Towards a Broader View of Hunter-Gatherer Sharing

Edited by Noa Lavi & David E. Friesem
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Contents

Contributors ix
Figures xi
Tables xi
Acknowledgements xiii

Introduction  Noa Lavi & David E. Friesem  1
Why hunter-gatherers? Why sharing? 1
About the book 4
Innovative perspectives of sharing: chapters outline 5
Concluding remarks 9

Part I  Intimacy, presence and shared-living

Chapter 1 Where have all the kin gone? On hunter-gatherers' sharing, kinship and scale 15
Nurit Bird David  17
The unscalability of kinship identities 17
Enter individuals 18
Kinship as a root metaphor 19
Demand-sharing constitutes social relations 20
Re-enter kinship, talk and presence 21
Conclusions 22

Chapter 2 Extending and limiting selves: a processual theory of sharing 25
Thomas Widlok  25
What is wrong with evolutionary models of sharing? 25
The problem of historical diversity 26
The problem of outcome 27
Extending the self 28
Limiting the self 30
The analytical purchase of the new theories of sharing 32
The opportunity to request 32
The opportunity to respond 34
The opportunity to renounce 34
Conclusions 36

Chapter 3 Intimate living: sharing space among Aka and other hunter-gatherers 39
Barry S. Hewlett, Jean Hudson, Adam H. Boyette & Hillary N. Fouts  40
Density of households: Sharing space in settlements 40
Sharing space in a home 42
Sharing space in a bed 44
Sharing interpersonal space: touching 45
Hypothetical implications of intimate living 49
Summary and conclusion 52

Chapter 4 Sharing and inclusion: generosity, trust and response to vulnerability in the distant past 57
Penny Spikins  58
Sharing in an evolutionary perspective 58
Sharing and care for injury and illness in the distant past 60
Sharing, tolerance and diversity 61
Contrasting emotional schemas – sharing through generosity and calculated collaboration 64
Conclusions 66
Chapter 11  An elephant to share: rethinking the origins of meat and fat sharing in Palaeolithic societies
Ran Barkai
Thoughts about sharing 154
Becoming an elephant/mammoth 157
The origins of fat and meat sharing in the Palaeolithic 161
Endnote 163

Part III  Learning and sharing of knowledge

Chapter 12  Identifying variation in cultural models of resource sharing between hunter-gatherers and farmers: a multi-method, cognitive approach
Adam H. Boyette & Sheina Lew-Levy
Sharing in forager and farmer thought 172
Sharing and early life experiences 173
Evolutionary approaches to resource sharing 173
Ethnographic setting 174
Hypotheses and qualitative predictions 175
Methods 175
Results 177
Discussion 180
Conclusion 182

Chapter 13  Foragers with limited shared knowledge
Peter M. Gardner
Actual learning processes 186
The challenge of cognitive diversity 189
Evidentiary criteria for knowledge claims 190
Closing thoughts 191

Chapter 14  The sharing of lithic technological knowledge
Gilbert B. Tostevin
Framing the question 195
Why should one share flintknapping knowledge? 197
But to what extent can one share one’s flintknapping knowledge? 198
The importance of the tactical vs. strategic knowledge distinction for the experimental investigation of the sharing of flintknapping knowledge 199
What does it mean to share flintknapping knowledge? 201
Sharing space 201
Sharing time 202
Conclusion: how do we test our assumptions about when a given lithic technology must have been shared? 203

Part IV  Sharing in times of change

Chapter 15  Men hunt, women share: gender and contemporary Inuit subsistence relations
Magalie Quintal-Marineau & George W. Wenzel
Methods 211
Ningiqtuq: the traditional sharing system 211
Women, the mixed economy, sharing and subsistence 213
Discussion 217
Postscript 218
Chapter 16  The pure hunter is the poor hunter?  
Olga Yu. Artemova  
Preliminary notes 221  
Twists of fate 223  
‘Absolutely tribal people’ 226  
There is no other way 227  
‘That’s enough for me’ 227  
‘We cannot be like them’ 228  
When generosity is stressed 229  
Retrospect 231  

Chapter 17  Ecological, historical and social explanations for low rates of food sharing among Mikea foragers of southwest Madagascar  
Bram Tucker  
Mikea of Madagascar 239  
Mikea food sharing 239  
Why Mikea rarely share, explanation 1: culture history and property relations 241  
Why Mikea rarely share, explanation 2: competitive self-interest 242  
Why Mikea rarely share, explanation 3: social exchange 244  
Conclusions 245
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Figures

2.1. The waves of sharing. 28
2.2. Screenshots from a field video documenting sharing among *Akhoe Hai/om. 29
2.3. Small foraging camp of a *Akhoe Hai/om person in the north of Namibia. 33
2.4. An Ovambo agro-pastoralist homestead in northern Namibia. 33
2.5. Advertisement for a gated community in Nairobi, Kenya (2015). 33
2.6. *Akhoe Hai/om burial ground. 36
2.7. *Aonin Nama burial ground. 36
3.1. Four people co-sleep on an Aka bed. 45
3.2. Percentage of time forager and farmer infants, children and adolescents are held or touched during the day. 47
3.3. Feedback loops between intimate shared spaces and other forms of sharing. 53
4.1. Significant cognitive-emotional capacities involved in sharing in mobile hunter-gatherer contexts. 58
4.2. Evolutionary pressures, motivations to share and sharing behaviours in early humans. 59
4.3. Example of an embedded figures test. 62
4.4. Example of portable art showing embedded figures (or overlapping forms). 63
4.5. Examples of embedded forms (or overlapping figures) in parietal art. 64
4.6. Contrasting internal working models and social behaviour between sharing through generosity and calculated collaboration. 65
8.1. The sharing of material things (dividing) and the sharing of immaterial things (multiplying). 114
8.2. Location map and general view of Wadi Sūra II, Eastern Sahara. 116
8.3. The central panel of Wadi Sūra II paintings. 116
8.4. A group of human figures depicted with bent legs in the rock art of Wadi Sūra II. 117
8.5. Human figures in a row at Wadi Sūra II. 117
8.6. A row of human figures holding possible musical instruments at Wadi Sūra II. 117
9.1. Interpretive framework for understanding the interrelationships between social recognition and quality signals. 126
9.2. Distribution of San language groups in southern Africa. 128
9.4. Tubular bone beads from the Felis Concolor Site (25SM20) in central Nebraska. 132
9.5. Spatial distribution of sites with tubular bone beads in the Central Plains of North America. 133
9.6. Temporal distribution of sites with tubular bone beads in the Central Plains of North America. 134
10.1. The Winterhalder-Kelly model of sharing relations between groups of foragers. 146
10.2. Radiocarbon dates, groundstone, nearest neighbor, and obsidian distance for the study area. 148
11.1. An Acheulean flint biface from Lower Paleolithic Revadim site, Israel. 157
11.2. An experiment in using flint handaxes in butchering operations. 159
11.3. A biface made on an elephant bone from the site of Fontana Ranuccio. 160
12.1. Box plot of cultural competency scores for Aka and Ngandu men and women. 177
14.1. The relationship between equipifinality and the likelihood of accurate reverse engineering of core reduction processes. 204
15.1. Country food consumption and financial support to harvesting activities. 216
16.1. Map of Australia. 224
16.2. Phillis Yankaporta throws the cast net. 225
16.3. Lucky family. 225
16.4. The interior of an Aurukun house. 229
16.5. The children of Aurukun. 230
17.1. Map of the forest camp of Belò in 1998, showing households clustered by space and kinship. 240

Tables

3.1. Measures of settlement density in five forager groups. 41
3.2. Average nearest neighbour in forager groups with data. 41
3.3. Average size and space per person in Aka and Efe homes. 43
3.4. Comparison of space per person in a typical household of mobile hunter-gatherers and farmers.
3.5. Average home size and living area per person in developed countries.
3.6. Average space per person in a bed among Aka hunter-gatherers and Ngandu farmers.
3.7. Infant holding and other measures of caregiver sensitivity.
3.8. Percentage of time intervals G/wi adults touched or were within proximity of other males and females in the camp setting during daylight hours.
3.9. Percentage of time G/wi adolescents touched or were within proximity of other males and females in the camp setting during daylight hours.
3.10. Husband-wife co-sleeping in hunter-gatherers versus other modes of production.
3.11. Average frequency of sex per week among married couples in three age groups among Aka foragers, Ngandu farmers and U.S. middle-class market economists.
7.1. Southern Mbandjele mokondi massana (spirit plays) organised according to context of use.
9.1. Late Stone Age and recent forager sites in the Kalahari that have evidence of ostrich eggshell beads.
9.2. Iron Age sites in the Kalahari Desert region of Botswana with ostrich eggshell beads.
9.3. Evidence for severe droughts on the plateau of southern Africa during the Iron Age Interpretive framework for understanding the interrelationships between social recognition and quality signals.
10.1. Obsidian Frequencies by Wyoming County and Time Period.
12.1. Interview questions and associated hypothetical domain.
12.2. Percent of forced-choice responses by ethnicity and domain.
12.3. Rankings of responses to the question: who teaches children to share?
12.4. Rankings of responses to the question: Who do children share food with?
12.5. Ranking of responses to the question: Who do children share non-food items with?
15.1. Ningiqtuq/sharing interaction sets in the Inuit social economy.
17.1. Per cent of different foods given away to other households among Mikea and Ache foragers.
17.2. Mikea foods and the predictions of the marginal utility model of tolerated theft.
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In this article I reconsider the origins of meat and fat sharing, and posit the argument that a very particular set of circumstances took place some 2 million years ago in the Old World, paving the way for the establishment of the economic, social, ontological and epistemological mechanisms that are reflected in sharing behaviour among past and present hunter-gatherers.

At first glance my argument might seem overly simplistic, and it is indeed quite simple to comprehend. It is founded upon a series of rather basic premises, many of which are commonly accepted or substantially well-argued in the academic literature on past and recent hunter-gatherer and Palaeolithic societies. The logic behind my integration of these premises into a coherent hypothesis is nonetheless somewhat complex, and I thus urge the reader to bear with me, be open-minded to certain new ideas and speculations, and be willing to rethink the origins of one of the most fundamental human traits, which might turn out to be the pivotal element in human survival and adaptation throughout the very long existence of humans as hunter-gatherers— and this is, of course, sharing.

From both a theoretical and methodological point of view, my line of thinking is two-fold, but supporting one body of argumentation. One approach is rooted within evolutionary thinking, primarily meaning that every physiological, biological and behavioural trait adopted and practiced over the long run must have had an evolutionary adaptive role, providing the fitness of a group of individuals with an edge that enhanced survival and prosperity. The other approach is rooted within anthropological thinking regarding the nature of the relations between indigenous groups and the world in which they live. Incorporating perspectives on the intimate, reciprocal, ontological and relational epistemologies of recent hunter-gatherers, and mostly the insight revealing that indigenous groups view the world they live in as composed of a series of living non-human agents capable of having personhood, free-will, emotions etc., provides the ground for a more holistic view of hunter-gatherers’ being in the world (e.g. Betts et al. 2015; Bird-David 1999; De Castro 1998; Hallowell 1926; Hill 2011, 2103; Krupnik et al. 2012; Nadasdy 2007). In particular I refer here to human-animal relationships, and more specifically to the seeming duality of humans perceiving animals both as other-than-human-persons and equal co-habitants of a shared habitat, while also hunting and consuming these animal-persons (see for example Nadasdy 2007; Tanner 2014; Willerslev 2004, 2007, 2013). I believe that by integrating significant insights from both the evolutionary and anthropological-relational perspectives, one can attempt to make sense of one of the most primordial and essential mechanisms in the history of the human race – the mechanism of sharing.

The elephant occupies a special place in my hypothesis, in that proboscideans have long had a dual role in their interactions with humans: they were (and still are in the very few places where hunter-gatherers and elephants still share habitats; e.g. Lewis 2015), a prominent element in human adaptation as the suppliers of extraordinary quantities of fat and meat (Agam & Barkai 2016, 2018; Ben-Dor et al. 2011, 2016; Guíl-Guerrero et al. 2018; Reshef & Barkai 2015), while also occupying a central place in the relationship between humans and the significant other-than-human agencies that share the world with them (Lev & Barkai 2016; Hussain & Floss 2015). The elephant thus offers a remarkable example in exploring this duality in human existence among indigenous groups: appreciating and relating to the different agencies of the world, and at the same time depending on those same agencies for their successful survival. I shall seek to convince the reader that these two approaches can mutually exist in a single body of argumentation and provide a plausible and concise explanation for the origins of meat and fat sharing among Palaeolithic societies.
Thoughts about sharing

In most cases when dealing with meat-sharing among hunter-gatherer societies (the role of fat is mostly overlooked, for reasons that are beyond my understanding), scholars have been inclined to focus on the economic, practical and social aspects of the practice of sharing (see Widlok 2016 for an extensive overview on the subject and also Lavi & Friesem and Widlok, this volume). The discussion has been mostly focused on providing an explanation for this extra-ordinary mechanism in the framework of reciprocal behaviour between group members; as show-off behaviour aimed at gaining some sort of social or demographic status; tolerant theft behaviour; family provisional strategy, and more (e.g. Alvard 2002; Bird & Bird 1997; Gurven 2004; Hawks et al. 2001; Jaeggi & Gurven 2013; Patton 2005; Peterson 1993; Suleiman et al. 2015). All these perspectives fail to take into account, however, the ontological and epistemological aspects of human existence in the world, and view human behaviour as aimed only at physical and practical existence, or at the anthropocentric social mechanism that maintains and enables such existence. Such perspectives, do not consider the phenomenological and perceptual components of being-in-the-world, despite much evidence demonstrating quite clearly that hunter-gatherer relationships with the world are on an equal footing with other existential necessities (e.g. Hill 2013; Krupnik et al. 2012; Nadasdy 2007; Tanner 2014).

Others have looked at sharing from non-cynical or utilitarian point of view, and negated its probable reciprocal nature. Such scholars opposed the view of sharing as a ‘social security’ mechanism or as an exchange system, and suggested to understand sharing behaviour as an almost innate element in the hunter-gatherers mode of thought and existence, one that could better be understood within the realms of social relations, personhood, autonomy, equality, the production of ‘joy’ and more (e.g. Lewis 2915; Widlok 2017; Woodburn 1998). Bird-David (1992) offered a more comprehensive understanding of the sharing phenomenon, coining the term ‘The cosmic economy of sharing’. Notwithstanding the major contribution of such a proposition, demonstrating that sharing has to do with relational epistemology and with the more holistic view of hunter-gatherer relations with the world, this approach too is anthropocentric in nature. However, it does demonstrate clearly that sharing is a mechanism that allows humans to survive and prosper while maintaining both social relations within the human group and reciprocal relations with the surrounding world. I fully agree that sharing constitutes part of a cosmic system of relations, but would like to stress that it has to do not only with the economy and social relations within the human group, but also with much a more elaborate network of relationships among the different components of the universe, humans included. Sharing, as I perceive it, is not merely a cosmic metaphor of human social relations, aimed at constructing frames of reference for the people for the world in which they live. Sharing is real, not a metaphor. It is not intended, as often suggested, merely to maintain social equality, inhibit social climbing or allow the provisioning of food for all. These are simply the side-effects of the way people have perceived their place in the world and the way they must behave towards the other agents of the world, human and non-human alike. Sharing, rather, is an obligatory outcome of the relationships people have with other human-persons and other-than-human persons (including animals, trees, rivers, stones, mountains, etc.; e.g. Bird-David Naveh 2008; Carreño 2016; Povinelli 1995). Recent hunter-gatherers, worldwide, are obliged to share with their human-counterparts whatever is beyond their immediate ability to consume (mostly large game), and are obliged to treat with full respect the hunted animal-persons that were willing to be consumed by those humans (Hill 2011, 2103; Nadasdy 2007; Tanner 2014).

I offer here a direct quotation from the pioneering work of Tanner, published originally in 1979, although similar concepts have been documented in many other studies, and the reader is welcome to look at one of the seminal papers on the subject written by Nadasdy (2007) entitled ‘The gift of the animal: the ontology of hunting and human–animal sociality’. As Tanner clearly indicates for the Mistissini inu, ‘A central attribute in the conduct of hunting is that game animals are persons and that they must be respected. The rules of respect after the killing involve essentially taking care of all elements of the carcass, and not allowing anything to be thoughtlessly discarded. Thus blood and intestines are consumed, buried in the snow, or fed to the dogs; bones are made into tools, hung in the trees, put on bone platforms, or put in a lake, and all uneaten meat is fed to the dogs or put in the fire’ (Tanner 2014, 202).

Carcasses of procured animals are usually exploited to their full potential by many other indigenous groups too, and nothing goes to waste, often from an ontological stand of respecting the hunted animal and avoiding offending it (e.g. Hill 2011, 2013; Nadasdy 2007; Pasda & Odgaard 2011). Among the caribou hunters in Greenland, for example, all the materials that can be extracted from the hunted caribou have a useful purpose: antler, fur, meat, fat, sinew, bone fat and bone marrow (Pasda & Odgaard...
2011). Regarding early archaeological examples, maximum exploitation of elephant carcasses has been demonstrated in Lower Palaeolithic Castel di Guido (Italy) site, where early humans fractured elephant bones for marrow and also used them as raw material for the manufacture of artefacts (Boschian & Saccà 2015). At many Lower Palaeolithic archaeological sites (e.g. the Middle Pleistocene Qesem Cave in Israel), the selected animal body-parts brought to the site were extensively exploited. Every piece of bone was fractured for marrow extraction after being stripped of meat and fat, and bone fragments were recycled as hammers for the production of flint tools at the cave (Barkai et al. 2017a,b; Blasco et al. 2014, 2016; Rosell et al. 2015; Stiner et al. 2009, 2011). It can thus be suggested that Lower Palaeolithic humans, very much like recent hunter-gatherers, used every part of the animal carcass they had hunted, and that this pattern of behaviour is not only an outcome of necessity (as it seems meat and fat were plentiful at Castel di Guido and Qesem Cave, for example) or strict economic decision, but a reflection of the relations that people had with animals and with the universe.

It thus seems evident that both human-human and human-animal relationships are at the basis of both past and recent hunter-gatherer approaches to the distribution of large animal meat and fat. Sharing of large game animals is a central element in the ‘treaty’ that human-persons have with their animal-person colleagues, and thus the animal carcass has to be dealt with care; nothing should be wasted and selected body parts must be carefully deposited, displayed, shaped into elements that can be worn and/or displayed etc. (e.g. Betts et al. 2012; McNiven & Feldman 2003; Krupnik et al. 2012; Zivaljčević 2015). Moreover, meat and fat sharing is an expression of the ‘treaty’ hunter-gatherers have not only with the universe but also among themselves, as part of the cosmic economy of sharing described by Bird-David (1992).

I deal here only with meat and fat sharing, which I consider to be the original practice and mode of thought that eventually led to the much more elaborate pattern of sharing other items that one is not using at the moment (e.g. Lewis 2015, Widlok 2016). I suggest here that the practice of sharing emerged very early on in human evolution, during the times of the Lower Palaeolithic period some 2 million years ago, as a consequence of the dual and complex relationships between people and elephants (as well as other mega-herbivores), emphasized by the dependency of early humans on fat and meat for their successful survival. This dual relationship between human-persons and other-than-human-persons (and the other elements constituting the world people lived in, such as trees, rivers, mountains, stones etc.) eventually led to, or was accompanied by, much more elaborate sets of practices. These practices, viewed by us as sharing, are first and foremost a reflection of the obligations that people took upon themselves when ‘exploiting’ the different elements in their environment. Possibly following these practices, sharing continued to exist as a major mechanism in human negotiation with the world, while also becoming a central element in human social relations.

Based on thorough analyses of animal-bone assemblages from early archaeological sites, it was recently strongly argued that meat eating, large-game hunting and food-sharing appeared in Africa some 2 million years ago, and that these practices and patterns were accompanied and supported by growing social complexity and cooperation (Domínguez-Rodrigo & Pickering 2017). This argument strongly accords with my current hypothesis, and emphasizes the dependency of early humans on calories derived from mega-herbivores through the hunting of large and medium-sized animals as a fundamental and very early adaptation mode of Lower Palaeolithic humans, and the possible emergence of social and behavioural mechanisms that appeared at these early times. I would like to argue that these practices may have existed (and continue to do so) for as long as the hunting mode of subsistence and the hunter-gatherer mode of thought and relating to the world persisted.

It is true that for recent hunter-gatherer societies such perspectives are well documented and argued, even though sometimes accepted by researchers with a grain of salt (e.g. Willerslev 2004, 2013). Regarding Palaeolithic societies, the application of such insight might be seen as problematic, and some may not agree that it is applicable to past hunter-gatherers. I believe otherwise, and content that such considerations might have also featured during Palaeolithic times. Although insights gained from modern hunter-gatherer ethnographic studies cannot be applied in a simplistic or direct way to Palaeolithic hunter-gatherer archaeological explorations, nonetheless, as stated recently by Endicott & Endicott, such insights could be of relevance ‘Although contemporary and recent nomadic hunting and gathering societies are not living fossils from the Stone Age, as they are sometimes depicted in popular media, they do provide the closest analogy we have to the way of life our ancestors followed before the advent of agriculture…” (Endicott & Endicott, 2014, 108). In my view, and especially when dealing with primordial behavioural aspects like meat-eating and hunting, insights gained from studies of modern hunters are relevant to past hunters regardless of
differences in technology, prey availability or even some possible biological or cognitive differences between past and recent hunters. There is no argument regarding the fact that mega faunal extinctions, coupled with human and climate influence on prey availability, could not be ignored when comparing past and recent hunting repertoire. This is especially relevant in the case of mega herbivores such as the elephant, the rhino and the hippopotamus which are rarely hunted by recent hunter gatherers due to their complete disappearance or due to political, ecological and financial considerations. The very few available documentations of elephant hunting by recent hunter-gatherers for nutritional purposes, however, do not seem to be beyond the capabilities of past and even Palaeolithic hunter-gatherers as we know them today (regardless, of course, of the use of spears with iron blades as opposed to wooden of stone-tipped spears. See a detailed review on the matter in Agam & Barkai 2018). Meat (and fat) sharing is also rather evident at Lower Palaeolithic sites (e.g. Domínguez-Rodrigo & Pickering 2017; Stiner et al. 2009), although the archaeological evidence could be read otherwise by those who do not wish to see it there. In any case, as many would agree that meat eating, hunting and meat and fat sharing are evident in the archaeological record as early as the emergence of Homo erectus in Africa some 2 million years ago, and as implication of that tracking capabilities and human cooperation and collaborative work must be in action during these early times, I believe that the foundation has been set for accepting some similarities between recent and past hunter-gatherers. Moreover, I would like to argue in this paper that past and recent hunter-gatherers actually shared the same reasoning for practicing these similar adaptation practices, and this is of course due to a combination of biological necessities in terms of diet and epistemological considerations in terms of human relations with the world, and with animals in particular. I would say that the fact that past and recent humans share these primordial aspects of behaviour bring them closely together and demonstrate that the hunting mode of existence, coupled with the perception of the environment as composed of entities to be negotiated with in a reciprocal manner, is a very early human trait and thus the use of data emerged from the study of these aspects in modern hunters is relevant for Palaeolithic ones. As for the physiological and probable cognitive differences between recent and early humans, I should make the statement that at least in my view these differences may not be as pronounced as some would like us to believe. We, modern humans (or, if you like, Homo sapiens), Neanderthals and Homo erectus are part of the human lineage. We share, in my view, more similarities than differences. Recent studies strongly argue that modern humans and Neanderthals were exchanging genes, and that most non-African populations still carry some Neanderthal genes. I would not be surprised that time will tell that this is the case for Homo erectus as well. On the other hand, modern people living on the planet today share many behavioural and cognitive capabilities regardless of some significant physiological differences. So I would not take the anatomical evidence as an a-priori element that contradicts the possibility to address similarities between these early and recent humans.

More specifically for my arguments presented here, there are lines of evidence supporting the claim that elephants and mammoths constituted significant cosmological and ontological elements for Palaeolithic humans as well as for recent hunter-gatherers. I believe that the central role of proboscideans as a food source, coupled with the social, behavioural and even physical resemblance between these animals and humans (Lev & Barkai 2016), were the reasons behind the cosmological conception of elephants and mammoths by early humans. The archaeological evidence for such speculation can be found, for example, in the use of elephant bones for making tools that resemble the characteristic Lower Palaeolithic stone handaxes (Zutovski & Barkai 2016), as well as the elaborate depictions of mammoths in cave ‘art’ and the production of mammoth and human sculptures/amulets/charms and engravings made from mammoth ivory and bone in Europe during Upper Palaeolithic times (e.g. Braun & Palombo 2012; Hussain & Floss 2015; Munzel et al. 2016). I shall elaborate on these aspects further below.

The proposition that meat sharing has its roots in the Lower Palaeolithic was first advocated by the late Glyn Isaac some 40 years ago (Isaac 1978a,b). This was indeed an ahead-of-its-time proposition, in being solely based on the association of stone tools and animal bones at early Stone Age sites in East Africa. Isaac suggested, in a major scientific breakthrough, that early humans had regular primary access to large ungulates and that this pattern, assisted by advanced levels of cooperation and social organization, led to food sharing at central places (or home-bases). Today we know much more about the adaptation of early humans and the idea suggested by Isaac has gained increasing support (e.g. Domínguez-Rodrigo & Pickering 2017). Here, I simply fine-tune his argument by focusing on the special relationships between early humans and proboscideans and on the relevance of hunter-gatherers relationships with the world, in reconstructing the origins of meat and fat sharing.
Becoming an elephant/mammoth

Accounts of the complex relationships between hunter-gatherers and the animals they share the world with (but also hunt, kill and consume), indicate that in many cases the human hunters identify themselves with the hunted animal, are at times ‘transformed’ into an animal during the hunt and often adopt the hunted animal’s perspective and even share its feelings and emotions during the hunt (e.g. Guenther 2015; Lewis-Williams & Biesele 1978; Russell 2017). Hunters commonly exploit all the different parts of the prey in order to manufacture hunting gear, pendants, clothing and footwear, amulets etc., and even conceal selected animal body parts on their body during the hunt (e.g. Tanner 2014; Betts et al. 2012; McNiven & Feldman 2003; Russell 2017; Zivaljevic 2015). The particular selection and use of a specific animal body parts is far from being accidental and is not directed solely by practical or technical considerations. As clearly argued in many studies, the selection and use of animal body parts is part of the way hunters express their obligation to respect the prey they kill (e.g. Tanner 2014), and the intimate physical contact between the hunters and the item made from the hunted animal provides the former with the perspective of the animal, allowing them to ‘transform’ into the animal during the hunt, providing them with the skills and strength of the respective prey, and effectively enabling the hunters to ‘become’ their prey. Prey animal hides are prepared as garments for children, including the head, ears and fur, in order to ensure the youngsters’ intimate acquaintance with these animals and enhance their ‘becoming’ these animals in the future during the hunt (e.g. Tanner 2014, 216). This perspective was beautifully demonstrated in reconstructing the role of deer ‘masks’ in Mesolithic Britain, suggested as not comprising ‘practical’ elements used in the hunt or ‘symbolic’ elements with no clear explanation, but rather as purposefully selected deer body-parts enabling the hunters to transform into a deer and become a deer (Conneller 2004). I shall follow this line of argumentation and present several archaeological examples regarding the relationships between humans and elephants and mammoths, starting with the peculiar and thought-provoking use of elephant bones in the production of items imitating the iconic Lower Palaeolithic stone handaxe (Fig. 11.1).

Lower Palaeolithic Acheulean lithic technology is characterized by the production and use of flakes and flakes shaped as tools. Its hallmark is considered to be the Acheulean handaxe (see Gowlett 2013, Pope et al. 2006, Machin 2009, Sharon 2010 but also Barkai 2009) (Fig. 11.1). Handaxes are in most cases relatively large items, shaped by extensive bifacial knapping that reflects manual dexterity, symmetry and, in some cases, a prolonged life cycle (Lycett & Gowlett 2008; Machin 2009). The handaxe is recognized as the hallmark of the Acheulean cultural complex for three main reasons: its wide geographic distribution; its continuous presence throughout the Acheulean

Figure 11.1. An Acheulean flint biface from Lower Palaeolithic Revadim site, Israel.
(1.8/1.6–0.250 million years ago in Africa and the Levant); and its persistent morphology and production technology (Finkel & Barkai 2018). The available functional, technological and experimental evidence would seem to suggest that the primary use of Palaeolithic handaxes lay in processing animal carcasses (e.g. Claud et al. 2009; Claud 2008, 2012; Jones, 1980; Keeley 1980, 160–70; Machin et al. 2007; Mitchell 1996; Solodenko et al. 2015). In some cases handaxes were used in other tasks than in solely assisting the extraction of calories from different game taxa (e.g. Dominguez-Rodrigo et al. 2001), and thus some see the handaxe as a multipurpose tool. However, most the available data indicate not only the repeated archaeological association of handaxes and processed animal parts, but also the efficiency and suitability of handaxes in skinning, cutting, defleshing and dismembering carcasses, and in particular carcasses of large-game taxa (e.g. Jones 1980, 1981, 1994; Key & Lycett 2015, 2016). The repeated association of handaxes and very large game at many Lower Palaeolithic sites in the Old World, coupled with the dependency of Palaeolithic humans on animal meat and fat (e.g. Ben-Dor et al. 2011, 2016; Dominguez-Rodrigo & Pickering 2017; Zink & Lieberman 2016), and the intriguing production of handaxes made from elephant bones (see Zutovski & Barkai 2016 for details), deserves special attention. Skinning, cutting, defleshing and dismembering elephants and mammoths is a tedious and demanding task (e.g. Gingerich & Stanford 2016). The presence of proboscidean remains bearing cut marks at Palaeolithic sites (see Slodenko et al. 2015 for details) as well as the butchered elephant skull from the site of Gesher Benot Ya’aqov, associated with many handaxes (Goren-Inbar et al. 1994), supports the contention regarding the link between Lower Palaeolithic humans, elephants and handaxes. The same holds true for a handaxe bearing fat residue from the Acheulean site of Revadim (Slodenko et al. 2015). The presence of butchered elephant/mammot remains at many Palaeolithic sites worldwide (e.g. Agam & Barkai 2016; Blasco et al. 2013; Germonpré et al. 2008; Iakovleva et al. 2012; Kufel-Diakowska et al. 2016; Rabinovich et al. 2012; Smith 2015) suggests that elephants played a significant role in the early human diet and adaptation. Direct evidence of proboscidean consumption is also provided by isotopic studies, indicating the consumption of mammoths by early humans in Europe (e.g. Bocherens 2011; Bocherens et al. 2015; Drucker et al. 2017; Naito et al. 2016). The importance of proboscideans in the Palaeolithic diet is further stressed through cases in which selected elephant body parts were carried back from the hunt to the caves (e.g. Blasco et al. 2013; Germonpré et al. 2014; Zhang et al. 2010), implying their high nutritional value (especially regarding elephant heads, see Agam & Barkai 2016), and most probably their significant role in maintaining the human-elephant relationship. It would seem that handaxes were efficient and effective tools in processing large carcasses, enabling the removal of large quantities of fat and meat and the separation of body parts in order to manipulate and transport them. The handaxe allows the application of considerable force and leverage during cutting and dismembering, and its continuous and mostly curved and sharp working edge is ideal for massive and intensive meat and fat processing tasks (e.g. Key & Lycett 2015, 2016). Moreover, handaxes could be re-sharpened in order to prolong their use for continuous operations, such as the processing of very large game (e.g. Claud 2012). I thus argue that handaxes were the primary tool that assisted butchery during Lower Palaeolithic times (Finkel & Barkai 2018), and in particular the processing of large game such as the elephant (Fig. 11.2).

The intriguing production of handaxes made of elephant bones offers a major clue in our understanding of the human-elephant relationship during Lower Palaeolithic times. The archaeological record reveals that Palaeolithic early humans not only consumed elephant fat and meat, but also broke up elephant bones, and especially limb bones, for bone marrow extraction. This pattern of behaviour and adaptation was practiced over three continents of the Old World for hundreds of thousands of years. In some cases Acheulean early humans also exploited elephant bones beyond their use for immediate nutritional benefit (Barkai & Gopher, 2013). Elephant bones, again mainly limb bones, were even used for the manufacture of artefacts that closely resemble the iconic Acheulean stone handaxes (e.g. Gaudzinski et al. 2005; Boschian & Saccà 2010, 2014; Costa 2010; Anzidei et al. 2012; Echassoux 2012; Rabinovich et al. 2012; Saccà 2012; Beyene et al. 2013; Wei et al. 2017). Although Lower Palaeolithic Acheulean bone handaxes appear across a wide geographical range, they actually represent a small-scale phenomenon. These items exhibit, in many cases, a remarkable similarity to the stone handaxes, and were probably flaked in a similar manner and according to similar concepts of design (Costa, 2010). A clear preference for elephant bones was detected in Acheulean bone biface production (Fig. 11.3). All eight archaeological sites analysed in our 2016 paper (Zutovski & Barkai 2016) contained bones of other large taxa in significant numbers, in addition to elephant bones. However, no handaxe was manufactured from any other animal than elephant, despite bones of other large mammals.
also being flaked, but not as handaxes. Moreover, bone handaxes were found only at sites where stone handaxes were present as well. In other words, while there are numerous Acheulean sites with stone handaxes completely devoid of bone bifaces, no Acheulean site to date without stone handaxes has ever featured elephant bone bifaces (Zutovski & Barkai 2016). An intriguing bond between early humans, handaxes and elephants must have taken place in the Acheulean throughout the Old World for hundreds of thousands of years. The resemblance between butchering tools made of stone and similar tools made of bones of the butchered elephants is striking. We have suggested that manufacturing handaxes from elephant bones might have been an expression of the people’s sense of dissonance at consuming those impressive animals.
they shared the world with, as well as an ontological act of reassuring continuation of this Acheulean mode of existence. This striking phenomenon, I contend, is part of the special relationship that obtained between people and elephants, and that butchered elephant bones were purposefully selected in order to allow early humans to ‘become elephants’, to transform into elephants and experience the elephant’s perspective and abilities. The ‘elephant-bone handaxe’ might also have constituted a token of appreciation and respect towards the elephants, aimed at maintaining the special relationship and the continuous presence of elephants that allows humans to exist and to successfully hunt elephants (in the spirit of the arguments suggested in Tanner 2014). I believe this to be one of the most wonderful examples of such relationships in Palaeolithic times. As an end-note to this subject, I present another quotation from Tanner’s work among the Linuu: ‘The more commonly held belief is that the inedible remains continue to be part of the species as a whole, and their proper treatment is a way of avoiding giving offence to the master of the species in question, thus enabling hunting to continue’ (2014, 261)

The following, additional, archaeological examples will be presented in less detail due to the confines of this article, but they convey a very similar message.

As noted earlier, during Upper Palaeolithic times in Europe (mammoths not only constituted a significant food source but were also ubiquitously depicted and sculptured in painted caves (e.g. Braun & Palombo 2012), and mammoth ivory and bones were frequently used in shaping both animal (including mammoths) and human figures (e.g. Conard 2009) as well as hybrid human-animal (the famous lion-man, Kind et al. 2014) figurines, beads, pendants and other personal ornaments (Dutkiewicz, Wolf & Conard 2017). Mammoth tusks and bones were used too in manufacturing tools such as chisels and retouchers (Munzel et al. 2017). This extensive data-set will not be elaborated upon here, as it requires a detailed analysis beyond the scope of the present article. It should be noted, however, that it was recently suggested that such items, made of mammoth skeletal remains, in fact represent agents in the complex relationship between humans and proboscideans, and were intended to assist Upper Palaeolithic humans to ‘become’ mammoths (Hussain & Floss 2015). I support this suggestion and hope it will be further investigated, by others and myself, in the future.

Additional possible evidence for the above suggestion comes from the European ‘Mammoth steppe’ (Guthrie 2001), where during Upper Palaeolithic times (but perhaps also during Middle Palaeolithic times; see Demay, Péan & Patou-Mathis 2012), humans constructed dwellings composed of mammoth skeletal remains and tusks (e.g. Iakovleva 2015). While most
scholars tend to take for granted the use of mammoth bones and ivory as building materials in the absence of trees or any other appropriate construction materials in the area, this striking phenomenon might well reference an aspect beyond that of merely the practical realm. I would like to argue that ‘living inside a mammoth’ offers yet another significant aspect of human-mammoth relationships, and indeed of purposefully using the inedible mammoth parts in order to maintain and strengthen the endurance of the bond between the two species. The dependency of the human inhabitants of the ‘Mammoth steppe’ on mammoths for their successful survival, and the fact they were actually living inside their favourite prey, offers a striking similarity to present-day indigenous Arctic populations who are fully dependent on whales for their well-being and livelihood and construct dwellings out of whale bones (e.g. Habu & Savelle 1994; McCartney 1980; Patton & Savelle 2006; Whitridge 1999). Such relationships between these Arctic populations and whales thus clearly lie within the framework of the other-than-human-person relationships, and greatly recall the set of meanings embedded in human-elephant ontology and cosmology as described in the present study (e.g. Coté 2015; Hill 2011; Monks, McMillan & St. Claire 2001).

The origins of fat and meat sharing in the Palaeolithic

Following the emergence of our direct ancestor, Homo ergaster/erectus in Africa some 2 million years ago, significant transformations appear to have taken place in diet, technology, social organization and cooperation (see also Domínguez-Rodrigo & Pickering 2017 for similar suggestions). Such transformations were probably also accompanied by the establishment of human relationships with the other elements in the world they lived in, including the establishment of specific ontological, cosmological and epistemological perceptions and worldviews.

*Homo erectus* (sensu lato) evolved around 2 million years ago in Africa, presenting new body proportions, an increased brain volume, new dental characteristics and possibly a specialized digestive system dependent on enriched foods in order to successfully maintain the body and brain (e.g. Aiello & Wheeler 1995; Domínguez-Rodrigo & Pickering 2017; Zink & Lieberman 2016). Fat and marrow were an essential food source for *Homo erectus* in providing for their daily energy expenditure (Ben-Dor et al. 2011; Speth & Spielmann 1983). It is thus not surprising that the earliest archaeological sites contain animal bones in direct association with stone tools, demonstrating the consumption of meat, fat and the extraction of marrow by early humans (e.g. Domínguez-Rodrigo & Pickering 2017; Domínguez-Rodrigo et al. 2014).

This dependency on meat and fat led to the regular acquisition of animal carcasses by hunting and a preference for mega-herbivores such as elephants, mostly because of the unprecedented quantities and qualities of the fat provided by these animals (Agam & Barkai 2016, 2018; Ben-Dor et al. 2011, 2016; Guil-Guerrero et al. 2018; Reshef & Barkai 2015). The role of protein and fat in the Palaeolithic human diet has been demonstrated time and again (e.g. Bunn 2006; Domínguez-Rodrigo & Pickering 2017; Pante 2013), in addition to the significance of complementary calories gained from vegetal resources (e.g. Hardy et al. 2015; Melamed et al. 2016). Animal meat and fat constitute an excellent source of calories and provide essential amino acids, minerals, vitamins and fatty acids (Friedman 1996; Givens et al. 2006), with fat having special virtues of its own, as it is the densest form of nutritional energy available in nature (Ben-Dor et al. 2011), providing a much higher caloric gain than either protein or carbohydrate (Outram 2002; Pasda & Odgaard 2011). Its taste, too, has been documented to be favoured by humans (Reshef & Barkai 2015) and it is plentifully present in large herbivores even in times of depletion of other resources (Ben-Dor, Gopher & Barkai 2016). In some cases, it may even be the only means of survival (Outram 2002).

It is well known, moreover, that protein consumption by humans has recognized and accepted ceilings, dependent on the ability of the liver and renal system to dispose of its by-products (see details in Ben-Dor et al. 2011, 2016). Thus, on average, humans are able to gain only about one third of their daily caloric intake from meat. Vegetal food is not always available and accessible, its processing is demanding and its digestion is costly. Fat is available year round (depending on the different animal taxa), there are no physiological limitations to its consumption and it provides nine calories per gram (as opposed to only four for protein or vegetal foods) with no digestion cost whatsoever. Fat is thus a compulsory component in the human diet in order to enable sufficient daily energy expenditure. Elephants and mammoths are the most outstanding food-packages of fat and meat, with the most perfect combination of these two elements, as half of the roughly six million calories within a single elephant are in the fat (see details in Ben-Dor et al. 2011, 2016; Guil-Guerrero et al. 2018). This set of circumstances clearly did not go unnoticed by early humans.

Fat, marrow included, must have had an important role in the early humans’ diet. Fat content has indeed been documented to affect prey selection.
among recent hunter-gatherers (e.g. Biesele 1993; Jones 1989), or as Tanner noted: ‘Fat is always the most significant part of an animal for the Innu; it has a symbolic significance at feasts, particularly the winter feast. ... during the feast, fat is smeared on the walls, doorposts and guns, as well as being placed in the fire with the other food offerings. Fat is thus presented both to the spiritual entities outside the dwelling, and to the domestic spiritual entities and those of the hunting equipment’ (Tanner 2014, 247). After describing one of the hunting rites, that of placing a piece of intestinal fat into the mouth of a moose or caribou foetus, Tanner writes: ‘This rite is directed at the master of the particular animal species involved, and its purpose is to ensure that any such animals killed subsequently by the hunter will have plenty of fat on it’ (Tanner 2014, 223). A final statement regarding this issue is from Tanner’s work related to cases when special food offerings are made, if ‘... the animal served is particularly large or has a particularly large amount of fat on it’ (Tanner 2014, 238).

It is true that early humans, as well as later ones, ate whatever was out there that was edible, and in many case enjoyed a varied diet of fat, meat and vegetable foods. However, under extreme ecological conditions such as arid or frozen landscapes, vegetal material is entirely absent for major parts of the year. Even when it is available, a great deal must be invested in procuring and processing it, and would have been especially so in times when the use of fire was not yet being habitually practiced (moreover, the use of fire has costs of its own; see, for example, Henry 2017). Furthermore, fruits, vegetables, nuts and roots are foraged by other, non-human, animals and are thus under strong competition in nature. The landscapes occupied by early humans as well as later ones were rich in herbivores as well as other animal taxa, and their fat and meat have been at the disposal of humans ever since.

Early humans were dependent on their animal-counterparts for successful adaptation. Hunting and consuming animals on a regular basis has long constituted the most parsimonious mechanism in human existence (e.g. Domínguez-Rodrigo & Pickering 2017). The dissonance between perceiving animals as other-than-human-persons on the one hand, while killing and consuming these co-habitants of the world on a regular basis on the other hand must have been a central element in human ideology, cosmology and behaviour. And again, elephants and mammoths must have played a major role in this dissonance. As humans share many physical, social and cognitive similarities with elephants (see details in Lev & Barkai 2016), and within the framework of the human perception of the world as composed of entities with personhood and social relations, proboscideans must have been a significant partner to human being-in-the-world for hundreds of thousands of years.

Nonetheless, elephants and mammoths are also an ideal food-package incomparable to any other species, and humans had been, as the archaeological evidence clearly shows, consuming these creatures for hundreds of thousands of years, if not a couple of million. On top of this very complex combination of conditions, necessities and worldviews, one must also take into consideration the enormous size of elephants and mammoths and the unprecedented amount of calories each individual is able to provide. In this regard, elephants and mammoths are unique (perhaps only outranked by the whale), and this basic fact sets the elephant apart from all other terrestrial animal taxa hunted by man.

Even if we take into account the possibility that the dissonance in human-animal relationships and interaction could be resolved by treating the hunted animals with respect and by ensuring that nothing is wasted, consuming all edible parts and making appropriate use of the inedible ones, the enormity of the elephant poses a real challenge to such a solution. And this is where, I suggest, sharing comes into account.

It is true that sharing might have been the practice also in the case of smaller taxa, as even medium-sized vertebrates are beyond the immediate consumption capability of a very small group of individuals. However their dependence on elephants and preference for fat left early humans with no other possibility of resolving the dissonance but that of sharing, establishing respect for the hunted animal by ensuring that nothing was wasted. And in this case, as has been clearly shown in studies of recent hunter-gatherers that still hunt and eat elephants (e.g. Lewis 2015), sharing is practiced both amongst group members and between neighbouring groups, facilitating too the establishment and maintenance of social and personal relations.

I note that the preservation of meat of medium and large game, allowing it to be preserved for several days and even longer periods of time, has been documented among recent hunter-gatherers (e.g. Marshall 2007; Pasda & Odgaard 2011). The probability of the consumption even of putrid meat in the Palaeolithic was also posited recently (Speth 2017). Preservation of elephant meat by smoke-drying is described in the case of the Mbuti Pygmies, as well as the sharing of it by several groups for several weeks (Duffy 1984, 144, 163). Similar practices could have been a part of the Homo erectus behavioural repertoire, enabling them to cope, to some extent, with the great amount of meat and fat provided by a single elephant carcass. The habitual use of fire for roasting and cooking might also
have facilitated meat preservation. As was suggested in the case of the use of fire at the Lower Palaeolithic Acheulean Lazaret Cave, the hearth at the back of the cave produced low temperature smoke intended mostly for meat preservation by smoking (Valensi et al. 2013). However, even if preservation techniques were available during Palaeolithic times, and even in recent times when fire is used in smoking meat, an entire elephant is way beyond the consumption capabilities of a single group of hunter-gatherers [just as a matter of demonstration, Marshal (2007) documented that the consumption of a single giraffe took a group of !Kung San nine days]. When Mbuti Pygmies of the Ituri forest hunt an elephant, they move their entire camp to the kill site and invite neighbouring groups, celebrating for weeks with singing and dancing – and no additional hunting (Duffy 1984, 144; Turnbull 1962, 138). A similar scenario was also presented for the Mbendjele forest hunter-gatherers of western Central Africa (Lewis 2015). Among prehistoric groups, as among recent hunter-gatherers, the successful hunting of a proboscidean was probably a significant event, a real cause for a celebration, but at the same time presented a significant challenge to maintaining the appropriate respectful relationship with this group of animal-persons.

It is highly conceivable that the dependency on animal-derived calories, coupled with the central place of hunting in the lives of early humans (involving, among other aspects, intimate acquaintance with the specific characterististics of the relevant animal taxa; the development, establishment and transmission of tracking skills; hunting technology and butchering tool-kits; cooperation in hunting, carcass dismembering and transportation etc.), and viewing the world as composed of different groups of other-than-human-persons, engendered a new spectrum of relationships between early humans and animals. Human relationships with elephants and mammoths – the most significant animals to them in terms of hunting, butchering, transporting and caloric contribution, as well as in terms of their resemblance in certain ways to humans, might serve as a good example of such relationships.

Endnote

Humans and proboscideans shared habitats during the last two million years across the Old and New Worlds. During that time, people perceived elephants and mammoths as equal co-dwellers and as agents characterized by personhood and social relations, while at the same time being dependent on elephant-derived calories for successful human adaptation. Both the archaeological and anthropological records, presented briefly in this article, are consistent with such a statement. The dependency on animal fat and meat for maintaining the necessary caloric balance, coupled with the view of animals as other-than-human persons and as agents capable of thinking, feeling and interacting, must have led, I believe, to the very early establishment of the sharing of fat and meat. The effect of the unprecedented enormous quantities and qualities of the fat and meat provided by the hunting of a single elephant, accompanied by the humans’ reciprocal behaviour towards their non-human counterparts, may have led to the human behavioural pattern of sharing that was aimed at resolving this dissonance. Sharing the fat and meat of the hunted proboscidean was directed at treating the carcass with respect by distributing the edible parts among group members as well as neighbouring groups, and most probably also by using the inedible parts as replicas of tools or even as practical tools, as pendants and figurines etc. Such items represented the characteristics and power of the animals, and thus served as mediators between man and his animal-other prey. I have attempted in this article to posit a hypothesis that interweaves all the components of the Palaeolithic hunter-gatherer modes of existence and being-in-the-world, in order to demonstrate that sharing was the most efficient mechanism by which to resolve the dissonance faced by humans in their complex relationships with other, non-human, animals. Sharing, thus, allowed early humans to achieve the necessary caloric balance through focusing on the most desirable prey in terms of fat and meat combination, and at the same time to treat these animals with the appropriate respect and ensure the continuation of the relationship. This may well have led to the subsequent assimilation and adoption of the practice of sharing in other realms of life. Thus, sharing is one of the very earliest characteristics of humans (alongside tracking, hunting, meat and fat eating and stone-tool production, etc.) and was greatly influenced by their interactions and relationships with elephants.

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