EAZ Ethnographisch-Archaeologische Zeitschrift

Special issue
An Ontological Turn for Archaeology?
Novel Perspectives on Material, Practical, Political and Reflective Engagements
Edited by G. Di Maida and M. Porr

EAZ 59 (2), 2025. DOI: https://doi.org/10.54799/ILVN5142 • CC-BY 4.0
Submitted: 18.09.2024 | Accepted: 30.09.2025 | Published: 19.11.2025

Zoo-Ontologies: Materiality and Visuality in the Multispecies Tangle

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Abstract

This paper probes into the opportunities of the ontological critique for the archaeology of human–animal relationships. I argue that 'ontological' is somewhat of a misnomer for this endeavour, as the aim is not to promote a new 'metaphysical' archaeology but instead to give way to radically empirical – yet conceptually consequential – investigations concerned with uncovering archaeological pasts otherwise. I sketch out the bearing of the ontological critique for our apprehension of key concepts underpinning much archaeological research on human–animal relationships and take some first steps toward 'opening up' the empirical record from entrenched presentist shackles.

I suggest that materiality and visuality offer privileged optics to rethink both the animal and the human, and how they attend to and co-make one another in deep prehistory. I explore several promising avenues of zoontological inquiry, including the impartiality, portability and fluidity of nonhuman bodies and bodily qualities; the nature of animal-oriented tool-making as well as the non-representationalisms of animal visualizations in the European Palaeolithic and Mesolithic. Finally, I point out that a preoccupation with the abstract rather than the literal often leads us astray, and that cultivating our ability to trace and interpret such 'concreteness' may greatly advance animal archaeologies.

Keywords:
ontology, epistemology, multispecies archaeology, human–animal relations, non-representational theory

Situating the ontological critique as radical observation

In March 2017, the Whanganui River on the North Island of New Zealand (Aotearoa) became the first river to officially receive the status of a legal person (Charpleix 2018; Brierley et al. 2019; Kramm 2020). For the Indigenous Te Atihaunui-a-Paparangi Māori, the river – whom they refer to as Te Awa Tupua [*tr.* the supernatural river] – is a living, breathing and expansive entity 'from the mountains to the sea' (Charpleix 2018), integral to their way of being and foundational to their self-understanding and identity. The Andean Mountains have similarly been positioned as troubled 'metapersons' (Gose 2018), and Te Urewera – a mostly forested and sparsely populated rugged hill area in New Zealand that forms a key habitat for most of the country's native forest-bird species – was released from its National Park status in 2014 to recognize its Ngāi Tūhoe Māori status as a living person (Sanders 2018; Coombes 2020). In April 2024, it was reported that Māori and Pacific leaders had further granted legal personhood to whales because of their ecological and cosmological significance to people in the region (Smith/Lewis Boucher 2024), and heated discussions on animal sentience and

consciousness – reignited by the *New York Declaration on Animal Consciousness* (Andrews et al. 2024) – are likewise taken to have implications for the expansion of personhood to at least some candidate nonhumans (Corbey/Lanjouw 2013; Korsgaard 2016).

The issues raised by these cases touch upon ontological questions[1] – i.e., how to organize, define and delineate what is said to make up 'nature,' and what can be claimed to exist, live, possess agency or be endowed with subjectivity and personhood. They also strike at the heart of the humanities, as what is at stake here is the confident extension of key qualities, capabilities and status descriptors long regarded as setting humans apart from other entities and phenomena in the world, including nonhuman animals.

These issues are both controversial and political – not only because they tend to assume that the antidote lies in the mere levelling of humanist[2] categories across the human–nonhuman divide (see especially Wolfe 2003), but also because they challenge and complicate notably Western[3] apprehensions of reality and are deeply embedded in ongoing power struggles over the kind of worlds we wish to inhabit, foster and promulgate (Goldman et al. 2011; Blaser 2013; Cadena/Blaser 2018). Indigenous positionalities are increasingly drawn upon to encourage and support nature protection and biodiversity conservation initiatives. However, such framings have not only generated enthusiasm, acclaim and celebration; many Indigenous peoples do not neatly distinguish between 'nature' and 'culture' (e.g., Salmón 2000; Descola 2005; TallBear 2011; Todd 2014; Country et al. 2015; TallBear/Willey 2019; Kimmerer 2021), and these framings should therefore not be instrumentalized to re-inscribe the very logics responsible for the planetary polycrisis we face today. As part of a poignant critique of the now-common tendency to subsume efforts to promote Indigenous sovereignty within the rationalities and logics of the state (Nadasdy 2017), Paul Nadasdy (2016) has argued that notions of citizenship cannot be neatly transferred between northern First Nations and the Canadian state – especially in relation to the idea of 'animal citizenship,' as influentially advanced by Sue Donaldson and Will Kymlicka (2013). Such equalization shoehorns the specificity of Indigenous practices and knowledges, reformulating – and thus misappropriating – their ways of life within the normative coordinates of Western liberalism.

The inversion of such tropes – as advocated, for example, by Andreas Weber's (2018) concept of *Indigenialität* [*tr.* Indigenius], which pleads for the rediscovery of the 'savage in us' to cultivate much-needed 'arts of ecological life' – is equally problematic. These examples showcase the omnipresence of what has been referred to as the 'ontopolitics' of contemporary discourses on the Anthropocene, our own future and the future of the planet (Chandler 2018). They illustrate the challenge of engaging the ontological: to take ontologies seriously and to work with them requires more than merely inverting the Western metaphysical relationship between ontology and epistemology. It demands that we unclasp both as products of situated world engagement and recognize them as humanist registers of theory that advance ideas such as 'citizenship' or 'agency' (Wolfe 2003).

1 Recapitulating the state of the art in debates about ontology in archaeology and anthropology is beyond the scope of this paper, but relevant references are highlighted where necessary. Useful overviews of current debates on ontological matters of concern in both disciplines can be found, for example, in Henare et al. 2007; Kohn 2015; Alberti 2016; Harris/Cipolla 2017; Heywood 2017; Ribeiro 2018. Anna Tsing (2018) offers a valuable discussion of the relationship between the widely proclaimed ontological turn and animal studies. The archaeological literature is particularly diverse, and Robert W. Preucel (2021) distinguishes at least three main approaches: symmetrical archaeology, assemblage thinking and relational archaeologies.

2 Humanism is understood here as a historically derived tradition of thinking, largely originating in Europe, that centres on humans – particularly the idea of the *Anthropos* [*tr.* human being, mankind] – and fixates on specific characteristics, such as rationality, language and morality, elevating the associated being above other forms of existence (see especially Wolfe 2003 and Salzani 2017, for foundational discussions; cf. Hussain 2025a, for animal archaeologies).

3 The notion of the 'West' or 'Western' is used not in an ontological sense here but as an empirical descriptor of a specific historical formation of action and thought and a category of self-identification, cultural identity and demarcation. What the West *is* remains contested and is subject to constant (re)negotiation, and some have argued that it is precisely this vagueness from which the idea draws its appeal and political potency. Edward W. Said (1978) famously showed how ideas about Westernness created the foil for the 'Orient,' and there is a rich literature on the relationship between the idea of the West and the social and political projects of modernity (Appadurai 2010), often linked to landmark developments in Europe, such as the accelerating scientification of life since the 17th century (Hasse 2021), the rise of capitalism as 'second nature' (Moore 2016a) and the polarization of the world in colonizers and colonized in the age of imperialism and colonialism, creating the 'West' as a powerful historical category within the world system of the 18th, 19th, 20th and early 21st centuries (see Wallerstein 1992). Following Marshall Sahlins (2022), and to some extent Jan Assmann (2015; 2018), Western configurations of thought and action are rooted in the Axial Age and exemplify a particular strand of being within 'cultures of transcendence.' The point is that the West can be mapped onto various coordinates of recent history, including the Cold War period, but it cannot be reduced to any of them; this is because, importantly, the West is, above all, an imaginary: it is based on an 'imagined community' (Anderson 2016), and it rests on particular visions of one's place in history and one's relationship to the past (cf. Geroulanos 2024). The West, as understood here, stands, above all, for a situated lens, through which a particular group of people has come to look at, interact with and appropriate the world (both materially and intellectually). It is the scaffold for what has been termed the 'coloniality of knowledge' (e.g., Shepherd 2020), and has thus naturalized – and so removed from critical scrutiny – what has been identified as the 'Western gaze' (e.g., Bhabha 2004; Fanon 2008). This does not imply, of course, that the category of the West is necessarily useful for negotiating a better, more inclusive, diverse, just and cosmopolitan future – and many have argued that it is probably not (illustrated by the ongoing genocide in Gaza in front of the world's eyes: see, e.g., Segal 2025). This is because theorizing the West, I argue, draws our attention to worlds otherwise.

To clarify this contestation, we thus need to return to some basic ideas of Western humanism. Tylorian anthropology sought to explain cultural diversity by proposing that peoples' worldviews reflect their attempts – often unsuccessful – to make sense of and properly explain the world, particularly phenomena that initially seemed to elude human understanding. For Edward B. Tylor (1871), 'religion,' in the broadest sense, was therefore a quality of 'primitive' culture, eventually to be superseded by rational science. Tylor's 'animism' sought to account for the simplest – and thus most 'primitive' – form that this could take: the anthropomorphizing of other beings, such as animals, plants and even stones, through the attribution of a 'spirit' or 'soul' to them. His fellow anthropologists continued to belabour this basic problem of the development of human society, and other concepts, such as 'magic' (e.g., Douglas 1992), were developed to specify the inferior ways in which non-Western people tried to temper with the world (cf. Bird-David 1999; see, e.g., Heywood 2017, for a discussion).

In this rendering of anthropological difference, cultural diversity was a mere *surface difference* – fundamentally a matter of how humans come to *know* the world, rather than of how the world truly *is*. This view thus recapitulated the orthodox understanding of the relationship between ontology and epistemology: all humans inhabit the same world, composed of the same stuff (ontology, or what there is) but come to know it in different ways (epistemology, or how we attain knowledge). This core tenet was not only taken to imply that the human sciences have little to say about ontology – as they can only study how humans see the world and render it meaningful – it was also codified in the analytical distinction of 'emic' *versus* 'etic' (Headland et al. 1990), initially developed in linguistics (Pike 1967) and then widely referenced in anthropology and archaeology (Harris 1976; Boissinot 2015). Only an etic perspective, in this view, can aspire to lay hands on the ontology of the world; emic accounts – the primary domain of much social and cultural anthropology – are dislodged from ontic claims (see, paradigmatically, e.g., Geertz 1973; 1984; see Kohn 2015, for a critique). Anthropology's discomfort with this interpretation of the relationship between ontology and epistemology is clearly reflected in recent attempts to move beyond what may be called 'one-world anthropology' to a dedicated anthropology of many worlds (e.g., Alberti/Marshall 2009; Alberti et al. 2011; Cadena/Blaser 2018), pivoted as a rich and possibly unexhaustive 'pluriverse' of variegated ways of being and becoming human (Blaser 2013).[4] Such proposals undercut the idea of ontological monism that is deeply entrenched in Western thought.

The burden of this tension between ontology and epistemology weighs heavily on the politics of difference, shaping how we make sense – and position – the situatedness and incongruence of human life across space and time. In response, some have suggested reframing the very problem of humanity in order to forefront the 'common ground' of being human – those shared commonalities that define us as planetary beings – rather than emphasizing the situated and the local in light of the global (Antweiler 2016). Such work is important as it shields against some of the risks of overstating anthropological otherness and disconnectedness, yet it also risks abetting the resurgence of universalist reasoning and naïve reinvigorations of the *Anthropos* (the generic 'Adamian human,' as conjured in ancient Greek philosophical thinking: e.g., Wirth 2022), which much recent work in the humanities has sought to overthrow (Chakrabarty 2009; Haraway 2016; Bajohr 2020).

Without buying into some of the problematic assumptions here, human life – as many other forms of life – can be defined as *unified in its diversity*. The qualification of commonalities and differences becomes, then, two sides of the same problem, but none of the two can be cannibalized by, or subsumed under, the other. This also means that, importantly, the problematic of the Anthropocene does not do away with questions of diversity; to the contrary, it showcases that human Earth system agency throws human differences, inequalities and discordances into sharp relief. The Anthropocene is the product of the actions and aspirations of a relative few, and its evolution is, in fact, deepening all sorts of intra-human differences while producing a whole barrage of novel disunities (e.g., Haraway 2015; Moore 2016b; Stöcker 2024; Mbembe 2025). Grappling with its many crises vividly showcases that sustainable 'solutions' will require affirmation of, and engagement with, *human difference* more than ever – to paraphrase Stuart Hall (1993), acknowledging and negotiating difference, as well as generatively living *with* and *across* difference, presents one of the overriding challenges of our time (Haraway 2016; Fincher et al. 2020).

The ontological critique must be placed into this wider context, contending that difference requires careful re-theorization, because framing cultural diversity as mere surface difference misconstrues the problem and carries

4 Nadasdy (2021) points out some of the issues, pitfalls and conceptual difficulties inherent in the 'multiple-worlds thesis,' arguing that rather than focusing on multiple irreconcilable worlds, theoretical attention should instead be directed toward the indeterminacy of the world and the anti-colonial politics associated with it.

potentially dangerous implications. Difference is pervasive and a fundamental category of existence, so that questions of what there is cannot be separated from how we act in and come to know the world. It is not enough, therefore, to say that culture is variable while nature is not, as this simply embanks, and therefore reinforces, the politics of difference rather than allowing for productive interrogations of what difference *is* and how it is *produced* across varied contexts.

As Eduardo Viveiros de Castro (1998; 2015) has lucidly argued, Amerindian Indigenous realities are based on the recognition that bodies are changeable, mutable and varied, while mentalities are essentially of a similar kind and thus transcend bodily differences. This inverts the logic of Western polarities of mind *versus* body and nature *versus* culture: humans and animals share culture but not biology; culture is universal, biology is not. Natures are multiple and varied in this optic, while culture is a commonality. The world is inhabited by different kinds of beings who make sense of reality from distinct corporeal vantage points; animals also see themselves as 'humans' with 'societies' and 'material cultures' as part of their manifest form (externalities), and humans are seen as 'animals' (cf. Descola 2005; 2021; Viveiros de Castro 2015; see Hill 2019 and Laguens 2024, for archaeological implications and applications). Stones can equally become persons, as people and stones interact in varied but often potent ways (Weedman Arthur 2017), and human 'personhood' frequently turns out to be relational (Fowler 2004; Harrison-Buck/Hendon 2018) or 'extended,' challenging notions of self-containedness, discreteness and boundedness, as well as the universal correspondence of personhood and bodily identity.

González-Ruibal and colleagues (2011), for example, have shown that the production and use of arrowheads is inextricably woven into how the Awá of the Brazilian Amazon construct and negotiate particular male selves, complicating the interpretation of such artefacts as either utilitarian/functional or symbolic – not to mention the assumed exhaustiveness of the explanatory space problematically framed in this way. In reality, the functional–symbolic binary represents yet another interpretation of inherited – but situated – ontology–epistemology hierarchies: 'functional' is understood as that which elicits causal effects through the ontological fabric of the world, thereby revealing its structure, whereas 'symbolic' registers the processes of meaning-making that shape how people know and imagine the world. Within this logic, there can be only one ontology of the world, cast as human-independent, and this world is taken as fundamentally given – although it may not be fully accessible to human knowledge, it can, in principle, be discovered and instrumentalized. Ontology–epistemology relationships are understood as *correspondence*, and there can thus only be one 'correct' or 'effective' – in terms of control and manipulation – way of mapping them.

Foregrounding ontological matters is, therefore, in part a response to the long-standing humanist tendency to regard culture primarily as an epistemic artefact – an expression of how we think about the world and cloak it in signs and symbols – rather than as a powerful source and driver of world-making itself. Received wisdom in most Western academic traditions, in other words, is based on the presupposition that epistemological pluralism meets ontological monism, without considering the dynamic relationship between epistemological and ontological registers of being in the world. Taking this dynamic relationship seriously entails a dedicated departure from thinking about knowledge as a mere *representation* of the world, resonating with broader tendencies to align the ontological critique with post-representational theories (Gell 1998; Thrift 2008; cf. Jones 2017; 2021; Eriksen 2022, for archaeology); knowledge, then, is to be understood not as an 'imprint' of some independent externalities but as a *consequence* of particular ways of being-in, engaging with and making worlds, to be pluralized not in isolation but in tandem with human actions, aspirations and wider projects of life. The world is not merely acted upon but *enacted*, and is thus inseparable from those who make and sustain it ('(multispecies) worlding': e.g., Anderson/Harrison 2016; Lorimer 2025).

Such worlds are precisely the intersection of ontology and epistemology, as they emerge from performative actions and processes and their spatiotemporal unfoldings. The implication is that ontology is not a given and simply 'out there' to collect or discover, as presumed by classical Western metaphysics, but constitutes yet another 'locus of difference.' To wit, the insistence that ontology is more fundamental than – or even foundational to – epistemology, with its implications for what is considered more variable than the other, merely reveals a specific meta-ontology: an ontology of ontology–epistemology relations. The ontological critique belabours precisely those efforts which close off such variability, seeking to 'open up' both ontology and epistemology from their conceptual shackles (Heywood 2017).

The recent upsurge of debates on ontology in anthropology and archaeology, I would argue, is therefore paradoxically much less about ontology itself than it initially

suggests. Artur Ribeiro (2019) has rightly warned about the risks of naturalizing and thereby reifying ontological debates to promote and justify new forms of 'metaphysical dogma,' and although this risk is to be taken seriously, it misrepresents the motivations and goals of the ontological turn.

To engage with ontology is not so much about pinpointing and developing an ontology which better captures the 'nature of things,' as such logic would merely re-inscribe what the ontological critique set out to dismantle. Rather, to engage with ontology is to challenge the notion that difference is merely a surface phenomenon and to advance novel ways of charting the depths of difference as a fundamental and pervasive quality of past human life (ontology is not merely a postmodern placeholder for culture: see, e.g., Alberti 2016). The goal, instead, is to expedite ontology for *empirical* analysis – for example, by investigating how humans and nonhumans have mutually enacted one another in the past, how such interactions shaped and fostered specific ontological registers of being and becoming, and how traditional archaeological interpretive schemes informed by ontological monism, such as the functional–symbolic binary, often prove inadequate or, at the very least, limit our understanding of the human past.

The ontological critique, in other words, aims to foster the very possibility that things in the past were *otherwise* and to subject ourselves and whatever we archaeologically study to such critical scrutiny of this 'Other.' The impetus is to overcome the long-standing tendency to render human–world relations in the *abstract* rather than to take them seriously – and hence *literally* – while avoiding the implicit impositions and judgments that arise from the categories we rely on to describe and make sense of such relations. The talk of 'opening up' ontology for empirical analysis (see, e.g., Alberti/Marshall 2009; Alberti 2014; 2016; Heywood 2017) is, accordingly, no empty talk. It means becoming aware of the tyranny of our own ontological framings and treating as an empirical question which ontological registers are at play in any given situation or broader historical context. It compels us to recognize ontology as a *derived* category of human life rather than something carved out *a priori*. Ontologies, in this view, emerge as *downstream consequences* of how people interact with – and thereby enact their worlds – what practices they employ, what other entities they engage with, and what generally matters for the successful conduct of these lives.

Fundamentally, then, fanning out an 'ontological lens' to the past must avoid containing this past within our own ontological positionalities and should thus be less concerned with the questions it answers than with those it raises. In contrast to what Ribeiro (2019) seems to suggest, ontological debates in archaeology are thus precisely concerned with a re-perspectivation of the empirical record itself; they cannot be qualified as dispensing with this record or as advocating some sort of independent 'reality' or its 'representation.' The ontological lens is, therefore, not about 'speculation'; it seeks to proffer new means to 'let the data speak' against the limitations imposed by our disciplined modes of categorization, methodological procedure and interpretation.

Ironically, the ontological critique, in this manner, unleashes an empiricism that is *more radical* than even positivism could have imagined – an empiricism that liberates the ontological and thereby strengthens observation itself, rather than allowing it to be tamed, enfeebled and domesticated by whatever can count as an acceptable lens. Benjamin Alberti (2023, 253) has described this as the tendency to 'overdetermine' the past and its objects by our long-rehearsed ways of looking at, ordering and explicating them, and the resulting need to promote 'arts of noticing' in order to 'reveal the material consequences of concepts that show up precisely because they are not ours.' Þóra Pétursdóttir (2017) has similarly warned of the domestication of possibilities through overly disciplined routines of taking up, handling and making sense of archaeological materials, which often curtail their capacity to reveal difference.

In the remainder of this paper, I draw and build on this understanding of ontology to counter some creeping misunderstandings of the concept in the archaeological literature and to explore some of its consequences for the study of past human–animal relationships. I suggest that multispecies archaeologies can greatly benefit from the kind of onto-epistemological opening sketched in the previous paragraphs. Multispecies archaeologies have been developed in particular to overcome the Cartesian bind of dualisms and assumptions regarding the animal specifically, and human–animal relationalities more generally (e.g., Hamilakis/Overton 2013; Overton 2016; Boyd 2017; Armstrong Oma 2018a; Hill 2021; Chazin 2024; Hussain/Brusgaard 2024; Whitridge/Hill 2024; Mannermaa 2025). These archaeologies have repositioned the question of the animal and animal alterity within much broader questions of difference and diversity (see especially Hussain 2024a; 2025a; forthcoming a; forthcoming b). As such, it may be argued that the 'animal turn' (Ritvo 2007; Cederholm et al. 2014) and its archaeological articulations bring ontological issues into sharp relief (see, e.g., Boyd 2017), as traditional categories – such as 'natural' and 'wild' – along with

various functional typologies for discussing, examining and qualifying human–animal relationships are increasingly critiqued as hampering understanding rather than advancing it (see, e.g., Baker et al. 2024; Hussain 2024b; Lynch/Kelty 2025). What an animal *is* has become almost as contested as what *kind of relationships* to pay attention to (Hussain 2025a). Most importantly, scholars increasingly realize that human–animal relationships cannot be adequately studied through a static analytical grid, as they inscribe into and enact multispecies worlds comprising situated humans and nonhumans and supporting diverse and sometimes unique forms of interaction (cf. Norton 2024). Neither supposedly innocent faunal remains nor animal-related material culture can any longer be assumed to be sufficiently understood as mere representations of the functional or symbolic domain. These categories are contested themselves and they often curtail rather than enable insight into the diversity of past human–animal engagements – a circumstance perhaps especially evident in scholarship on past animal-related visual worlds.

I attend to these critical issues and argue that zoo-ontology[5] should be placed at the centre of theory-building, debate and data analysis in animal archaeologies. I explore this 'zoo-ontological' bearing through two interpretive optics: (i) materiality and (ii) visuality. This initial exploration speaks to general concerns and issues in the field but focuses in particular on debates and preoccupations in deep-time archaeology, primarily drawing on empirical material from diverse Pleistocene and Holocene hunter-gatherer pasts and the human–animal constellations they fostered (see Warren 2021, for the notion of hunter-gatherer archaeology). I suggest that taking the ontological critique seriously can considerably strengthen the core of the empirical project in animal archaeologies, opening new research avenues and possibilities for critical reflection and theorization, thereby alleviating the burden of received presuppositions and propelling such archaeologies far beyond what has been termed 'social zooarchaeology' (Russell 2012; Marciniak 2020; Chazin 2025). A zoo-ontological lens, as I hope to show, promotes evidential proximity and reinvigorates observation itself – strengthening the voice of the archaeological record – while bringing into view multispecies worlds that differ greatly from our own, challenging the many presentisms and anachronisms that have long plagued the archaeology of human–animal relations. This onto-archaeology, I argue, draws critical attention to the concreteness of lived human–animal relationships, rather than fixating on how we abstract them – an animal archaeology that seeks to unearth non-analogue and potentially fundamentally alien modes and logics of human–animal engagement, without continuously falling back into, and thereby naturalizing, the ontological registers of what the late Marshall Sahlins (2022) termed post-Axial 'cultures of transcendence.'

Zoo-ontologies and multispecies archaeology

In a paper ahead of its time, Chantal Conneller (2004) suggested that prehistoric bodies are not what they appear to be in the gaze of Carl Linnaeus, Charles Darwin or Ernst Haeckel. Despite referencing the term 'ontological' only once, she argues that the treatment of human and animal bodies at Early Mesolithic Star Carr contradicts modern ideas of bodily boundedness, impartiality and immutability, elucidating the 'way in which the human body is conceived' and the 'types of body produced from the taking on of objects made from animal remains' (Conneller 2004, 37). Drawing on the rich evidence from Star Carr, Conneller (2004) gestures toward corporeal otherness – not just in terms of how past people *perceived* bodies, but in how they *enacted themselves* as corporeal beings and *engaged with* other embodied entities, thereby shaping their situated yet entangled ways of being and becoming (see also Conneller 2011). 'Becoming deer' swirls up received ontological certainties of what a body is, what bodies enable and effectuate, how they interrelate, and why particular bodies matter – and others, perhaps, not so much (Conneller 2004). In other words, how human and nonhuman bodies are treated, brought into dialogue, manipulated, transformed, repositioned, staged, framed and addressed can be highly informative of multispecies world-making (or 'worlding') – that is, the material–semiotic co-shaping of the shared context of human and nonhuman life in specific times and places (Westerlaken 2020; cf. Fredengren 2021; 2022). Importantly, Conneller's (2004) exploration of red deer antler frontlets in the British Early Mesolithic also unmasks established scientific worldings and thereby reveals how implicit research ontologies more often than not hamstring archaeological evidence. Since Grahame Clark's (1954, 170) publication, the deer frontlets are discussed as headgear, either understood as functional hunt-

5 I am not the first one to invoke this term in archaeology, of course, but even in Brian Boyd's (2017) recent call for a post-anthropocentric human–animal archaeology, the notion plays only a minor role and remains relatively underdeveloped. This stands in notable contrast to the attention that the idea of 'zoontology' has received in cultural studies (see especially Wolfe 2003 and contributions therein).

ing aids or ritual remedies. Conneller (2004, 37) notes that Clark 'appeared to have covered all possibilities' and rightly highlights that the thrust of the problem resides in its categorical 'intransigence.' Yet, as she lucidly exposes herself, this interpretive 'impasse' is foremostly rooted in the conceptual framing brought to bear on the antler frontlets, notably the idea that as 'masks,' they are meant to disguise rather than, for example, reveal (Conneller 2004, 42).

The Star Carr antler frontlets are a perfect example of how our own commitments to how the world supposedly 'is' – and how it can thus be manipulated, not to mention the idea that manipulating and controlling the world are 'natural' aspirations – can interfere with the possibilities afforded by the archaeological record. There are, in reality, far more than Clark's two possibilities, and this is not just a problem of so-called 'unconceived alternatives' (Stanford 2006), but of how we have metaphysically positioned and partitioned ontology and epistemology – so that ontology appears necessarily singular and shared, while epistemology is seen as divisive, embedded in and non-shared among different human cultures, past and present. Material culture either 'responds to' and thus harnesses the supposedly shared ontological structure of the world (functional explanation), it reveals particular 'world-views' or 'ways of seeing' this world (symbolic/cosmological explanation – see especially Barkai 2021, for this use of ontology); or it shows a combination of the two. Expanding on Viveiros de Castro's (1998; 2015) critique of the logic of Western nature–culture binaries, ontology–epistemology relations may similarly be inverted, could be otherwise and remain logically linked to Cartesian nature–culture construals.

The long-standing critique of 'economic' approaches to human–animal relations, at the heart of recent developments in multispecies archaeology, speaks to similar issues (e.g., Hamilakis/Overton 2013; Hill 2013; Overton 2016; Boyd 2017): these approaches prioritize and thereby tend to normalize particular ontological registers and the assumptions that come with the study of particular places, times, peoples or lifestyles. The 'economic' view, for example, is frequently tied to capitalist notions of economy as 'second nature' (see, e.g., Cassegård 2021) and ideas of an 'economy of nature' (Hussain forthcoming b), with complicated but consequential imports for the relationship between nature, culture, ontology and epistemology – concepts we tend to group in neat pairings: ontology–nature *versus* epistemology–culture. The fact that animals are often grouped within the ontology–nature cluster is symptomatic and important, as such placement encourages the idea that they, above all, represent 'resources' for human societies to thrive (see Overton 2016; Hill 2021; Hussain/Brusgaard 2024; Mannermaa 2025, for similar critiques). As such, animals are 'effective' and 'useful' because of what they *invariantly are* (ontologically): bundles of energy, calories and specific raw materials (e.g., bone, horn, skin and sinew). Yet, positioning animals as abstracted quantities rather than in terms of their life-qualities and as embodied, material and agentive beings merely reveals the dominant (implicit) zoo-ontology of archaeological research. Simply *adding* 'social' and 'cultural' dimensions to the past significance of animals, as proposed by advocates of social zooarchaeology (Russell 2012; Marciniak 2020) and ethnozooarchaeology (Albarella/Trentacoste 2011; Broderick 2016), tends to reinforce this general problem rather than offer promising ways out of a serious ontological impasse. This is because, importantly, none of the involved concepts (economy, resource, sociality, culture, etc.) is neutral, and all of them pre-cast the material record in particular ways, opening specific possibilities of insight, while closing off others. The way 'economic questions' are conceptualized and posed in much of traditional zooarchaeology, and in particular in its deep-time branches, provides a telling example. Already in their influential 'Manifesto for a Social Zooarchaeology,' Yannis Hamilakis and Nick J. Overton (2013, 117) note that much archaeological discussion on the target 'economy' does not actually address the issues they aim to interrogate under this rubric:

> *(M)uch of the discussion to date has been in fact not on the economy – that is, on relationships of entitlement, access and inequality – but on economizing – that is, on formalist and rather mechanist allocation and management of narrowly defined 'resources', an approach which obscures the socially embedded and corporeally embodied nature of the economy. […] (E)ven in contexts where humans have treated animals as 'resources' to be exploited, such a relationship cannot be disentangled from the effect of the bodily, sensuous, and often emotive encounters between humans and other species, and the agentic power of each species to shape the other species' life and world: as living bodies, and as body substances and parts which are incorporated through eating; hoarded, valued and preserved as mnemonic remnants; or transformed into circulating, powerful objects, be they bone tools, trophies or animal masks.*

I suggest this is largely because the history of zooarchaeology – especially what is today considered 'normal science' in the field (*sensu* Kuhn [1962] 2020) – was shaped by powerful processualist ideas and concerns, often framed from the perspective of a general theory of human behaviour (e.g., O'Connell 1995; Rowley-Conwy et al. 2017). While traditionally emphasizing the development of its broader knowledge-making apparatus (e.g., Gifford-Gonzalez 2018), this approach has shown little awareness that its regulative ideas – including those guiding method development – rest on particular ontological commitments regarding humans, animals, the worlds they inhabited and the phenomena in which they participated – many of which are now critically re-assessed. Zooarchaeology is thus an illuminating example of the structural role science can play in fortifying particular zoo-ontologies, while marginalizing – or even excluding – others. Drawing on Cary Wolfe's (2003) textbook dissection of modernist zoo-ontologies, archaeological apprehensions of 'economy,' 'technology,' 'sociality' and 'culture' can thus be said to rest on an ontological matrix in which 'humans' and 'animals' are always separate and axiomatic. This framework inherently exclude one from the other, greatly limiting what we can notice and know about their gatherings, let alone about multispecies worlds organized according to alternative categorical logics and principles.

Even so, and despite the clear influence of ontological debates on recent developments in multispecies archaeology (Hill 2011; Boyd 2017; Harris/Cipolla 2017; Armstrong Oma 2018b; 2021; Živaljević 2021), the concern with ontology remains generic and archaeologists rarely speak of or explicitly engage with 'zoo-ontology' (Boyd 2017, 307–309; Hill 2021). This situation likely has to do with two overarching preoccupations in much of current ontology-informed animal archaeologies:

1. The 'ontological lens' is deployed primarily as a critical manoeuvre to expose Western Cartesian research frameworks and their conceptual and interpretive limitations for the study of past multispecies relationships (e.g., Armstrong Oma 2018a; Chazin 2024; Mannermaa 2025);
2. 'Ontology' is still widely regarded and used, above all, as a basic matrix to organize and supply input categories of observation and interpretation, rather than as an empirical variable itself (e.g., Kveiborg et al. 2020; McNiven 2022; Mansrud 2023).

The former has prompted numerous calls to abandon Western dichotomous thinking altogether – which is likely delusional at best – and has encouraged many to turn emphatically to Indigenous perspectives and ontologies as sources for alternative approaches to interrogating the archaeological past (e.g., Herva 2009; Laguens 2024). Although this 'Indigenization' of the past can be productive, it also risks reifying Indigenous perspectives, homogenizing past difference and denying certain forms of past otherness – the so-called 'we have always been like this' syndrome of primordialism. Invoking Indigenous ontologies bears similar problems as invoking ethnographic analogies (Alberti 2016 speaks of the 'authorized return of the grand ethnographic analogy in archaeology'): specific ontologies need to be selected from a wide pool of existing and possible ontologies, and scholars are, in most cases, also forced to work with specific *representations* of these ontologies, which may be contested, variously interest-laden and/or distorted themselves. Viveiros de Castro's (1998) account of Amerindian perspectivism is a prime example of this challenge, as the author does not dismiss the nature–culture polarity but rather argues that 'nature' and 'culture' are differentially linked to each other and other key concepts, thus unveiling a world-making logic substantially deviating from default Western reality-making. Furthermore, his account (Viveiros de Castro 1998; 2015) represents a specific interpretation of the ethnographic observations referred to – it is a specific 'worlding' of this evidence itself. In this broader rendering of the problem of ontology, Ribeiro's (2019) critique does thus not fail its mark. Brokering of ontologies as such – as ready-made devices of research – and attempting to assess their *a priori* appropriateness threatens to simply shift the debate on inferior/superior (research) perspectives from the epistemological to the ontological level.

Therefore, archaeologists cannot simply substitute their previously assumed scientific epistemology with a specific ontological lens – whether perspectivism, animism or another – just because it is currently *en vogue* [*tr*. in fashion], routinely deployed by other archaeologists (paragon bias), or because the deep past is imagined as 'animist' (period bias easily reinforced by, e.g., influential shamanist stereotypes: cf. Clottes et al. 1998). In other words, the 'epistemologization' of ontology cannot resolve the problems that the ontological critique set out to address; to the contrary, in many cases, new problems of the same kind will be reintroduced. Yet discussions of 'flat ontologies' (Harris/Cipolla 2017, Chapter 9), 'relational

ontologies' (Herva 2009), 'sociocentric ontologies' (Mansrud 2023) or 'kin-centric ontologies' (McNiven 2022) as well as of 'animism' or 'perspectivism' as specific research frameworks or as distinct approaches (Mansrud/Berg-Hansen 2021; Mansrud 2023), are symptomatic of these understandings, in practice often reinforcing other ontology–epistemology hierarchies rather than opening them up.

We may argue that as long as these perspectives are cultivated in the plural, contrasted and critiqued, and as long as they develop no hegemonic claims on archaeological pasts, they can help illuminate previously overlooked aspects or uncover otherwise disclosed otherness and difference. And this is certainly a reasonable position to take, but we must also be vigilant that we do not, on the way, confuse the 'ontologies' we mobilize to enact our scholarship with those we seek to *reveal* through sustained archaeological investigation and conceptual work. This confusion, I suggest, is often at play when archaeologists engaging with such issues become 'metaphysical archaeologists,' in the way Alberti (2016) describes them, wittingly or not introducing 'alternative metaphysical orthodoxy' into the discipline. All of this is somewhat ironic, as ontological archaeologies were originally devised to combat all forms of orthodoxy – precisely to make space for alterity and difference. The critique of 'interpretation,' ushered in by early proponents of ontological archaeologies, was for instance squarely targeted at the conventional idea that meaning and significance are exclusively human provinces and epitomize *arbitrary* affairs (Alberti et al. 2013). Acceptance of the plurality of interpretation was hence typically premised on – and so purchased at the expense of – the singularity of ontology. The critique of interpretive archaeologies now needs to be reformulated as pointing to the *inseparability* of description and interpretation in the wake of co-pluralities – the plurality of epistemology–ontology arrangements and relations, as well as the plurality of 'concepts of concepts' (Brandom 2001). All of this harkens back to the insistence of critical scholars such as Bruno Latour (2018), who argue that no description can hope to be neutral or non-political – every description is ontologically infused – and that we must actively practice and cultivate the *capacity to describe* from a standpoint of difference (Muecke 2024; Muecke et al. 2025).

Interpretation, therefore, is not merely disposable. It must be re-activated in the service of the ontological critique, functioning as part of the antidote to the continual closure of onto-epistemological registers for knowing the past. But this also means that the traditional role of interpretation is changed: interpretation is no longer about reaching out to the arbitrary (which may reasonably be dubbed 'speculation') but is fundamentally concerned with the *nexus of doing, knowing and being*: how worlds take shape through the tangled practices of particular agents, in turn enacting specific realities affording specific ways of seeing, knowing and engaging. Material and visual traces register the organization and logic of these worlds but also take part in their enactment, curation and reproduction. Bodies, artefacts and images are 'worlded' – that is, shaped by their worlds – but they coevally shape and thereby assemble these worlds (Eitler 2014). We can then productively ask what the specific ecologies of observed visual and material traces are, and what kinds of ontological registers they premise, actualize and afford. This is by and large an empirical question, but one that cannot be addressed without *ontological literacy*. This literacy is not reducible to the taking on of particular ontological positionalities; it indeed clashes with such an inclination and instead demands sensibility for the kinds of ontological difference we may encounter in varying contexts, demanding familiarity with broader ontological debates, positions, conflicts and the anthropology of difference. There is no easy way out of this and no reduction to singularity; taking ontology seriously is extremely difficult and challenging – it is antithetical to the rhetorics of simplicity.

With this understanding of the archaeological record as both a product and a context of negotiating specific ways of doing, knowing and being – where material objects and visual renditions play an active and conducive role – we can now productively turn to some opportunities for engaging with the ontology of past animals and human–animal relations – what I collectively refer to as 'zoo-ontology' here (*sensu* Wolfe 2003). Although zoo-ontology is always in plural, much of this space of plurality remains unknown for the past and deep past, as the ontological categories we currently employ were developed from contemporary or, at least, ethnohistorical source materials (see especially Descola 2005; 2021). With this in mind, it seems indispensable to return to the archaeological record and its capacity to resist and escape our own ontological registers (Hussain 2025b). As a starting point, I will explore the ontological bearings of archaeological patterns in which other animal materialities are non-arbitrarily referenced or incorporated, with a particular eye for discussions in Palaeolithic and Mesolithic archaeology, and then extend this approach to what has been termed 'Palaeolithic visual culture' (Nowell 2017). My goal is to sketch a larger

research endeavour fuelled by the ontological critique, capable of advancing the aims of deep-time animal archaeologies, and to show that a more courageous, literal reading of observable human–animal entanglements can help break long-standing ontological impositions, bringing into view previously clouded logics of human–animal engagement and their associated material patterns.

From materialities to zoomaterialities: The nexus of animal bodies

The materiality of nonhuman animals is a pervasive component and integral feature of the archaeological record (Hussain 2024a). We can collectively refer to this corpus of animal material traces as 'zoomateriality' – material culture made from animal bodies, body-parts and other animal-derived products. Archaeological zoomaterialities are extremely diverse and exhibit both small-scale and large-scale spatiotemporal patterning, evading simple logics of availability, suitability and Cartesian usefulness ('utility,' tied to specific notions of causality and mechanical action, as derived from the so-called 'effective' categories of mechanistic thought, cf. Pepper 1972, Chapter IX). And yet, there is widespread belief in the field that organic tools sourced and made from animal bodies somehow respond to the raw material requirements of such tool-making (e.g., Knecht 1997a; Choyke/O'Connor 2013; Hutson et al. 2018). Body parts were selected, in other words, because of their conformity with key (and likely aspired) tooling parameters, such as workability, shape, size, durability, sturdiness and compactness (e.g., Iovita/Sano 2016; Langley 2016; Wild et al. 2022). Although experimental research confirms a nonarbitrary linkage between some of these material dimensions of faunal remains and their human treatment in the archaeological record (e.g., Pfeifer et al. 2019, for ivory properties), the extent to which the hypothesized key parameters can predict the details of observed tool-related engagements with animal bodies remains to be explored, and is likely to hold considerable surprises to archaeological researchers.

Part of the problem is how animal-sourced tooling is commonly conceptualized. People are typically said to select their organic raw materials – such as bone, antler, horn or ivory – either for their formal and abstracted material qualities believed to be required for certain tools to work properly and effectively (e.g., Pétillon 2008; Pfeifer et al. 2019; Backwell/Errico 2020), or else to use whatever animal remains are 'opportunely' available. The latter is often assumed to involve minimal technical interference, as opportunistic use is regularly understood as dependent on the existence of functional working ends – such as tips or fresh sharp edges – already inherent in the original configuration of animal body elements (e.g., Tartar 2012; Hutson et al. 2018; Ma/Doyon 2021; Abrams et al. 2025).

In the first scenario, the idea of the tool and its requirements logically precede the selection process, reproducing the notion of animal bodies as a bundle of distinct 'resources,' whose value can be reduced to their physical and geochemical properties and detached from the living animal of which they were once a part. Tool-making here is cast simply as a siloed, function-securing exercise of exclusive human province, while 'function' is largely understood as mechanistic action with source-independent but predictable consequences. The functionality of these animal-sourced tools can consequently be 'curated' and 'honed' (Knecht 1997b), and the analytical focus thus regularly lies on the various human modification and shaping practices needed to translate this material potential into specific human-sought functions (e.g., de la Torre et al. 2025).

The second scenario situates determination on the other extreme of the spectrum, and humans are cast as hyper-adaptive opportunity seekers discovering and co-opting predefined faunal functionalities; yet, again, these functionalities are primarily understood in physicalist and mechanistic terms, as 'performance characteristics' in the sense of Michael B. Schiffer and James M. Skibo (1997; 2008). This opportunity-seeking mode of organic raw material selection and transformation is often accompanied by a description of what has been called 'expedient design' (Lyman 1984; Doyon et al. 2021). Both perspectives rest on particular notions of how animal-oriented tool-making works, what it is about, why it matters, and what role animal bodies themselves play in the process. They are not only anthropocentric and thus delegate almost no significance to the involved animals beyond rendering them as the inert husks of their abstracted morpho-physical properties accidentally tied to their durable body parts, they also, at best, outline only a rather narrow subset of possibilities with regard to the logics of selection, the role of animal bodies and the nature of tool-making, to name but a few sites of contention. Part of the ontological register that feeds this conceptualization, in other words, appears to be the assumption that faunal selection for tool production is chiefly *output-oriented*, the output is independent of the embodied context of its input, and cognition is upstream, i.e., takes precedence over and ultimately deter-

mines material engagement, rather than being *embedded* in the latter. All of these propositions are problematic (e.g., Malafouris 2015; Hussain 2018; Ihde/Malafouris 2019; Hussain/Will 2021), and they reverberate particular zoo-ontologies of the present, not even necessarily shared among the diverse academic and intellectual traditions cultivated in the West (see especially Pepper 1972).

Reformulating the problem in the following way may help to illustrate what is at stake here: although it seems uncontroversial that past humans 'used' animal bodies in particular ways – as evidenced by the archaeological record – *what* precisely humans have used (for instance, did they use detached Cartesian bones or rather relational 'bear-feet'?) and *why* they used them (was it primarily or exclusively to exert physical action or rather to enact 'bear-feet-ness'?) should be opened up for interrogation rather than prescribed by the dominant zoo-ontologies of research. It is precisely there, I would argue, that valuable insights into pasts otherwise can be gleaned, telling us something new about the situated interposition of tools, animals and people in past contexts as well as their ontological bearings. Such situated ontological registers are expected to impinge on human cognition, categorization, meaning-making and, notably, the '*how*' of animal body treatment and zoomaterial transformation – which also includes different technological modes of attending to faunal remains. As these various dimensions of past realities are expected to co-configure each other, evidence-driven analysis worthy of this designation must strive to free itself from as many *a priori* conceptual fixings as possible. This is the reason why ontological investigations in archaeology are fundamentally troubled by deductive reasoning, especially when such reasoning is based on so-called (near) certainties of how the world truly 'is' (typically derived from authoritative universal theories of reality).[6] It is also important to remember, however, that such opening up of the archaeological possibility space does not mean to *a priori* discounting of all of the respectively 'unfixed' and criticized categories and concepts either. It may, in fact, be demonstrated that some of these categories have great relevance for archaeological explanation and contextual understanding (see, e.g., Russell 2022, for the example of the wild-domesticated binary), but this remains an empirical task and must thus be discerned on a case-by-case basis.

Returning to the question of what is 'used' in zoomaterialities – and why and to what effect other bodies are engaged – scholars are therefore well-advised to critically scrutinize the twin assumptions that:

1. Animal-sourced tools are primarily instruments for acting upon the world;
2. The 'effect' of such tools in the world resides primarily in their ability to elicit physical or material action as a consequence of the properties of the inert matter contained in the animals in question.

In response to (1), we may insist that zoomateriality frequently serves as a potent means to *enact* the world and to negotiate, mediate and forge particular social and interspecies relationships, and not others (e.g., Hill 2013; 2021; Eitler 2014; Hussain et al. 2022). In response to (2), we may point to the distinctiveness of Western construals of causality and mechanistic action, notably the circumstance that material 'efficacy' in cross-cultural perspective often makes reference to nonmaterial aspects of the very materiality considered, for example, the qualities and behaviours associated with the living animals in question (see especially Hamilakis 2003; Borić 2005; Jones 2009; Conneller 2011; Živaljević 2015; Hill 2019; Hussain forthcoming a), including the recognition of the potential WEIRD-ness[7] of the very idea that death renders matter inert and ends animal agency.

Taking these considerations seriously helps to reconfigure our knowledge of archaeological pasts and to reveal alternative perspectives on the relationship between zoomateriality and past human–animal relations. As often in such cases, it is instructive to begin with a critical analysis of our Western, highly entrenched scientific gaze. In an important study hardly known or cited in archaeology, Cory Willmott (2014) has, for example, shown that animals and people can intersect in dramatically different ways vis-à-vis practices of identity construction and maintenance, and that these are contingent on divergent ways of being in the world, or what she calls 'modes of production.' She argues that Great Lakes Algonquians and their European colonizers showcased contrasting modes of identity negotiation, rooted not in differences of symbolic attendance but in the *ontological pertinence of the visual*. In the Algonquian case, the 'realm of the visual' plays a far lesser role than in the European one. Instead, animal behaviours and lived corporealities serve as primary vectors

6 However, I do not believe that a new 'inductionism' follows from this, as Martin Furholt (2023) seems to suggest.

7 In cross-cultural psychology, WEIRD stands for 'Western, Educated, Industrialized, Rich and Democratic' – the dominant population sample underpinning most generalized statements on human cognition and behaviour in psychology and other behavioural sciences (Henrich 2020).

of identity politics – the specificities of the 'behavioural environment' enacted by embodied animals – thus, to some extent recapitulating the tension between Linnaean taxonomy, which foregrounds animal appearance (shape, morphology) and Indigenous ordering systems, which emphasize difference through (situationally) enacted effects (see, e.g., Zedeño 2009; 2013; cf. Hussain forthcoming c). These contrasting logics of identity construction are associated with disparate relationships and attitudes towards beavers and sheep, respectively – they critically feed into these relationships and are fed by them, both performatively and cognitively (Willmott 2014).

Alongside the heavy weight often put on appearance-based as well as formal, casually-effective characteristics of animal bodies to act upon the world, we should equally question the assumption of invariant separateness, boundedness and impartiality of human and animal bodies. As Erica Hill (2021, 27) notes, the selective deposition of paradigmatic animal body parts – for example, skulls of beluga whales in Southwest Alaska – the 'middening' of such remains, the inclusion of more or less complete animals or specific body elements in human burials and the deliberate caching of similar objects, such as deer antlers, 'suggest that animal agency and personhood were key components of many zoontologies.' Integrating archaeological and anthropological data, Ian J. McNiven (2010; 2022) has argued that in Later Holocene Torres Strait Northeast Australia, Indigenous peoples' relationship with animal bodies was not foremostly instrumental, or overtly 'economic,' but instead *dialogical* – reflected, again, in zoomaterialities incorporating body parts of key animal others, such as dugong ear bones.

However, this human choice is poorly understood as an arbitrary symbolic act of signification, and I argue that we should probe into the possibilities of appreciating such zooselectivity much more literally and with regard to concrete human–animal expositions in shared multispecies lifeworlds: dugongs are marine keystone agents maintaining the coastal seagrass meadows, they ensure the productivity of the land–sea interface, they anchor particular seagrass species communities (many of which past humans relied on) (cf., e.g., Bakker et al. 2016), and they do so by deploying their heads. The special treatment of ear bones may then be interpreted as *conducting* this deep existential enmeshment of dugongs and Indigenous people, and as contributing to the resulting necessity of dialogical interspecies engagement – perhaps even human–dugong diplomacy. Ear bones, after all, enable cross-species communication by virtue of their original bodily 'function' in these living coastal megaherbivores. Ear bones may hence link a particularly salient human–animal relationship to the efficaciousness of the animal bodily functions contained within it, by virtue of the key role of ears and heads in dugong, human-directed world-making. In this view, animal raw material selection has less to do with the harnessing of Cartesian functionalities; 'functionalities' may instead be a consequence of the world-making agencies and bodily capabilities of particular animal others, and these vary in efficacy, co-optational potential and have a corporeal *location* of their own. Triangulating zoomaterialities with animal ecosystem and world-making agencies, as well as human needscapes, lifeworld concerns and cohabitational arrangements, may therefore pry open novel windows into the ontological fabric of past multispecies worlds.

Extending and refining Dušan Borić's (2005) exploration of 'bodily volatility,' Ivana Živaljević (2015) has similarly argued that concepts of the body and personhood were brokered in the Mesolithic-Neolithic of the Danube Gorges – comprising Lepenski Vir and other sites – by drawing on specific body parts, manipulating them and re-arranging them in different contexts – house floors or burial contexts. Importantly, body-part selectivity is highly patterned and not arbitrary; it appears to be grounded in embodied and affective animals, 'how they look, feel or what they *do*' (Živaljević 2015, 675, original emphasis). Difference here is produced and created not through the abstract extraction of the animals' ahistorical 'essences' but with reference to how animals help to enact a shared world, and how they differ in this regard and their human exposition from other animals. Živaljević (2015) suggests that deer antlers were often deposited in house contexts and floors because of their 'regenerative' properties, notably contrasting the treatment of bovid horns; and that dog mandibles as the locus of 'dog speech' (e.g., barking) were drawn upon to co-opt the distinct 'communicative' capabilities and vantage points of dogs. Importantly, bringing together animal body parts in novel configurations – in association with human remains or not – is argued to proffer a potent means to create *new kinds of bodies* (Živaljević 2015, 684–685), neither necessarily 'human' nor 'animal.' This possibility illustrates the ability of zoo-ontological analysis to disrupt humanist ordering practices (Wolfe 2003), transferring Krupnik and colleagues' (2012) evocation of the more-than-human 'nonempirical past' into the theatre of death – not only challenging Western understandings of the same but also of what can be said to exist

and under what conditions. How bodies travel through space and, especially, time, participate in other bodies, transform and give way to new bodies must be considered a key arena of human engagement and intervention. This process attests to varied – and perhaps multiple – transient ontologies of the body, negotiated in relation to human and nonhuman rhythms, and challenges the idea that death implies the cessation of bodily potency and agency, instead of marking yet another transition in bodily potentiality and affectivity. That animal bodies are partible and capable to enact and reproduce significant social relationships is also reflected in the treatment of dog bodies – notably the removal of the head – mirroring similar practices in human burials, but not in the treatment of other animals (Živaljević 2015, 692). A similar relationship between people and foxes has been proposed at the Epipalaeolithic site of Uyun al-Hammam in Jordan, on the eastern side of the Mediterranean Sea, where a fairly complete fox body was partitioned between two human burial contexts by means of translocating the skull (Maher et al. 2011); this case is interesting because only humans and foxes but no other animals appear to have received such treatment, pointing to zoontological registers operating oblique to, or even beyond, the human–animal divide.

Body part selectivity – sometimes more subtle, other times more pronounced – has also been documented for the European Middle Palaeolithic, although many patterns are still unclear and await clarification (see, e.g., Wragg Sykes 2020; Hussain et al. 2022; Hussain 2023). Some Neanderthals placed special emphasis on bear feet bones and paws – the former were often co-opted for stone-tool retouchers (Abrams et al. 2014) or extracted bear pelts – without necessarily exploiting full bear bodies (Verheijen et al. 2023); some used elephant ribs to turn them into 'spears' and 'lances' (Gaudzinski et al. 2005); fur/skin smoothers were often made from aurochs and bison ribs (Soressi et al. 2013); and deer femora were frequently deployed as retouchers (Romero et al. 2023), as were horse incisors (Baumann et al. 2023), although the articulation of these zoo-objects with other organic and inorganic tool-making practices remains elusive (see Hussain forthcoming a, for an overview of the data). These patterns not only illustrate the limitations of the function-symbol framework, they point to the pivotal role of embodied animals and their varied agencies in structuring Middle Palaeolithic zoomaterialities. In a notable number of cases, for example, patterns of selectivity appear to be disjunct from overarching foci of Neanderthal subsistence: at Chez-Pinaud in France, a diverse Neanderthal bone-tool assemblage is mainly sourced from larger ungulates – and especially osseous 'multi-tools' appear to have been almost exclusively manufactured from their bones – yet smaller reindeer dominate the rich faunal assemblage associated with the site (Baumann et al. 2022). In the broader techno-economic context referred to as 'Quina,' or 'Quina Mousterian,' due to the reliance on Quina technology linked to a distinct mobility system (cf. Delagnes/Rendu 2011), Neanderthals preferentially engaged in systematic – often large-scale – reindeer hunting, yet reindeer bones are treated highly selectively. They were rarely modified, often mainly used as fuel and, when transformed, used as blanks for end-smoothed and bevelled tools (Baumann et al. 2023) – a choice hardly intelligible simply as 'opportunistic.' Instead, these patterns likely reveal varying positions, potentialities and potencies, both of animal bodies and specific body parts, within Neanderthal ontologies, including their status as 'bodies,' 'persons,' materialized 'capacities,' to begin with. As Hamilakis (2008; 2013) has persuasively argued before, even the consumption of other bodies is never a neutral exercise and, hence, a 'key arena of interspecies engagement' (Hamilakis/Overton 2013, 117), as bodies are literally incorporated, integrated and changed when eaten, devoured or feasted upon. The taking on of animal bodies, behaviours, sensibilities and qualities is thus not limited to the treatment of their organic body parts but can be relevant to our understanding of other body-related practices, too. 'Clothing' is another such practice, as people literally cloak themselves in certain animals and so 'extend' or otherwise alter their own bodies (see, e.g., Živaljević 2015, 678), both materially and virtually. It is therefore possible that the restrictive utilization of reindeer for organic tool-making in Quina contexts is logically tied to the regular *incorporation* of their bodies *through consumption*, so that acquisition of reindeer 'functionalities' required no separate efforts.

These examples highlight that patterns of selection and treatment underpinning different archaeological zoomaterialities regularly challenge the very ontological registers researchers are used to draw upon to make sense of the past. They also showcase the importance of starting to engage the possibility of multispecies worlds otherwise, and that practices, knowledges and ontologies were co-configured and articulated in different – and sometimes surprising – ways through them. The alleged 'use' of animals as 'raw material' offers a productive starting point for such critical interrogations in human–animal archaeologies.

Notions of 'usefulness' and 'functionality' – what can actually be harnessed from specific animals, for what purposes, and what human practices *do* with specific animals and in shared human–animal worlds – are thereby opened up for empirical analysis and re-interpretation. Archaeological patterns of zoomaterial selection and animal body treatment often suggest that already usability and functionality – traditional vectors of zooarchaeological research – cannot be understood outside of a broader landscape of *animal-oriented* (Gibson 1977; Rietveld/Kiverstein 2014) and *multispecies affordances* (van Dijk 2021). Questions of how to make the best use of animal bodies, in what ways and to what effects are not matters of abstract reflection but are revealed through concrete relationships tailored in the world and through the actions performed in it. The co-optation, reclamation and transposition of relevant potentials for action and thought, as well as of qualities and efficacies registered by particular animal body-parts, is therefore a theme that merits extended comparative and systematic investigation.

Archaeological evidence mustered in support of such practices brings into view the porosity, mutability and fluidity of bodies and the portability of faculties, perspectives and potentials (Hill 2019), thus enabling the archaeological study of engaged animal body differences through time and space. As Nathalie Ø. Brusgaard and I (2024) have pointed out, the human–animal *recursivity* of some of these practices is noteworthy: beaver mandibles in the Mesolithic of Northern Europe were co-opted almost as-is to (re-)enact similar 'beaver effects' in the environment. As a practice, this essentially translates beaver agency into human domains and fosters a 'beaver perspective' on how to navigate and operate in the respective environments. Similar cases may be much more common than currently admitted, but a final example must suffice here: the co-occurrence of minimally modified tiger shark teeth from Middle Holocene Sulawesi Toalean hunter-gatherer contexts with so-called lithic 'Maros points,' which exhibit over-serendipitous shape similarity with the same shark teeth (Langley et al. 2023). Not only does this association similarly suggest a sort of 'borrowing,' or 'translation,' of specific shark agencies, efficacies and 'functionalities,' it again shows how difficult it is to overcome rehearsed research logics. The brittleness of the teeth, which prevented recurrent use and effective resharpening, was initially interpreted by the authors as indicating a broadly 'ritual' significance of the items. But should we not instead ask: what if the functionality of the shark teeth had less to do with their physical properties? What if the teeth were part of a process of learning, co-opting and appropriating shark 'functionalities,' whose refined incorporation into human culture is reflected in Maros points – where such a translation of 'shark dentition' does not suffer from brittleness?

From visualities to zoovisualities: The nexus of animal images

Nonhuman animals participate in past visual worlds, both directly and indirectly (see Hussain forthcoming a, for a recent synthesis). They are rendered and evoked, although the specificity of the animal is sometimes left ambiguous (Davidson 2025), and their diverse agencies, affectivities and behavioural legacies play into the formation of the visual (Hussain 2025c). As recently elaborated by Wisher and colleagues (2023), many visual forms – especially in the context of Upper Palaeolithic parietal art – must be understood as 'conversational' practices. As a kind of 'installation art' (Sakamoto 2019), these visualities both regularly stage and are staged by their material environment, into which they are inextricably embedded (e.g., Robert 2007; 2011; Lorblanchet 2010; Pastoors/Weniger 2011; Delannoy et al. 2013; Batarda Fernandes et al. 2017; Lorblanchet/Bahn 2017; David et al. 2021; Hussain 2025c). As a result, the respective imaging practices often evade simple qualifications as 'representational' or 'symbolic.' They display diverse synthetic properties and bricolage qualities (see especially Conkey/Fisher 2020; Hughes 2021), frame hybrid 'naturecultures' (Hussain 2025c) and belabour mineral–animal resemblances across local and landscape scales (e.g., Coulson et al. 2011; Nash/Garcês 2023) – resulting in what, following Roberto Marchesini (2018), may be termed 'zoomorphisms.'

As in the context of zoomateriality discussed in the previous section, this raises the question of ontology – not only because the long-standing preoccupation with identifying the correct 'zoo-reference' (see Sauvet et al. 2009; Sauvet 2019, for some examples) may, in many cases, entirely miss the point, but also because notions such as 'art,' 'religion' and 'spiritual culture,' may fundamentally distort the purpose and logic of the corresponding practices (see, e.g., White 1992; Conkey/Fisher 2020; Moro Abadía/Porr 2021; Abadía/Tapper 2025). This concern with our ability to know and understand visual pasts otherwise has to be sharply distinguished, I suggest, from the emancipatory opportunities that arise from the affirmation of 'art' as a tractable deep-time phenomenon (see, e.g., Porr 2019). To combat the many conceptual delusions that likely misguide

our apprehension of 'zoovisuality' (cf. Hussain forthcoming a) – that is, visual culture (Nowell 2017) as it pertains to animal imagery across various media[8] – we must accordingly not only ask what an animal image *is*[9] but also expand our situated understandings of 'realism' (BernÁldez-Sánchez/García-Viñas 2019) and 'depictional accuracy' (Horvath et al. 2012), as well as consider *why* the (zoo)visual is conjured in the first place (see especially Jones 2021).

The burden of implicit assumptions regarding the 'representational' nature of such 'art' weighs heavily on this enterprise (e.g., Davidson 1999; Guthrie 2005; Sauvet et al. 2009; Renfrew/Morley 2009; Clottes 2011; Walker et al. 2018; Solomon 2019; Bacon et al. 2023). I will focus here on a range of reasons why it may be productive to initially dispense with this influential idea altogether when interrogating Palaeolithic zoovisualities. Once more, we should more seriously consider that zoovisuality may register the *literal* rather than the abstract or arbitrary of lived human–animal intersections, participating in the construction and negotiation of situated interspecies relations. It should not, therefore, be readily relegated to the realm of mere 'signs' or 'visual communication' (Davidson 2025), especially since the latter immediately taps into related assumptions that the subjects of communication (i.e., relevant interlocutors) are exclusively human.

To begin addressing some of these issues, it is useful to centre the attention on an old – some would, perhaps, say outdated – problem: namely the relationship between archaeological zoovisuality and living animal ecologies of the past (see, e.g., Guthrie 2005; Azéma/Rivère 2012; Korpershoek et al. 2024). Framing this as an essential locus of insight simply *assumes* that zoovisuality *is* representational, either by representing the 'real,' that is, the external environment, or by representing the 'imagined,' i.e., the internal environment (e.g., Hodgson 2003; 2021). Importantly, Upper Palaeolithic cave art in particular is often precast as a representational phenomenon *par excellence* [*tr*. by excellence], in large part because of the tendency to regard 'representational art' as a hallmark of *Homo sapiens* (e.g., Bourrillon/White 2015), whereas Neanderthals are thought to have inhabited 'non-representational' cognitive worlds (Coss 2017). The ontological challenge, however, lies in treating representationality as yet another hypothesis to be tested across different spatiotemporal contexts, rather than naturalizing it as a species baseline (cf. Jones 2021).[10]

Both the 'real' and the 'imagined' tend to presuppose an objectivist and realist ontology – along with cultural epistemologies grounded in it – which cannot be taken for granted but must instead be demonstrated through the weight of the available archaeological evidence. Consider, for example, the many paradoxes arising from allegedly 'exotic,' 'rare' or possibly '(near)extinct' animals in Palaeolithic zoovisuality. Archaeologists regularly argue – both in press and reviews – that the very circumstance of depiction serves as evidence for an animal's presence, that elaborated details suggest direct observation, and that megafaunal depictions can therefore be mobilized as evidence for dating megafaunal survival (e.g., Bosinski/Bosinski 1991; Iriarte et al. 2022; Korpershoek et al. 2024; Richter et al. 2024). These construals are not only based on the idea that depiction is a practice of indexing something else 'out there,' they also clearly fall prey to circular reasoning. More seriously, they confound the richness of conveyed details with pictorial 'realism' or 'naturalism' (e.g., Pruvost et al. 2011; BernÁldez-Sánchez/García-Viñas 2019),[11] quickly invoke 'real-world observation' (see also Abadía et al. 2012) and posit that details are antithetical to memory-based visual productions (Guthrie 2005). This is easily linked to the assumption that cultural memory in societies relying on oral and communicative transmission is less accurate and possesses a shorter half-life when compared to more recent literate societies; both impositions are problematic in light of available evidence from Indigenous contexts (e.g., Ouzman et al. 2002; Nunn 2019; Hamacher et al. 2023).

The difficulty is not that these contestations are always wrong, but that we cannot confidently know whether they are if we close them off from empirical scrutiny. It may

8 The qualification 'zoo' may in the future be reserved for more inclusive usage, to denote both human and nonhuman animals (from the Greek ζῷον *zóon* [*tr*. animal]) and to further destabilize the human–animal boundary. We may then, for example, distinguish between 'anthrovisualities' and 'theriovisualities.' The same, of course, applies to the qualification 'zoomateriality,' discussed in the previous section.

9 The ontology of Palaeolithic imagery is still a poorly explored theme, but it often defies Western assumptions and intuitions about 'art' and 'imagery' – for example, with respect to the boundedness and discreteness of an image. In an attempt to understand Upper Palaeolithic cave art, Stephen Davies (2025) has accordingly proposed an 'ontological contextualism,' which defines art not by the properties contained within its anthropogenic boundaries, but by its interrelationality with, and embeddedness in, other environmental features.

10 For the long and troubled history of reflections on Palaeolithic art from the vantage point of Western modernity – and its preoccupation with realism and abstraction – see Maria Stavrinaki (2022).

11 Consider, as an example for this symptomatic line of reasoning, the abstract of Pruvost and colleagues (2011, 18626):

> *[…] all horse colo[u]r phenotypes that seem to be distinguishable in cave paintings have now been found to exist in prehistoric horse populations, suggesting that cave paintings of this species represent remarkably realistic depictions of the animals shown. This finding lends support to hypotheses arguing that cave paintings might have contained less of a symbolic or transcendental connotation than often assumed.*

well be, for example, that Palaeolithic societies memorized specific (salient) details of relevant animals and codified them in particular visual conventions – such as distinctive ways of drawing back or ventral contour lines – rather than attending to animals as bounded wholes (see, e.g., Lorblanchet 2010; Lorblanchet/Bahn 2017; Conkey/Fisher 2020; Hodgson 2023; Hussain 2025c, for the rich evidence available for this on the structure of Palaeolithic mobile and parietal art). This would not only resonate with the often-overriding performative emphasis on animal body partiality discussed in the previous section, but also align with other key features of these visual worlds: radical embeddedness, pictorial incompleteness and the selective highlighting of different animal gestures and body parts across periods. Again, the Linnaean gaze and its underlying ontology of privileging organismal 'appearance' and 'wholeness' could well lead us fundamentally astray. The significance of the visual and the logic of the Palaeolithic gaze may thus uncomfortably confront our own 'ways of seeing' (Berger 1972), and how we visually render and thereby enact our *own* worlds.

The representational status of Palaeolithic zoovisuality is also challenged on other frontiers and by other archaeological observations. Based on detailed contextual and technological analyses, it has, for example, been argued that the remarkable assemblage of burnt zoomorphic clay figurines from the Moravian Pavlovian was probably, at least in part, fragmented and then buried in place after their fire-aided manufacture and shape imposition (Verpoorte 2000; Farbstein 2011). This reconstruction considerably weakens the interpretation of such objects as intended to be spectated and revisited as 'representations' in the traditional understanding of the concept. The empirical evidence rather highlights the *performative* background of these salient instances of zoovisuality. I suggest that contexts such as these should compel us to seriously consider whether visual practice was sometimes less about 'depicting' and 'representing' something at a distance and instead perhaps concerned with what I would like to term the 'presencing' of significant others. In other words, visual practices may have been a cultural technique to close and narrow human–animal distances and to create proximity, rather than to produce, and hence reinforce, such distances. Once 'presenced,' the ontological status of animal imagery is not categorically different from the ontological status of living embodied animals, and to render animals visually may thus mean to conjure them, to 'make them co-present' (see especially Bird-David 2017a; 2017b, on the notion of being co-present).

To appreciate this, we again need to let go of the (itself ontologically grounded) idea that the abstract rather than the literal is the pinnacle of world-making, and thus separate discussions of representation from the cognitive evolution of *Homo sapiens*. To deny the ontological collapse of depiction and being is to claim that the delineation between image/representation and being/existence is universally valid and unshakable, and that imaging something can therefore never be about re-instating being/presence. In this view, the image always points to something beyond itself, remaining secondary – it exhibits derived, rather than primary, existence. Such insistence would not only reveal ontological dogma and Western-centrism, it is also challenged by anthropological accounts suggesting that practices of presencing may be central to the functioning and reproduction of many so-called 'pluripresent' Indigenous socialities around the world (Bird-David 2017a; Descola 2021).

This ontological critique of the Palaeolithic image, I propose, can open up novel, exciting avenues for understanding and comparing the diversity of visual cultures in the deep past. Rather than interrogating zoovisuality *over yonder*, we may wish to ask whether some animals are visualized precisely when they become rarer in the landscape, thereby inverting the assumed relationship between depiction and environmental presence. This question is particularly pertinent because such linkages have also been mobilized to explain unusual practices of animal body treatment – for example, cave lion pelt extraction during the Iberian Magdalenian (Cueto et al. 2016). Potential examples from the corpus of European Upper Palaeolithic parietal and mobile art include the seals, mammoths and rhinos from the Magdalenian of Gönnersdorf (Hansen 2006; Płonka 2018), the Bad Kösen woolly rhino from the same period (Richter et al. 2024), the engraving of a giant deer from the end of the Italian Late Glacial (Mussi 2001) as well as Early Upper Palaeolithic hyena depictions from Chauvet (Baynes-Rock 2015) or the great auk renderings of Cosquer likely predating the Last Glacial Maximum (d'Errico 1994). Visual practice in such contexts may have been concerned with counteracting animal disappearance and may have thus been employed to compensate for decreasing opportunities for direct engagement and communication. Practices of 'presencing,' in other words, may be a hitherto overlooked cultural technique (*sensu* Macho 2013) to facilitate dialogue and proximity within multispecies communities, deployed particularly when confronted with the physical elapse of significant nonhuman others. This may also explain some supposedly late depictions of

now-extinct megafaunal species in the Americas, previously interpreted as a 'late survival' signature (Iriarte et al. 2022). Taking the ontological critique seriously thus means allowing for plural ontologies of images and image-making practices – an image may not always be the same, and the very notion of the 'image' may already overburden certain visual pasts.

Conclusion: Animality reconsidered

This paper has attempted to take the ontological critique seriously and to delineate some emerging areas of concern in the deep-time archaeology of human–animal relations. I have highlighted the importance of an evidence-driven approach to some of the issues raised by the critique, but have also cautioned against the tendency to curtail what can count as archaeological observation, data and credible interpretation in the first place – touching upon the core of what Palaeolithic and Mesolithic archaeologists commonly accept as established ways of doing science, asking questions and understanding the past. As a result, I have suggested that the call to engage the ontological is often mischaracterized, or misunderstood, as the emergence of a 'new metaphysical' ambition among archaeologists, when it merely seeks to hold open and enhance the possibilities for tracing past worlds enacted and understood in radically different terms than the worlds present-day archaeologists inhabit and promulgate. The engagement with ontology, in this view, is an exercise in 'breaking up' our own ontological closures and allowing the evidence speak in ways that challenge the very positionalities we bring to bear on it.

This is the radical empirical impetus of the ontological critique, and I have argued that the empirical opening that it promises – notably long overdue attention to how we *observe* and *describe* the archaeological record with regard to animal questions – can be immensely beneficial to human–animal archaeologies. As I have tried to show, it can help bring into view radical zooalterities as expressed in the nature, structure and logics of past human–animal engagements that are difficult to make sense of by invoking presentist baselines. The overriding challenge may accordingly be to find productive ways of strategically dispensing with the many evidential stereotypes currently underpinning deep-time human–animal studies and to tap into the archaeological record to distil new, situated categories of analysis and interpretation, with all the challenges and risks that such an endeavour implies. I have suggested that being acutely attentive to how humans have engaged with zoomaterialities in the past, as well as what kind of zoovisualities they have authored and in what broader multispecies context, helps to identify dead ends and conceptual impasses of conventional research perspectives, to challenge a whole range of entrenched Western assumptions and to rework our conceptual registers to better account for the weirdness (in contrast to WEIRD-ness) of the deep past. This must include resisting the temptation to reify ontological systems, such as animism, perspectivism, totemism, analogism and naturalism, as newfound metaphysical orthodoxy, and it must equally withstand the temptation to domesticate the past with Indigenous ontologies.

This is a difficult undertaking, requiring the cultivation of ontological literacy as well as careful engagement with debates on anthropological and zoological difference. As I have attempted to demonstrate through a range of archaeological examples sourced from various Pleistocene and Holocene hunter-gatherer contexts, the critical analysis of key concepts – such as 'function' and 'representation' – and their confrontation with data pertaining to human–animal relationships can be instrumental for working towards such animal archaeologies, recognizing that ontology should not be treated as an input category but rather as a target outcome of analysis. We should be careful, in other words, not to confuse ontological animal archaeologies with the sort of 'political ontology' that Mario Blaser (2013) has advocated in anthropology.

Acceptance of the overarching ambition of ontological human–animal archaeologies – to reveal rather than precast diverse, potentially unfamiliar 'zoo-ontologies' – also implies that we must be prepared to destabilize the category of the 'animal' itself. Both 'animal' and 'human' are situated, discursive and world-making products: they presuppose and co-define each other and stand for only one way of negotiating and affirming difference (Hussain 2025a). As Wolfe (2003) reminds us, the 'animal' has historically functioned as a constitutive other in Western thought, conducive to its achievements as well as its harms. Animality is thus only the flipside of the kind of humanity currently conceived (Armstrong Oma 2018a), and it is a crucial task of ontological human–animal archaeologies to devise approaches to the archaeological record, which enable us to ask how other societies sorted through the nonhuman world, categorized and hierarchized nonhuman others – or not – and therefore what significance

the human–animal asymmetry (Derrida 2010) holds in comparative perspective. The 'animal' must consequently receive the same critical attention as concepts such as 'function' and 'representation,' and it is here that animal archaeologies can perhaps make particularly important contributions to broader multispecies studies and the anthropology of othering. This is because such 'zoo-ontological' archaeologies ultimately bring into view alternative ways of being human themselves.

Acknowledgements

I thank the two anonymous reviewers who, through their responses and provocations, have helped to improve this paper, and the editors of this special issue, Gianpiero Di Maida and Martin Porr, for their patience and support of this project. All remaining misrepresentations, mistakes and shortcomings are the sole responsibility of the author.

Funding

The author acknowledges funding through the HESCOR Research Hub of the University of Cologne, supported by the '*Profilbildung* 2022' [*tr*. Profile Development 2022] initiative of the of the Ministry of Culture and Science of the State of North Rhine-Westphalia (ID: HESCOR PB22-081).

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