tusks, present in both sexes (Hofreiter & Lister 1999), are additional "unique" features that naturally attract attention and render the mammoth a central experience while dwelling in the mammoth steppe.

Furthermore, an aspect that is particular to landscapes that host elephants is that these non-human

animals are virtually *omnipresent*. Elephants impact and shape the environment in which they live in such a profound way that their "presence" is easily recognisable, especially for people who are used to navigating in these landscapes, even if the animals are *not even physically present* (Hayes 2006). As Gary Haynes (2013) puts it: elephants and their extinct relatives are large-scale "earth-movers and ecosystem engineers". They leave information-rich traces of their behaviour by modifying the habitat around them, thereby even transforming it at times more severely than human hunter-gatherers could ever hope to (Figs. 3 & 4). Some of these traces are self-evident and characterise the visibility of elephant-carrying landscapes while others are subtle and only readable when observation-driven knowledge of elephant behaviour is available. African savannah elephants, for example, "construct" entire trail-networks running through the landscape. These trails are permanent since elephants remember their preferred pathways and habitually re-use them (Haynes 2006). Because all elephants seem to be highly migratory (e.g. Sukumar 2003: 158-169; Wittemyer et al. 2007), these trails often span huge distances and thereby interconnect crucial landscape elements.

Another landscape-shaping behaviour that elephants regularly display is "rubbing" (Haynes 2006; 2013). They rub themselves against trees, stumps, rock outcrops or even earthen mounds to relieve itching or to get rid of parasites and remove irritations. Rubbed stones and tree stumps in particular leave behind a characteristic glossy polish that is widely visible and quite a peculiar feature of elephant habitats. Smoothing rock surfaces comes sometimes close to "sculpting" and is a good candidate to leave long-lasting and deep impressions on hunting and gathering people. It is well established that Pleistocene mega-herbivores also rubbed rock outcrops (e.g. Parkman



Fig. 2. Artistic representation of a Pleistocene glacial landscape with human hunting party, mammoths and rhinoceros. Reproduced with the permission of the Natural History Museum, London.

Abb. 2. Künstlerische Rekonstruktion einer pleistozänen kaltzeitlichen Landschaft mit menschlicher Jagdgruppe, Mammuts und Rhinocerossen. Reproduziert mit freundlicher Genehmigung Natural History Museum London.



Fig. 3. Left: Remnants of a once-healthy mopane (*Colophospermum mopane*) woodland in Zimbabwe. Broken trees and branches lie on the ground, and the remaining trees have been debarked and almost killed by elephants. Right: A stump of leadwood (*Combretum imberbe*) rubbed to a glossy polish by elephants in Zimbabwe. Courtesy of Gary Haynes.

Abb. 3. Links: Reste eines einst gesunden Mopani-Walds (*Colophospermum mopane*) in Simbabwe. Abgerissene Zweige und Äste bedecken den Boden und die Bäume sind von Elefanten entrindet und fast vollständig getötet worden. Rechts: Ein von Elefanten polierter Baumstumpf aus der Familie der Flügel-samengewächse (*Combretum imberbe*), ebenfalls Simbabwe. Mit freundlicher Genehmigung Gary Haynes.

2002) and therefore “imprinted” the landscape in broadly similar ways (Haynes 2006).

Additionally, African elephants habitually relocate large amounts of sediment, for example while digging water holes or extending already present water bodies, but also in order to extract mineral

components from the soil itself (canophagy). They have been observed rearranging bone accumulations, favourably of their own species, and they frequently dig for tree roots, break entire branches and intensively bark-peel while they feed on trees, often leaving behind only “tree-carcasses” (Haynes 2006; 2013).



Fig. 4. Left: Aerial view of elephants at a refugial area called Lememba in Zimbabwe. The elephants are clustered around water-wells that they have excavated by themselves. Right: Permanent elephant trails converging on an isolated set of small basins in Northwestern Zimbabwe where the animals find water in the dry season. Courtesy of Gary Haynes.

Abb. 4. Links: Luftaufnahme des Elefantenrefugiums Lememba in Simbabwe. Die Elefanten drängen sich um Wasserlöcher, die von ihnen angelegt worden sind. Rechts: Permanente „Elefantenwege“, die an einem kleinen Talabschnitt in Nordwest Simbabwe zusammenlaufen, wo die Tiere während der Trockenzeit Wasser finden. Mit freundlicher Genehmigung Gary Haynes.

Finally, elephants are bulk feeders and inefficient intake processors (Ullrey et al. 1997) – an important basis for their biome-sustaining function (Haynes 2013). They therefore feed at nearly all times of the day and, consequently, produce large amounts of dung which, due to their mobility, is widely scattered over their daily range (Laws et al. 1975; Haynes 2006). In fact, elephant dung is virtually everywhere in elephant inhabited landscapes. One implication of this immense and constant impact of elephants on the environment is that they truly "emboss" and hence virtually dominate the landscape while being continuously present, either directly (physically) or indirectly (through their markings). Projected into the Late Pleistocene mammoth steppe context, this renders mammoths extremely focal for Aurignacian people who experienced a surrounding that was literally "stained" in mammoth.

It is important to recognise that mammoth-derived clues and traces are not merely *there*, but can also provide significant and reliable ecological knowledge which can help to render the world intelligible and to "make sense" of people's place in it. "Helping" is thereby maybe *more than just* a metaphorical dimension of such a "mammoth-stained" landscape. Mammoth trails, for example, embody strong affordances to following and using them (for a detailed discussion on the role of affordances in wayfinding and spatial piloting, see Hussain & Floss, in press). They therefore support hunter-gatherer mobility and even help them to explore the landscape, serving as "natural pathways" (this seems to be particularly crucial during or shortly after dispersal and colonisation events – a situation that is currently hypothesised for the EUP Aurignacian; Haynes 2006). Not at all marginal, moreover, is probably the fact that elephants dig for water or laterally extend existing water holes and even streams, therefore critically enhancing water accessibility or at least indicating where water can potentially be found in the landscape. Through their behaviour, in other words, these animals "signify" the general landscape drainage and hydrology – even under nearly featureless physiographic conditions like in the mammoth steppe (Haynes 2006). Extant elephants use their trunks and tusks for these activities and mammoths can be expected to have done the same. Knowledge about water and river drainage is obviously a key factor for human forager groups (e.g. Floss 2000; Hussain & Floss 2014) and the animal-water association might be a good reason to believe that there is a kind of "natural significance" inherent in elephant behaviour – a significance that might lay the foundation for an intricate and intimate elephant-human relationship. Elephants also sometimes have far-reaching effects on how other animals behave; their behaviour can thus indicate (*clue*) the presence of those animals and where they aggregate (Haynes 2006; 2013). All these behavioural peculiarities, likely shared at least broadly by

Pleisto-cene woolly mammoths, can "help" mobile foragers to *organise their spatial presence* and can *afford* them specific behavioural opportunities (cf. Reed 1988). It is tempting to interpret this general matrix as indicative of *mammoths being a vehicle to access the world* – if accepted, this reading would in fact have profound implications for the quality of the mammoth-human interface in the Late Pleistocene, and thus also in Aurignacian times.

The unique, rich and complex social life of elephants (e.g. Bradshaw 2009) can be used to support the idea that there is something "naturally inherent" in elephant socioecology and ethology that is likely to have "trapped" and "enchanted" hunting and gathering people of the Late Pleistocene in significant ways. Two arguments are worth discussion in this regard: first, elephant social organisation suggests *resemblance with human lifestyles*, and, second, elephant social behaviour engenders aspects of *individuality* and *personality*. Since various studies broadly confirm that people are generally inclined to be particularly attracted to, as well as to develop positive attitudes toward animals that share some degree of behavioural similarity with the human species (e.g. Kellert 1993; Plous 1993; Allen et al. 2002; Serpell 2002; Batt 2009), these characteristics of elephant lifestyles are likely to anchor an intimate elephant-human relationship – particularly if the animal-human boundary is not crafted in Cartesian terms.

We begin with the first argument which is probably the less contested one. Although the African savannah elephant (*Loxodonta africana*) and the Asian elephant (*Elephas maximus*) are known to vary slightly in their social organisation, both live in multi-tiered societies that are essentially organised around core families of about 5 animals (Sukumar 2003: 170-184; Vidya & Sukumar 2005; Wittemyer et al. 2005; De Silva & Wittemyer 2012). Because the Late Pleistocene mammoth steppe is in many ways comparable to the African savannah biome (Hofreiter & Stuart 2009; Zimov et al. 2012; see below), a kind of cold subarctic version of the savannah, we use the African savannah elephant here to outline the potential "social space" of the woolly mammoth. These elephants are generally organised in stable female-dominated family groups that host offspring and young individuals on the one side (Fig. 5) and solitary adult males ("bulls") that irregularly form temporal "bands" on the other side (Sukumar 2003: 170-184; Bradshaw 2009). Strikingly, there seems to be a strong relationship between age and "experience" and social status. These family core groups are thus led by "matriarchs", female individuals that are often very old – elephants can reach ages of up to 70 years in the wild (mammoths, therefore, can be expected to have out-lived most of their human contemporaries). Family groups function to protect the young from predators and to provide the social environment which is crucial for elephant lives (e.g.



Fig. 5. Typical formation of elephants moving across the grass-savannah landscapes of Samburu National Reserve, Kenya. Courtesy of George Wittemyer.

Abb. 5. Typisches Erscheinungsbild eines Elefanten-Sozialverbandes, der durch die Grass- und Savannen-Landschaft des Samburu National Reserve in Kenia zieht. Mit freundlicher Genehmigung George Wittemyer.

Moss 2000). Elephants are highly social animals and interact and communicate with each other in multiple and often complex ways (e.g. Langbauer Jr. 2000; Sukumar 2003: 137-157). They are known to suffer from social deprivation and even to develop severe psychological pathologies that are comparable to mental disorders in humans when their social environment becomes seriously impaired (Bradshaw et al. 2005). The bond between elephant mothers and their offspring is very strong, and elephants, like most primates, show an over-extended mother-child dependency (e.g. Moss 2000; Wylie 2008: 48). There is even some indication that "alloparenting" plays a certain role in elephant societies (Lee 1987; Shah 2001). Although the core family group provides the elementary social unit, these groups regularly aggregate with other groups to form larger units – for example in dry periods of the year (Haynes 2006; De Silva & Wittemyer 2012). Social mobility and fission-and-fusion dynamics in elephant societies are therefore high and comparable to the organisational complexity in human communities. Circumstantial evidence suggests that Pleistocene mammoths had broadly similar social structures (Hofreiter & Lister 1999). Together with a variable, but often tremendous home range – somewhere between 50 and 7'000 km in modern-day elephants – these animals *share* some important spatial and social features with human foragers in the mammoth steppe. Their spatial presence as highly mobile, highly social and highly visible "agents" would have provided hunter-gatherers

with a set of experience to erode the animal-human boundary. When combined with the findings of Paul Ward and colleagues (1998) that people's preference for animals – at least in zoo contexts – is strongly correlated with their size, larger animals being more popular, as well as with their degree of sociality, in this case measured in group size, it becomes very likely that mammoths in the mammoth steppe were also seen as significant and at least as partly "similar-to-human" animals.

The second point, namely that elephant behaviour suggests the presence of at least rudimentary individuality and personality, is a recently common but in part still contentious claim (e.g. Masson & McCarthy 1996; Bradshaw et al. 2005; Wylie 2008; Bradshaw 2009). It is based on the tangible recognition that elephant behaviour must be discussed on the level of dolphins and non-human primates such as chimpanzees and bonobos – animals that are known to have rich and complex social lives (e.g. Yamagiwa & Karczmarski 2014). Elephants, in fact, also seem to show a significant degree of "self-awareness" and the capability to "empathise" with other group members and even humans at times (Masson & McCarthy 1996; Byrne et al. 2008; Bradshaw 2009; Plotnik et al. 2010). The most striking example for complex sociocognitive dispositions in those animals, however, is arguably that they grieve and mourn their dead – with weeping being not uncommon (Masson & McCarthy 1996: 91-110; Masson & McCarthy 2007). They use their trunks to touch and comfort other individuals, often evoking

the impression of a deeply intimate relationship between particular group members (see Bradshaw 2009 for a detailed discussion of the evidence). We know that elephants have remarkable long-term memory, notably pertaining to their ability to memorise particular individuals. They can remember and identify individual calls, for example, even if they haven't encountered the individuals in question for years (Sukumar 2003: 137-158). It therefore seems that there is a link between elephant longevity, their remarkable social memory and the tendency to develop personalised behaviours. Idiosyncrasies are also well reflected in home range patterns and general mobility systems that often vary dramatically from group to group, even in the same region (Sukumar 2003: Table 4.5; Cerling et al. 2006; Wall et al. 2013), pointing to a not to be underestimated role of varying matriarch experience and "decision-making". Yet, the encounter of adult males that dwell solitarily in the landscape for most of their lives is an at least similarly impressive experience. Male elephant display and aggression during *musth* as well as their "tusk-duels" provide a counterpoint to mostly "peaceful" elephant sociality in the family core group (Sukumar 2003: 100-112). Moreover, elephants, especially large adult males, unlike many other animals, show little anxiety when they encounter humans – male "bulls" are for example even known to "raid" human villages when elephants live close-by to human groups (Kuriyan 2002; Bird-David & Naveh 2008; Locke 2013; Barua 2014). This behavioural architecture highlights the *ambiguity of the human-elephant relation* on the one hand and both its *inherent immediacy* and *intimacy* on the other hand. Elephants are both dangerous and fear-evoking animals but they also bespeak of intentionality, sociality and personality – attributes that are characteristic for "humanity" which finds itself constantly torn between its "dark" and "ferocious" *homo homini lupus* and its "peaceful" and "domesticated" *animal sociale* nature. By the same token, these terms capture the ambiguity of humanity itself which is endowed with both animality and sociality. In post-Enlightenment epistemologies, animality is believed to be universal whereas the social is deemed to be particular and to transcend human animality, but the phenomenology of animal-human interactions leaves more than enough space for the opposite reading. The intimate engagement with nonhuman animals might therefore stimulate "multinaturalistic" perspectives where the relationship between animality and sociality is inverted, and thus animals too are bestowed with social agency (Viveiros de Castro 1998; 2004).

If we consider this general behavioural matrix a good baseline for evaluating what it might actually have meant for Late Pleistocene hunter-gatherers to live in the immediate vicinity of mammoths, the least we can say is that these animals were probably perceived as important "agents", not fundamentally different from humans, that impact human lifeways in

various significant ways. The central position of the mammoth-human relationship emerging from this "natural behavioural entanglement" of the two species in the wider web of worldly relationships renders the important place of the mammoth in cosmologies and worldviews a likely scenario. Negotiating a "good relationship" with these animals, then, would have been an important aspect of maintaining social relationships in general. In short: elephant behaviour, by virtue of its resemblance to human behaviour, in particular when experienced on a daily basis and from close proximity, is likely to suggest a wider social significance of these non-human animals – a significance that would underscore their conceptualisation as "persons". We will further explore this link between ethological and socioecological intricacies and ontological significance in the next subsection and illustrate it with ethnographic evidence.

The final argument we want to present here for the "natural significance" of mammoth in the Late Pleistocene concerns the *raw material potential* of elephant inhabited landscapes – a raw material potential that is crucial in particular for hunter-gatherer groups. For human foragers, another important aspect of the already addressed environmental impact of elephants is their "pre-treatment" of wood (Haynes 2006; 2013; cf. Fig. 3). While processing larger bushes, ripping out branches and literally "destroying" entire trees, elephants often leave behind large scatters of wood material that can be easily collected, for example, for fire-making purposes. These pieces are already suitably "formatted" and present themselves as "pre-processed" for human needs. In landscapes where wood-availability is low – such as the Late Pleistocene mammoth steppe – elephants both critically "signify" the availability of wood and considerably enhance its accessibility and utilisation value (compare also Heckel & Wolf 2014). This has to be considered a strong affordance and ties elephants and wooden raw material closely together. It might be important to think of spots in the landscape where elephant activities produced natural "wood outcrops" in terms of "landmarks" or "places" with their own toponymes and narratives since, depending on the "intensity" of elephant activity, people can return time and again to exploit these natural sources. Additionally, elephant inhabited landscapes are characterised by the widely scattered availability of broken ivory fragments – fresh, rotten and fossilised – and artefact-like stones with sharp cutting edges (Haynes 2013). The latter is the result of elephant trampling behaviour, whereas the former can be the outcome of elephant digging activities or the clash of two or more individuals, for example when one individual tries to push away other water-hole competitors (Haynes 2006). These ivory fragmentations result from pressure rather than from direct percussion and thus produce suitable "raw" pieces (frz. "supports") for further modification. Also, some

of these fragments are easily confused with human worked ivory (Haynes 1991; 2002; see also Villa & d'Errico 2001). Consequently, elephants "provide" natural ivory sources in a broadly similar fashion as they generate woody raw materials through their behaviour. The natural availability of ivory cannot be overemphasised since the utilisation of ivory by ancient human groups is for some scholars evidence enough to suggest that humans habitually hunted these animals – on the basis of what has already been said about the natural raw material structure of elephant-landscapes, such reasoning is surely subjected to the "hunting-fallacy". Landscapes that are co-inhabited by humans and elephants, therefore, provide a very specific raw material potential that has likely shaped Late Pleistocene hunter-gatherer behaviour in profound ways. In this sense, the elephant "taskscape" is inherently important for human affairs, crucially interlocking the spatial presence of humans with that of elephants. Behavioural adaptation to the mammoth steppe, accordingly, also involves *human adaptation to critical aspects of the behavioural repertoire of woolly mammoth*.

In this context, the aforementioned longevity of mammoths might be another crucial factor rendering the worldly dwelling of these animals "naturally" significant for humans that live in close proximity to them. Growing probably more than twice as old as the average Aurignacian human, mammoth groups and even particular individuals provide an "alternative temporality" to human lifecycles and sociocultural reproduction and constitute a steady reference point in the landscape, capable of "anchoring" the *Dasein* (*sensu* Heidegger 2006) of human forager groups. These mammoth groups and individuals can be remembered and identified over generations thereby becoming powerful mnemonic devices and helping to form the social memory of these groups. Quite crucially, they interact with humans not only spatially but also temporally, and, as a result, open up a field of *spatiotemporal co-presence* that binds the different physicalities and temporalities of the landscape together – they constitute a natural "chronotope". Mammoths, therefore, can become important resonators for human representations of mortality and finitude; they incorporate a "mobile monumentality" that draws humans into mammoth agencies. The entanglement of human and mammoth lifeworlds can thus be considered not only spatial but chronospatial. Interaction possibilities beyond the here and now foster proximity and enhance the ecological salience of these animals for Aurignacian people. With Eduardo Viveiros de Castro, one is even tempted to say that when Late Pleistocene humans are naturally inclined to relate to mammoths not only horizontally but also vertically – when humans and mammoths not only share their landscape but also their *history* – these animals are much more likely to be regarded as a part of humanity and as having been closely related to

humans in the ancestral past. Such a conception is particularly strong in "perspectivist" ontologies where all animals are conceptualised as *ex-humans* and therefore as retaining at least a fraction of their former humanity (Viveiros de Castro 1998).

In summary, it can be said that elephant behaviour – and thus, by analogy, mammoth behaviour – offers a rich repertoire of opportunities for foraging people to use and consequently to "exploit" the landscape which they share with these animals. Because elephants shape the landscapes they inhabit in both subtle and fundamental ways, human environmental adaptability in such landscapes translates, at least partly, into reconciling and adapting to elephant behaviour. Such an elephant-mediated human-landscape relation is then likely to shape the way these humans see and experience the world around them. Elephant behaviour, in other words, is inherently significant for hunter-gatherers under "appropriating" subsistence conditions. The fact that mammoths, like today's African savannah elephants, are visually prominent and highly social animals which demonstrate strands of personality as well as anthropomorphic features, moreover, renders the possibility that they were also seen and experienced as *social agents* and even as sentient "persons" additionally tenable. Another important aspect of their salience for human foragers is that they provide a "material fixture" in an ever transforming world since their longevity draws humans into mammoth-centred temporalities providing a catalyst of group memory and identity. The inherent ambiguity of the elephant-human link, at the same time, is easily understood as an indication that a "positive relationship" with elephants is nothing to be taken for granted but rather demands considerable human "investment", invoking the "need" to constantly re-negotiate this socially significant relationship.

Ethnoelephantology

Piers Locke (2013) has recently proclaimed the dawn of a new field of inquiry at the human-elephant intersection which he calls *Ethnoelephantology*. At the heart of this approach lies "[r]ecognizing continuities between the sentient and affective lifeworlds of humans and elephants, the mutual entanglement of their social, historical, and ecological relations, and the relevance of combining social and natural science methodologies" (Locke 2013). Drawing on a rich set of recent and historical data, he argues – along similar lines as we have thus far – that elephants must be considered *subjects* that effectively *co-inhabit* the landscape with humans, leading to a "natural" symmetrisation of elephant-human relationships. He also stresses the importance of conceiving of the human-elephant nexus as a *co-adaptive interface*. All these considerations essentially re-emphasise the need to think beyond some of modernity's most powerful categorisations and dichotomies in order to truly understand the human-elephant interface in its

diachronic and cross-cultural unfoldings. In this respect, it is important to recognise that constructing the human-elephant relation in Cartesian terms, as a dualistic animal-human divide, is probably a historical exceptionality in itself – a persistent reflection of an anthropocentric worldview. Engaging with non-human animals and encountering them on a daily basis usually makes a huge difference for how to conceptualise and experience these relationships in the first place. The specific structure of these interactions, then – as exemplified above – often "demands" "decentering the human" and "socialising the other-than-human" – albeit in various and socioculturally specific ways. Before we discuss the implications of such a view for interpreting the Late Pleistocene archaeological record of the EUP Aurignacian, however, it appears necessary to at least shortly outline the potential significance of the elephant-human interface and its often critical sociocultural embeddedness in ethnographically documented forager societies. We discuss the Samburu of Northern Kenya and the Nayaka of Southern India and their specific relationship with African and Asian elephants – these examples, though, are not introduced as some sort of "model" for past forager-elephant ties, but rather to accentuate once again the varying but immensely rich and remarkable social relationships people usually maintain with elephants when they encounter them on an almost daily basis.

The Samburu of Northern Kenya

The Samburu, Maa speakers, are one of the tribes that inhabit the dry savannah-grassland landscapes of today's "Samburu Country" (formerly "Samburu District") in Northern Kenya. In addition to the Samburu people who live today as pastoralists, the landscape features a variety of different savannah animals including antelope, zebra and giraffe and supports about 3'000 African bush elephants (*Loxodonta africana*; Kahindi 2001: xvi-xv). The Samburu have a long tradition of living in close proximity to elephants, an eco-spatial proximity that is also well reflected in sociocultural proximity (Kahindi 2001; Kuriyan 2002). Although most of these people possess livestock today (about 80%), wildlife is still highly significant to the Samburu (Kuriyan 2002). Despite the economic importance of livestock, the most outstanding and socioculturally potent human-animal relationship they sustain is the one with free-living elephants (Kahindi 2001; Kuriyan 2002). Even though Samburu lifestyles have been strongly impacted in recent years by some of the so called "achievements of the industrial age", their construction of the elephant-human interface still pervades their sociocultural organisation and the way they conceptualise the world.

Local knowledge about elephant physiology, behaviour and ecology is very detailed but construed in inherently social terms and in constant reference to

the Samburu themselves (Kahindi 2001). In that respect, elephants are seen as individuals that differ in their affective states, emotions and general behaviours – differences that are clued by physical appearance. The Samburu have different names for different elephant body parts, for example – they have their own "elephant topography" – as well as different linguistic expressions for different individuals and different elephant groups (Kahindi 2001: 15-19). These toponymes express the perceived human-likeness of these non-human animals and are embedded in cultural narratives and folk stories, by which the "place" of different layers of the elephant-human intersection is constantly re-negotiated. The Samburu, furthermore, use linguistic anthropomorphisms to denote the reminiscence of humans and elephants. Elephant trunks, known to be instrumental for touching objects and other individuals, are referred to as "arms" and elephant tusks as "teeth" (Kahindi 2001: 21). There are even different local names for different tusk appearances – testifying to the visual prominence of these features. Also, elephant age is known to correlate with the size and depth of skin cracks, giving rise to 9 discrete "age stages" in elephant biographies that are discriminated by Samburu people (Kahindi 2001: 17). The core social unit, the "elephant family", is called *mboo o ltome* which literally means "group", "enclosure" or "kraal" and is also used to signify groups of Samburu people. Each elephant group, furthermore, is known for its peculiarities and autonomy (Kahindi 2001: 18). Samburu terminology also reflects the social organisation of these elephant units, for example distinguishing between *sangalai*, a term that describes elephant bulls and their strong and aggressive male leadership – there is also an additional term specifically for "sexually active bulls" – and *ngamitoni*, designating female protectionship and matriachism. Very old female individuals are also "signified" separately and are usually named *narikoni*. The Samburu believe that there is no fundamental difference between elephants and humans in this respect – both are effectively living in "tribes" (Kahindi 2001; Kuriyan 2002). The nature of interactions between Samburu people and specific elephant groups, memorised over generations, therefore strongly influences how people experience and name the latter. Elephant groups from the highlands, for example, are known as *osupuko* since they are said to be highly tolerant of both people and livestock, whereas groups from the lowlands, *lpurkel*, are known to be short-tempered and at times very aggressive (Kahindi 2001: 17). In their cultural narratives, the Samburu ground the differences in how they relate to these two metagroups in differences in elephant diets: elephants from the highlands are thought to eat "cool" vegetation, while those from the lowlands are thought to consume "hot" plants. In this sense, humans, elephants and the landscape are crucially interlocked

and interacting with elephants, therefore, is a socially significant task for these people. Elephants, consequently, are highly respected animals that are seen as closely related to humans and the Samburu constantly strive for maintaining a "good relationship" with them (Kuriyan 2002).

Living in an elephant-landscape also has far-reaching implications for how the Samburu see and use the landscape and how they organise socio-cultural practices. For example, they use the trails that have been created by elephant groups but at the same time avoid setting up camps in the immediate vicinity; they use and exploit both the water holes and water dams that elephants dig, and they collect loose branches that elephants leave behind when they feed from trees and bushes (Kahindi 2001: 28; Kuriyan 2002). Elephant water "pools" are even sometimes identified with unique place names (Kahindi 2001: 29). The Samburu also "share" salt-licks that elephants unearth in the lowlands with these animals (Kahindi 2001: 28; see also Redmond 1982). In other words: they systematically use their knowledge about elephant behaviour and exploit the affordances it creates. This, however, also demands that they are "thoughtful" with regard to elephant activities, mitigating conflicts for water access and the like. The human-elephant relationship, from this perspective, is a deeply reciprocal one – one that rests upon mutual respect and recognition (Kuriyan 2002). People, for example, regard elephants as "mighty" and at times even dangerous animals; however, their "dangerousness" is not seen as negatively inherent in elephant nature or as fostering rivalry with humans, but as something that needs to be respected and constantly re-negotiated as well as something that demands "appeasement" and "coordination".

Another example of elephant-related materials that are entangled with sociocultural practices is elephant dung which is burnt as protection against mosquitos (Kuriyan 2002) and plays an important role in transitory rituals (Kahindi 2001: 35). In Samburu "wedding" ceremonies, for example, elephant dung is compulsory for igniting a fire in the couple's first hut, the *nkaji naibor*. During the *ara lapa* ceremony which is conducted on a monthly basis and tied to the lunar cycle, elephant ivory is plunged into ash and then used for applying ochre to the forehead and right chest of Samburu boys (Kahindi 2001: 36). The respect for these animals and their human-likeness is also reflected in the treatment of elephant carcasses. When the Samburu encounter an elephant carcass they meet them with the same respect as they treat human corpses, *asai*, placing a green twig or a stone on the dead body or marking it with ochre. The Samburu also believe that an unburied elephant placenta or one that is exposed to scavengers is a "harbinger of good luck and prosperity" (Kahindi 2001: 34). Consequently, the placenta of dead elephants has to be transported home and formally buried there. No other animal

experiences a similar "humanised" post-mortuary treatment. Clearly, these complex and semantically rich manifestations of Samburu behaviour mirror their socially complex, highly significant and intimate link with these animals.

Finally, the various relationships of people and elephants that shape Samburu lifeways in critical ways are also reflected in the materiality of the elephant-human interface. Elephant ivory, for example, is used to manufacture talismans, *riati*, that are thought to protect new-born babies from dying at birth (Kahindi 2001: 35). Traditional Samburu "warriors" used to wear ivory ear-plugs for adornment and decoration, although the original function of these pieces remains unclear. (Such talismans are also shared by other tribesmen of the region). These personal ornaments are believed to offer protection from elephant "curses" that are thought to originate from past elephant hunting by the ancestors of the Samburu. These narratives underscore the status of elephants as "persons" and even relatives and are closely linked to elephant killing taboos (Kahindi 2001: 36-37; Kuriyan 2002). Although killing an elephant in defence is usually not negatively sanctioned, human-induced elephant-death is nonetheless considered to seriously impair the human-elephant relationship. The use of ivory, therefore, testifies to the important place of elephants in Samburu worldviews, in particular to the flexible boundary between elephants and humans, and is clearly not related to elephant hunting – on the contrary. Samburu cosmology rather speaks of elephants as ancestors and "ancient relatives" and states that they once lived in Samburu homes and worked closely together with their women (Kuriyan 2002). These statements clearly show that elephants and humans, for the Samburu, belong to the same "kind" and share an essentially human perspective on the world although they "inhabit" different (physical) bodies. This idea is in fact very close to what Eduardo Viveiros de Castro (1998; 2004) has termed "multinaturalist"-perspectivist ontologies in Amerindian societies.

Taken altogether, the case of the Samburu of Northern Kenya perfectly demonstrates how closely intertwined human and elephant lifestyles can actually be when both, elephants and humans, occupy the same areas throughout the year and face each other on a daily basis. Elephants are deeply embedded in Samburu sociocultural organisation and are an important vehicle for these people to define their worldly place. The socially significant relationships that these people maintain with elephants are reflected in both their every-day and ritual practices as well as in their material culture. The way the Samburu see and experience elephants, moreover, is thereby strongly rooted in *how they interact with them and how these animals behave and shape the landscape around them*. Elephant ostensive personality and complex sociality, in particular, appears to be a salient

"catalyst" for conceptualising the elephant-human interface, and is thus, ultimately, an important factor for shaping Samburu worldview and ontology.

The Nayaka of Southern India

The case of the Nayaka of Southern India ("Nilgiris District") is in many ways comparable to the Samburu although they live in a completely different environment – a forested, subtropical highland-mountain landscape (Bird-David 1999). Like in the open grassland-savannah landscapes of Northern Kenya, however, elephants – in this case Asian variants (*Elephas maximus*) – are also an important feature of the landscapes that Nayaka people inhabit. The Nayaka are one of the last forager groups of the Indian subcontinent and their cultural heritage is severely endangered today (Bird-David & Naveh 2008). Elephants are highly valued by these hunter-gatherers and are regarded as one of the most important and socially significant animals in their environment (Bird-David 2006; Bird-David & Naveh 2008).

Their relationship with these non-human animals, however, appears to be more ambiguous than in the Samburu case. Nayaka material culture – although generally rather sparse – comprises a bamboo rattle, for example, that is specifically designed to scare away elephants (Bird-David 2006). The sheer existence of such an object illustrates the potential "dark" side of Nayaka-elephant encounters and is a reflection of elephants – mainly male bulls – "raiding" and "threatening" entire villages and thereby endangering Nayaka people (Bird-David & Naveh 2008). Yet, elephants are nonetheless regularly framed as *devaru*, which essentially means "other-than-human persons", and are seen as an inherent part of the wider social community, the *sonta* (Bird-David & Naveh 2008). For the Nayaka, however, this status of elephants as social actors and persons is not rooted in an essentialist notion of "elephantness" or "personness"; elephant social personalities – like those of any other socially relevant entity – are rather invoked *within* and *as part of* ongoing (actual) engagements. Accordingly, not all elephants are always *devaru*, they can rather *become* other-than-human-persons in the process of interacting with Nayaka people. Their status as social agents and subjects not very different from humans, in other words, mainly depends on the perception of these interactions as meaningful and significant encounters. Nurit Bird-David and Danny Naveh (2008), for example, report on an elephant individual that was regarded as elephant-person, as *anna-devaru*, by the Nayaka simply because the elephant "walked harmlessly" between Nayaka houses although elephants are known to regularly devastate human settlement in such situations. Personhood, therefore, is not an essential attribute of being an elephant or anything else, but an emergent property of salient interactions and encounters that render the elephant-human relationship significant and memorable in

specific situations. It becomes clear then that "innateness" is not a feasible concept when exploring Nayaka-animal relationships. The recognition of "persons" in other-than-human entities can only be concluded after a specific engagement – usually types of interactions that, in Nayaka terms, are "expressive of care and consideration" (Bird-David & Naveh 2008). Clearly then, "being-a-*devaru*" is not bound to a specific physical state but can rather be understood as a *way of being that is contingent on the process of its unfolding*. Personhood and social significance for the Nayaka, accordingly, are a matter of constant re-negotiation and thereby testify to their relational ontology (cf. Bird-David 1999).

Although Nayaka recognition of inherently social interactions is thus critically decoupled from particular "matter-states", it is nevertheless dependent on perceivable and expressive body conditions and behaviours in these other-than-human entities that can invoke individuality, personality, sentience and, ultimately, human-likeness – in the case of Asian elephants, these properties are, of course, closely related to the appearance, ethology and socioecology of these animals. A good example is the report of Chellan, a 35-years old Nayaka man, who "identified" an *anna-devaru* by the simple fact that the elephant "looked straight into his eyes" while passing by (Bird-David & Naveh 2008). Because elephants are highly social animals, often displaying individually unique behaviours, and are capable of at least rudimentary emotionality and empathy, they are very likely to "draw" people into such meaningful interactions. The expressive and affective characteristics they share with humans can thus be regarded as critical interaction preconditions that enable the "symmetrisation" of these interactions – in particular under conditions of animistic or perspectivist ontologies where not natural (biophysical) kinship but social (cognitive/spiritual) kinship of animals and humans is presupposed.

The interaction with animals and other-than-human persons in general therefore cannot be reduced to direct physical or face-to-face encounters with these entities. On the contrary, the Nayaka talk and thus interact with these other-than-human persons – with all different kinds of *devaru* – on a daily and sometimes even a nightly basis, although the latter are in most cases not even physically present. This again shows what has already been emphasised, namely that social significance and interaction, for the Nayaka, transcend physical contact or the bodily presence of these non-human persons. Because *devaru* are considered coevals on a much more fundamental level and are therefore an integral part of the wider social discourse of Nayaka people, they are virtually always *co-present* and only instantiate or "show" themselves in specific situations and/or physical forms. The conversations with these non-human "persons" reflect this intimate bond and

are often highly personal, informal and friendly, regularly including elements such as joking, teasing and bargaining (Bird-David 1990), which again clearly demonstrate the *regular place* of these entities within the social community that forms around the Nayaka (Bird-David & Naveh 2008).

One of the main incentives to maintain "good relationships" with these non-human persons is the prevention of illness and misfortune, which the Nayaka call *batha*. *Batha* are believed to be symptoms of disrupted or critically impaired social relationships including relationships between Nayaka, between Nayaka and *devaru*, and even between *devaru*. Accordingly, the Nayaka devote much effort to maintaining and ensuring a positive relationship with and between these other-than-human persons by their actions (Bird-David 2006; Bird-David & Naveh 2008). In this respect, the Nayaka clearly "care" for these non-human persons and their relationship with them is therefore often symmetrical in nature, thereby testifying to their relational and deeply animistic ontology.

Undoubtedly then, elephants are important social agents for the Nayaka people of Southern India. This social significance is accompanied by the recognition of elephants as active and autonomous co-dwellers in the Nayaka environment which display idiosyncratic and often strange, but, importantly, overall rather human-like behaviours. The construction of the elephant-human interface in sociocultural terms, therefore, can be understood as a reflection of the "natural significance" of elephant behaviours for these forager people and the specific framing of human-elephant encounters and interactions in the Nayaka environment – this "framing" arguably being related to the close structural proximity of human and elephant tasksapes in this environment. In other words: the intimate and socially significant elephant-human relationship is *to some extent also an emergent property of the conditions under which humans and elephants interact in these settings*.

Archaeoelephantology

We have argued so far that the construction of the human-elephant interface is often motivated and at least partly shaped by the *ecological conditions* under which elephants and human foragers experience and encounter each other. Aspects of such an "ecological matrix" for Late Pleistocene human-mammoth interactions in the mammoth steppe superbiome have been outlined above. We would suggest that this matrix can be effectively used to shed new light on the ontological implications of mammoth-centred material culture in the EUP Aurignacian. It is therefore proposed that an *Archaeoelephantology* (analogous to an *Ethnoelephantology*) is a feasible and ultimately fruitful undertaking. This section, accordingly, attempts to outline some of the most crucial cornerstones of the human-mammoth relation in the

Aurignacian (ca. 42-30 ka calBP) as we currently see it and thereby offers a (potentially surprising) re-interpretation of the Aurignacian *Glaubenswelt*.

Materialities of human-mammoth relations in the Central European Aurignacian

The association of the European EUP Aurignacian with anatomically modern humans (AMH), or *Homo sapiens*, is well established (Churchill & Smith 2000; Bailey et al. 2009; Hublin 2013; 2015; Benazzi et al. 2015). The Aurignacian material record in Western Eurasia is rich and commonly thought to mark the beginnings of the Upper Palaeolithic in the Old World (see Hublin 2015 for a recent review of the evidence), but it has been shown that its sociocultural landscape is also characterised by marked heterogeneity and an intensification of internal differentiation dynamics (e.g. Vanhaeren & d'Errico 2006; Teyssandier 2007; Conard 2010). The ongoing dispersal of AMH, in other words, seems to be accompanied by the proliferation of regional material culture signatures (Hussain & Floss 2014; Conard & Bolus 2015). We therefore suspect regionally varying "eco-cultural webs" that frame the place of people, things and animals and thereby also "call" for different underlying ontological systems. Hence, we focus here on a regionally distinct site-cluster in order to explore the "ecology" of object-human-animal relationships as reflected in one of these (regional) material culture archives – here exemplified by the Aurignacian record of the Swabian Jura key sites in Southwestern Germany and the open-air sites of Breitenbach and Lommersum in Central Germany (Fig. 6). The central idea is that the *salience of the mammoth-human interface in Aurignacian times* manifests itself in "mammoth-centred materialities", and can in fact be charted throughout different albeit interconnected material culture domains: (1) "visual art", (2) settlement organisation, and (3) faunal remains. The prominence of the "mammoth theme" and its tangible material realisation thereby supports the idea that the mammoth-human interface in the Aurignacian was a socially significant one – a relationship that was deeply entrenched in the sociocultural realm and also pervaded the actual *Glaubenswelt* of these people.

Mammoth in Aurignacian "visual art"

The mammoth is strongly interwoven in the materialities of what can be called Aurignacian "visual art". It reveals itself in two different ways and thus in a double-sense, either as "raw material" or as "motif" – one could even say either as an "abstraction" or as a "concretisation" of the mammoth theme. One way or the other, referencing the mammoth, both directly and indirectly, is *the dominant topic* in the Aurignacian of the Swabian Jura (Hahn 1977; 1986; Floss 2007; Conard et al. 2015; Wolf 2015: 287-298). Mammoth ivory is the preferred and predominant material with which to produce a whole range of different final

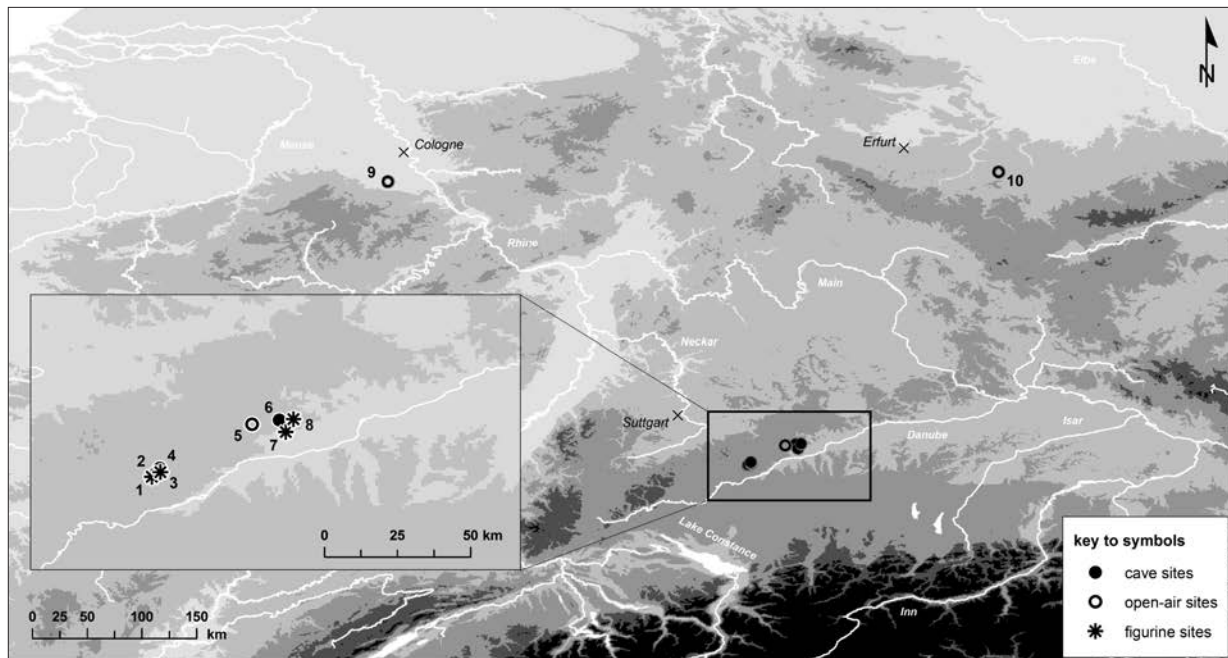


Fig. 6. Map of Central and Southern Germany showing the location of Aurignacian sites that are discussed in the text. 1: Geißenklösterle, 2: Sirgenstein, 3: Hohle Fels, 4: Brillenhöhle, 5: Börslingen, 6: Bockstein, 7: Hohlenstein-Stadel, 8: Vogelherd, 9: Lommersum, 10: Breitenbach. All figurine sites are cave sites.

Abb. 6. Karte von Zentral- und Süddeutschland mit den Aurignacien-Fundstellen, die im Text diskutiert werden. 1: Geißenklösterle, 2: Sirgenstein, 3: Hohle Fels, 4: Brillenhöhle, 5: Börslingen, 6: Bockstein, 7: Hohlenstein-Stadel, 8: Vogelherd, 9: Lommersum, 10: Breitenbach. Alle Figurinen-Fundstellen sind gleichzeitig Höhlenfundstellen.



Fig. 7. Different bead types of the Swabian Aurignacian. 1: Double perforated bead, 2: double perforated bead with wedge-shaped extension, 3: single perforated bead, 4: disc-shaped bead, 5: tubular bead, 6: cup-shaped bead, 7: eight-shaped bead, 8: toogle-shaped bead, 9: pin-shaped bead, 10: bulbous bead, 11-12: pendants, 13: bead blank, 14: bar. Hohle Fels: 4, 5, 7, 8, 11-14; Vogelherd: 1-3, 6, 9, 10. Photographs: S. Wolf and H. Jensen. After Wolf 2015 (Abb. 47), modified. Courtesy of Sibylle Wolf.

Abb. 7. Verschiedene Perlentypen aus dem Schwäbischen Aurignacien. 1: Doppelt durchlochte Perle, 2: doppelt durchlochte Perle mit keilförmigem Fortsatz, 3: einfach durchlochte Perle, 4: scheibenförmige Perle, 5: röhrenförmige Perle, 6: körbchenförmige Perle, 7: achtförmige Perle, 8: knebelförmige Perle, 9: zapfenförmige Perle, 10: bauchige Perle, 11-12: Anhänger, 13: Perlenrohling, 14: Band. Hohle Fels: 4, 5, 7, 8, 11-14; Vogelherd: 1-3, 6, 9, 10. Fotos: S. Wolf und H. Jensen. Nach Wolf 2015 (Abb. 47), verändert. Mit freundlicher Genehmigung Sibylle Wolf.



Fig. 8. Hohle Fels, chaîne opératoire of ivory beads in the Aurignacian. Photographs: S. Wolf and H. Jensen. After Wolf 2015 (Abb. 86). Courtesy of Sibylle Wolf.

Abb. 8. Hohle Fels, die chaîne opératoire der Elfenbeinperlen im Aurignacien. Fotos: S. Wolf und H. Jensen. Nach Wolf 2015 (Abb. 86). Mit freundlicher Genehmigung Sibylle Wolf.



Fig. 9. Vogelherd, chaîne opératoire of double perforated ivory beads in the Aurignacian. Photographs: S. Wolf. After Wolf 2015 (Abb. 109). Courtesy of Sibylle Wolf.

Abb. 9. Vogelherd, die chaîne opératoire der doppelt durchlocherten Elfenbeinperlen im Aurignacien. Fotos: S. Wolf. Nach Wolf 2015 (Abb. 109). Mit freundlicher Genehmigung Sibylle Wolf.

products, ranging from simple points to ivory flutes and various types of beads and pendants to well-defined figurines (Conard et al. 2015). These products, although all made of mammoth ivory, can be distinguished by quite specific and often rather complex chaînes opératoires which include various intermediate steps and their associated “half products” (Wolf 2015; Figs. 7-10). The regulative patterning and proliferation of such a technological matrix suggests at least a habitual integration of these activities into every-day practice. It further indicates that not only the final product, the “outcome”, was important and systematized but that the modalities of manufacturing were as well. We know that the intersection of such regularities, or “technical recipes”, particular raw materials, and specific cultural artefacts (endproducts) is often considered an integral part of the sociocultural reality and as deeply significant in itself (e.g. Lemonnier 2012) – effectively framing social identities and negotiating worldly relationships.

When we take into account, first, that the large majority of the personal ornament repertoire from

the Swabian Jura Aurignacian is made of mammoth ivory and, second, that there is good evidence now to suggest that many of these pieces were sewn or at least somehow attached to clothing or accessories (see Wolf 2015: 291-292 for a recent review of the evidence; Fig. 11), it becomes clear that mammoth ivory was probably *omnipresent* in this part of the Aurignacian lifeworld. Moreover, it might also imply a direct association of humans and mammoth ivory both visually and physically since these ornaments promote a visual as well as a physical blending of mammoths and humans on people’s bodies. If worn on a daily basis, these garments and accessories would thus both establish and express an intimate and immediate bodily relationship between Aurignacian people and mammoth ivory – this entanglement of mammoth material and the human body can be interpreted as a close and almost unmediated link between humans and mammoths (for a comparable argument, see Porr 2015). It has been shown that “material intermingling” of humans and non-human animals often reflects a blurred animal-human boundary and the social significance of these other-than-human entities (cf. Viveiros de Castro 1998; Mithen 1999; Hill 2012). It is also well established that many hunter-gatherer societies believe in the “transposition” of attributes and personality traits through materials and objects from one “person” to another when those are genuinely or metaphorically related to that “person” (e.g. Malinowski 1920; 1922; and more recently, Descola 2011). Gift-giving within the *Kula ring*, for example, is believed to encapsulate the “transfer” of a *part of the givers personality*, effectively motivating a delayed but ultimate return of the “gift” to the original “giver” and rendering *Kula* exchange a self-sustaining system (Caillé 2007; Därmann 2010). The “giver”, in this sense, therefore literally gives away a part of *himself* (see Hussain 2013: 56-58 for a more detailed analysis). By the same token, constantly carrying around attached mammoth ivory beads and pendants might have literally meant *carrying around a part of mammoth personality and capability* for Aurignacian people.

As already emphasised above, such an “interchangeability” of features across the human-animal interface is particularly prevalent when ontological schemes stress relationality (*contra* essentialism) – lending this interpretation a certain plausibility. A similar phenomenon can also be observed, for example, in Amerindian “multinaturalist” worldviews where corporeal diversity but spiritual unity of humans and animals (in the sense that all nonhuman animals have once been humans) is the main cosmological scheme (Viveiros de Castro 1998; 2004). Bodily diversity – although creating physical and cognitive differences – is considered there as constituting a “field of intercommunicability” and transformation since bodies are variables and spiritual unity is a constant. Indigenous people therefore see bodily presence mainly as an “envelope” and animals,



Fig. 10. Hohle Fels (AH Va), different ivory bead production stages and their artefactual correlates. 1: Larger ivory rod fragments, 2: bead half-products, 3: incised ivory bars, 4: smaller ivory rod fragments, 5: final products (beads), 6: possible ivory lure. Photographs: S. Wolf and H. Jensen. After Wolf 2015 (Tafel 30), modified. Courtesy of Sibylle Wolf.

Abb. 10. Hohle Fels (AH Va), verschiedene Herstellungsstadien von Elfenbeinperlen. 1: Größere Elfenbeinstabfragmente, 2: Perlen-Halbfabrikate, 3: verzierte Elfenbeinbänder, 4: kleinere Elfenbeinstabfragmente, 5: Endprodukte (Perlen), 6: möglicher Elfenbeinköder. Fotos: S. Wolf und H. Jensen. Nach Wolf 2015 (Tafel 30), verändert. Mit freundlicher Genehmigung Sibylle Wolf.

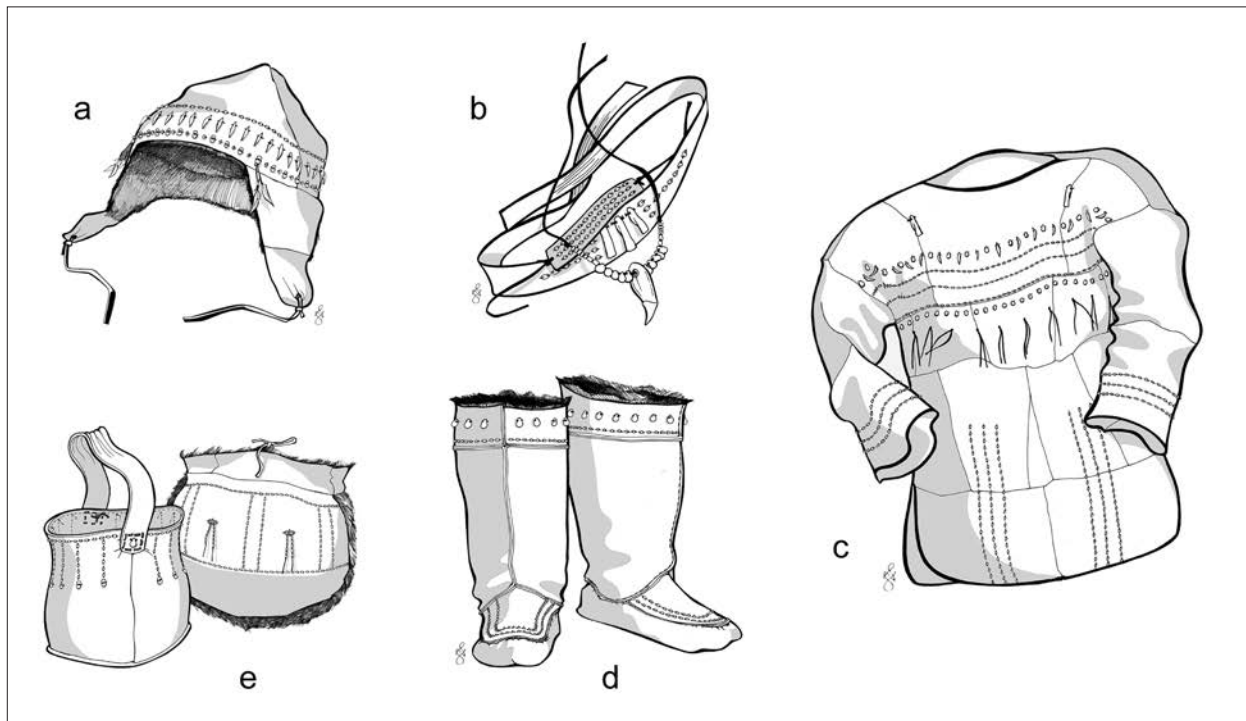


Fig. 11. Reconstructions of clothing and accessories attached with personal ornaments from the Swabian Aurignacian. a: Cap, b: belt-like and strap accessories, c: clothing, d: boots, e: various containers. After Wolf 2015 (Abb. 141, 138, 137, 139, 140), modified. Drawings: C. von Elm. Courtesy of Sibylle Wolf.

Abb. 11. Rekonstruktionszeichnungen von Kleidungsstücken und Accessoires mit applizierten Perlen aus dem Schwäbischen Aurignacien. a: Mütze, b: Bänder, Gürtel und Accessoires, c: Kleidungsstück, d: Schuhwerk, e: verschiedene Behältnisse. Nach Wolf 2015 (Abb. 141, 138, 137, 139, 140), verändert. Zeichnungen: C. von Elm. Mit freundlicher Genehmigung Sibylle Wolf.

consequently, as essentially humans that are “cloaked” in animal bodies (Viveiros de Castro 1998: 479). The “social intimacy” implied by such a reading would underscore a deeply co-adaptive interface of human-mammoth engagements in the Aurignacian mammoth steppe environment.

The significance of mammoth ivory in personal ornament making and the peculiarities of its transformation and utilisation, from this perspective, can thus be seen as a direct reflection of social, symmetrical and intimate human-mammoth relationships in the Swabian Jura during the Early Upper Palaeolithic and points to the role of mammoths as “active”, sentient and “other-than-human” persons. With Viveiros de Castro and others, one could even say that Aurignacian people, by staining themselves in mammoth (and therefore copying their lifeworlds which have also been “stained in mammoth”), were effectively “cloaking” themselves *as mammoths*. The act of attaching bodily mammoth features to the human body might therefore be interpreted as a performative act of communication expressing the trans-corporeal relatedness of Aurignacian people and mammoth “people” in Swabian Jura landscapes of the last ice-age. “Clothing” oneself in another body follows the logic of assuming the perspective of the other since the body – if a fundamental “socio-cosmical” affiliation between humans and animals is

posited – is the primary instrument through which to attain this perspective: “Man ritually clothed as an animal is the counterpart to the animal supernaturally naked” (Viveiros de Castro 1998: 480). An over-emphasis on mammoth-related clothing in the Swabian Aurignacian might thus be indicative of such an ontological perspectivism and the essential humanity of the mammoth in Aurignacian worldview.

The “social significance” of the mammoth in the Swabian Aurignacian is also supported by concrete mammoth representations in the form of ivory figurines (Fig. 12) – and therefore by the materiality of the mammoth as a “motif”. At least three arguments speak in favour of this interpretation: first, there is no clear and convincing evidence that the importance of mammoth in the Aurignacian figurine sample of the Swabian Jura sites is in any way a direct reflection of hunting and subsistence preferences (Niven 2006; Floss 2007; Conneller 2011; Wolf 2015: 289). Second, mammoths are clearly the most frequently depicted non-human animals in the sample (Fig. 13), and, thirdly, the diversified realisation of the “mammoth motif” can barely be captured by invoking a monolithic set of standardised representational conventions, but rather indicates the importance for Aurignacian foragers of expressing the inherent individuality of mammoths (Floss 2007: 309). Whereas the first two arguments mainly point to the general significance of the



Fig. 12. Mammoth representations from the Swabian Aurignacian. 1-4, 6: Vogelherd, 5: Geißenklösterle. Photographs: J. Lipták and H. Jensen, © University of Tübingen.

Abb. 12. Mammutdarstellungen aus dem Schwäbischen Aurignacien. 1-4, 6: Vogelherd, 5: Geißenklösterle. Fotos: J. Lipták and H. Jensen, © Universität Tübingen.

mammoth in the Aurignacian *Lebenswelt*, the third argument likely implies that these people encountered and experienced mammoths in their environment as highly personalised animals displaying all sorts of idiosyncratic behaviours – a perspective that has already been suggested, though on slightly different grounds, for example by Joachim Hahn (1986), and more recently, by Harald Floss, Nathalie Rouquerol and Wolfgang Zessin (2007). The rarity of genuinely *humane* representations in the sample (but see

Conard 2009; and more recently, Conard & Malina 2015) further supports the idea that these figurines – some of them probably had perforations at one time – were effectively *media* to negotiate, reproduce and express relations with other-than-human entities. It is probably not a coincidence that the visual and behavioural prominence of woolly mammoth in the glacial tundra-steppe environments of Southwestern Germany and the natural sociality of these animals, frequently invoking aspects of personality, individual idiosyncrasy and affinity to humans, is "translated" into the Aurignacian figurine record of Swabia by predominantly depicting precisely these animals while using their own body parts as raw material and stressing their "person-likeness" and individuality by representational variation. We would argue that this *convergence* of the general behavioural ecology of the woolly mammoth and the way it is treated and represented in the Swabian Aurignacian clearly indicates that these animals were an important part of a *shared lifeworld* and had their own and unique place in the *Glaubenswelt* of these people – ultimately assigning a central place in the ontology and wider worldview of the Swabian Aurignacian to the woolly mammoth.

Mammoth and Aurignacian settlement

Mammoths, at least indirectly, also seem to have influenced the way Aurignacian people of Southwestern and Central Germany have organised their settlement. Although the arguments that we present here are somehow speculative and still rather preliminary, it seems that this impact had two dimensions, pertaining to both site function and site choice. The first aspect is reflected in a differential contribution of mammoth bone and ivory remains to the Aurignacian faunal assemblages within the regional site sample. Vogelherd cave in the Lone valley marks a clear anomaly in this respect, yielding mammoth NISP proportions of around 50% and MNI proportions of about 20% (Niven 2007), 345 personal ornaments and most of the mammoth figurines made of ivory (Wolf 2015: 245; Figs. 14 & 15). Because the evidence for targeting mammoth as regular big game is ambiguous or poor (Niven 2006), it seems that mammoth remains, in particular ivory, were largely imported as raw material supplies. The positive correlation between the relative importance of mammoth faunal material and the relative frequency of mammoth figurines unearthed from the Aurignacian layers of Vogelherd cave in the overall site sample, points to a differential role of the cave in the wider settlement system of the time and suggests that Vogelherd was *the* main hub for storing and processing mammoth raw material (Conard & Bolus 2003; Niven 2006; Wolf 2015). Hohlenstein-Stadel, located at the southern rim of the Lone valley and "home" of the famous lion man, is also a peculiar place in this respect (Kind et al. 2014). Besides abundant remnants of intensive ivory processing and carving, only a few lithic artefacts and almost no faunal

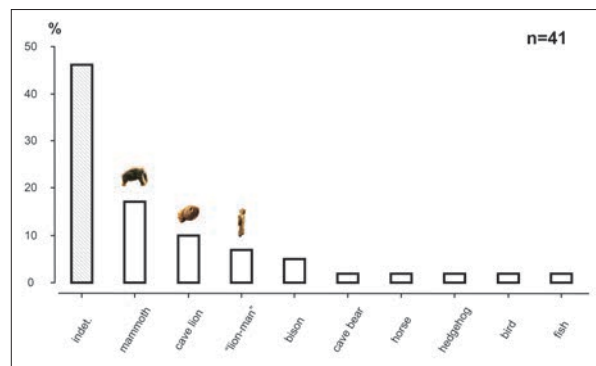


Fig. 13. Frequency of different animal motifs in the "visual art" repertoire of the Swabian Aurignacian.

Abb. 13. Häufigkeit verschiedener Tiermotive im Repertoire "visueller Kunst" des Schwäbischen Aurignacien.

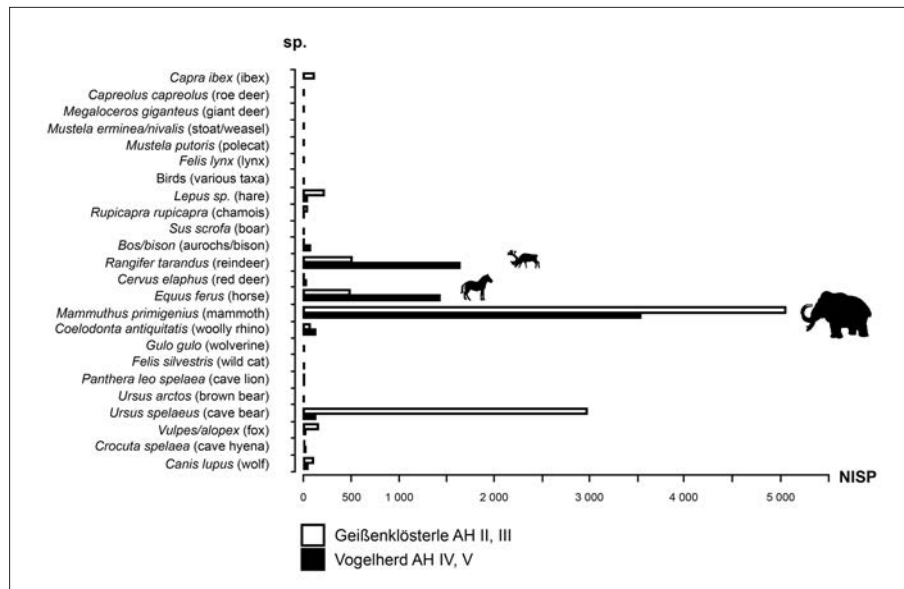


Fig. 14. Comparison of NISP counts per species between the Aurignacian layers of Vogelherd and Geißenklösterle (data from Conard & Münzel 2004; and from Niven 2007).

Abb. 14. Vergleich von NISP-Häufigkeiten pro Faunenart der aurignacienzeitlichen Schichten aus dem Vogelherd und vom Geißenklösterle (Daten aus Conard & Münzel 2004; und aus Niven 2007).

material have been found there. While specific sites seem to receive at least part of their spatial importance from their role in ivory processing, these practises are in most cases embedded into other every-day activities – once again emphasising the daily and social significance of these mammoth-related practices.

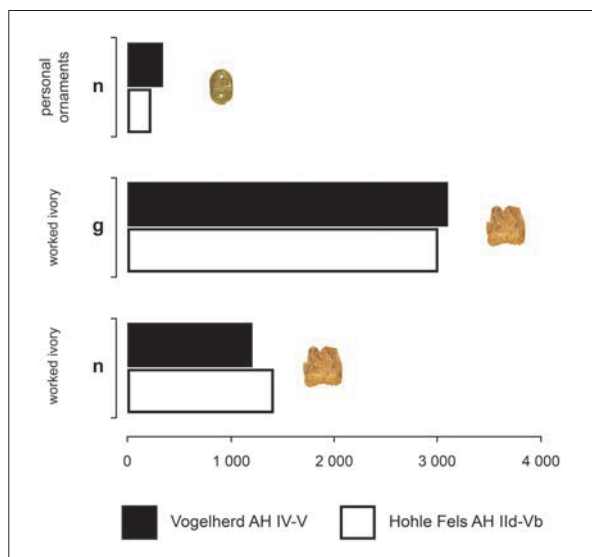


Fig. 15. Comparison of worked ivory counts (in n), personal ornament counts (in n), and the weight of worked ivory (in g) between the Aurignacian layers of Hohle Fels and Vogelherd (data from Wolf 2015).

Abb. 15. Vergleich der Anzahl bearbeiteter Elfenbeinstücke (in n), der Anzahl Schmuckstücke aus Elfenbein (in n) und dem Gewicht bearbeiteten Elfenbeins (in g) der aurignacienzeitlichen Schichten aus Hohle Fels und Vogelherd (Daten aus Wolf 2015).

The Aurignacian open-air sites of Breitenbach and Lommersum in Central Germany add to this picture (Hahn 1977; Jöris & Moreau 2010; Jöris et al. 2012) but also open up another very interesting angle for interpreting the relationship between settlement affairs and woolly mammoth in the Aurignacian. While mammoth ivory processing is an important factor in both sites (Hahn 1977; Matthies 2012; Jöris et al. 2012), only the large-scale Aurignacian occupation at Breitenbach seems to feature larger mammoth bones or even complete ribs and tusks, potentially even underneath the Aurignacian horizons (e.g. Groß 1987; Gaudzinski-Windheuser et al. 2009). This opens up the interesting possibility that the proximate availability of mammoth raw materials was a critical variable in the initial establishment of a camp at the respective location (a similar interpretation is already provided by Gaudzinski-Windheuser et al. 2009). Since elephant carcasses are known to demarcate important landmarks as well as to function as bone and ivory “caches” for hunter-gatherer groups that share the landscape with these animals (cf. Kuriyan 2002; Haynes 2006), it is even possible to think of such spots as potentially *meaningful* localities that had a place in wider sociocultural narratives. One way or another, the peculiar association between larger amounts of complete mammoth bones and Aurignacian layers in the “open landscape” is a remarkable situation that calls for further exploration.

Unlike in Breitenbach, in Lommersum, on the other hand, ivory is not very frequent and there is no indication for larger and complete parts of mammoth skeletons that are spatially related to Aurignacian

finds (Tim Matthies, personal communication). Reindeer and horse are the dominant species there (Hahn 1989; Matthies 2011; 2012) – a pattern that seems to be clearly subsistence related. Seen in this light, Breitenbach and Lommersum are likely to have occupied different positions in Aurignacian land-use systems – a discrepancy that can probably be linked to the role of ivory and the intensity of its exploitation in both sites. Therefore, mammoths, either directly or indirectly, seem to have impacted the way Aurignacian people of Central and Southern Germany organised their spatiality, and, thus, their wider settlement. This, in turn, does not seem surprising when we consider the chronospatial significance of these animals in the wider "mammoth-stained" landscapes of Aurignacian times.

Mammoth and Aurignacian subsistence

The question whether mammoth played a role in the subsistence of the Swabian Aurignacien is difficult, multi-faceted and ultimately contested (Münzel 2001; Niven 2001; 2003; 2006; Conard & Münzel 2004; Wolf 2015). To date, it seems clear, however, that the main prey species that Aurignacian people systematically targeted – as well-demonstrated for example by the faunal assemblages of Vogelherd – was reindeer and horse (Niven 2007). There is also an emerging picture that indicates the increasing importance of small mammal, fish and bird exploitation throughout the Swabian Upper Palaeolithic that seems to begin in the Aurignacian (Conard et al. 2013; Boger et al. 2014). In general, there is therefore enough space on the margins of the subsistence spectrum for a smaller contribution of animal species that were not the main game (Niven 2006). This statement leaves open whether or not these species were "hunted" in the full sense of the concept, but it nevertheless acknowledges their possible caloric and dietary contribution. We believe that the current evidence points to a place of the woolly mammoth somewhere in that group, although, as we will argue, at the outermost limits of the subsistence spectrum. The point to make in this respect is that, in Vogelherd cave for example, there is no evidence that, like reindeer and horse, mammoth bones were systematically or even extensively cracked and processed in order to extract marrow – on the contrary, mammoth bones in general bear relatively few cut-marks or other traces of human deliberate manipulation (Niven 2003; 2006). We are thus inclined to follow Laura Niven (2006) who has already quite convincingly suggested that in the face of poor evidence for meat or marrow processing in the mammoth sub-sample it rather seems that most of the bones and tusk fragments were in fact collected from the landscape (compare also Niven 2007 and Wolf 2015: 289 for similar views).

We have already seen that ivory is usually widely scattered over elephant-landscapes and there is therefore no need to actually kill these animals in

order to acquire this raw material. In addition, the site of Vogelherd is located near a river and in a limestone outcrop, the latter providing a possible source for calcium and sodium which are known to attract proboscideans (Redmond 1982; Niven 2003). We also know that African elephants tend to aggregate in drier or extremely cold phases of the year at water patches and that these "refugia" usually provide plenty of bone and ivory material due to the dynamics of elephant behaviours (Haynes 2006; 2013; see above). It is interesting to note in this context that some ivory pieces in the Aurignacian faunal assemblages are actually rotten, and rotten ivory even seems to be the raw material for several figurines from the Swabian Jura sites (Steguweit 2015). This, clearly, seems to indicate the (according the Leif Steguweit (2015) perhaps even intentional) use of such natural (weathered) ivory sources. The splitting and percussive techniques that underlie Aurignacian ivory processing (Heckel & Wolf 2014) would be consistent with this "embedded" ivory collecting perspective. Differential weathering of mammoth bones at Vogelherd supports this view (Niven 2003).

Although Susanne Münzel (2001) reads the presence of predominantly juvenile mammoth remains in the Aurignacian layers of Geißenklösterle as a strong indication for "active hunting", we think that such a signature – also documented at Vogelherd where either juvenile or relatively old individuals are represented (Niven 2007) – is still perfectly compatible with the presently defended view. It is well known, for example, that mortality rates for young elephants are rather high, especially in dry periods and during times of shortage, and that they are preferentially targeted by other carnivores. The same was expectedly the case – if not even more strongly pronounced – in Late Pleistocene mammoth steppe environments, and the presence of carnivore remains in the Swabian caves (Niven 2006; 2007) renders this scenario a feasible alternative. The age class of very old individuals, of course, would then simply demonstrate carcass exploitation of naturally deceased mammoths.

One of the more serious challenges for an exclusive "gathering" of mammoth bones and tusks is the overrepresentation of cranial elements, for example at Vogelherd cave (Niven 2003). This pattern seems to suggest that more or less complete mammoth heads were – at least from time to time – transported to the site (Niven 2003). Because elephant heads are known to offer a rich nutritional potential (Agam & Barkai 2015), this could indeed speak in favour of mammoth consumption at the site. Heads, however, are peculiar body elements and are often seen as significant beyond their nutritional value by indigenous people. It is well documented that forager groups in Alaska and Northeastern Siberia, for example, give special treatment to beluga crania that they arrange in linear structures along the beach (Hill 2012). These people have reasons for transporting and accumulating

beluga skulls that have nothing to do with subsistence but pertain to their relational ontologies and the importance of the beluga in their worldviews. Skull transportation and arrangement, in this case, directly reflect the social nature of the human-beluga relationship – a fact that becomes clear in the statement of an Alakanuk man that belugas, in fact, “envy others who are able to go on land [because] they are unable to” (Fienup-Riordan 1994: 111; Hill 2012). In the face of an arguably socially significant human-mammoth relationship in the EUP Aurignacian, the import of mammoth skulls to Aurignacian sites might also signal specific sociocultural practises rather than pure domestic nourishment.

In total, we would argue that the faunal evidence from the Swabian Jura sites supports a highly positive human-mammoth relationship in the Late Pleistocene Aurignacian. Woolly mammoths were probably rarely – if ever – intentionally hunted and there is little indication that mammoth meat was an integral component of dietary habits. This picture might even suggest to a certain extent the *prohibition* of hunting and eating mammoth – as it is documented in recent times for the Samburu for example (see above) – which would, in turn, strengthen the view that mammoths were seen as “human-like”, sentient beings and occupied a special place in Aurignacian worldviews. It would also lend additional support to the view that the strong representation of mammoth in the Aurignacian “visual art” of the region is not exclusively bound to particular subsistence practices. To put it in Lévi-Straussian terms: mammoths are “good to think”, not “good to eat” (Lévi-Strauss 2007; see also Sax 2007 for a discussion). As one of the authors has already emphasised elsewhere (Floss 2012), however, there is no necessary inconsistency between hunting mammoth and maintaining a positive social relationship with these animals since ritualised hunting might have also become a means to constantly negotiate, stabilise and reproduce the mammoth-human link in Aurignacian times. Evidently, this effectively complicates the picture and renders the Aurignacian faunal record so difficult to read. The inherent complexity of the mammoth signature is eventually reflected in recent, although still preliminary results from isotopic fingerprinting indicating at least a small contribution of mammoth to Aurignacian diets in Northwestern Europe (Wißing et al. 2015).

Man and Lion

Because the interaction dynamics of humans and woolly mammoths have been explored both *in depth* and *at length* so far, we think it is sufficient to focus on a few core features of the lion-human interface here in order to compare the role of both animals in Aurignacian ontologies and worldviews. This approach is additionally warranted by the simple fact that due to several problems with “reasoning by analogy”, little

is actually known to date about Pleistocene cave lion (*Panthera spelaea*) socioecology and ethology. However, the inferable peculiarities of the lion-human interface – which are also, of course, related to the specifics of cave lion behaviour – show that this relationship in the EUP Aurignacian had a different quality than the mammoth-human relation discussed before. The “treatment” of the cave lion in the “visual art” of the Swabian Aurignacian mirrors that difference and indicates a rather *liminal* and deeply *ambivalent* place of the lion in the wider social web belonging to the Aurignacians.

Socioecology and ethology of the cave lion

Many of the carnivore species that survived from the Middle to the Late Pleistocene are represented by larger and more robust “cave” variants and are often described as subspecies (Augusti & Antón 2002: 268; Barnett et al. 2009). The cave lion (*Panthera spelaea*) is one of these exponents of the Late Pleistocene carnivore guild – a guild that was much larger and more varied than any found today. Cave lions are thought to be the ancestors of extant lions (*Panthera leo*) which mainly live in African savannah landscapes, although closely related Asian populations can still be found in parts of Gujarat in Western India (Packer 2010). The modern lion was once distributed from Morocco to South Africa and in large parts of Asia but is heavily endangered today – mainly because of human activity and population expansion (MacDonald & Loveridge 2010; Frank 2010; Gross 2012). The cave lion was much bigger than the extant lion and could reach 2 m in length and 1.2 m in height. We know that the presence of carnivorous felids is strongly correlated with environmental conditions since these factors largely determine the availability, density and mobility of prey species (MacDonald et al 2010). This also explains the large size of the carnivore guild in the Late Pleistocene mammoth steppe (Croitor & Brugal 2010) with its extremely high biomass productivity providing niches for many different herbivorous ungulate species (Von Königswald 2004; Hofreiter & Stuart 2009; Zimov et al. 2012; Yaekel et al. 2013). The cave lion was part of that superbiome and consequently once dispersed from Western Eurasia to Eastern Siberia (Stuart & Lister 2011). If one takes the estimations from Sergey Zimov and colleagues (2012) as a basis, the surface of today’s Germany (without its ice-covered parts) could have been the home of ca. 37’500 cave lions during the Late Pleistocene. Although represented in much smaller numbers than mammoths, for example, these animals would thus still have amounted to a significant presence. Like today’s felids, the cave lion can be expected to have preyed upon animals of approximately its own size including horse, reindeer, bison, aurochs, cave bear and at times even woolly rhinoceros – and dietary reconstructions seem to confirm this picture (Bocherens et al. 2011; Yaekel et al. 2013; Bocherens 2015).

Like all big cats, cave lions were expert killers and stalkers – the cave lion being likely *the* apex predator of its time (Yaekel et al. 2013). Isotopic dietary reconstructions, simultaneously, show that these animals, which probably had large hunting ranges comparable to those of modern lions (up to ≥ 400 km), had highly plastic and flexible predatory strategies and, by implication, highly *idiosyncratic diets* (Bocherens et al. 2011; Yaekel et al. 2013; Bocherens 2015). Another important point that needs to be stressed here is that cats in general are well adapted to operate *at night* and are, as a result, known to possess excellent nocturnal visual capacities while their day and colour vision is relatively limited (Bradshaw 2013). This last point is of particular importance for evaluating the conditions of human-lion interactions in the mammoth steppe of the last ice-age (see Packer et al. 2011). Although these non-human animals should not be considered particularly rare in this environment, the "taskscape" of humans and cave lions seem to have been barely inter-linked – in particular since the main activity focus of cave lions was probably at dawn and/or at night. Taken together with the fact that cave lions have probably competed with humans for certain prey species, such interaction-conditions *strongly reduce any "natural intimacy" of the lion-human interface at the time*. It might also point to the "natural elusiveness" of cave lions in these extensive environments (from a human perspective), a fact that would be enhanced if they, like almost all extant felids (MacDonald & Loveridge 2010), were largely solitary hunters. Today's African lion marks a clear anomaly in this respect (Packer 2010) and its sociality, therefore, cannot serve as a "model" for the Pleistocene cave lion's wider socioecology.

Ethnofelidology

An *Ethnofelidology* (analogous to an *Ethnoelephantology*) seems difficult to envision at the moment. One reason for this is the lack of cross-cultural data from hunter-gatherer contexts that illustrate the variability and potential plasticity of the lion-human interface through time and space. Although much more work needs to be done in this respect to support our view, we suggest in this section that *co-existence* with lions in the mammoth steppe has to be understood in different terms than living proximate to mammoth groups. The human-lion interface is rather conceivable as "fraught with tension" and therefore calls for a constant *re-negotiation* of the worldly place of humans *and* lions. Symmetrisation, thus, likely takes place on the level of "being a hunter" and not so much on the level of developing reciprocal social ties. In that sense, the animal-human boundary seems to be blurred in another way – a difference that has implications for the construction of the human-lion interface in these Pleistocene settings. This argumentation rests on two sockets: Western felid-views that characterise human-lion relationships in and around urban centres on the one hand, and

non-western felid-views that are documented in ethnographic accounts of foraging people without such an infrastructure on the other hand.

Western felid-views

Where humans today inhabit similar habitats as tigers, lions, pumas, leopards and their cousins, human-felid interactions tend to be driven by conflict (e.g. Conforti & Cascelli de Avevedo 2003; Hemson 2003; Frank 2010; MacDonald & Loveridge 2010; Gross 2012; Banerjee et al. 2013). Recent studies, however, strongly indicate that this recurrent pattern is mainly the outcome of agricultural lifestyles and the existence of livestock, the latter often being a welcome game for these predators (Kellert et al. 1996; Anderson & Ozolinš 2004; Schumann et al. 2012). It is therefore highly problematic to use the attitudes of modern-day people as a reference to delineate past forager relations with large carnivores. There are some indications, however, that people who engage with large felids and experience them more directly – and not *via* livestock-mediation for example – tend to have more positive albeit concurrently *blurry* and *ambivalent* views (e.g. Kellert et al. 1996; Lichtenfeld 2005; Bhattarai & Fischer 2014). Many city-dwelling people in the developed world often hold positive views of large felids, but their highly idealised picture of them can usually be related to more general society-driven paradigms such as the "fascination of the wild" or a growing awareness of "ecological sustainability" (Kellert et al. 1996).

Interestingly enough, though, there are also strong attitudinal differences within the wider carnivore community, and these differences are probably linked to behavioural disparities between the affected species (Kellert et al. 1996). The strong divergence in the perception of wolves and mountain lions in modern-day North America is a useful example to re-contextualise some of the points that have already been stressed before. Both species similarly affect human livestock, but are seen in radically different ways – the wolf conveying a very negative, the mountain lion a neutral to positive picture (Kellert et al. 1996). Stephen Kellert and colleagues (1996) link this attitudinal contrast to a key difference in how the spatial presence of both animals actually *interferes* with human taskscape. Whereas mountain lions primarily employ olfactory clues and short-range vocalisation to communicate with conspecifics, usually avoid open areas since they are "first order stalkers", and are largely nocturnal (Seidenstricker et al. 1973; Laing & Lindzey 1991), wolves have a much more "menacing" presence since they operate in groups and not solitarily as the mountain lion, and their howling is well audible and reminds humans constantly of the wolf's presence (Mech 1981). The most crucial factor, however, seems to be that wolves habitually scavenge and are thereby easily observable in the landscape while mountain lions almost never engage in such

activities (Kellert et al. 1996). These differences and their connection to human attitudes offer an interpretive matrix through which to explore some of the conditions of lion-human interactions in the mammoth steppe ecosystem since carnivores are an important factor in this environment.

It can thus be argued that wolves in the North American case are a good "correlate" for spotted and cave hyenas (*Crocuta crocuta spelaea*) and their spatio-perceptual presence in glacial-steppe ecosystems (see Holekamp 2006; Watts & Holekamp 2007 for a portrait of hyena societies), whereas cave lion behaviour, by contrast, was probably more comparable to that of mountain lions, and therefore naturally predisposed to invoking associations along vectors of "elusiveness" and "ambivalence" – cave lion spatial presence, from this perspective, being virtually "latent" (it is striking in this respect that hyenas are almost never depicted in Late Pleistocene "visual art" contexts). These observations would thus indicate interaction conditions *anticipating an identificational to ambivalent lion-human relation* in the Late Pleistocene since face-to-face encounters would be rare, but the cave lion would nevertheless be recognised as a main hunter and in this sense critically akin to humans. Since it can be safely assumed that humans would sometimes fall victim to these large predators – as is also documented today in settings where large felids and humans live together (Packer et al. 2011) – this would further stimulate this ambivalent interface by motivating a "fearful" and generally respectful attitude towards them. These interaction conditions, hence, point to an inherent significance of the cave lion for finding one's place in the world and, at the same time, indicate the "un-secured", fluid, and liminal nature of the human-lion interface under such conditions. Both proximity and distance are thus seemingly important in order to understand the role of lions in the EUP Aurignacian.

Non-western felid-views

Interactions of large felids and foraging people that are not heavily biased in their attitudes by livestock management are in fact poorly documented and difficult to identify in the literature. One of the better examples is provided by the Maasai of Eastern Africa that inhabit parts of today's Kenya and Tanzania (Lichtenfeld 2005; Spear & Waller 2008). They are not typical foragers in the sense that their subsistence relies exclusively on hunting and gathering, but the seminomadic lifestyle of some groups and their remarkable relationship with lions is reason enough to consider them as a useful source of information here. We thereby focus on normative aspects of the human-lion interface that are not directly related to habitual "lion hunting" performed by Maasai "warriors", *ilmurran*, in order to check lion populations and protect livestock (Goldman et al. 2010).

The "lion hunt" or *olamaiyo*, on the other hand, is

also a sociocultural practice, a means to constantly negotiate the human-lion relationship that is accompanied with strong and respectful sentiments. It helps to maintain the "appreciation" of the animal and demonstrates the proximity of humans and lions (Goldman et al. 2010). The *olamaiyo*, although probably a relatively recent phenomenon, therefore also reflects a basic *tension* that seems to characterise the Maasai-lion relationship in more general terms. The lion is the only non-human animal that is really *worth* a fight – a statement that tells us, of course, more about the Maasai and how they perceive lions than about the lion itself. For the Maasai, the lion is, moreover, the most significant animal in their environment and their relationship with these animals is very complex but remains essentially ambivalent (Lichtenfeld 2005; Goldman et al. 2010). Lions, for the Maasai, regularly invoke "awe", "strength" and "bravery" but also "fear" and "respect" (Goldman et al. 2010).

These animals are in fact the only representatives of the carnivore guild that are conceptualised in this fashion – jackals and hyenas, for example, are only seen with scorn and disgust. In this sense, it is probably also the lion's place *within* the wider carnivore community, and thus, more crucially, its behavioural uniqueness within the sphere of "hunters and scavengers" that grants it a special role in Maasai cosmology. The lion, for example, is the only other "hunter" that is considered "smart" and worthy of comparison to a Maasai hunter – lions are effectively considered akin to *ilmurran* by virtue of their *resembling* strength, beauty and bravery (Goldman et al. 2010). While interviewed, a Maasai "warrior" from Tanzania explained that "[l]ions are like people [...] they have intelligence (*akili*) like people [...] they can tell if someone is smart, or afraid, or slow" (Goldman et al. 2010). As Mara Goldman, Joanna Roque De Pinho and Jennifer Perry (2010) rightly point out, this profiling is deeply rooted in the lion's idiosyncratic prey tracking and stalking behaviour. But it also demonstrates the inherent "multinaturalist" background that anchors the relationship of Maasai people and lions, granting these animals a *subjective perspective* that is comparable to and even interchangeable with that of humans. It is rather telling in this respect that Maasai people respect lions as "neighbours" even though they are well aware that these animals are inherently dangerous. Maasai socio-cultural narratives additionally underscore the "person-ness", individuality and autonomous agency of lions and their behavioural affinity to humans, but also show the "need" to call for the protection of lions if needed, for example in conflicts with other groups (Goldman et al. 2010).

In total, the Maasai case seems to illustrate how proximate and yet "remote" lions tend to be for human forager groups that co-inhabit the landscape with them. In contrast to other carnivores, their unique

hunting behaviour, "person-ness", and rather elusive presence in these grassland-savannah landscapes allow them to emerge as the only "worthy contender" for human hunters. In contrast to the Samburu-elephant relationship, for example, this link is essentially ambivalent since it is driven by "tension" rather than by co-adaptive and "naturally" intertwined lifestyles. Such a matrix of attitudes, consequently, points to a more "symbolic" role of the lion in Maasai sociocultural organisation (cf. Lichtenfeld 2005: 36) where the animals function as "counter-humans", as a "mirror", and thereby help these people to better understand their own worldly place. Lions, the "walkers" of the African savannah, which are *both intimately and antagonistically related to the Maasai, therefore, invoke inherently unstable, shifting, and ultimately ambivalent attitudes*. Hence, the lion-human relation is always highly problematic, one that "demands" constant re-negotiation and "calls" for careful (and sophisticated) sociocultural treatment.

Archaeofelidology

Like in the mammoth case, we believe that the *ecological conditions* under which felid-human interactions actually occurred in the periglacial environments of the mammoth steppe are a crucial factor for how the felid-human interface is constructed in such a setting. We are aware, however, that an *Archaeofelidology* (analogous to an *Archaeoelephantology*) – at least as we propose it here – must still be placed on safer grounds (but cf. Packer & Clottes 2000). More caution is therefore needed to interpret the archaeological record of the EUP Aurignacian from this perspective. The main point we want to make in this section, however, is that even when one disagrees on the detailed reading of the evidence at hand it is hardly possible to cast serious doubt on the apparent qualitative difference between human-lion relationships and human-mammoth relationships in this period, although both, in fact, played a decisive role in framing the sociocultural world of the Swabian Aurignacian (ca. 42-30 ka calBP). The prominent place of both non-human animals, hence, does not preclude different "modes of conceptualising" the respective animal-human interfaces. We use the "figuration" of the lion in the "visual art" of the Aurignacian cave sites in Southwestern Germany (see Fig. 6) as an example to illustrate this point. It is argued that the ambivalent structure of lion-human engagements in the Pleistocene mammoth steppe are directly reflected in the representation of the lion as *torn between "human-ness" and "lion-ness", and therefore as an essentially liminal and transitory being*.

Materialities of lion-human relations in the Central European Aurignacian

Lion in Aurignacian "visual art"

The lion is, after the mammoth, the second-most frequently depicted animal in the figurine sample of

the Swabian Aurignacian (cf. Fig. 13). Figuratively, lions are also realised in a highly individualistic fashion – with variations in small representational details like the alignment of the ears (Fig. 16). Unlike the mammoth, however, a crucial aspect of its "representational space" seems to include human characteristics. Lions, in other words, are represented in close reference to humans. Three figurines form the basis of this observation: the iconic "lion man" from Hohlenstein-Stadel in the Lone valley, the "small lion man" from Hohle Fels, and the "adorant" from Geißenklösterle, the latter two sites being located in the Ach valley (Hahn 1986; Floss 2007; Conard et al. 2015; Fig. 17). The three figurines incorporate the "mixture" of human and lion traits – human posture and lion head as well as less well-defined "transitional" features (Kind et al. 2014; Wolf 2015: 252-253). As such, these examples indicate both the anthropomorphic nature of lions and the lion-morphic nature of humans – pointing to a highly ambivalent relationship with blurred boundaries between the two (see also Mithen 1999; Porr 2015). Such a "fluidity" of traits is often framed as *hybridity* although it remains unclear in what sense this notion is applicable when it comes to forager societies of the last ice-age. If we take into account what has been argued so far, it seems likely that the hybrid nature of these lion-human figurines points to a perceived "need" of *policing the human-lion relationship socioculturally* – thereby constantly re-casting the human-lion boundary.

There are several possibilities of how to interpret the "intermix" of lion and human characteristics in single (discrete) figurines, but it seems that they all point to the same essential conclusion – namely, that people are similar to lions and lions are similar to people while both are also very different. The combination of lion and human traits, in fact, presupposes a distinction of "humane" and "lione" properties that are specific to their domain. It is therefore tempting to

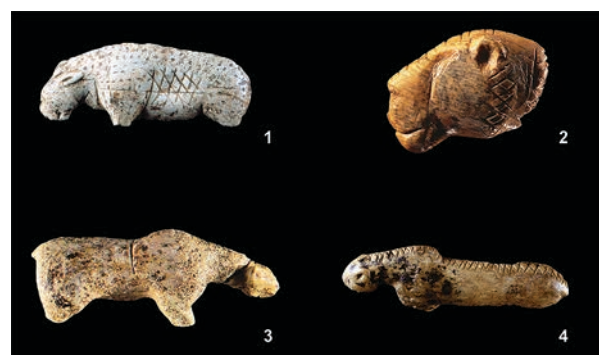


Fig. 16. Cave lion representations from the Swabian Aurignacian. 1-4: Vogelherd. Photographs: J. Lipták and H. Jensen, © University of Tübingen.

Abb. 16. Höhlenlöwendarstellungen aus dem Schwäbischen Aurignacien. 1-4: Vogelherd. Fotos: J. Lipták und H. Jensen, © Universität Tübingen.



Fig. 17 alt 21. Transitional beings from the Swabian Aurignacian which combine human and cave lion features (“lion-man” representations). 1: Geißenklösterle, 2: Hohle Fels, 3: Hohenstein-Stadel. Photographs: J. Lipták and H. Jensen (University of Tübingen), Y. Mühleis (Landesamt für Denkmahlpflege Baden-Württemberg, Regierungspräsidium Stuttgart), © University of Tübingen and Museum Ulm. Courtesy of Kurt Wehrberger.

Abb. 17. Mischwesen aus dem Schwäbischen Aurignacien, die menschliche und feline Eigenschaften vereinen („Löwenmenschen“). 1: Geißenklösterle, 2: Hohle Fels, 3: Hohenstein-Stadel. Fotos: J. Lipták und H. Jensen (Universität Tübingen), Y. Mühleis (Landesamt für Denkmahlpflege Baden-Württemberg, Regierungspräsidium Stuttgart), © Universität Tübingen und Ulmer Museum. Mit freundlicher Genehmigung Kurt Wehrberger.

read this material configuration as a reflection of the artificial “fusion” of the naturally separated taskscapes of lions and humans in Late Pleistocene settings – most prominently mirrored in the disparity between “the nocturnal hunter” (lion) and “the diurnal hunter” (man), the highly idiosyncratic and “person-ness” invoking behaviours of these large cats, and the status of the lion as a dangerous and fearsome animal that needs to be respected as an “autonomous power”. The inherent tension between properties that suggest

a high degree of intimacy and “human-ness” and those that invoke antagonistic sentiments and re-cast the lion as a “contester” and even as a “foe” at times, generate a very peculiar and ambivalent human-lion interface. The lion, from this perspective, “walks both the human and the non-human realm” in both a very real and a metaphorical sense. In Amerindian perspectivism, for example, each animal, although perceiving the world in the *same way*, lives in its *own world* and all beings, but in particular humans and animals, *have*, in principal, such a unique perspective (Viveiros de Castro 1998; 2004). This perspective not only grants them the status of subjects, but is also believed to imply that these “subjects” see themselves as humans and the “others” consequently as animals, for example as prey. Such an “anthropocentric” perspective is particularly granted to great predators since the hunter-prey relation is a *natural topos* (Viveiros de Castro 1998: 471). These animals are thus “anthropomorphised” and believed to be “cloaked” humans that occupy another world. This, in turn, is a problematic situation since although lions are essentially human they cannot be encountered as such. One way or another, it seems crucial that these specific and “*inherently ambiguous*” interaction conditions in the Late Pleistocene condense in the materialisation of a *transitory* and *highly liminal being*, the Aurignacian “lion man” that appears to be a figuration of both identification and alienation.

Liminal animals are known from different socio-cultural contexts and emphasise the fluidity of classificatory units in the social worlds of many forager societies – what Mary Douglas (1970) and Victor Turner (1964) have famously called a mode-of-being “between and betwixt”. All these examples indicate that “ontological fixation” is a rather strange concept when approached from a cross-cultural and non-western perspective. They also show that different albeit often interlocking layers of meaning and significance can crystallise *at once* in liminal entities – which, in turn, captures the deeply relational and non-essentialist logic of the underlying worldviews. Actual relationships with animals, for example, can give rise to (non-empirical) entities in the *Glaubenswelt* that are merely *mounted* on specific human-animal relations, and can be read as a kind of sociocultural “meta-discourse” about the respective interactions. Yup’ik elders from Southwest Alaska, for example, have very specific knowledge about *qununit*, “seal people”, whom they identify by holes in their hands or shoulders and who are in fact hybrid creatures combining human faces with bearded seal bodies (Hill 2012) – additionally distinguished by the Yup’ik by distinctive calls and specific “swimming fields” (Fienup-Riordan 2005: 277-287). Such (non-empirical) other-than-human persons add an additional layer of complexity to debates on the nature of human-animal relationships in forager societies, but, at the same time, demonstrate the

constant need for *negotiating* the "[...] shifting and permeable boundaries between the human, animal, and spirit worlds and the ritual acts that created the pathways between them" in these societies (Fienup-Riordan 1994: 9). It is possible, of course, that the "figuration" of a *lion-person* in the Swabian Aurignacian is also the materialisation of a discourse about such a (non-empirical) "person" that deeply penetrated the *Glaubenswelt* of Aurignacian people. These lion-persons might also have been very similar to the animal "spirit masters" in Amerindian ontologies that create an "intersubjective field" of human-animal relations centering on the animal with which they are associated (Viveiros de Castro 1998: 471). Such counter-factual entities, as they might be called, reflect the complex, multi-tiered, polysemantic and relational worldviews of many foraging people that are both contingent upon and deeply embedded in every-day practices. They are, first and foremost, messengers of *animistic ontologies*, and are not necessarily bound to a "shamanistic spectrum" as often presumed (compare also Hill 2012 for a similar critique).

Upper Palaeolithic organisational complexity and the animal-human interface

The emergence of "visual art", personal ornaments and, most importantly, figurative animal representations is commonly thought to coincide broadly, at least in Western Eurasia, with the onset of the Upper Palaeolithic (e.g. White 2007; Floss 2007; Álvarez-Fernández & Jöris 2007; Watts 2010; d'Errico & Stringer 2011; Floss & Hussain 2015). If the *depiction* of non-human animals as well as the *artisan transformation* of their bones, antlers and tusks indeed tell us something about the nature and configuration of the respective animal-human interfaces – as argued above – and, accordingly, how the animal-human boundary is crafted under these past conditions, what does this actually mean for all those stages of human evolution that lack such materialised evidence? Can we, for example, infer that these stages are probably devoid of any meaningful and significant animal-human relationships that exceed those that other species sustain with one another, and therefore do not find material expression? These are important questions and even though we know that they are not within the scope of this contribution, we at least want to comment on the former because we believe that this will substantially help to clarify the presently developed position.

One of the possible wider implications we see is that the "florescence" of critical material culture categories across the Middle to Upper Palaeolithic transition is in fact only loosely – if at all – tied to the realms of cognition (e.g. Mithen 1996, Klein 2001) and/or demography (e.g. Powell et al. 2009) as usually

argued, but is rather anchored in broader modalities of *social ontology*, in broader *ways of knowing and relating to the world*. We therefore agree with David Wengrow and David Graeber (2015) that the internal rhythms of sociocultural dynamics have often been unwarrantedly ignored even though they are likely key to explaining the broader picture of Upper Palaeolithic societies. One of us has already argued (Floss 2015) that the shift in material signatures from the Late Middle Palaeolithic to Early Upper Palaeolithic can also – and probably more powerfully – be explained by a radical re-configuration of the wider socio-cultural realm including the ways people define their social relations, negotiate and reproduce them (e.g. White 2007). In other words: we suspect that the emergence of fully developed Early Upper Palaeolithic entities in Western Eurasia – like the Aurignacian – is best understood as a fundamental transformation in sociocultural organisation that is ultimately rooted in the re-framing of the underlying ontologies and epistemologies that people use to "navigate" the world.

Nurit Bird-David (2006) and others have shown, for example, that broader organisational categories of the "foraging spectrum" can help to shed light on the scarcity of animal depictions in some hunter-gatherer communities (e.g. Morphy 1999). It is intriguing to note in this respect that "delayed-return" foragers – in James Woodburn's (1980) sense – seem to be much more inclined to develop and maintain "visual art" with animal content than "immediate-return" foragers (Bird-David 2006). It is thus an interesting perspective to re-cast the Middle to Upper Palaeolithic transition in terms of "immediate-" vs. "delayed-return" hunter-gatherer systems. The general pattern of material culture proliferation across the transition at least demonstrates the *systematisation* of personal ornaments – often perforated animal teeth and ivory – and "figurative art" that is nearly always zoocentric (Floss & Hussain 2015; Figs. 18 & 19). The almost complete lack of ivory beads and pendants in Later Middle Palaeolithic contexts as well as the clear underrepresentation of perforated animal teeth might additionally support the view that human-animal interfaces were differently constructed in these contexts. These objects are clearly the most conspicuous advocates of human-animal relationships and appear as deeply embedded both in material culture repertoires and in every-day practices.

Like in the Swabian Aurignacian, forager groups in Alaska and Northeastern Asia make systematic use of personal ornaments which they identify as "amulets", and that, quite similarly, either take the *form* of an animal or are *made of* animals (see Hill 2011 and references therein). These personal ornaments can have different functions but are usually believed to provide *material links* between humans and non-human animals – they help to "think with animals". Accordingly, they are either used to "invoke" and to

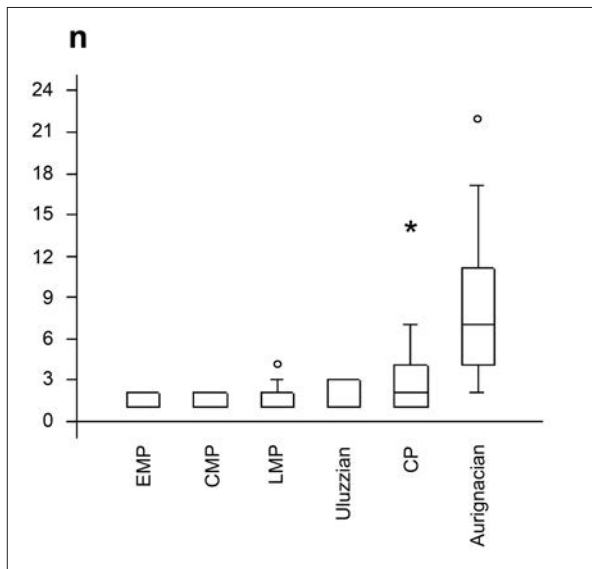


Fig. 18. Frequency of archaeological incidences that proxy “complex behaviour” across the Middle to Upper Palaeolithic transition. The “richness” of the EUP Aurignacian record is statistically significant and separates it from everything that came before (over 20 categories were used to determine the presence or absence of archaeological incidences qualitatively, the number of individual pieces within each category, however, remains unquantified [Floss & Hussain, in prep.]). EMP: Early Middle Palaeolithic (ca. 300-131 ka BP), CMP: Classical Middle Palaeolithic (ca. 130-71 ka BP), LMP: Late Middle Palaeolithic (ca. 70-39 ka BP), Uluzzian (ca. 52-36 ka BP), CP: Chatelperronian (ca. 46-38 ka BP), Aurignacian (ca. 42-28 ka BP). Sample size is shown in Fig. 19.

Abb. 18. Häufigkeit archäologischer Vorkommnisse, die “komplexes Verhalten” am Übergang vom Mittel- zum Jungpaläolithikum anzeigen. Die “Reichhaltigkeit” der EUP Aurignacien-Archive ist statistisch signifikant und unterscheidet sie von allem, was zuvor kam (über 20 verschiedene Kategorien sind erfasst worden, um die Präsenz oder Abwesenheit eines archäologischen Vorkommnisses qualitativ zu erfassen, die Anzahl der individuellen Stücke innerhalb einer jeden Kategorie ist dabei jedoch unberücksichtigt geblieben [Floss & Hussain, in prep.]). EMP: Frühes Mittelpaläolithikum (ca. 300-131 ka BP), CMP: Klassisches Mittelpaläolithikum (ca. 130-71 ka BP), LMP: Spätes Mittelpaläolithikum (ca. 70-39 ka BP), Uluzzien (ca. 52-36 ka BP), CP: Châtelperronien (ca. 46-38 ka BP), Aurignacien (ca. 42-28 ka BP). Stichprobengröße kann Fig. 19 entnommen werden.

attract prey or to “summon” the *inua* – the personality or spirit – of an other-than-human person (Crowell 2009; Hill 2011). Alternatively, they serve to invoke a certain property, characteristic or ability of the animal in question (Murdoch 1988; Hill 2011). These objects are in fact good examples of the materialisation of relational ontologies since they embody the idea that traits can be “transposed” from one material to another, “infused” and even “invoked” by material

association and thereby testify to a deeply animated lifeworld. These “amulets” are thus not only a carrier of group identity but also reflect the very nature of relationships these people maintain with other-than-human entities (Fig. 20). If our suspicion is true, the “florescence” of material culture within this material spectrum across the Middle to Upper Palaeolithic boundary may thus indeed be linked to a re-organisation of worldviews and accompanied sociocultural

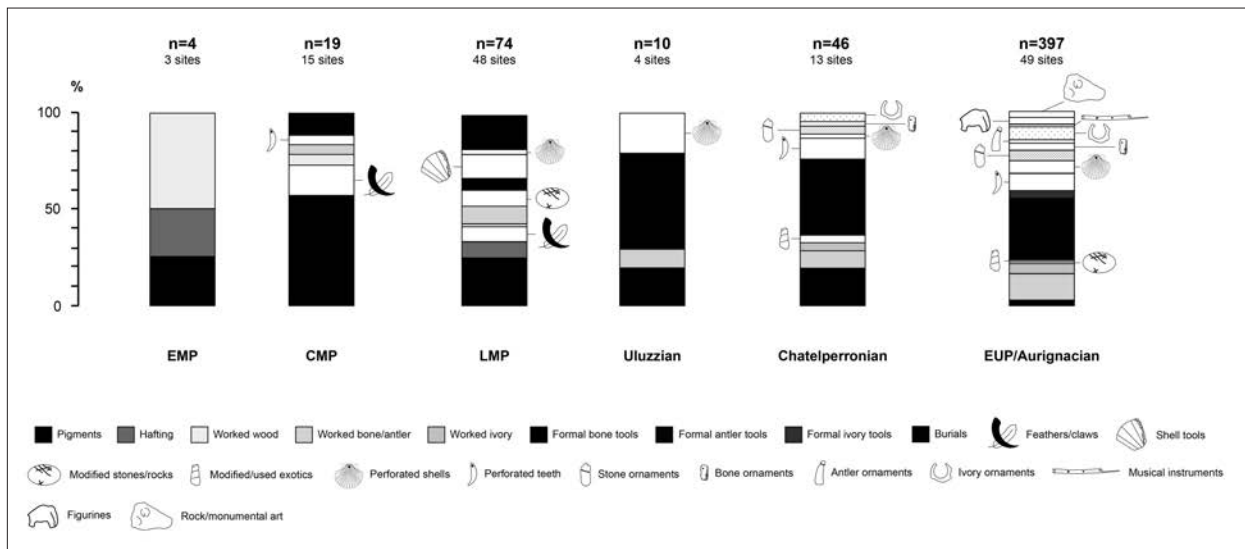


Fig. 19. Relative importance of different material culture categories within the wider sociocultural architecture across the Middle to Upper Palaeolithic transition (measured in the number of discrete incidences per total incidences [Floss & Hussain, in prep.]). The “florescence” of material complexity in the EUP is a direct result of the systematisation, formalisation and diversification of animal raw material use and the concrete representation of these animals in Aurignacian “visual art”. For abbreviations, see captions Fig. 18.

Abb. 19. Relative Wichtigkeit verschiedener Kategorien materieller Kultur innerhalb der soziokulturellen Architektur einzelner Raum-Zeit-Einheiten am Übergang vom Mittel- zum Jungpaläolithikum (gemessen an dem Anteil diskreter Vorkommnisse an der Gesamtzahl aller erfassten Vorkommnisse innerhalb der entsprechenden Raum-Zeit-Einheit [Floss & Hussain, in prep.]). Das “Aufblühen” materieller Komplexität im EUP ist ein direktes Resultat der Systematisierung, Formalisierung und Diversifizierung der tierischen Rohmaterialnutzung und der konkreten Darstellung dieser Tiere in der “visuellen Kunst” des Aurignacien. Für Abkürzungen, siehe Beschreibung Fig. 18.

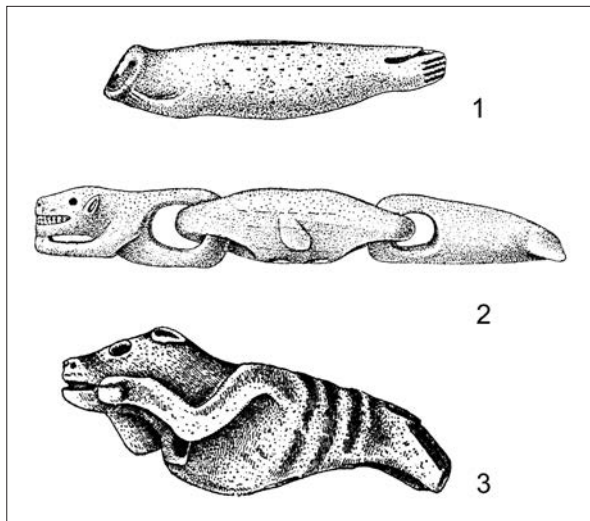


Fig. 20. Inuit ivory figurines. 1: Ivory carving of a mermaid-like creature from Sledge Island, representing a mythic being, half seal half man, that is believed to dwell in the sea, 2: ivory cord handle from Sledge Island representing a "composite animal" (mythical being that is believed to inhabit the sea and to be half bear and half whale), 3: ivory carving of a "composite animal" from Cape Darby, representing the head and shoulders of a white bear and the body of a seal. After Nelson 1899 (Fig. 161, 160, 157). Reproduced with kind permission of the Smithsonian Institution.

Abb. 20. Inuit Elfenbeinfigurinen. 1: Elfenbeinschnitzerei einer Meerjungfrau-ähnlichen Kreatur aus Sledge Island, die ein mythisches Wesen darstellt, halb Seehund halb Mensch, welches in den Tiefen des Meeres weilen soll, 2: Elfenbeingriff aus Sledge Island, welches ein "Komposit-Tier" darstellt (mythisches Wesen, das in den Erzählungen dieser Menschen das Meer bewohnt und zu einer Hälfte die Gestalt eines Bären und zur anderen Hälfte die eines Wals annimmt), 3: Elfenbeinschnitzerei eines "Komposit-Tieres" aus Cape Darby, die den Kopf und die Schultern eines Bären und den Körper eines Seehunds kombiniert. Nach Nelson 1899 (Fig. 161, 160, 157). Reproduziert mit freundlicher Genehmigung der Smithsonian Institution.

fabrics. Policing "modern human behaviour" might then be misleading to say the least.

We believe that these observations also make clear that a "shamanistic component" is not imperative to explain the thing-human-animal interface in the EUP Aurignacian of Southwestern Germany (since, for example, the broader picture of sociocultural organisation is *not* enforcing the presence of ritual specialists). On the contrary – and as we have argued above – most of the evidence rather favours the "deep sedimentation" of material culture that links to the animal-sphere into every-day practice. Little evidence, for example, speaks to the exclusivity of personal ornament use in special contexts; the archaeological record rather points to the production and use of these objects *alongside* other domestic activities (Wolf 2015). We would therefore suggest increased caution with the use of the label of "shamanism", at least for the Swabian Aurignacian (*contra* Dowson & Porr 2001), and the use of a more neutral term instead – a term that expresses the inherent ontological

relationality of its materiality: *animism* or *perspectivism*. At the same time, however, we are aware that these conclusions are not generally inconsistent with views that stress "shamanistic" aspects of the Aurignacian *Glaubenswelt*, but this is a discussion that lies without the scope of this contribution. We should be cautious, however, about the monocausality that is often implied by the usage of "shamanistic" labels in broader palaeolithic research and with the threat of re-casting these past and alien worldviews as perfectly analogous to that which is documented in recent and subrecent hunter-gatherer societies (compare Porr 2015).

Conclusion

This contribution has examined the role and quality of animal-human interactions in the Late Pleistocene and in the EUP Aurignacian of Southern and Central Germany more specifically. It is argued that the animal-human interface is an often overlooked but critical aspect of how people construct their social world, in particular how they "design" their social relationships, and therefore what they consider socially significant in the first place. Critique on the usually taken-for-granted Cartesian duality between humans and animals – which in fact constitutes a historically exceptional case of re-casting the animal-human relation as a "boundary" – from *Animal-Human Studies* and *Multispecies Ethnographies* leads to the recognition that the interface of animals and humans is highly susceptible to sociocultural and, ultimately, ontological framing. It reflects how people through time and space "dissect" the world, how they classify and categorise what is around them, and, hence, how people catalyse ways of knowing and relating to the world. Western industrialised societies exclude most non-human animals from the social realm – in particular if they are not domesticated and thus "civilised" – revealing the apparent hierarchies and power relations which underlie the construction of animal-human interfaces in recent times. The ascription of value, sentience and significance to non-human animals is hence conceptually bound to the modalities of crafting the animal-human interface, and cannot be simply projected onto past contexts.

We argue that animal-human relationships for highly mobile forager groups that lived in the vast open landscapes of the Late Eurasian Pleistocene mammoth steppe superbiome and encountered large mammals on a regular and almost daily basis have to be considered much more symmetrical – these relationships were generally characterised by a high degree of proximity. Non-human animals are better thought of as *co-inhabitants* and *co-dwellers* in these settings than as "creatures", "lower beings" and the like. Such a "being-in-the-world" then has crucial implications for crafting the animal-human interface at this period and is much closer to what we know from

many hunter-gatherer contexts in which animals are often believed to *share* the world with people, are considered important social “persons” and even play decisive roles in group ontologies and worldviews.

This shift in perspective, then, opens the door for a thorough analysis and re-interpretation of the animal-human interface in EUP Aurignacian times. We argue that the *conditions* under which Late Pleistocene foragers actually engaged and encountered specific non-human animals critically *frame* how these interactions are seen, experienced and conceptualised. Although the physiography and morphology of periglacial landscapes, and the socioecology and ethology of animal co-dwellers, of course, does *not fully determine* a particular set of experiences and beliefs, it nevertheless crucially *constrains the nature of specific animal-human engagements* under these conditions. It is therefore suggested that discussing the ecology and behaviour of specific animals in terms of their impact upon and relevance to human foragers in the mammoth steppe might be a good starting point from which to address these interaction conditions. Subsequently, these eco-behavioural parameters can then be linked to patterns of “handling” animals and relating to them in the archaeological record. Our analysis – proceeding along these lines – indicates that both woolly mammoths (*Mammuthus primigenius*) and cave lions (*Panthera spelaea*) were socially significant animals for EUP Aurignacian people. For both animals, there is a striking *convergence* of eco-behavioural characteristics that suggest a certain – although qualitatively different – “natural significance” for human forager groups living in the same environments and the prominent and peculiar treatment of these animals in the Swabian Aurignacian material record.

The mammoth, by virtue of its size and impressive appearance, is by far one of the most salient features of glacial tundra-steppe landscapes. Mammoth behaviour, at the same time, invokes social resemblance to humans and suggests individuality and personality. Moreover, mammoths have a severe impact on their environments which creates critical affordances that hunter-gatherer groups can “exploit” – these landscapes literally present themselves as “stained in mammoth”. Mammoths and humans, therefore, form a *co-adaptive* interface; their taskscapes are inherently intertwined. This “natural” proximity of man and mammoth is well reflected in the EUP Aurignacian record of Swabia. While there is little evidence for a subsistence-based exploitation of mammoths – potentially indicating *hunting prohibition* – mammoth “raw material” was transformed into various personal ornaments and figurines. The focus on ivory itself, which must have been collected from the wider landscape, but also the fact that ivory beads and pendants were attached directly to the human body, indicates a high degree of social intimacy between humans and mammoths. The centrality of

the mammoth is further evidenced by the fact that it is the most frequently depicted animal in the figurine sample of the Swabian Aurignacian while displaying a notable degree of stylistic variation which testifies to perceived individuality and idiosyncrasies. All these arguments point to the positive, reciprocal and socially significant nature of the mammoth-human relationship in the Swabian Aurignacian. Mammoths, consequently, were likely seen as coevals, probably even as individualised “persons”, and in the Lévi-Straussian sense as “good to think with”. The archaeological evidence also points to the *embeddedness* of mammoth-related activities in every-day practice and demonstrates the intermixing of mammoth material and social organisation in the Aurignacian, indicating the important place of the animal in the worldview of Swabian Jura groups of the time.

The eco-behavioural profile of the cave lion is different and its materialisation in the “visual art” repertoire of the Swabian Aurignacian is different as well. Cave lions were likely solitary and one of the most deadly predators in the Eurasian mammoth steppe. The conditions of lion-human interactions in these settings thus suggest a highly *ambivalent* human predisposition toward lions largely characterised by tension. Lions often invoke positive attitudes due to their impressive appearance, respect-demanding visuality and their behavioural “human-ness” but are, at the same time, regarded as extremely dangerous animals and as “worthy contesters” for human hunters. Arguably then, the cave lion is effectively a *liminal and transitory being* – a reading that is additionally encouraged by the critical decoupling of lion and human taskscapes, humans being “diurnal hunters” and lions being “nocturnal hunters”. This ambivalence of human-lion relationships is directly reflected and in fact materialised in hybrid human-lion representations from the Swabian Aurignacian. The fluidity of the human-lion interface, in this manner, manifests itself in the salient “policing” of the lion-human boundary in the material culture domain. Hence, it seems to be no coincidence that the cave lion is – after the mammoth – the second-most depicted animal in the figurine sample of the Swabian Aurignacian.

Both the similarities and differences in the construction of the animal-human interface during the Aurignacian in Southwestern Germany demonstrate the important but unique place of mammoth and cave lion in the *Glaubenswelt* of these people. Both human-animal relationships also point to the crucial role that “other-than-human” entities played in the worldviews of these Aurignacian groups. This, in turn, indicates that – at least in the Swabian Jura – Aurignacian ontologies were essentially relational and deeply *animistic* and/or *perspectivistic*. It is very likely that these complex, multi-tiered and dynamic animal-human ties, in fact, find *no* recent or historic analogue. They are an irretrievable part of the unique and rich lifestyles of these forager groups from the last ice-age.

It is notable, however, that both mammoth and cave lion are ecologically prominent animals in mammoth steppe landscapes and engage in sets of behaviours that are easily interpreted as human-like, idiosyncratic and thus as demonstrating human-resembling individuality and subjectivity. It is therefore perhaps not surprising that these two "agents" have seemingly occupied a salient position in the worldview of Aurignacian people – be it as "companions" or as "contenders".

Ultimately, we hope that this contribution has effectively demonstrated the productivity of linking specific animal-human interactions with the animal-related material culture archives that refer to them. We believe this is an interesting field of future inquiry that promises deeper and fresh insights into the very fabric of Upper Palaeolithic sociocultural organisation and ontology. It thereby contributes to the growing field of *Animal-Human Studies* by extending its scope far back into the early stages of human evolution.

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